Professor Dennis Goodman | Impact of COVID-19 on Mind, Body and Spirit

- Good evening, everybody, and welcome. I'd like to introduce you to my significant other, Dr. Dennis Goodman, who will be talking tonight on COVID and the impact that it has on the mind, the body, and the spirit. Dr. Dennis Goodman is an integrative cardiologist, director of integrative medicine and professor of medicine in the Department of Cardiology and Preventative Medicine at NYU Grossman School of Medicine and professor of medicine at University of Cape Town, South Africa. He's board certified in cardiology, internal medicine, lipidology, critical care, interventional cardiology, cardiac CT imaging and integrated medicine. He graduated cum laude with distinction from the University of Cape Town Medical School in South Africa. Dr. Goodman completed his internal medicine residency and was chief medical resident at Montefiore Hospital in Pittsburgh, Pennsylvania, and completed his cardiology fellowship at Baylor College of Medicine in Houston, Texas.

He is past chief of cardiology at Scripps Memorial in La Jolla, California. He's an international sought after speaker and has been a visiting teaching professor throughout South Africa, Asia, Middle East, and Europe. He has published many research articles in addition to many books on heart health, including magnesium, omega-3, and Vitamin K. Dr. Goodman teaches and conducts clinical research at New York University and New York University Langone Medical Centre and is also talk show host on "Sirius Dr Radio." He's founder of the popular preventative medicine lecture series at NYU. He has consistently been named as one of New York's and USA top doctors. And I say that very proudly. So Dennis, welcome to our Lockdown University, and it's over to you.

- Hello, everybody. Thank you, Wendy. I'm glad my mother's listening. She's the only anyone who'd believe any of that, but I really, really appreciate being here and I'll get back to that in a minute. I want to start off by going back to 1980. And in 1980 I was an intern at Groote Schuur Hospital in Cape Town, South Africa. And throughout my medical school, I used to be, I was a waiter at a restaurant called Pudgy's, for those who's South Africans who are listening, there was Walter's Grill and then there was Pudgy's. And I was working twice a week in that restaurant from 06:00 to 01:00 in the morning or around 12:00. And I did that 'cause I was actually trying to make some pocket money.

My parents had kindly stretched so that I could get to the University of Cape Town and go to medical school there, but I didn't want to ask them for pocket money. So I was working twice a week. And then I finished my internship in December and I was so excited, because now I was a real doctor. But I had also agreed to do a locum in Camps Bay at that time. And it was the two weeks right after I finished my internship. But Walter Pudgy said to me, "Dennis, it's a very busy season. You didn't give us advanced warning like we wanted, I mean, a year before. So please will you work during the season and then you can be done?" And under severe pressure, I think you all know me well, especially Wendy. I don't like to say no. And I agreed to be a waiter for the last two weeks of my seven-year stint there. And I started my locum in camps bay. And guess what? I saw a lovely lady about four o'clock in the afternoon and I examined her and I think I

helped her. And then at six o'clock, I put on my black pants and my red shirt and I went to the restaurant. Well, you know what's coming next. At eight o'clock that evening, and I still remember the time, I walked up to her table and I saw a woman sitting there with her family and her face went white.

And she looked up at me and she could barely speak and she said, "Don't I know you from somewhere?" My heart sank. I was having palpitations and I'm not going to carry on what happened. But right after that I resigned from the restaurant and I said, "I can't work another day." And it all worked out fine in the end. But why I'm telling you this story is that it makes you realise that we're living in a world now where you're getting a plethora of information and how do you know if it's coming from the waiter or the doctor or is the waiter a doctor or is the doctor a waiter? And so we have a huge issue today with trying to figure out what is truth, what is accurate, what is fake news? And there's a huge political aspect to that as well. So what I wanted to try to do, and I want to start here, is try to give you some facts as I know them today, because it can be different tomorrow.

But I wanted to give you some information that I thought would be a little different. We are all inundated with information about COVID-19 and I thought that I would do, is bring some of the aspects of this disease to your attention. And of course we can discuss afterwards your questions. I want to start off by giving you a quote from Einstein who said, "In the midst of every crisis lies great opportunity." And there's one person who just introduced me who lives and breathes by that. Wendy is a source of light and inspiration, from feeding the poor to stimulating the brightest minds. She's a visionary and she loves to connect people and build bridges to make this a better world. She's the founder of Lockdown Wendy University, which is a huge success.

But what makes her most happy is that there's no limit to the number of guests that we can put on the guest list and she doesn't have to worry about table seating or leaving anybody out. So it is a privilege for me to speak to you today and to a worldwide audience with so many friends and family online. That to be an incredible part of this Lockdown University, the speakers are triple A. It's actually very daunting to be on the list and I've enjoyed every single one of them. I want to quickly say hello to my mother, my sisters, Natie and Francis, and the whole Kirsch family, and everybody else that's listening, and there to support me no matter what. I will tell you that when Wendy asked me to do this, I said, "There's one condition, that you will love me no matter what."

And she said okay, so I agreed to do this. I'd like to start with the first slide. I have a few slides and I want to thank Shauna and Carly, of course, who always help with these things. But this is something you've all seen pictures of. I want to start off by showing you this virus, this dreaded corona SARS- virus.

Visual slides are displayed

And unlike influenza viruses, it's from a different family of viruses. It's called the corona family. The corona family of viruses have been around for thousands of years. So what happened that this member of the family went rogue? So we all know that in about in December last year, we started to hear about cases coming out of China. And we heard about the fact that it started off with people with pneumonia and I don't have to go through the history with you.

And the next thing, within the 30 days, 30 to 60 days, we had a worldwide pandemic. What is it about this virus that makes it so infectious and in many ways, so much more dangerous and lethal than other viruses, including the flu virus? Well, this is an RNA virus, which means that it has genetic material inside it. It's encapsulated, so think of a capsule, like when you take a tablet and it's got a capsule on an inside of the ingredients. So that's why it is so susceptible to detergents, and soaps, et cetera, because it breaks the capsule. And when the capsule's broken, the virus is no longer able to function.

Coronaviruses have been allowed, for a long time, as I said, but they mostly exist in animals. About 30% of viruses, of coronaviruses are found in bats. And therefore there was this question about, well, did it come out of the Wuhan sea market, because somebody was selling and eating bats? So let me dispel that for you. They don't sell bats in that market, certainly not legally. And nobody today really believes that it came from a bat. It might have come from a pangolin, but what's important to know is these animals, these viruses reside in animals. And when we get in contact with these animals, either through direct contact or eating these animals, we land up where this virus can transmit to humans and then it mutates and it now becomes a human virus that has the capability to infect other humans.

