

# THE ECONOMIC CLUB

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## **Interview with Johns Hopkins Medicine Experts**

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Johns Hopkins Medicine**

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The Economic Club of Washington, D.C.  
Friday, March 27, 2020**

DAVID M. RUBENSTEIN: Welcome, everybody. I'm David Rubenstein. And I am the president of The Economic Club of Washington. And on behalf of the Club, I wanted to welcome you to our Virtual Signature Event. This is the third that we've done in recent weeks. And what we're trying to do is to give you information about the coronavirus situation, among other things. And we have today a very, very impressive group of individuals who are here to kind of educate us about this. I would – I'm going to introduce them appropriately in one moment. And I want to thank them at the outset for coming and giving up about an hour of their time today at a time when they obviously are very, very busy.

So, let me just say at the outset that this is for members of The Economic Club of Washington, but we've also invited members of The Economic Club of Chicago and The Economic Club of New York. And they are watching as well. And then other guests are free to watch as well. And this will be on our website right after this broadcast, and people can tune in and watch that as well on their computers. What we are trying to do today is give you some information about the coronavirus so that you might be able to better prepare for a situation that might arise, in your own case, or prevent things from happening that nobody wants to have happen.

I would like to say that I appreciate Paul and your colleagues for coming here. And let me just introduce you. And then, Paul, I'll ask you some opening questions if I could. Paul Rothman is the dean of the Johns Hopkins medical faculty. He's also the CEO of Johns Hopkins Medicine. So, he is both the head of the medical school and also the head of the hospital, which consists of six community and main academic hospitals, among many other kinds of things that he'll talk about that they do. And Paul is a native of New York. Graduate of MIT, where he was captain of the crew team, and he went to Yale medical school, and he is a molecular immunologist by training. He has previously been the dean of a college of medicine at University of Iowa. And Paul has also spoken before at The Economic Club of Washington. Paul, thank you very much for doing this.

I would just introduce briefly your colleagues. Lisa Maragakis is the head of infectious – or, director of infectious medicine at Hopkins. She is a native of the Dallas area, went to undergraduate in Utah, where she was – sideline – a professional ballet dancer. She got out of being a ballet dancer and went into infectious medicine and got her medical degree at Johns Hopkins. And she's now directing infectious medicine there. And then Lauren Sauer is a native of Baltimore, my hometown. But she was training to be an astrophysicist but concluded that emergency medicine was more important. So, she is now an assistant professor at Johns Hopkins in the emergency medicine area. So, I – that is a brief introduction. I want to thank all of you for coming today. And let me start with you, Paul, if I could.

Paul, thank you for giving us your time today. Let me ask you my first question. How is Johns Hopkins preparing for the coronavirus situation? Are you as overwhelmed yet as people in New York seem to be? Are you anticipating that that might happen in Baltimore and the Washington area?

PAUL ROTHMAN, M.D.: So, thanks David. It's good to be back at The Economic Club. I thought first I'd just give a little bit of what the coronavirus looks like today. And I'm on the

great [Hopkins website](#),<sup>1</sup> which gives almost up to the minute data. So as of right now, 9:00 this morning,<sup>2</sup> there are 551,000 confirmed cases around the world, and 24,900 deaths from corona. In the United States as of, again, 9:00 this morning, there are 86,000 confirmed cases, 1,300 deaths. As with many pandemics, what you'll see is spread that is not uniform across the country. You will see that it arises in certain locations. In the United States, as you know, the first major locations were on the West Coast, in the Seattle region and then in the California region. It quickly went to – spread across the country, and especially in New York, which has a very large number.

Here in the Baltimore-Washington area, we are in terms of spread, at least we think, about a week behind New York. You know that data's very soft, but behind New York. But the growth rate is pretty fast. So, the data for the country – doubling time for COVID is calculated by how many days it takes to double the number of cases in a region. So, for the United States the doubling time as of yesterday was six days. So, every six days the number of cases in the United States double. But in the – I'm sorry. That's around the world. In the U.S., and in Maryland, Baltimore, it is three days. So, every three days in the United States, in the Baltimore-Washington area, the number of cases are doubling. The world, it's six days.

