

Dr. Comilla Sasson:

Hello, my name is Dr. Comilla Sasson, and I am the Vice President for Science & Innovation for the Emergency Cardiovascular Care group here at the American Heart Association. I'm going to talk to you about COVID one-on-one, all of the quick facts you should know to stay healthy. All right, things are going to be learning about. How COVID is spread and how to prevent getting COVID. Some basics on testing, how is COVID different than the flu, when should you be getting care and what should you do at home if you do actually become sick, and what are the treatments that are available for you if you have to go to the emergency department or to the hospital. And then of course some basics about the COVID vaccine as well.

Dr. Comilla Sasson:

So just to begin with, COVID is spread in three main ways. Contact is really what we always think about in terms of particles that get on the hand or on a surface and then become contaminated and then you touch something or someone who has COVID and that's how it gets transmitted. The second way is through droplets. And these are larger particles that can travel about six feet when somebody coughs or sneezes into the air. So this is where a lot of this physical distancing numbers come from.

Dr. Comilla Sasson:

And then probably the one that has been talked about the least is airborne spread. This is really, really important. And the reason being that we think that COVID is actually a much smaller particle and so not only can it be transmitted through coughing and sneezing, but also because those particles are so small it can actually linger in the air. So what does that mean? It means that it can go further in terms of distances than the six feet that we normally think of. It can also linger in the air, so who was in the room before you two to 16 hours before? And that's really just dependent upon what the airflow is like in and out of that room. Let's say if you're in an enclosed space like a small conference room, for example. If there's not a lot of ventilation in there, whatever those particles are can actually stay in the air for a much longer period of time.

Dr. Comilla Sasson:

A mode of transmission that we don't talk a lot about but really, really important especially as we started thinking about how COVID can impact you, one way that we're starting to look at this actually is looking at CO2 detection, so carbon dioxide. That's the gas that gets expelled when we talk or when we sing, after we breathe in we exhale out. And so you can actually monitor CO2 levels to see what kind of air flow you have in a room, and if you don't have a lot of air flow that might be a reason to really think about changing what you have going on in that room, whether it's opening the windows or thinking about a ventilation strategy. But again, this is where airborne spread becomes really, really important. And COVID obviously can be spread in all three of those ways but we oftentimes will talk about close contact too, so just how close are you to others.

Dr. Comilla Sasson:

What can you do to stay safe at home, work, and school? Wear a mask? I cannot say that enough, it's super simple, keeps you safe, keeps others safe as well. Wash your hands, get outside, get some fresh air. Just like I had mentioned about the COVID particles lingering in the air inside when you get outside you actually flush out those lungs and you get to be able to bring in that great fresh air. Also good for your

mind as well getting outside. Poor ventilation like I'd mentioned can definitely increase your risk of picking up COVID as well so make sure you open those windows while you're at home.

Dr. Comilla Sasson:

Physical distancing also really important as well as, so it's trying to stay six feet apart from others. And get the vaccine, I cannot say that enough. The vaccine has come together very quickly because of a global process in which all of us have been working together to try to get a vaccine developed. And so now we've got a multiple different options and the great thing is that these are all showing really great results in terms of being able to keep us all safe.

Dr. Comilla Sasson:

Now, the COVID vaccine does not give you COVID. I want to repeat, it doesn't give you COVID. What it does is it actually works with your body's natural defenses so that your body is ready to fight the virus when you're exposed and that's how you get immunity. Really effective at keeping you from getting COVID-19, and it could even keep you from getting seriously ill even if you did pick up a different strain for example of COVID-19.

Dr. Comilla Sasson:

Of course, when people do get the vaccine sometimes they can get some side effects and that can be sore muscles, maybe a mild fever, feeling tired. Those reactions actually mean that your body is learning how to fight COVID-19 if you're exposed, and so it doesn't actually mean that you're getting COVID-19 it just means that your body is developing that immunity. And again, if you've had COVID you do have to wait about 90 days after before you're eligible to get the vaccine.

