

Dr. Comilla Sasson:

Good morning. My name is Dr. Comilla Sasson, I'm the vice president for science and innovation for emergency cardiovascular care, here at the American Heart Association. And I am very pleased to introduce my guest, Mr. Joheris Exito. Do you want to introduce yourself Jo?

Joheris Exito:

Good morning guys. So, my name is Joheris Exito, I am a registered vascular tech, registered diagnostics sonographer, I'm also a registered respiratory therapist and respiratory care practitioner, been doing this for a really, really long time. And I'm super excited to be here this morning with Dr. Sasson, to talk to you guys about COVID-19 and some procedures and methods that we use to help treat our COVID-19 patients.

Dr. Comilla Sasson:

Excellent. Thanks Jo for joining us.

Dr. Comilla Sasson:

What we're going to do today is give you the very brief overview of the key points for COVID-19, in terms of modes of transmission and some latest breaking research that's coming from the CDC on that, how COVID differs from other respiratory illnesses and why we have to do certain things, in terms of how we both diagnose and treat patients and also take care of ourselves. Differentiation of mild, moderate and severe COVID and then, some back-to-basics medical care based on some of the clinical experiences, both Jo and I have had it over the course of the last year. So, we will launch right in.

Dr. Comilla Sasson:

In terms of epidemiology, I think, it's always just important to remember the difference between an epidemic, outbreak and a pandemic. So, an epidemic can be infectious or non-infectious, so even when we think about obesity, you may hear it referred to as an epidemic, so that's the non-infectious epidemic. Obviously, COVID-19 is another epidemic that we're experiencing here in a very specific population. An outbreak carries that same definition of an epidemic but it's really for a much more limited geographic area, so smaller area, so for example, if you have an outbreak of E. coli at a restaurant versus a pandemic where you're actually going to have spread all over several countries or continents and that's exactly where we are, unfortunately, today.

Dr. Comilla Sasson:

In terms of modes of transmission, I think, we oftentimes think of contact transmission first, which is when you touch, let's say, a surface or shake somebody's hand, that article or that surface can become contaminated with those particles. And so, that's what we would call fomite transmission. We know that COVID does have a component of contact transmission. It also has droplet transmission and this is oftentimes why we talk about keeping your space of about six feet within yourself and someone else. And the idea behind that is that, when you've got larger and smaller droplets and particles with droplet transmission, they can't travel beyond those six feet and that's why we would say, "hey, keep that physical distance."

Dr. Comilla Sasson:

What we're finding more and more now though is that, there is an airborne transmission spread component to COVID and that can have some really different implications for us, in terms of thinking about these respiratory droplets that are much smaller and can actually remain suspended in the air for much longer distances. So, we're thinking way longer than that six feet and definitely can even stay in the air for anywhere from 2 to 16 hours, depending on what that ventilation in that specific room is or how big that enclosed space is. So again, if you think about airborne transmission, it's going to completely change the way in which we think about how COVID is spread. We oftentimes, will also think of COVID as being really a close contact type of transmission, meaning that most of the contact and droplet transmission is going to happen within that six feet.

Dr. Comilla Sasson:

But again, as we're getting more and more data from the CDC, specifically, around the idea of airborne transmission, we know that it's not just going to be about who you're in close contact with but also who has been in that room before you because we know that there can be that airborne transmission and COVID can linger in the air even after a person leaves.

Dr. Comilla Sasson:

So, what makes COVID-19 different than influenza? This is actually based on some research that was done very recently at a Brigham and Women's and really the big differences are that, in terms of modes of transmission, you'll see that influenza's primarily droplet and contact with some airborne that's been reported. Now, COVID-19 is primarily close contact, again, as I've mentioned, but we are starting to see more and more reports about airborne transmission, especially when they're in an enclosed space, when you've got poor ventilation or if there's prolonged exposure. In terms of the contagious period, oftentimes, again, three to four days before symptom onset and after five to seven days after symptom onset, is what we think about for influenza. And then, for COVID-19 it's the two days before symptoms begin and then mild to moderate illness, it's about 10 days after symptom onset and severe illness is 20 days after symptom onset, that we're thinking that people can still remain contagious. So, again, that window for being contagious, it's very different.