So, we are on a very steep slope of increase in COVID-19 cases. And the slope is very similar to that that was seen in Italy early in the Italian. So, we are at a place that we're seeing, and will see for the close foreseeable future, a large growth in the number of cases. And again, the mitigator here is some of the community and social mitigation strategies that we here in Maryland and others are looking at.

Just to tell you what it looks like for Hopkins, we have five hospitals in the Baltimore-Washington area. Hopkins Hospital, Bayview, Howard County, Sibley and Suburban. Right now, as of 7:00 a.m., we have 75 inpatients with COVID, 16 of them intubated. And we have approximately 80 patients that we are – we suspect may have it. They use the same type of respiratory isolation, but they have not yet been confirmed by testing. We're doing over – about 5(00), 600 tests a day. We actually developed our own test. So, we are testing our own patients and patients come to us form testing.

And what we've seen that interesting, about a week ago we had about 5 percent positives. These days, we're over 10 percent of the people we're testing are positive on any one day. So, we are going to see the surge that we're seeing in places like New York, we're just a little bit behind here, in the Washington-Baltimore area.

MR. RUBENSTEIN: Now, on the testing, suppose somebody says: I would like to get a test because I don't feel well, or I just want to make sure I'm OK. Can somebody just call up Johns Hopkins and drive over there, and get a test? Or how do you get these tests?

DR. ROTHMAN: Lisa Maragakis, I'm going to ask you, because you help run this.

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<sup>1</sup> <https://coronavirus.jhu.edu/map.html>

<sup>2</sup> March 27, 2020

LISA MARAGAKIS, M.D., MPH: Sure, of course. So, we have done a lot of work on the testing. And I'm sure everyone is very aware, there have been challenges in the United States with rolling out widespread testing. As Dr. Rothman just said, we have developed our own in-house test. And we are so grateful to the Johns Hopkins microbiology team who really started very early on this, got out ahead of things, developing our own test, and filing, really, what as a mountain of paperwork to get the regulatory approvals to bring that online. So, we are well-positioned to test our patients.

To your point about the logistics of that, we have taken a strategy of really centralizing testing locations and taking a lot of measures to encourage those who are the worried well who have questions and those who have mild illness to reach out to our clinics by telephone. And we've set up a triage telephone system so that we can support people in their homes, get them the information that they need, and direct them to these centralized testing sites, where the samples can be collected safely and then the individuals who are well enough to return to their homes can return and await the results.

Our turnaround time is now much better than it was when we had to send all of these samples to the Centers for Disease Control and Prevention. And now within a day we can get most people their results back. The test itself takes five or six hours. And we are increasing the capacity every day. We do triage, meaning that we're looking at directing the available testing to those who need it most. And means that we are testing people who have symptoms consistent with the coronavirus illness, with COVID-19, with those who have fever, shortness of breath, severe headaches, body aches, and other symptoms, including now loss of smell, which is an apparently unique feature of the clinical syndrome in some patients.

Of course, other patients are sicker and need to come to our emergency departments. But part of this strategy helps direct patients to the right – the appropriate location for their level of care, and helps unburden our emergency department and inpatient location, where testing is also available.

MR. RUBENSTEIN: I understand. If you don't – if you feel OK, but you just – you're worried well or you're just a hypochondriac, you just want to be tested, can you just call up and drive in and say: Give me a test. Or you won't give tests to those people that have no symptoms?

DR. MARAGAKIS: We are currently not testing asymptomatic individuals. And there's a couple of reasons for this. We've alluded to the, you know, limited number of tests that we're trying to direct to those who need it most. But also, because the sensitivity of the test is much higher for patients who are symptomatic and are shedding more virus that can be collected and recovered in that testing process. And so, we know, even for patients who get the disease, that sometimes if you test too early you may not be able to detect the virus. So, it's also a strategy for making the correct diagnosis.

MR. RUBENSTEIN: What is the actual test? I mean, the test that I – that President Trump took, and I guess Vice President Pence took, is you kind of put a swab up your nasal passage. Apparently, it's somewhat painful. Is that the one that you do?

DR. MARAGAKIS: Well, it's not supposed to be painful, but it is a somewhat uncomfortable test, if done properly. It's called a nasopharyngeal swab. And so, it is a relatively long, if you think about it, a Q-tip kind of device. It has a plastic core, or stick, basically. And on the end of that is some material that can collect the viral particles from the back of the nasopharyngeal passageway. So, it's really going to the back of the nose and the throat through the nasal passageway.