Dr. Comilla Sasson:

The amount of time exposed in the viral load matters. If someone in your home is sick you want to keep them isolated from others, a separate bedroom if possible. Avoid direct contact. So if possible keep them in a separate bathroom possibly and avoid exposure. So if you can deliver food outside of their door that's just really decreasing your likelihood of being exposed like we said to those droplets and those airborne particles.

Dr. Comilla Sasson:

If multiple people are sick in the same house, and this happens very commonly, open the windows to get the virus out of that shared air. Because again it's not just the virus and the amount of time that you're exposed to it but it's also how much is in the air as well. And we know that that can correlate to how sick you get. So if you can open those windows and get some better air flow in the room or in your house, you're going to be much better off. Clean those shared surfaces, get outside and get away from others and then limit your time together. Again, not the best if all of you guys are sick but again it just does help in terms of decreasing your viral load.

Dr. Comilla Sasson:

Here's the time course of COVID infection. When you first get exposed what you'll see is that you'll start to see the viral load start to increase. And what you see here is when your infectious actually it starts a little bit before your symptoms start. This is really, really important because a lot of us think, "Oh, well, I don't

have any symptoms so I'm okay." But we know people can be asymptomatic meaning that they don't have any symptoms at all with COVID or they can be pre-symptomatic meaning that maybe they're in this infectious period right now and they haven't developed symptoms yet, but they can still transmit the virus so really important to think about how that viral load increases over time and then leads hopefully to recovery.

Dr. Comilla Sasson:

Now, how does that translate out to testing? Well, what we know is that when you get exposed your viral load starts to rise. The PCR test is actually that test that takes a little bit longer to get back but it is a little bit more sensitive, meaning that it can pick up the COVID a little bit earlier. What that also means though is that there's this time period here where you could potentially be infectious and not actually have the PCR test pick up that you're positive yet. And with the rapid test you can see that that window is even a little bit shorter, meaning that again you might actually have to have a higher viral load in order for that rapid test to become positive.

Dr. Comilla Sasson:

So what does that mean? It means that you don't have enough virus to be detected by the test. What it doesn't mean, definitively that you don't have COVID, so it's really important for folks to know it's like a pregnancy test in many ways. It's a point in time test that basically says yes or no, do you have enough virus in your system to be positive? If you retest in three days, five days, seven days, that test can absolutely become positive once that viral load gets high enough to be detected by the testing unit. Again, really important, a negative test does not mean you don't have COVID.

Dr. Comilla Sasson:

But isn't COVID the same thing as the flu? Nope. Nope, it's not. I cannot say that enough, really important to remember this. How are they different? Well, so influenza and COVID of course can all be spread through the droplet, the contact, but COVID actually has more chance of being really an airborne exposure as well, so that's really enclosed spaces, the poor ventilation, prolonged exposure becomes important. The contagious period is similar in terms of the days before the symptoms start, but we do know that mild to moderate folks who've got COVID can be contagious for up to 10 days after symptom onset, or even if you're severely ill, even up to potentially 20 days after symptom onset so it's a much longer period of time.

Dr. Comilla Sasson:

In terms of symptom onset, usually with COVID we'll start seeing symptoms around five days but it can be anywhere from two to 14 days after exposure. And with influenza it's usually a day or two and sometime between day one and four after the virus enters the body. The symptoms for the flu and COVID-19 can be very similar. The things that are a little bit different about COVID-19 is that again the loss of taste and smell is something that we don't often see with influenza. And we can't see even nausea, vomiting, diarrhea with influenza, but we are seeing it much more with COVID-19 as well.

Dr. Comilla Sasson:

And then in terms of how many people get sick each year, obviously we're still waiting for the numbers for COVID-19 to come in but for influenza depending on the season it can be anywhere from three to 11% of the population. And in terms of vaccines timing, again the influenza vaccine is every year and we try to do it

sometime between that October timeframe, again two weeks before flu season starts and it's about 40 to 60% effective. Now, for COVID-19 again we're just learning about these.