Dr. Comilla Sasson:

In terms of symptom onset, again, usually with influenza, we're talking about within the first two days or one to four days after the virus enters the body, is when we would think that you're most likely to get your symptoms to come on. And now with COVID-19, it's usually within those five days and so, that 2 to 14 days after exposure, but usually we would expect to have some type of symptoms at that five day mark. Again, this also correlates back to timing for testing as well.

Dr. Comilla Sasson:

In terms of symptoms, again, very similar across both influenza and COVID, but you will see that COVID-19 will have more of the loss of taste or smell, it's a little bit different. Oftentimes, can have the GI component just like influenza can as well, so you might see nausea, diarrhea and then, of course, fevers and/or throat but we also can see many other different symptoms that we don't normally see with influenza. And that's really, again, what has been characteristic for COVID-19 is that, there is nothing characteristic and even asymptomatic patients can have COVID-19 as well.

Dr. Comilla Sasson:

So, in terms of how many folks get sick each year, about 3 to 11% of the population will get influenza, again, this varies year by year. And in terms of vaccine timing, again, you're going to want your influenza vaccine to be given about two weeks before the flu season starts and with COVID-19, we've got the Pfizer and Moderna, primarily right now, obviously there's additional vaccines that are coming out, but both are going to be two doses. For now, it's a one-time vaccination schedule, but as things evolve, we will have to see how things go as well.

Dr. Comilla Sasson:

In terms of vaccine frequency, Pfizer's the 21 days, Moderna is a little bit longer, it's usually around 28 days. So again, it varies by the type of vaccine that you're giving. And then, in terms of vaccine effectiveness, influenza, we're going to be doing 40 to 60% annually, in terms of the effectiveness, again, that varies year by year. And with preliminary data right now, we are seeing really highly effective vaccines for COVID-19, somewhere even around the 95% mark, at two months.

Dr. Comilla Sasson:

So, what makes COVID-19 different from other respiratory illnesses as well? It does cause a much more severe infection. Now, influenza, of course, can often cause severe infection as well, but we are seeing so many more people with that severe infection, it's the acuity, the higher volumes of patients and the higher number of patients who are so sick, that makes COVID-19 so different than what we would see in a normal influenza season. And this is actually data that has been taken from Dr. [inaudible 00:07:39] paper, that is just coming out in the Journal of General Internal Medicine. And what they found is that, in their cohort of patients, when they actually compared it to patients from a prior influenza season, they did see that COVID-19 patients were more likely to have respiratory failure, patients were more likely to be on the ventilator for prolonged courses.

Dr. Comilla Sasson:

So, the median time on a ventilator for flu was about three days but for COVID-19, it was closer to 14 days. So then, it just shows you how much more severely ill these patients are. There's also more and more data emerging about COVID-19 also being a vascular disease, as well, that can cause micro-emboli and the pathophysiology that's been proposed is that, it causes inflammation, which then activates platelets, which then can cause clot formation as well. In terms of also some additional research that's coming out, there is also the thinking that COVID-19, actually, and the SARS-CoV-2 virus, specifically, can cause some hemolysis of red blood cells. And this actually may be the reason that you start to see the long COVID symptoms. So, people who are severely fatigued, people who have prolonged weakness and the idea behind that is that, the red blood cells need to actually regenerate in order to be able to get back to some level of functioning again. So, that may be a potential mechanism as well.

Dr. Comilla Sasson:

And then, we also know that there's a cumulative exposure to COVID-19 that is also a little bit different than anything else we've seen before. So, early on in the epidemic, it was all about the 15 minutes of exposure and you don't want to be in a room for that long. Now, we're starting to see that it's all about the actual amount of time that you're spending being exposed to the SARS-CoV-2 virus, but also more importantly, how much of that viral load is it? So, is it just you in a room by yourself? Is it multiple people in a room together? All of that virus actually goes into the air and, of course, can actually cause a different severity of illness as well.