MR. RUBENSTEIN: Right. What is it about this virus that is – that attacks the respiratory system so violent? In other words, many viruses you might get them that they don't attack the respiratory system so much. What is it that's unique about this particular virus?

DR. ROTHMAN: So, David, I'll take that one. So, this virus is part of the corona family of viruses. It has on its surface a protein which can bind to a human surface protein – a protein on the surface of our cells called ACE2. And that protein is present on cells of the respiratory tract. So, the reason the virus attacks the respiratory tract is because the viral protein binds to cells with the ACE2 protein. Those cells are in the nasopharynx, and in the trachea, and in the lungs. So that's why the virus attacks the respiratory tract.

MR. RUBENSTEIN: OK. So, the reason that we have to have social distancing is, what? And do you think social distancing is actually working, or is it – for example, Governor Cuomo I think said yesterday that social distancing might not be so wonderful if, in fact, you have young kids and older people locked in an apartment together, because they're kind of like a petri dish. And he thought maybe there wasn't the best thing. Is there any doubt that social distancing is the best policy?

DR. ROTHMAN: Lauren, you want to take that?

LAUREN SAUER, M.S.: Sure. I think social distancing is a critical piece of the policy that we're working with right now. We have so much to learn about the virus and the outbreak. And we know that at a minimum we are seeing spread from droplets from people who are sick spreading the disease. And so, while we're trying to learn more about how the disease is transmitted, social distancing allows us to keep that separation, to stop the spread at these little increments, from person to person. So, while there are going to –

MR. RUBENSTEIN: Go ahead.

DR. SAUER: I was just going to say, while there are going to be instances of people transmitting among family members that they're living with or places where you can't avoid being in close contact with people, for the most part social distancing allows us to stop those trains of transmission and do the public health work that we need to stop the virus.

MR. RUBENSTEIN: Should I be wearing a mask when I go outside or talk to anybody? Is that a plus or a minus?

DR. ROTHMAN: So the mask is – so actually the common surgical masks that you see around, their role – they are good at stopping droplets and they're good to protect others if you are –

actually have the virus and may be transmitting it through your droplets. Lisa, you can comment, but I don't think those masks are very good at stopping you from getting infected. But Lisa's the expert here, so.

DR. MARAGAKIS: Right, that's correct, Paul. So really, we use personal protective equipment, masks or respirators, to protect ourselves when providing direct patient care to someone who is ill. But the data suggests that wearing regular masks around in the general public are of questionable benefit. But the one time we know it does help is when you, yourself, have some symptoms, and you must go out and be with other people. Wearing a mask controls those respiratory droplets from affecting others.

MR. RUBENSTEIN: What about gloves? I have gloves. What about those – are you wearing gloves all the time?

DR. MARAGAKIS: We certainly do use gowns and gloves as part of what we call – yes, you have them right there – part of what we call contact precautions. So, the viral particles, when people who are ill cough and sneeze, can travel approximately six feet, and then they fall onto surfaces. We know that this is why hand hygiene and disinfection of highly touched surfaces is so important, because – yeah, you can pick that up by touching a doorknob or a surface. And then if you touch your face or your eyes, you can become infected that way.

MR. RUBENSTEIN: How long does it last on a surface? If somebody coughs and something – a little piece of their cough goes onto the wood, how long will it stay and be contagious? Is it three hours? Six hours? A day?

DR. MARAGAKIS: So, studies have shown that the viral particles can last hours to days, depending on the temperature, humidity, and the type of surface that it's on. But I think that on the longer span of time, we have to keep in mind that that would be a very small amount that might be able to survive, and might not, you know, pose an infection risk. So, I would say on hours – hours would be the biggest concern.

DR. ROTHMAN: David, could I just refocus on just a couple things you talked about, and so for if we have people listening. When you wash your hands, which is very important because you're touching things – and, as Lisa said, don't touch your face very much. And when you wash your hands, wash them for 20 seconds. A good way to know 20 seconds is sing "Happy Birthday" to yourself twice. That's 20 seconds. And you can time yourself on your iPhone, but basically that's what it is. Sing "Happy Birthday" to yourself twice as you wash your hands. And that will be a sufficient handwashing.