There are many, many diseases and pathogens out there that don't have human to human transmission. For example, malaria, which is the plasmodium vivax and falciparum where you need a mosquito, that's the vector. If you don't get bitten by a mosquito, you're not going to get malaria from another human being. But this particular coronavirus, which is called corona SARS virus 2 is very infectious. Now why is it called corona SARS virus 2? And by the way, we use the term COVID-19, which stands for coronavirus 2019. That's where that comes from, because it arose in 2019. So let me remind you, there are some other virus pandemics with corona that we know about. One is SARS and another is MERS.

There've been others, but these are the two main one. You've heard of SARS, severe acute respiratory syndrome. 2002, 8,000 cases, 800 deaths, also came out of China, but it died out. There were about a 10% mortality. MERS, which is also a coronavirus, is from Middle East respiratory virus. That's what it stands for. There were about 850 deaths and it was mainly in the Arabian Peninsula. And again, it had a high mortality, but there weren't that many people that had this virus and it certainly didn't become a worldwide pandemic, but the most important thing is that, and this, I think, is really interesting, when people started to talk about developing a vaccine to this coronavirus, it was stopped.

The funding was stopped, because people didn't believe there'd be a huge need for it, because

the virus died out. Now what is it about this virus that makes it so infectious? Why did it not seem to die out like these other coronaviruses? And what I'm going to tell you about this coronavirus, and you can see those little spikes on the virus. So these spikes on the virus make it able, these are proteins that make it able to penetrate epithelium and other cells in the body and then they get inside the cells and they cause destruction. Let me give you an example, a metaphor. If you have a kitchen and you've got a lot of cookbooks, you make all sorts of things in your kitchen, that's the DNA inside your kitchen. What happens is this virus comes into cells, because all it wants to do is replicate itself. So it comes into your kitchen, it destroys your recipe books, it destroys your kitchen, and eventually it destroys the whole house. So what's actually happening is the virus initially comes into your body, into these cells, tries to replicate itself. And of course the body recognises that there's a foreign pathogen and it starts an immune response. It starts to try and get rid of this virus.

But what actually happens, and this is actually another analogy I want to give you, it starts off with the usual cells that come in, macrophages and natural killer cells, and it tries to kill the virus. And the analogy I'm going to give you is to a wartime situation where someone comes in with guns and it's not enough. So you come in with cannons and then you come in with bombs. And when you bomb a situation, you have innocent people, innocent bystanders, and you have devastation. And what's actually happening in the body is something called a cytokine storm. The body tries to get rid of the pathogen, but because you can't get rid of it easily, it sends in the bombs, and so you land up getting destruction, not only of the cells where the virus is, but the rest of the body and the healthy cells. And we actually know today that unfortunately we used to think this virus was just in the lungs, but it actually affects all the organs. And I'll go into that in a minute. If you could show me the next slide.

So I wanted to show you the slide to show you what's going on in the world. And I wanted to just, I picked this, it's an article that just came out in the New England Journal of Medicine. And it's showing what's actually going on in South Africa. And I picked South Africa because it's so dear to our hearts. And you can see that there's a curve, a blue line there that starts off very slowly with a national lockdown and then lockdown easing starts, which it has to, and the virus starts to become more and more prevalent. Every single country has gone through this type of curve. So the lockdown that occurs, which is entirely appropriate. And I think Ramaphosa was really spot on and presented himself as an incredible leader in this situation. You can only lock down people for a certain amount of time and then you got to let them out. And as they start to let people out, you start to see the virus increase.

So we have a situation in the world today where there are 6.7 million people infected and 393,000 deaths. Brazil, Russia and UK and Spain and the United States are the top five countries. If you go to the next slide. Thanks, Shauna, you can see that you get this upsurge that I showed you on the previous slide and then it levels off. And you can see South Africa is still on an uptick. Every country goes through this uptick. I have a good friend in Cape Town at Groote Schuur Hospital and he tells me now that the system is becoming overwhelmed, the ICUs are getting full. There're large numbers of people coming in, even though the reported

death rate is fairly low and relatively low. What he told me is something really shocking. And that is, reminds me back when I was a medical student in the 1970s.

They're so concerned that they have come up with a kind of a rule that anybody over 65 cannot go into the ICU. And if you're over 60 with underlying medical conditions, you can't go in the ICU because they need to keep these resources available for people that are more likely and most likely to survive. This is scary and this happened in Spain and I want you to understand that the biggest reason for lockdowns is to try to prevent the healthcare system from becoming overwhelmed. And if they're overwhelmed, we can't take care of people. So what it actually says is if you're at higher risk in South Africa or anywhere else in the world, you want to hope that the resources are there to take care of you, but it's best not to get this. And that's why it's so important and why I'm going to discuss with you, what can you do about it to avoid it and to protect yourself?

I want to go to the next slide and I want to show you some of the symptoms of influenza. And I'm trying to just contrast this to COVID-19. One of the things I wanted to tell you is that influenza viruses are also viruses that we've had for a long time. We know that. And they cause pandemics as well. We have the Spanish flu, the Asian flu, the Hong Kong flu, the swine flu. These are influenza viruses and we name them according, you've heard the word H1N1, H1N3. They're labelled like this because they have proteins on them.

The H stands for hemagglutinin and the N stands for neuraminidase, which are enzymes that help to get the virus into the cell and out of the cell. During the Spanish flu, 1918, which was an H1N1 influenza virus, there were about 50 million deaths and 3/4 of a million in the United States. We've seen these terrible pandemics before. But here's the big difference. The difference is that we developed a vaccine. And so influenza virus, we have it under control and that's why it's so important to take your flu shot every year. And so if people say this is just like the flu, it's really not. It's firstly more infectious and it's more lethal. Every pathogen has what we call an R0 number. It means how many people are you likely to infect if you have this virus? The R0 number for COVID-19, for coronavirus is 2.5 to 3.5 people.