Dr. Comilla Sasson:

And then in terms of the happy hypoxic and Jo will talk much more about this in just a few minutes, there's really nothing happy about these patients but we do know that they can come in severely hypoxic. So, we're looking at O₂ sats of 60, 70% on room air and they're literally walking into the emergency department. But as we'll talk a little bit more, there's nothing that is happy that's going on in their body at all, they're truly very, very hypoxic but they may not necessarily realize it until it is too late.

Dr. Comilla Sasson:

In terms of COVID illness severity, it is important to think about starting to characterize this and I think we're going to get much more sophisticated as we go along, in terms of thinking about how to really start grouping off the different types of illness and severity. But this, according to the NIH, is really where we're starting right now, so you have the asymptomatic or presymptomatic infections who are people who maybe have tested positive but don't necessarily have symptoms yet, of COVID-19, those are our presymptomatic folks. And there are some people who never actually develop any symptoms at all, those would be our asymptomatic folks.

Dr. Comilla Sasson:

In terms of mild illness, again, these are new patients who may have signs and symptoms of COVID-19, like the fever, cough, sore throat, but really no shortness of breath, dyspnea or chest imaging like chest x-rays, that would show any abnormalities. That can very quickly, as we all know, progress to moderate illness and that's where we start to see some evidence of lower respiratory disease during, either clinical assessment, so we'll talk a little bit about that in just a few minutes, but exertional O₂ sat is a really important component of that. Or you might start to see findings on chest imaging as well and you will start to see alterations in the oxygen saturation. Again, it's still staying over 94% in that moderate illness, but when you move into that severe illness, that's when you start to see that SpO₂ start to drop below 94%, start to see that respiratory rate go above 30. And now, you're starting to see lung infiltrates that are really more than 50% of the actual chest fields as well.

Dr. Comilla Sasson:

And again, that moderate to severe can happen, not necessarily over days, it can actually happen over hours. And I know that, again, Jo and I have both seen this in clinical practice, where you have somebody who looks okay, and then within 12 hours, they're severely ill, either on high flow or even on the bed, just within literally hours. And then, of course, those ventilated patients are the ones who we can call them the critical illness people who've had respiratory failure, septic shock or multiple organ dysfunction as well.

Dr. Comilla Sasson:

So, just thinking about the time course of COVID infection, really important to think about, not only when was the exposure and then when did the symptoms start, but you'll see that the infectious period actually starts even just as that viral load starts to increase. And so, the infectious period can oftentimes happen even before somebody starts to display symptoms and that's actually what makes it very challenging because many folks can actually be transmitting the SARS-CoV-2 virus to others, even though they don't necessarily have symptoms yet. And again, that's where time and time again, it's "hey, I felt okay. I went to this event and then a couple days later I developed these symptoms." And now, all of a sudden, we're trying to backtrack and trying to figure out who else they were exposed to. As you start thinking about

what a negative COVID test means as well, I think, it's important to think of that infectious period, again, is going to be when the viral load starts to spike up.

Dr. Comilla Sasson:

As you can see, the PCR test is going to be a little bit more sensitive, in terms of picking up the SARS-CoV-2 virus, as compared to the rapid test, which requires a little bit more of a viral load. The issue with a negative test, though, is that, it's very similar to what we would call a pregnancy test. So, hey look, right now, you have not tested positive for SARS-CoV-2 or for COVID-19, but we know that, again, if you're in that earlier part of that curve, you may not have tested positive, even though you are infected by the virus. And so, just like a pregnancy test, it's a point in time, it's a cross-sectional test, that tells you at this point right now, you do not have enough virus in your system to be detected, but it does not necessarily mean that you do not have COVID-19. And that becomes really important, especially as we start thinking about air travel or what is a negative test really mean.