MR. RUBENSTEIN: Is hot water better than cold water? Or doesn't make a difference?

DR. MARAGAKIS: I think any temperature of water and soap. You know, back to the basics. And just making sure you get all the surfaces of your fingers, and all the way up to the wrists.

MR. RUBENSTEIN: Right. What about this - ventilators. That has been a big subject. I think there are roughly 100,000 ventilators in the United States. Do you have enough ventilators right now at Johns Hopkins?

DR. ROTHMAN: So, David, we don't know. So, I'm going to go back to the point that Lauren was talking about, about why this social mitigation is so important. So, we know that if we don't do any the period of time that we'll get infected – the peak will become earlier, but the peak becomes really high. And it would tend to overwhelm the health care system. And that's what you've seen in Wuhan, China and in northern Italy. And so, one of the reasons we are so supportive and promoting this social distancing is that it will decrease the peak. It will prolong it a little bit out. So, I saw one person in chat asked, when will the peak come to D.C.? We don't know that because it depends on how successful social mitigation is in decreasing the person-to-person spread.

The reason that I bring that up with ventilators is because if the peak is high enough, and quick enough, there'll be no place in the country that has enough ventilators because the peak is very sharp. If we community mitigate and do what we think we need to do, we know at Hopkins we have over 500 ventilators. We think we'll have enough ventilators, per se. Our big issue, and the big concern, and what you're hearing from other places that get overwhelmed is it's not only the ventilators that are the limiting factor, but it's the people who run the ventilators and take care of ventilators, that workforce is very important.

And one of the concerns people have is that workforce, because they are working with people during the – when people are intubated and put on ventilators – they themselves are getting sick. And so we're – for instance, we are training people who – physicians who don't necessarily use ventilators every day to help care for ventilators in case that first – we have some caretakers who become infected early on, and so we're able to have the workforce to help take care of those people.

MR. RUBENSTEIN: That's an important point. The ventilators is one thing, but you have to have people that actually know how to use them. And you're training additional people to use them. But on a ventilator, when you have a ventilator, basically how do you insert a ventilator in somebody. Basically, it's you go down their throat. And is that what they do? And you have to be kind of sedated for that?

DR. ROTHMAN: Lauren, you do this for a living. Do you want to talk about intubating people?

DR. SAUER: [Laughs.] Well, I don't think anyone wants me to intubate anyone. [Laughter.] But yeah, so the ventilator will be put down the – down your throat. And if it's in there for an extended period of time, there may be a small incision placed in the trachea to go through that mechanism – that route instead. You would be sedated, and we have medication to make sure that people who are ventilated are as comfortable as possible during the entire process.

MR. RUBENSTEIN: How do you deal with bacteria that often arises in the case of a ventilator or something else? How do you prevent bacteria, unrelated from the virus, coming in and hurting the person?

DR. SAUER: I'll hand that off to Lisa if she doesn't mind.

DR. MARAGAKIS: [Laughs.] Sure. Maybe I'll take that one. So, we have a variety of things that we do every day in the hospital to prevent what are called health care associated infections. And these are things like what you're describing. So, when we put someone on a mechanical ventilator or we place a line into the bloodstream, and other invasive procedures, there is a risk of infection. So, we do a variety of things, some of them very basic, including hand hygiene, cleaning and disinfecting the environment, cleaning, sterilizing medical equipment. And then the way that we care for these devices to make sure that bacteria don't have an opportunity, or other pathogens, to get where they're not supposed to be and cause an infection.

MR. RUBENSTEIN: And do you think you have enough gowns and other medical equipment for the surge that you expect to get? Because in New York it appears that they don't have enough gowns. They're using trash bags as medical gowns in some cases, it seems. Do you think you have enough supplies? And are you trying to get more? Or is it hard to get more supplies now?

DR. ROTHMAN: So, the answer is we have sufficient supplies today, but we are worried about supplies in the future. And we, like everyone else, are trying to get supplies. You know, one of the issues that arose really early in this was we realized that a lot of the personal protective equipment was actually manufactured in China. So, because of some of the issues we had there, there was – there's an issue with supply chains. So that's now starting to gear up again. We're hoping to be able to get them. But we also notice that – and one of the great things that we're noticing in the states is how many different people are gearing up to try to help produce PPE.