That means if you start off with an R0 where you infect 1 person, 1.1 persons, you can get 25,000 people infected in 60 days. If you multiply that by three and the R value is three, it just is exponential and it turns out to be tens of thousands. The R value, the R0 value for flu is about one. For MERS and SARS, it was about one. For something very infectious like measles, it was 15. Thank God we have a measles vaccine. So to come back to the symptoms, this virus initially gets into the respiratory tract just like flu does. So you get respiratory symptoms. Now how do you know if you've got the difference between, this is an influenza virus with stuffy nose, sore throat and cough, that's your respiratory involvement.

But what happens is the body then sends the immune system to fight off this virus and that's when you develop constitutional symptoms. So fever, chills and body aches are symptoms that you'll get with influenza. And any pathogen or virus where you have the immune system really

getting revved up. So if you have a little cold, which could be a non-specific virus, it doesn't tend to cause fever, chills, body aches. That's much more likely to be the flu. So when you're trying to figure out, do I have a flu, or a little, or a cold, it's whether or not you have significant constitutional symptoms like a fever above 100. Let's go to the next slide. So what are the symptoms of coronavirus? And of course we were all very concerned about this in the beginning. How would we tell if someone has it?

So it's a respiratory virus that initially gets into the respiratory system through the nose and infects the nasal mucus membranes and then it moves down to the throat and then it moves down to the lungs. I want you to think about your respiratory symptom like a tree, an upside down tree. An upside down tree has all the little branches and leaves down at the bottom. That's the alveoli in the lungs. But you have a bronchus and you have the nasal passages at the top, an upside down tree, which would be the trunk. So it it affects the the pathways to the lungs, so you can get a sore throat. Then it gets to the lungs, you get a cough.

You can get a new loss of taste or smell, you get the fevers, the chills, the muscle aches, just like I told you with flu, because you have these constitutional symptoms. You can also get severe fatigue. Ask anybody who's had this. And you can get vomiting and diarrhoea. Now you can tell from what I've just told you that there's overlap and that's the problem. And it created absolute havoc for physicians. When people came in droves to the office and said, I've got a cough, I've got a sore throat, which could be any virus, any of these viruses, but it could also be COVID. Go to the next slide, please. So what I want to tell you is that it's really, really important that you understand these are the symptoms and you should be aware of the symptoms, but a lot of times it's not COVID.

And in fact when they test populations across the board, there's only about a 5% incidence of having it of the people that were tested. So you can have these symptoms, you'd be aware of them. The one big problem with COVID-19 is that you can be asymptomatic and about 50% of people are asymptomatic. And that's a huge problem and it creates a problem of trust. How do you go out into society if you don't know if the person sitting next to you is asymptomatic and has this disease? It turns out one of the reasons that COVID, this virus is so infectious, is that it has a very high viral shedding ability. And we think that some of the reason why some people get so sick and others don't is 'cause when you get a large load of the virus into your body, it overwhelms your immune system or it makes it harder to fight back.

So it turns out that people are most infectious just before they get symptoms or early on. And that's a problem. And therefore what we really try to do is to avoid being exposed to people. And how do you do that? And we all know about this, you want to stay six feet away, you want to socially distance, and you want to wear a mask. There's actually an interesting article I saw, there is a scientist in Italy by the name of Massimo Marchiori. So what he did, he walked around, he put a sensor on his body and he walked around Venice and he found out when he was wearing the mask, people didn't come anywhere near him, but when he didn't wear his mask, they'd be within a foot.

And so one of the reasons to wear the mask, we've said they may or may not be helpful. They're clearly helpful if you have COVID, but they're also helpful because people, when they see you with a mask, think you may have a problem and they don't come near you. And that's one of the other most important reasons to go out and wear one 'cause it keeps people away from you. I wanted to just point this out 'cause I'm an integrative preventative medicine physician, that one of the biggest things that we've discovered from this COVID virus is that people that are immunocompromised or have medical conditions are at greater risk. So despite the impressive medical advances, the chronic disease pandemic remains, by far, the leading cause of premature death, disability, and escalating healthcare costs.

If you go to the next slide. So this is a quote from a renowned cardiologist, "Among the many lessons we are being blind to is that the burden of chronic diseases has led to a human civilization in great danger. What is clear from the COVID-19 data is that the risk for severe manifestations, death are being driven by the interaction of a viral illness with an unwell population." And of course that means how do we stay healthy? Go to the next slide please. So this is where I want to talk to you about what can you do to help yourself? And it's not just prevent yourself from getting this terrible infection, it's to be well. And wellness is not the absence of disease. Wellness is something that you have to do for yourself.

And so I want to point out something that we all know and something that I discuss with every patient, how are you supposed to stay well? And it revolves around these four major issues, nutrition, exercise, sleeping properly, and stress management. So I'm not going to go into the details. I want to talk a little about one or two of these things. I want to mention to you that what you eat is so important. We all know that Hippocrates said that how you eat your food is your medicine. So I can just tell you that my belief is that a plant-based type of diet is the best diet. Doesn't mean you can't eat fish or meat, like a Mediterranean diet.

But the more you can be plant-based, the better. You want to stay away from processed foods and foods with trans fats in them. What about exercise? Crucial, and I hope many of you have been able to exercise even in lockdown. Even if it's walking up and down stairs or walking around the room or getting on a bicycle or getting on a treadmill. There was a study that showed if you exercise for 273 hours, you get an extra three years of a life, that's provided you don't come down unluckily with another illness. But that's how important exercise is. Sleep is absolutely crucial. You want to try to get seven or eight hours sleep a night. I'm not going to go into that tonight, but there is a condition called sleep apnea and it affects many, many people where they aren't getting good sleep.

And there are easy ways today to diagnose it. So if you are snoring or you wake up in the middle of the night several times, not to go to the bathroom, just because you wake up, especially if your partner says, "Wow, it sounds like you weren't getting enough air." Or you wake up tired or you're falling asleep during the day, please go get checked out and get yourself what we call a test to check for sleep apnea, which is just a little O2 SAT monitor, which you can

put on your hand or on your finger, I mean, as an outpatient. And now what about stress management? Let's go back, let's go to the next slide.

Before I talk about stress, I wanted to throw this out to you, because I believe that there are certain supplements that can help boost your immune system. So this would fall under the nutrition category. I put them down for you 'cause this is what I like to use. So vitamin C, vitamin D, vitamin E, vitamin B6, zinc and magnesium are some, not all of them, are the most powerful antioxidants and supplements that boost the immune system. I left out the dose of vitamin D, because it should be based on your level, which you can have drawn by your doctor. An average of one to 2000 units a day is the right dose for most people.