Dr. Comilla Sasson:

I think, again, it's telling you what you don't have right now but it doesn't tell you what you may develop in the next three to five days and that's why it becomes very challenging.

Dr. Comilla Sasson:

So, in terms of thinking about prevention, I think, this is, again, testing is a huge part of making sure that we get control of the virus but, of course, the most important thing that we all can do is safety first. So, wearing a mask and I will say for healthcare providers, it's always important to match your level of risk to the type of mask that you're wearing. So again, if you're in a different aerosol generating procedure, you're going to wear an N95 and a different type of mask if you're in the general public wearing a mask, a non-cloth mask is going to be very important as well. There's more data now emerging about the idea of double masking to just to really be able to help prevent the spread. Washing your hands is very important, getting outside. The getting outside is really just because, again, we know that with airborne transmission, when you're in an enclosed space, that's when you can have higher levels of viral load in the air, that's when you're more likely to get sick, if you've got poor ventilation.

Dr. Comilla Sasson:

So, once you can get outside, get some fresh air, clean those lungs out, it's really going to be important to be able to do that. Poor ventilation can increase your risk, so again, if you are sick, open your windows or if you are in an enclosed space, do whatever you can to either get outside or make sure that you've got better ventilation. Physical distancing is still going to be important, even though I know we were talking about airborne spread as well, but again, at least six feet of distance between yourself and someone else. And then, get the vaccine, very, very important, especially for health care providers, but really for the general population, in terms of helping us get to herd immunity as well.

Dr. Comilla Sasson:

So, just briefly, in terms of the COVID vaccine, many different ones that are now coming up to market. The basic principles for the vaccine, though, is that, it does work with your body's natural defenses so that your body is ready to fight the virus. So, if you are exposed, then you will have some level of immunity that's already built in. And this is very different than if you've already had COVID-19, your body will make its own antibodies, but again, this is actually where you've got the vaccine helping to elicit that antibody response.

It is very effective at keeping you from getting COVID-19 and it may even keep you from getting seriously ill, even if you do get COVID-19. And I think this is really important, I always like to put this in there, the COVID vaccine will not give you COVID-19 or it will not get you infected with the virus. So, just really, really important to make sure people remember that.

Dr. Comilla Sasson:

And you will see some side effects in some people. I know when I got my shot, I had a sore muscle just for the day, so that that's probably the most common one. People feel tired, they might have a fever, these reactions really do mean that the virus is working help teach your body how to fight the SARS-CoV-2 virus. And if you are exposed, it will help you have your own antibody response to that virus. It does not actually mean that you are getting COVID-19, so really important to remember that. And then, if you have had COVID-19, you would be eligible for the vaccine, approximately 90 days after you've gotten it, so just something to keep in mind and for more information, there's a little link at the bottom of your screen.

Dr. Comilla Sasson:

So with that, I'm going to turn it over to Jo.

Joheris Exito:

Hey there everybody.

Joheris Exito:

So, we're going to talk about [inaudible 00:17:16] that you need to do, that can help you minimize your exposure, minimize your risk for getting COVID-19. So, one of the first things that we need to talk about is, your personal safety. If you're a healthcare worker, you want to make sure that you put your PPE on, so your gloves, your mask, your gown, your shield, double mask if you can. You also want to limit your exposure, so that goes back to the discussion about viral load. So, we're trying to minimize the amount of viral load that you're actually taking into your body. And that's something that you guys may want to consider when you do things like BLS, ACLS or PALS. You may want to revisit how you call for your codes, you want to make sure that you have the minimum amount of essential people in the room.

Joheris Exito:

I know that way back when somebody called a code blue, you would have 30 people in the room. Well, with a COVID patient, you can't really do that, so you want to think about exactly how many people you need in that room. And you want to consider the use of viral filters, especially with your Ambu bags and your masks because you're trying to reduce the amount of viral load that's actually getting out into the room and exposing everybody. So, under practice considerations for COVID-19 other respiratory illnesses, we have to think about things like aerosol generating procedures, so intubations. You want to make sure that when you have to intubate your patient, hopefully you don't have to but if you did, you want to make sure that the person that's doing the intubation can get it the first time, every time.