I'll give you a nice example. The churches in Baltimore – well, the women – some of the women there want to help. So, they are actually sewing face masks for us. We have – we're working with our applied physics lab designed a very quickly to be made face mask that we're working with companies – local companies to try to use them to produce face masks. So, we're trying to get some ability to do it here in the states while we're waiting for the supply chain that we had in China to gear up again.

MR. RUBENSTEIN: OK. So, you used the phrase PPE, which I didn't know until recently meant personal protective equipment. Is that right?

DR. ROTHMAN: That's right.

MR. RUBENSTEIN: So, what can the business community in Baltimore, Washington, or anybody anywhere do to help you? What can the business community or anybody do? What do you most need? Do you need money? Do you need equipment? Do you need people like me leaving you alone do you can do you work? What do you most need?

DR. ROTHMAN: So, first of all, and I'll let Lauren and Lisa – the best thing the business community could do today is take their employees and have them socially isolate. The most important thing today, given where we are in the peak in the Baltimore-Washington area, is social mitigation and community mitigation of spread, because for us we're most concerned if people don't do that, we will get overwhelmed. I think that would be one. Two, I do think we have some supply chain issues in PPE. And we have – David, we have some companies who had PPE stored up after 9/11 who've been donating to them, because some major corporations had stored PPE. And they've been wonderful to donate some of that. I think that's number two.

I think number three is we are going to reach out to people because we and others are trying to gear up our research to try to figure out both vaccines, therapeutics. And a big question for us is why – as you asked in your initial question – is why are people getting so sick from this and why are they dying? So, for us, we are going to take a variety of research efforts to try to ask that very simple question is, why do people – some people get sick and die of this, and why people don't.

MR. RUBENSTEIN: OK. So, you didn't specifically say you needed money, but I assume you need money. That never hurts. So, if somebody wants to donate to Johns Hopkins, can they just email you? Or what do they do?

DR. ROTHMAN: There is – on our website there's – we're going to actually launch an email to our 140,000 prior donors to ask them to donate for research and clinical care. There is, right now, on the Hopkins Medicine website a site where you can donate money.

MR. RUBENSTEIN: OK. Let me go back to the initial virus. Is there any doubt that this virus stated in China, in let's say a food kind of market in Wuhan, and it just migrated? How did it come from there over here so quickly? And if a human being said: I want to create a virus that would be destructive, could have a human being have actually created this? Or is this just something out of nature we couldn't, you know, do if we wanted to, replicate it?

DR. ROTHMAN: Lauren, you want to take that?

DR. SAUER: Sure. So, I think we do have a really good understanding that this likely originated in bats and probably spread through a wet market of some sort. Possibly not the original wet market that was closed, but a wet market, and then possibly through another animal into humans. I think we are going to see more and more of this as we become an increasingly global population with easy movement around the country, and more and more climate changes and changes due to how we use land and access other animals. So, we're definitely going to see more naturally occurring viruses just like this spread in humans.

It's possible – sorry.

MR. RUBENSTEIN: Go ahead.

DR. SAUER: Yeah. It's possible that things like this could potentially be engineered. However, all of the evidence in this case points towards this being a naturally occurring virus.

And engineering things like this is actually quite challenging to do. And there are systems in place to stop things like that from happening.

MR. RUBENSTEIN: All right. Now, Dr. Fauci said I think last night or yesterday on television that in the event that we ultimately get on top of this situation and it's mitigated to some extent, we should anticipate when the weather comes back maybe a year from now that something like this could happen again. Is that true, that this could come back when the weather changes? And is it better – is it more likely this will live in the hot weather or cold weather? And is there a difference between the temperature and affecting people with this disease?

DR. SAUER: Yeah, I think the answer right now is we don't quite know yet. Other coronaviruses do show seasonality, so there is some evidence to think that there may be a seasonal piece to this. We do have a highly susceptible population right now since this is such a new virus. So, there's a lot of people who have never been exposed to this virus across the globe. And so that's going to change the initial seasonality of it. But there is potential to see seasonality and then to see another peak.