But if you're taking C, D, E, and he's E's a little bit controversial, but if you do take it, it should be taken as mixed tocopherols. But take C, D, zinc and magnesium, and maybe we can talk about magnesium later if there are any questions, because that is near and dear to my heart. But zinc has been shown to boost the immune system and it's really, it's really one of the ones that I'd really recommended. It modulates neutrophils, macrophages and natural killer cells. So now I'd like to, before I carry on, tell you a story. When I was, early on in my practise in San Diego many, many years ago as a young cardiologist and my friend who was a pulmonologist said, "Dennis, please will you do me a favour and see my father who is in Seattle who's been having palpitations and chest pain and he's been seen by multiple doctors at a major institution and they telling him there's nothing wrong with him."

I said, "Well, you know what? I'm very happy to see him but it just seems so inappropriate to bring him all the way down here when all these other doctors have told him that there's nothing to do." I said, "Why don't you send me the records?" They sent the records and just like he said, there was nothing specific. All his cardiac tests were showing that he's okay. Anyway, he persuaded me and one day I opened my office door and there were 15 people sitting in my waiting room and they all came with this gentleman who was an Italian, like a godfather and a sweet lovely man.

And they all walked into my office when I said come into my office. And it was the sisters and the brothers and the friend, it was unbelievable. I took him to my office, I examined him. I went through his records and there was absolutely nothing structurally wrong with his heart. The tests all came out normal. And I said to him in my office alone, "Is there something worrying you? Is there thinking upsetting you? Are you depressed?" He said no.

And I came back into my office and everybody was in the office. I brought them all back in. And I said, "You know, I don't see anything on the tests that show that he has a heart condition, a pathological condition, but when I see these kind of symptoms in the absence of structural heart disease, I always think of something called broken heart syndrome or something that's stressing him. Is there anything that could be stressing him? He's denied it." And the daughter jumped up and said, "Dr. Goodman, please can I speak to you?" She took me out of my office and she said, "For the last six months he has not been speaking to his son, my brother. They've had a

fight, he moved to Vegas and it's killing my father." So I took him back into the office and I said, "I think we have the answer.

And all I can tell you is there's no medication. And what you need to do is go straight from my office to Vegas." And I told his family to tell his son that if he doesn't accept him and doesn't want to see him, he will never see his father alive again, because he will come in with real heart disease, a heart attack. And two weeks later I got a beautiful note. It came with a box of wine, a whole case of wine, but I'll never forget the note. And it was in his writing and he said, "Dear Dr. Goodman, thank you so much for giving me my life back. I met my son, we hugged, and all my symptoms have gone.

And I wanted to tell you that story, because so many people are coming to doctors and are coming to places where they get seen in the healthcare profession. And all sorts of tests are done costing thousands of dollars, tens of thousands, and we never get to the real cause. And we are living at a time now where we've all been able to see what this kind of stress can do to people. Can you go to the next slide? And I want to, I dunno if any of you recognise this lady. You would've seen her on TV or in a newspaper. But this lady, her name is Dr. Lorna Breen, was the director of the emergency room at Presbyterian Hospital in New York. And on April 28th, her family brought her to Virginia and she committed suicide. And when they went back and looked what was happening, she had developed COVID and she had been so distressed by the number of people coming to her emergency room that were actually dying before they could even do anything, she became overwhelmed by the system.

She became depressed, she'd never had mental illness, and she took her life. What a tragedy. And there's one little, little tiny shred of something good that came out of her life. And in her memory, a patient called me, he was so distressed that a healthcare worker could become so depressed that she would take her own life because of the situation. And he donated a large amount of money, which was given to the psychiatric department at NYU. And we have started a programme, they have started a programme to provide mental resources to healthcare professionals. And what they do is there's just, you can go on and you can check the boxes and you can answer some questions and you can find out very quickly if you're at risk.

And if you're at high risk, you immediately get taken to a website where the resources are available. And in fact, when somebody's at very high risk, they receive a phone call from someone in the psychiatry department to say, how are you and can we help you? And I show her because she's an extreme example, but there's so many people that have suffered and have increased their levels of anxiety and their depression. And one of the greatest tragedies of this situation is how many people are actually dying and there's nobody around them, the family can't be there. And there's no gatherings, very few people at funerals. And there's nobody to hug you when you're not feeling well.

So this is a real crisis. Can I go to the next slide? And so I want to turn to an optimistic note. I want to say, what can we do to try to prevent these feelings of depression, these feelings of

anxiety, how do we stay connected? And one of the ways that we stay connected is to keep in touch with your friends and family. We want to help people feeling from feeling isolated and lonely. My own beautiful mother in South Africa in Johannesburg is in a retirement village. And every day I try to call her, I do call her. And when I say, "How're you, mom?" She says, you know what? I'm fine, but I'm lonely." And the most important thing that we can do is to call up people who are lonely or to call up your family and friends and just ask them how you are to show them that you care. This is a time to let go of the rebels and tension. It's a time to forgive and reconnect with loved ones and to realise that it's just not worth it.

We need to connect and that's how people feel loved. And all I can say is, to come back to Wendy, what she has done is one of those remarkable things where she sat there and said, "I could be stuck here feeling isolated, sorry for myself, but what can I do?" And she created this incredible community. And I actually, one of my favourite people that I love their quotes is Mahatma Gandhi. And if you go and Google, you'll find out that he's got a whole lot of quotes. And I just picked one or two others, one or two that really reflect what Wendy's about. "In a gentle way, you can shake the world," that's her.

The best way to find yourself is to lose yourself in the service of others. And then I found a quote for Natie, and I hope he's listening, who is a remarkable man. Natie and Francis, in my eyes, walk in the same walk that Mahatma Gandhi walked: selfless, generous, unbelievable, and it extends to their whole family. And you can see it in action so easily through the children. And at this moment we're talking about Wendy. So this quote is for you, Natie, and I hope you're listening, "To Give pleasure to a single heart by a single act is better than a thousand heads bowing in prayer." So can I go to the next slide? I want to end off by just giving you an article to read before I play this, Shauna.

And this article is "When Will This Pandemic End?" And it's an article in The New York Times by Gina Kolata from the 10th of May, 19-20, so recently. And what she says is there's two ways this pandemic will end. One is a medical way, when death rates go down, when the R0 value goes below one. But there's also another way. Socially when the epidemic of fear wanes and people say we've had enough. Now one of the greatest tragedies today that in the United States, we have two crises at the same time, right in the midst of a pandemic, a COVID-19 pandemic, we have social unrest because of a terrible, iniquitous, horrendous murder, which has rocked the nation and brought out all the tensions of racism.