Joheris Exito:

Because if we have to do multiple intubations or multiple attempts, you're just increasing the amount of viral load that's getting out into the room. Nebulizers, that depends on where you are on the fence. You can do nebulizers but you want to make sure that you have a viral rated filter. I know some people say, "oh,

well, we'll just put a bacteria static filter on there." You really want to make sure you get a viral rated filter that you're going to put on the end of your nebulizer mask. If you have the choice between nebulizer and a meter dose inhaler, it's much better to give your patient the MDI versus a NAB. On your bag-valve mask devices, again, you want to make sure that you have a viral rated filter on there. Bacteria statics are okay, much better if you have a viral rated filter, they are out there.

Joheris Exito:

Also consider non-invasive ventilation, so that would be your BiPAPs in your CPAPs, but again, if you're going to have to BiPAP or CPAP your patient, then make sure that you can actually close the door, if you're in a disaster tent, make sure that you actually close off the room, slide the zippers down and make sure that you have air scrubbers in place or some type of negative ventilation in there. It doesn't necessarily have to be a true negative pressure room but at least a negative flow room. Super important to consider that when you have to do things like that.

Joheris Exito:

Now, under your assessments and your treatments, one of the first things that I try to encourage is, don't necessarily just look at the number. And this is where we're going to revisit the happy hypoxic. You're going to have patients that are going to come in, they're going to talk to you, they're going to tell you that they don't feel well but when you check their pulse ox, you're going to see their pulse ox at 62, 65, 68. And back in the ancient days, we would go, "oh my goodness," and we put them on a BiPAP, where we'd immediately go, "oh, well, we need to tube this patient." You need to actually look at your patient, is my patient talking to me? Do they have an increased work of breathing? Things like that. So, don't just necessarily look at the numbers.

Joheris Exito:

And one thing that we really need to emphasize is that, pulse oxes may not always be accurate in people with darker skin tones and that's super, super important to consider. And also at this point, when your patient comes in and they're not feeling well, they probably already have that micro-emboli thing going on, so that's something else that you might want to consider.

Joheris Exito:

So, in order to really bring this together, the Brigham Women's Hospital algorithm is a really good algorithm to use. But the key point here is to assess where the patient is in their clinical course. And the two main components that you guys really need to think about is, assessing your patient's exertional O₂, so you can do the 40 step walk test. I know that there's the one minute sit to stand test, which is supposed to be a really good empirical indicator. And you also need to assess your patient's symptom duration, how long have they been like this? Because that gives you a window as to where they are in their COVID infection, which is going to be for the doctors and NPs and stuff. That's going to be really important for you guys to determine what meds you need to get.

Joheris Exito:

And I know back in the day, we used to look at our patients and go, "oh, you look fine, so we're just going to go ahead and let you go home. Here's some meds, go home you'll feel better." All right, do not leave that patient, do not let your patient go home until you do an exertional pulse ox, super, super, super important. So, this diagram is the NewYork-Presbyterian COVID-19 pathway, it's really, really effective. It keeps it

short, it keeps it sweet but this is a really good guide on whether you should send your patient home or not. Exertional pulse oxes, super important, make sure you do them before you discharge.

Joheris Exito:

Now, in the progression and treatments for COVID, there's a whole bunch of different things that we can do now. In the mild stage, we could probably do the monoclonal antibodies and if you have questions about that, Dr. Sasson has their contact information, at the very end of this program. For your moderate disease, you can do supportive care, you can do things like steroids, like your dexamethazone, you can do your Remdesivir and you can do your Lovenox prophylactic doses. For your more severe critical patients, that's where we need to start thinking about your oxygen therapies. We need to think about therapeutic levels of anticoagulants and maybe we need to start thinking about doing convalescent plasma, if it's available, and if your patient is eligible.