Dr. Comilla Sasson:

Now, there's many different ones on the market right now but the main ones are the Pfizer and Moderna, and those are where two doses are needed and those can be anywhere from 21 to 28 days apart and immunity levels are around 95%. They're very effective right now, but again we still have a lot more to learn, but it does help us really get towards that idea of trying to get to herd immunity.

Dr. Comilla Sasson:

What makes COVID-19 different than other diseases? Well, it is an infectious disease that directly destroys the lung tissue but is much more severe and deadly than the flu. And we know that because it has really seen a lot more people getting sick, the number of people coming in, how sick they are, even young people that we're seeing come in and with COVID-19. Again, even on any given flu season we normally don't see patients that are that sick and that level of numbers that are coming into our hospitals for care.

Dr. Comilla Sasson:

The other thing that makes COVID-19 very different is that it's also a vascular disease as well. And so what that means is that it can cause clots in the veins and the arteries. And so we are seeing strokes, we're seeing heart attacks, we're seeing deep venous thrombosis which is these blood clots in the legs, even blood clots in the lungs, that's what pulmonary embolism is. And the idea behind that is that it's from inflammation that can activate the platelets in the bloodstream and cause clots to form. Again, we're still learning a lot about what's happening right now but this is one of the ways in which we think that COVID is actually causing blood clots in the veins and the arteries.

Dr. Comilla Sasson:

Another thing that has been shown potentially to be different about COVID-19 is that red blood cells also can be damaged by COVID-19 actual virus itself, SARS-CoV-2. And what that can do is that it actually can cause those red blood cells to be exposed to stressors and then to rupture, meaning that they can burst. And when they burst it can take almost 120 days to replace those red blood cells with new ones. So this may be a reason, again, this is experimental but it could be a reason that people are having long-term issues potentially with COVID-19, especially the fatigue and that shortness of breath that just lingers and lingers and lingers.

Dr. Comilla Sasson:

The other thing that can make COVID-19 very different is that it affects every organ in the body. And so there are different ways it can affect different people. Some people we know maybe asymptomatic, as I had mentioned, meaning that they have no symptoms. And then there's some people who end up having to be on the ventilator or can even die, and so again there's such a broad spectrum of how it can affect people. And we know that cumulative exposure and viral load matters just like I had mentioned before.

Dr. Comilla Sasson:

This is just talking a little bit about the illness severity, meaning what are the different courses that COVID can take? So asymptomatic means no symptoms at all, presymptomatic like I had mentioned before is

maybe somebody who's positive but hasn't developed symptoms yet. Mild illness is someone who has the fever, the cough, the sore throat, the headache, fevers, all of those things, that maybe doesn't have any shortness of breath or any chest imaging, so chest x-ray for example that's abnormal.

Dr. Comilla Sasson:

Then you start going into moderate illness, meaning that now your oxygen levels start to decrease on room air and you start to see potentially some signs on chest x-ray for example of pneumonia and that's probably the most common thing that we see with COVID-19. Once you get into severe illness that's when your oxygen levels start to fall below 94% at room air and you start to have your respiratory frequency, so your breathing rate starts to go up above 30. And you may even have x-ray findings or CT findings that show let's say more than 50% of your lungs are affected. And then of course critical illness is when you start to have respiratory failure, meaning you may end up on a ventilator, have septic shock or have multiple organs that are not functioning.

Dr. Comilla Sasson:

So when should you get care? The most important thing is that if you have any kind of trouble breathing, if you have any pain or pressure in the chest, any kind of confusion, you're not able to stay awake, bluish lips or face, those are reasons that you should call 911 or go directly to your local emergency facility. Make sure you let people know that you are COVID-19 positive because again that helps us protect ourselves as well and get ready for your arrival. Again, this is not a complete list but if you do have symptoms like this you should be really thinking, "Hey, look, it might be time to go seek care."