And you all know the story. You only have to turn on the TV. It is tragic. So what's happened is that you have this bombardment of, on the one hand we're trying to solve a problem of a pandemic with social isolation, social distancing, wearing a mask, and then people gathering in huge numbers to protest, let alone the terrible violence. And the quick question is, is this going to affect the trajectory of the coronavirus? Are we going to take a step backwards? I suspect we will see an increase in the number of cases. We have to wait and see. But it really is a tragedy that what we're trying to do is clearly being tested by this terrible situation.

And we have to hope and pray that this will all end soon. I want to leave you with some good news. Testing is ramping up. We've had 20 million tests in the United States. Not enough. 2.2 million people positive, 11% of the population. Therapeutics are on the way. Although we still don't have any proof, hydroxychloroquine has come out at this point not being able to show the evidence. Remdesivir is an antiviral. It did show some improvement. People got out of the ICU and got better a little sooner, 11 days versus 15. But it's definitely not, it's not the answer alone. The vaccine is on the way. There are over 100 companies that are in a race to bring us a vaccine, which clearly will make a huge difference. But it takes time.

There's a lot of questions about how long it'll take and I can tell you that normally it takes years to develop a vaccine. Mumps was maybe the fastest ever. That was four years. So there are people saying, could it be the end of the year? Forget it, could it be next year? I doubt it. There are two big companies that are in the race right now that I know that are right near the front lines, Moderna and Science, you can check them out. When you get a vaccine that works, which means that you have antibodies produced, you have to be able to show that these antibodies are effective and you have to be able to show that they lost and you have to be able to show that the vaccine is safe.

So all those things take time. There's an article by Bruce Thompson on the 16th of May and he wrote an article which was quoted "Reasons for Optimism." And he said that their new cases are down, their death rates are up, down. And we haven't seen a significant surge as people open up. So in summary, we are seeing the light at the end of the tunnel, certainly in Western countries like Europe and Asia, I mean like Europe and United States. If you have a question, we can talk about Sweden, which by the way tried to not do a lockdown. They tried to go the other way and they tried to make it very liberal. It turned out that even their epidemiologist, their state epidemiologist said it was a mistake. They should've gone somewhere between severe restriction and allowing people out.

They have a much higher death rate than Finland and Norway. And in fact, half of the deaths there have been in nursing homes. More than 90% of people do not need hospitalisation. You should know that. You should know that most people, 90% plus are fine, and they manage to get through this. Some are asymptomatic, some are mildly asymptomatic, and some get very sick. Another 10% who get very sick, half of them land up in hospital in a critical condition. And we have a death rate of around 1 to 2%. So let's be smart, and this is what I want to suggest. Let's protect the most vulnerable populations. People over 65 need to be careful. You aren't going to stay at home forever, of course not, but be very careful 'cause you're at increased risk, particularly when you have underlying conditions, associated conditions like high blood pressure, heart disease, lung disease, obesity.

So be careful. Now what about if you're over 70 and you're in a nursing home? That's a high risk situation. We have to protect those people. We have to prevent the virus from getting in there. But if you're a less than 65, go out and be careful and carry on living and think about what you can do to bring a smile and bring some joy to other people's lives, because when you do that,

you will be making a huge difference. I want to end off with a video that was so inspiring to me and then we will take some questions. Thank you all very much. Thank you very much.

Video of violinist plays

- Hi, Dennis.

- Hi, Carly.

- First of all, thank you for remotely doctoring me through my own COVID outbreak. Even from San Diego, you could keep me alive, so thank you.

- You refused to go to the hospital, so I had to be a telemedicine doctor.

Q&A and Comments:

Q: Yeah, so that gives us a first opportunity for the question then. So the health insurance companies here are reporting a 4,000 year on year increase in telemed appointments this March to last March. And as you know, this has forced a lot of innovation in the telemedicine space that people were sceptical about before now. What's your opinion on the telemedicine sector and are these changes here to stay?

A: Absolutely, thanks for the question and I'm so happy to see you well again.

- [Carly] Thanks.

- It's really been a revolution in telemedicine. I think many of you know that I'm involved as a medical director in a company called 2nd.MD where we do consultations as a second opinion for people that want a second opinion on any difficult situation. And we hook them up with top doctors around the country, which has been enormously successful and there's a huge need. But now we're in a situation where people are accepting and many insurance companies, they all going, they are paying for telemedicine visits, because they realise that people can't come to the doctor and it's really difficult.

And there are all sorts of logistics. Can you sit near somebody? You can't even sit next to somebody in the waiting room. You've got to go find parking. You've got to take two or three hours sometimes just to come and see the doctor. And then there's all these logistics of how you're going to be seen and you're in the room. And you've got other patients there that may be sick. So telemedicine is now taking off. It is the future. There's another company called Medici where you can be in touch with your doctor very easily. It's just like having your doctor on your cell phone and you can text your doctor at any time and he'll get back with you. We've realised that this is a huge opportunity.

But, Carly, I want to warn people, one of the things that's happening and one of the really serious dangerous effects of having telemedicine is that when someone's got a problem and they don't want to see the doctor or they don't want to go to the emergency room, bad things can happen. And unfortunately, for example, in New York, there are a lot of people that have had heart attacks and died at home, because they didn't want to go to the emergency room. And even when a doctor says go to the emergency room, they're so afraid of COVID that they don't go. And so what's really important is you must talk to your doctor. I saw, I was just involved, I heard about a case and I tried to help this person who landed up going and not being examined properly when she had abdominal pain and she ruptured her appendix. So we can't say that everything will be taken care of with telemedicine.

The real art of medicine is to touch somebody. We're going to live in a contactless society and it affects the medical profession. So what I'm calling for is a lot of stuff can be done with telemedicine, but have a relationship with your doctor. I think every first visit to a physician should be face-to-face. They should examine you and get to know you and feel you and then you can decide what you can do with telemedicine.

Of course you can talk to people and should I increase my drugs? And now we have all these ways that you can have your blood pressure checked at home and your blood sugar checked at home and your lipids can be checked at a nearby lab. And there's a lot of opportunity just to talk to your doctor. So telemedicine is huge and as you've seen and we all know, it is a multi-billion dollar industry, but we have to be very careful. We do not want to give up the art of medicine.