Joheris Exito:

Now, in the treatment of your unhappy hypoxic, which is actually probably more accurate, you really want to limit the ambulation that you're having in your patient do. For a moderate to critically ill COVID patient, asking them to get up and go to the bedside commode, you might as well have already asked him to go run a marathon because a lot of them are just not going to be able to do it. So, you need to make sure that you're always there and you're always ready to assist them to transfer between the bed or whatever. Proning, always, always, always prone your patient. Do not panic if your patient is sitting upright talking to you and you see their sat bottom out to 70 to 75 after they just went to the restroom, that's perfectly normal. Just have them prone, give them their oxygen and give them a minute, maybe 20 minutes, 30 minutes, 45 minutes, maybe even an hour, but just have them prone. Now, under the intensification of oxygen therapy, what we need to talk about here is, don't be afraid to start high and work your way down.

Joheris Exito:

So, in the case of the nasal cannula, you want to start at about six liters per minute, which is going to give you about 45, 50% FiO₂ and start working your way down from there. Traditionally, we would have started at two and try to work our way up. COVID patients don't work that way, you have to start high and work your way down, we'll talk more about that here in just a second. Now, when it comes to deescalation of oxygen and weaning, you want to make sure that you're going down about one liter per minute, per day. When you have your patient on the vapor therms or the high flow nasal cannulas, you want to start at a 100 today, maybe 95 tomorrow, maybe 90 the next day. You want to start with the FiO₂ and work your way down and then once you get them down to, let's say 40%, 50%, now we can start thinking about coming down on their leader flow from 60, 40, 30 and so on.

Joheris Exito:

So, why does proning work? Why does that even work? So, in the lungs we have three zones, [inaudible 00:26:18] zone is zone one, my nipple line area is going to be, what we call, zone two and then, zone three is going to be where our bases are. So, all the magic happens in zone three. But why is that where that happens? Well, that's where all the blood is. You can't perfuse unless you have blood there and blood is super gravity dependent. So, why proning works is, what we're doing is we're changing location of our zone three, we're trying to maximize the amount of surface area in the lungs that we can still get blood to, that has open alveoli so that we can actually ventilate and perfuse our patients. So, we need to change our

mentality from ventilate, ventilate, ventilate to actually perfusing our patients, so zone three, that's what you're trying to do.

Joheris Exito:

In the proning world, COVID is not just traditional proning of facing down, it could be TP, it could be 45 degrees back, it could be left side, right side, it could be 45 left, 45 right, just whatever works best for your patient. Because remember, we're trying to find that best zone three. 90% of the time, your patient's going to find their own comfortable position that they can breathe best. It might not look comfortable for you but if you come in, if you assess that patient and they're in this curled up fetal position but they're setting 98%, leave them alone. As a general rule, put the good lung down, so if you look at a chest CT or an x-ray and you see that the right lung looks better than the left lung, put that right lung down. If the opposite is true, then you put the left lung down. But it's all about trying to find the best zone three.

Joheris Exito:

Now, an intensification of oxygen therapy, remember I said earlier, you want to start high and work your way down. Weaning has to be slow and steady, you can't do this super aggressive, "okay, they're at 50% now, I'm going to drop them to 30% in two hours," that's not going to work with your COVID patient. It's a very, very slow and steady process. So, if you have them on a six liters nasal cannula today, they're going to be on a five liter nasal cannular tomorrow and so on and so on and so on, until you get them down to where you want them to be. You have to remember that your patients can be hospitalized or be oxygen dependent when you send them home. This could be days, it could be weeks, it could be months. Dr. Sasson was very adamant about making sure that when her patients got to two liters per minute, she would send them home with home care and a DME company to deliver oxygen, for them to run on oxygen at home until their primary provider felt safer that now that they can come off.