Dr. Comilla Sasson:

So, one of the things that people oftentimes don't realize is what is shortness of breath? What does it mean to truly be short of breath at home? And so, one of the ways that we've really talked about how to quantify or to really tell if you're feeling short of breath is the walk test. It's something really, really simple that you can do. What you can do is just march in place for 40 steps or for one minute, and then sing your ABCs. (singing). You get it.

Dr. Comilla Sasson:

And so the whole idea is that if you do this about three times per day and you find yourself either not being able to do the walk test, or you start singing your ABCs and it kind of goes A, B, C, or you cannot catch your breath, those are all reasons that you need to be seen immediately by a medical provider. And so again, this is something that you can do at home by yourself or if you have a family member or friend who's sick this is also something that you can do over the phone just to say, "How are you feeling?" Again, not an absolute mechanism for knowing if you need to seek care but it does help us get some information about whether or not maybe you were having a hard time breathing at home.

Dr. Comilla Sasson:

Some other things to think about too is that you can also buy something called a pulse oximeter, and that's a little machine that goes on your finger and what it does is it measures your oxygen levels. And the idea behind that is that it can check your oxygen levels indirectly to see whether or not you are... If your blood oxygen levels are normal or not. You can do this at rest, you can do it during quiet breathing. You can also check your walking oxygen levels to see if your oxygen levels are dropping when you do walk or exert yourself.

Dr. Comilla Sasson:

You'd want to use your index finger, your middle finger, don't use your toes or your earlobes. Watch the readings for about 30 to 60 seconds to see what that most value is and then write down that value two to three times a day and make sure you're talking to your healthcare provider if it's falling below the 94, 92, 90% threshold. And you do want to make sure you remove nail polish from the finger when you're using it.

Dr. Comilla Sasson:

One caveat too is that we are finding that folks with darker skin tones may not have accurate readings so it's really important to think, not just look at the number but also to see how you're feeling. If you're feeling short of breath, you're doing your walk tests, or if you're just feeling like you're wiped out walking from the kitchen to the bathroom, this might be a really early sign that you need to be seen by a medical provider.

Dr. Comilla Sasson:

So some tips if you're going to have to go to let's say the emergency department, to the urgent care, or to your primary care office. Call ahead to let them know that you're COVID positive. Again, that helps us plan and prepare for your arrival. Tell them what symptoms you've been having and what day of symptoms you're on. This can become important because we know that sometime between day five and day 11 is oftentimes when people will get worse in terms of their symptoms. But let's say here on day one or two you see your doc, you feel fine, and then all of a sudden day five you start to get much worse. We want you to come back, we expect you to get worse.

Dr. Comilla Sasson:

And so we'll always want to make sure that people understand just because you're fine in the early part of that course does not mean that you will be fine later on. We need to make sure we can see you again if you do start to again feel short of breath or any of those other symptoms like chest pain that I had mentioned before. Get that walking oxygen saturation if you have one of those pulses as well. Again, if you find yourself dropping low it may be a reason for you to actually come back to be seen again.

Dr. Comilla Sasson:

And if you are seen in the emergency department make sure that they do an exertional oxygen saturation, meaning that they don't just take your oxygen levels while you're sitting there but that they get you up, walk you, and then see what happens to your oxygen levels. I can't tell you how many patients I've taken care of who have had oxygen levels of 96% when they're sitting there but when we do the walk test with them in the emergency department, those oxygen levels can pull the 80, 70% even, and people get really short of breath so it's really, really important to make sure you get that test done. Very simple to do. Bring in your medications, mention all of your medical conditions of course, and then if you're a high-risk candidate maybe there are some of those early treatments that can stop the virus from replicating that you may be eligible for as well.