Q: So we've had a few questions about stents and people who have stents and whether or not that means that's considered an underlying condition with regards to COVID and if they need to be more careful regardless of age or other conditions.

A: I have a very good friend who's only about 60 years old and he's got a stent. He knows who he is, and I put it in when he was in his 40s, 'cause he had a family history of a mother who died at 42 of heart disease. So as an aside, if you have a family history of heart disease or stroke, please go and be seen so that you can find out that you're at increased risk. And so I assume that this is a relevant question for him and he has the story. We know that people with underlying conditions are at increased risk and that they're at increased risk because if they get COVID, they're more likely to have complications.

You are not more likely to go get COVID because you have a cardiac stent. But when you land up with this COVID and if you're one of the unlucky 5 or 10%, we know, and I mentioned this earlier, that it not only affects the lungs, it affects the heart, it affects the brain, it affects the kidneys, it affects the clotting system. And so all organs in the body are vulnerable and it's because of the significant inflammation that goes on. I pointed it out to you early on, it's that bomb that comes down and causes damage throughout the system. So if someone who has a stent lands up in the hospital and now you get respiratory-compromised, so there's less oxygen, you land up where you are at increased risk, because you already got a cardiovascular problem.

The other issue is that COVID can make plaques more vulnerable.

So there's a greater risk that you could actually rupture a plaque. It also causes arrhythmias. And lastly, and of course I shouldn't forget this, COVID's been shown to cause severe inflammation in the heart muscle itself and cause something called myocarditis. So what myocarditis does, it weakens the heart muscle and you can end up going into heart failure. So 40% of people actually either have an arrhythmia or some degree of cardiac involvement. So to answer the question, no increased risk of contracting it, but if you get it and you're one of the unlucky ones, your risk is much higher, because you can't tolerate an insult to the heart.

Q: If we can return to the COVID symptoms, you know, as I can testify and as you know, COVID can be described as haunting patients. You know, it can come and go, it can give you a few days of what you think is relief and then return. How do people know when they're really through COVID and no longer at risk of shedding the virus? And in addition, if you don't have a fever, is that the point at which you can consider yourself safe?

A: So that's a great question, you know, Carly, you can answer these questions 'cause we've discussed them so many times but I will answer it. So how do you know that you're through and that you don't have COVID? Well, the only way to be sure is actually to have a nasal swab test, which is called a PCR. And that's a polymerase test. And it actually is testing for a piece of the RNA in the coronavirus. So to know that you don't have it anymore in your system, you actually have to have the test. The other, clearly when your symptoms have resolved, you're getting better, but you could still be shedding the virus.

And the reason we talk about this incubation, this two weeks of quarantine is that we feel you, if you're going to get the virus within two weeks if you've been exposed or if you get the virus, it takes about two weeks and most people are rid of the virus. Now what about antibodies? It's a big bag of worms, because many people are doing antibodies and they can be inaccurate. You have to go to a lab where you've got a high degree of accuracy. I want to point out something to people that are interested in statistics. If you have a test that's 90% accurate but you actually have a base rate of infection of 5%, which is basically where it is for COVID around the world in general. If you do a test on a whole population and you've only got a 90% chance of accuracy, but the base rate is very low, you can have huge inaccuracies.

The estimated inaccuracy is 70%. Well, you could imagine a real problem when people are told you don't have antibodies, okay? And they think they're at risk. Or if you do have antibodies, most of the problems are people are told they don't have antibodies, it's inaccurate, and then they're at risk. And if they're told they do have antibodies and they don't, of course you're at significant risk because now you think you can go out and you're safe. One of the problems with the antibodies card is we don't know how long you are protected and if you're protected and you yourself know that the level of antibody is significant, you have very high antibodies, because you actually had the infection for a long time and you developed high antibody titers, I would say that it's extremely, extremely likely you are protected for, I don't know how long, from that

specific, that particular strain.

What we're worried about is that this virus could mutate and other strains come along and you could get it again. We haven't seen that fortunately. So how do you know? Test it, go get your coronavirus PCR and get antibodies. If your PCR is gone and you have a high level of antibodies, you've had it and you probably are protected. Of course you need to be careful and still continue with your protective measures.

- Yes, you would hope after a 45-day fever, that I had earned high antibodies.

- So why do you think you were really so sick for so long?

Q: No idea. Maybe I caught it on the plane and it was too much exposure, who knows? We've had a question around plasma, which as you know is something I was very keen to do. When I got better I felt like, you know, something good should come from this and one of the attendees is asking, "Do we know any more about plasma donations and if this type of treatment is helping people?"

A: So people are accepting and there're calls from the Red Cross to come and donate if you've had COVID. They check your antibody titers and if they're high enough, you know, normally above 400, they take your plasma and we are doing studies in the hospital and giving plasma to people that are critically ill. And the feeling is that it's helping. We have not seen a proper study that's come out yet, but it's definitely being used.

Unfortunately by the time it's used in many patients, they may be so sick that it's too late, but it is being used, it is being studied and I do think it's one of the little things that you can do. If you've had COVID, go and get your antibodies tested, and give your plasma 'cause you may save somebody's life.

Q: In terms of diabetes and that being an increased risk for dangerous consequences, is there a difference between type one and type two diabetes?

A: I think the difference is if your diabetes is controlled, that's better than if it's uncontrolled because if you've got uncontrolled diabetes, you're more likely to have inflammation in your body. You're more likely to have high sugar levels, which makes your immune system, makes your immune system compromised. So I don't believe there's a significant difference. If you've got type one, it just means you've had it for a really long time.

But if you're well-controlled, I think your risk is lower than somebody who's got type two who's out of control. And it's a little bit like the question you asked me about the heart. People who have diabetes, their immune systems may be depressed or they may have more inflammation in their body, but if they get the illness, they are more likely to have complications, 'cause they've already got issues with many, many of the organs.

Q: So we're still in the early days of understanding this virus, but have you seen any reports of long-term conditions once people have recovered, be it in the lungs, or in the heart? You know, is there a risk even when you think you're through it?

A: That's a good question. The long-term sequela of this COVID-19, we don't have the data yet. Remember it was, we're talking December, we're six months out. So obviously some people who have lung disease, it may take a while for the pneumonia to resolve, but what we see is people who get better get completely better.