Joheris Exito:

So, in the progression of oxygen therapy, you always want to start low, as far as your modalities, so nasal cannular to venti mask to non-rebreather to high-flow to BiPAP to ventilator, but when you choose each of these modalities, you want to start on that high end. So, on nasal cannula, you want to start at six liters per minute, on a venti mask, you want to start them at 50%. non-rebreather, of course, 100%, your high flow nasal cannula, don't be afraid to start them at 40 liters per minute and 100 and then just wean down as necessary. On a BiPAP, don't be afraid to go to 12/8, 12/6, 18/8, 18/12, don't be afraid to do that. As long as your patient is comfortable, you're not compromising their cardiac output, things like that, so don't be afraid to do that.

Joheris Exito:

On your ventilator settings, back in the day, we would have said, "oh, we're going to give this patient a 500 tidal volume." Can't do that with your severely ill COVID patients, you want to start low. So, you want to give them maybe 300, 325, maybe even 275, but give them a rate of 25, 27. Peep, you don't want to go above 10 of peep because once you start going above 10 of peep, now you're starting to compromise cardiac output. So, these are things that you want to consider but that's your progression.

Joheris Exito:

So again, to reiterate, oxygenation and where to start, nasal cannula, start at six, venti mask is usually at 50, non-rebreathers are 100. Your high flows, you're always going to start at 100 and start to work your way

down, but again, don't be super aggressive about it, it's little steps, little steps, with your COVID patients because it takes them a long time to recover.

Dr. Comilla Sasson:

I think it's very important Jo, as you had mentioned, obviously, all of this can change based on your local protocols and things like that too. And these are some of the lessons that we've learned across the country in the course of the last year or so, of taking care of these patients. But again, it's always about watching your patient first and then really thinking about, what is it that they need and not necessarily just looking at the numbers again. So, I think, to me, that's really the big take home message there is that, again, protocols will change, the way in which we practice will be different in each setting and these are just some suggested ideas. And in terms of some of the years of experience, it feels like years of experience together. So, thank you Jo, again, I've learned a lot about just how to really improve lung mechanics and getting the profusion from Jo and his experiences.

Dr. Comilla Sasson:

I think the big thing too, that I've learned from you Jo is also just, the most important thing is that don't panic. Don't panic, start proning- [crosstalk 00:32:05].

Joheris Exito:

Prone before you panic.

Dr. Comilla Sasson:

Prone before you panic, that's it. So again, I think, that's just something else to keep thinking about too is that, there's a lot that we can do that is not fancy, that is not necessarily about medications and treatments. It's oftentimes, just really supportive care over a long period of time, that is what many of our COVID-19 patients need. So, just some final other take home messages, prevention works, obviously, that's the most important thing we can all do to stay safe. Don't be afraid to seek care and this is for your patients, you have to make sure that they understand, look just because we sent you home on day 2 because you weren't sick enough to be admitted, doesn't necessarily mean that we don't want you to call us again on day five or day six. It is very likely that they will get worse, in terms of their clinical course.

Dr. Comilla Sasson:

So, it's really, really important for us, as healthcare providers, to make sure we remind our patients, that we are here to help them and if they need care that they should not suffer at home, they need to come and be checked out. And then, of course, the most important thing we can all do is, get the vaccine whenever we are eligible to get it. And that's, again, how we're going to get to some level of herd immunity.

Dr. Comilla Sasson:

So, thank you so much Jo, for all of your tremendous work over the last year and for teaching so many people about the lessons that you've learned. And even me, in many ways, I've learned so much from you as well.

Dr. Comilla Sasson:

Hope you guys have enjoyed your COVID basics for healthcare providers and as always, please feel free to reach out at any time. And then, we have a lot of great resources, including some ventilation training resources too, if you're interested in learning more about how to take care of ventilated COVID-19 patients and as always, everything is changing. So, just keep that in mind and that, many of the things that we may have said today could absolutely change within the next few months or few years, as we continue to learn more. But just really appreciate all of your hard work and thank you all for doing what you're doing to help keep our communities safe.

Joheris Exito:

Bye.

Dr. Comilla Sasson:

Bye.