Dr. Comilla Sasson:

These are actually the treatments that potentially could be available in whatever facility you end up being seen in. The monoclonal antibodies are very early right now in terms of their course but it is the idea that an antibody can be given or an antibody cocktail can be given, and what that does is it binds to the spike protein on COVID and it doesn't allow for COVID to get inside the cell and to replicate. What that means is

that when the virus can not replicate it doesn't induce that very high-immune response that we know that can really cause severe COVID or progression to severe COVID. That's the theory behind it. It's still experiential but again we're really at the point right now of trying these for especially high-risk patients.

Dr. Comilla Sasson:

When you go to moderate COVID you can also start to get into the supportive care area which is most often oxygen therapy, proning, which we'll talk about in a few minutes. Steroids actually help blunt the hyper-inflammatory response that can happen with COVID and then remdesivir is an antiviral that has also been shown to be helpful in that mild to moderate COVID, as well as anticoagulation, meaning that, remember how we talked about the blood clots, it actually could be helpful to have anticoagulation or blood thinners in that mild, moderate, and severe timeframe for COVID, that can help make sure that you don't develop those clots as well. And then convalescent plasma if your hospital has it and potentially if you're a candidate for that type of therapy as well. Again, it's under investigation but it is one of the therapies that has risen to the top in terms of treatments for COVID.

Dr. Comilla Sasson:

So if you do have COVID-19, what can you do at home? First and foremost, stay away from others because you don't want to infect others. Monitor your symptoms especially your breathing. Proning, and I'll talk to you about that in just a minute. That's really just actually changing the blood flow in the lungs itself. Taking anti-inflammatory medications like acetaminophen and ibuprofen, that will just help in terms of your fevers, your body aches, how you're feeling, hopefully you just get feeling better as well.

Dr. Comilla Sasson:

And like I had mentioned before, make sure you know what day of your illness you're on. Days five to 11 are often the worst in terms of your symptoms and how you are feeling so you have to be on the lookout. Now, that's again, most commonly, so people can get worse on different days as well even extended at like 14 days, 20 days, I've seen that before too as well but again just something to keep in mind. Don't be afraid to call back or go to the emergency department if things worsen. Don't ignore chest pain, trouble breathing, or feeling confused, you should be seen.

Dr. Comilla Sasson:

So what is proning and why do we tell you to do it? In the very top of your lungs, this is called zone one. This is an area of your lungs where you've got a lot of oxygen flowing but not a lot of blood. Now, blood actually starts to pool lower in the lungs just like you would expect with gravity. When blood is gravity-dependent that's where the blood goes in the lower parts of the lungs. In zone three, we actually have a lot of blood flow but not as much oxygen exchange happening. And so what we do with proning is actually change your zone three so that when you actually have let's say somebody laying on their side, all of your lung becomes zone three.

Dr. Comilla Sasson:

Here's a little picture that I like to give to all of my patients when they go home. And this just shows you that proning can mean laying on your belly, it can mean laying on your side, it can actually be even 45 degrees. And the whole idea is that you want to find a position that works best for you, but what you're trying to do is you're trying to change the place in which the blood is pooling in your lungs. And what that does is it allows, let's say if you're laying on that left side, hopefully that's your good lung, that's the lung

that you want to lay on, that'll make your entire zone three be that whole left side of that lung. Again, it's something that you can do very simple at home. It is limited in the mild to moderate COVID setting but again, symptomatically and personally I've seen a lot of people do really well with proning.

Dr. Comilla Sasson:

So just in final messages, we know that prevention works, meaning wear a mask, wash your hands, stay away from others at least six feet. Get outside get some fresh air and make sure that you've got good ventilation systems set up in whatever work environment, school environment, home environment that you're in. And most importantly, get the vaccine when you're eligible, this is going to make a huge impact not just on you but everyone in terms of being able to get to that herd immunity and getting our lives started again. And please don't be afraid to seek care. We are here to help you, that's our job, and we want to be able to take care of you.

Dr. Comilla Sasson:

If you have any other additional questions, please feel free to reach out to me, Dr. Comilla Sasson. And thank you so much on behalf of the American Heart Association and really appreciate all that you're doing to help keep yourself and your community safe.