So we not seeing people that are then stuck with a chronic condition because if provided, they recover fully. Clearly if you get, you know, a severe complication like renal failure where you actually, in some patients, actually have to go on dialysis, it may take a long time and the kidneys may never recover. But for people out there who just get the infection and they get sick from it, the 90% of people, we have not shown long-term consequences at this time, the answer is still unknown.

Q: Does a flu vaccination help during COVID season?

A: Very good question. I pointed out during my talk, the flu vaccine is for influenza A, strains of influenza A. So I told you about the H1 and N1. And what's important is that it's protecting you against strains of the influenza virus. It does not protect you against coronavirus, which is another virus, I told you, it's in the family of viruses. We don't have a vaccine for coronavirus yet. But what is important is clearly if you get the flu, now you're immunocompromised and you are likely, if you do get corona, to be much more sick.

So I do suggest you protect yourself from getting the flu. By the way, we all know this, millions of people don't take the vaccine. Millions of people get flu every year in the United States, tens of millions. And last year I read there were about, there were 37,000 deaths. So there's a lot of deaths due to influenza. So very important that you, I'm a believer that everybody should be vaccinated, especially if you're elderly, increased risk. But I believe everybody should get vaccinated.

Q: Early on there was reports that ibuprofen or aspirin could be dangerous to people suffering from COVID versus taking something like Tylenol, paracetamol.

- Yeah.

- Have there been any more studies on the effects of those drugs?

A: Those studies that came out, like a lot of the studies that have come out, are studies from the waiter instead of the doctor, unfounded. We have not been able to prove that. We do have an issue with clotting in COVID. I told you that, there's increased clotting, which has put people at

risk from pulmonary embolism and strokes. And that's why when people are in the hospital, those that are sicker are being put on intravenous heparin to prevent blood clotting. There's no indication that you should just start taking aspirin. It hasn't been proven. And certainly I have seen no studies that you can't take ibuprofen. I mean, when I say studies, good studies, not proven.

Q: In terms of the risk to young children. Generally speaking, we've seen infection in the same way. Although there has been reports particularly in New York state, particularly in New York state recently about the fact that perhaps COVID affects children in a way we don't yet understand. Children who have other underlying conditions, like type one diabetes, are they more at risk?

A: So we do know, unfortunately, that there seems to be a condition in children, very rare, that is related to COVID. Like Kawasaki's disease. It's a vascular problem and with inflammation. I am not aware that children with diabetes are at increased risk. Clearly it's a risk, it's extremely small. I don't think we have to put ourselves in a situation where you become, when you've got children, afraid to take them out, the risk is extremely strong. The most important thing is if your child, no matter what age, develops any symptoms, fever, whatever they are, you must talk to your primary care physician or your paediatrician.

I'm not aware of any increased risk and there aren't a lot of cases now. We're just starting to find out about it. It's very, very rare. For most cases, by the way, you know, the number of cases of people, you know, that are less than 38 years old or 30 years, 40 years old are very, very, very low. And that's, to my point, when I ended my talk. People that are younger are very low risk. The only risk is that if they get it, they shouldn't go into a nursing home or go and expose other people that are higher risk. But the risk to themselves is very low.

Q: In terms of how COVID-19 affects the other organs in the body, such as the kidneys, you know, or some of the other systems, could you talk a bit more about that?

A: Well, we think that, I told you that this virus gets into the cells and damages these cells and destroys them. So there are cases of increased renal failure. You damage the kidney cells, the renal cells. The virus gets into cardiac cells, they're called myocytes, destroys them. So the brain is affected. We think the brain actually is affected and we're not exactly sure, but it can get into the brain. One of the ways the brain is affected is that you can get cranial neuropathies. And that's one of the reasons we think you get a loss of taste and smell. It affects the cranial nerve and also you get tiny blood clots.

The sort of clotting system is affected and that's why you can have many strokes and there're reports about the strokes from COVID-19. So clearly if you get this disease, okay, now we're talking about the small percentage of people where they get very sick from it, there's an increased risk of clotting. So what the bottom line closing on this question is, it affects all the organs, not just the lungs. And there are a group of people, a small percentage who I would say

are really unlucky, especially if you don't have underlying conditions. And we have to acknowledge the tragedies. There was a programme I actually saw on CNN about a week ago where they had a memorial to people that died from COVID and they weren't all people with underlying conditions. And there were people that were 50s and 60s and 70s. And of course we highlight those people, we highlight everybody. But when we see young people getting this and getting sick and dying, we realise we still don't understand exactly why would that person have such terrible, terrible consequences. And it's got to do with stuff we don't understand yet. It's their immune system, how it reacts to this disease.

And instead of it fighting the disease, the immune system has something called a cytokine surge. And it basically kills the whole organism. It kills the whole body, it kills that person . and that's what happens unfortunately. So it's all about genetics and immune system and we have lots to learn. But as I said, it's unusual, very rare.

Q: Is there anything else people could do such as a pneumonia vaccination or a shingles vaccination that can be helpful in fighting COVID?

A: Well, pneumonia, Pneumovax is very, very important, especially for people. We give Pneumovax routinely to people over 60 and it helps to protect against the pneumococcus bacteria. So you're actually specifically protecting against a certain bacteria. It doesn't protect you from getting coronavirus pneumonia. But having said that, if you get pneumonia, you are compromised now, your lungs are compromised.

So if you get corona on top of it, your risk goes up significantly. So Pneumovax definitely indicated, especially if, as I told you, elderly and people that are immunocompromised or people who've had a splenectomy, their spleen out, they need Pneumovax. That's not going to protect you from getting corona.

Q: South Africa has, as we discussed earlier, taken quite drastic action, both to lockdown the country, but also to ban certain things, particularly they banned tobacco products and they say that ban will continue. Do you feel that was a medically motivated decision?

A: Look, that's a controversial decision and the only explanation that I could actually vaguely understand for that is that if you're passing around a cigarette and you have COVID, you are likely to pick it up, especially when somebody obviously is dragging on the same cigarette. But to take away something, and obviously I'm totally against cigarettes, so the idea that you stop smoking is a very good thing. But if you suddenly force people to stop smoking, what are they going to turn to?

So my answer to that is it's controversial, it's questionable. I understand that why they did that, from the point of view that you're passing around cigarettes and other things that you smoke, but that didn't happen in other countries. It was in South Africa and time will tell. Personally, I don't think it's going to make a huge difference, because people will find, if you're in contact with

someone who's got corona, you don't need to suck on their cigarette. If you're within six feet and they're coughing on you, you are likely to get it. Now when I say that, by the way, I'm always very careful. I just read an article in a study that came out where they looked at hydroxychloroquine to see if it's preventative.

In other words, if you're exposed to somebody, they did a study with 80 people. If you're somebody that got exposed to someone who actually has the virus, that means you were within six feet without protective gear or you didn't have a face mask. And they looked at those people, and lot of them were healthcare workers and they said, half of you will go on hydroxychloroquine and the other half won't.

There were only about 80 patients. They couldn't show a significant difference in those who got it and those that didn't. It was something like 11% versus 12 to 13%. So what's important to realise that even when you're exposed, which is this study, only 10 to 15% of people actually got it. But that just tells you, you know, if you are exposed or you know you were near somebody, you don't have to get into a terrible state of thinking you're going to get it. You still have an 80 to 90% chance of not picking it up, particularly clearly if you're younger and you don't have chronic conditions and your immune system is good.

- And as I can testify, the side effects of hydro chloroquine don't make it a pleasant experience if it's not proven to lead to good results.

- Yeah, but, Carly, just to point out, we have not been able to show that it's useful either for prevention or treatment and right now it's not being used in large numbers, because we don't have the evidence.

- Well, I was glad to be your guinea pig while we tested the theory.

- Well, at that stage, we were like, Carly, let's give you whatever we think may help. And that's what's so important here. That we don't know we, we're learning all the time. And so sometimes we're going to give something where the data's not out yet. And that's one of the biggest problems right now where we're putting people on different drugs and even the vaccine, we have to know they work before you can just send it out into the community and make it general broad guideline.

Q: Looking more to a public health question, we've seen that the, disproportionately, both in the US and the UK, the numbers of of people of colour who've been affected from COVID and, you know, have had increased mortality rate has been very high. Can you talk any more about why that might be the case?

A: So that's well known that in the Black, Hispanic communities, they are at increased risk. It turns out what was interesting, I'm at NYU, we actually have found that when people get excellent medical care, we have not seen any difference in how people do once they get into the

hospital in those populations, which is really testament to excellent medical care. But in general, it clearly makes sense, and it would apply to South Africa. If your nutritional system is not good, if your immune system is depressed, you are much more likely to have complications and to acquire the disease.

So like all pathogens and all diseases that affect populations, whatever they are, infectious diseases, the vulnerable populations are those that are not getting the same, whether it's the diet, it's all the things that we spoke about. So it's an absolute truth. These populations are at greater risk. But as I said to you, I think if they get excellent medical care, the numbers of, in terms of getting well, are very, very similar. It's really about what condition they come to you in the hospital and it's about whether they get the care in the first place. So it's the immune system and it's the fact that you're in close proximity, so it's so much easier to pick up these viruses when you're on top of people and you're unable to socially distance.

Q: So just for our last question, we've had some inquiries about the mutation of COVID. From what you've seen, is it the same strain that's being seen around the world or is there a theory that perhaps, you know, in, in Asia and Australia and New Zealand that perhaps that's a different strain than what we've seen in Europe or the US and has that had an effect on the mortality rate?

A: So that's a very, very good question. We have not seen in United States a mutation in the strain that we've seeing here. And therefore, although there's a theoretical concern of reinfection, it hasn't been a problem. We have seen reports in other countries, in South Korea and China, that there are reinfections in some patients, that we think it's a mutation. So it clearly will be a problem if a virus mutates and then people become reinfected.

But if you think about the flu, which has a lot of variations in mutations, when we give a flu vaccine, we try to look at what the mutations are and the variations and we try to deal with it by giving a flu vaccine that's going to take care of those strains. So for the most part, Carly, we have not seen that, thank goodness. But it's absolutely true that it's possible. Viruses try to mutate to be able to survive and that's something we're keeping our eye on.

- Thank you, Dennis. I'm now going to hand back over to Wendy.

- Thank you, Dennis for your very, for your excellent and succinct presentation and for your very kind words that you said about me. Just one last question from me. We are definitely going through very, very harsh times and people are feeling lonely and isolated at home. Is there something that you could leave with them before you end your presentation that might be helpful when they're feeling a little bit low?

- Okay, I just want to say two things before I do that, and I'm happy to do that. One is I'm very proud of you and we've been far away for a long time, so hopefully I'll see you soon. That's number one. Number two, humankind is facing a global crisis, certainly the largest of our

generation. And I want to refer you to an article, all of you. It's a great article from the Financial Times, March 20th, 1920 from Yuval Harari, "The World After Coronavirus." And Dennis Davis who did a brilliant talk and always does mentioned him, and I want you to read it. It's really brilliant. And the bottom line was how we pull together will determine our future. To quote Yuval, "Will we travel down the route of disunity or global solidarity?"

And I feel that doing the kind of things that you've done, Wendy, and we all do in our own little way, will get us on the right track. Now what I want to do is give you some little thing that we can all do that I did just before my talk. And it's a breathing exercise, and those of you who are still listening, I hope you'll do it with me. And it's called 4-7-8. And it's a breathing exercise. If you can do this two or three times a day, you will be boosting your parasympathetic nervous system and it helps you to reduce your sympathetic nervous system, which is the fight-and-flight and what makes you anxious and makes you stressed and makes you not feel well. And it's a breathing exercise. And of course meditation's based on this and yoga's based on this. And just before I give it to you, I want to give a shout out to Durry, Dr. D I hope you'll come on and we planning on having you back 'cause I really want you to get into the mental aspects of this disease and what we really can do. But here's my little suggestion.

We all going to take a breath and we're going to count to four while we breathe it in. We're going to hold for seven and then we're going to breathe out and take eight counts to breathe out. I'm going to do it with you for one minute and you keep doing it if you want to. And I hope you'll be in touch with me, dennisgoodman18@gmail, and let me know that you're doing this and how this helps you. I do it several times a day and it's been a huge help. So let's breathe in. Four, hold for seven, one, two. Breathe out, eight counts. Breathe in for four. Hold for seven. Breathe out for eight. Two more, deep breath over four counts. Hold for seven. Breathe out over eight counts. Last one, breathe in.

- Well, thank you, Dennis, on that breathless note.

- Breathful note.

- Breathful note that we were all connected on breathing. And so I'd just like to thank you very, very much for an excellent presentation.

- [Dennis] Thank you.

- Good night, everybody.