MR. RUBENSTEIN: Now, if somebody is self-isolating in their house and they're getting food delivered and they're not doing anything, that's the best thing, I assume, you can do, right? Just stay in your house and don't go see anybody. Is that the absolute best?

DR. SAUER: Absolutely.

MR. RUBENSTEIN: OK. Let's suppose you're nervous about the area you live in, you live in New York, you live in some other area that has a lot of coronavirus. Should you get in your car and drive to Montana or something like that? Or is that not going to help?

DR. ROTHMAN: I'm not sure they have enough homes in Montana for everyone from New York, David. Maybe. They have enough space, but probably not enough houses. I think –

MR. RUBENSTEIN: So, if you want to get food, the best thing to do is to go to a supermarket? And if you have to go out and get your own food, you go to a supermarket and you wear a mask, you wear gloves, and pick it up, and don't get close to anybody. Is that the best way you can get food?

DR. SAUER: I think the best way to get food is to – so a lot of supermarkets these days have added hours, special hours for immunocompromised and elderly populations. So, take a look at those hours and try to go to the supermarket, if you have to go, on hours where those elderly and immunocompromised aren't going to be there, and where the volume in the store is low. And try to maintain that six feet of social distancing, even if you have to go to the store. You can also use delivery services like Peapod and things like that, that will bring it to your door, leave it. And then there's no human-to-human contact at all.

MR. RUBENSTEIN: Yeah. I used to think of myself as a Baby Boomer. Now all of a sudden, I'm a senior citizen. I don't know whether I want to take advantage of that and go into these grocery store lines in the senior citizen time. Is that the best time to go or the worst time to go?

DR. SAUER: If you are immunocompromised or you're in the elderly population I would say it's a better time to go, because they're restricting the access to the store from other people who are – so they're protecting you by giving you that space and the time, or protecting immunocompromised people by giving them that space in the store, and that time in the store. But if you're not – if you don't meet those criteria, you shouldn't go during that time at all.

MR. RUBENSTEIN: Based on what you know today, do you think we are likely to be in this self-isolation mode, the kind of thing we are today, for another month, or two months, or three months? Or do you think it's unpredictable how long we'll be doing this?

DR. SAUER: I think we don't – go ahead, Lisa.

DR. MARAGAKIS: Oh, well, I think we were going to say the same thing, Lauren. [Laughter.] Which is basically, we don't know. And everybody wants to have a crystal ball. We do have mathematical models that give us some data and forecasting for this. And then we also have the data from other countries that were affected before our areas began to see surge in the number of cases. I think all indications are that it is certainly a number of weeks, if not a couple of months, that we're looking at over the next – over the next bit of the spring here.

MR. RUBENSTEIN: Now, it's been suggested that maybe the U.S. government could say certain counties are OK and certain counties are not OK, and maybe we could reopen certain counties. Do you think there's any scientific hope that that might be possible, or you think it's unrealistic that that can happen? In other words, opening up for business and regular conduct by county by county or state by state, or something like that?

DR. SAUER: I think that's a little bit unrealistic right now. And I think to Lisa's point, because we don't know, these social distancing practices and other public health measures become really important to reduce the overall time. So, if we implement them now and we don't open county by county and take those risks, then we're likely to all have a little more freedom of movement and shorten this time period that we have to be restricted.

MR. RUBENSTEIN: All right. Based on what has happened to date, Paul or others, what do you think are the lessons that the medical community has learned from this kind of situation – i.e., we're too dependent on Chinese supply chain or we just didn't prepare for this kind of situation. What do you think the lessons are that we've learned so that the next time something like this happens, if it does, we're better prepared?

DR. ROTHMAN: That's a great question, David. I think one thing we've learned is we – you know, hospitals and health systems work in isolation. I think what we learned from this is that we really are a health care system in a region, and that we have to start working with other hospitals in our region to better coordinate in terms of crisis, because if one system – even though Hopkins, we think we're pretty ready, if other hospitals around us are not, we're going to get overloaded. And so, if you really want to think about caring for a community or population, I think hospitals in this country have to better coordinate. And I think across states too. I mean, we don't – you know, especially here in the mid-Atlantic region, patients – we've had patients

drive down from New York who said: New York has too many cases. I'm going to come down to Hopkins. We see –

MR. RUBENSTEIN: Do you turn those people away? Or what do you do with those people?

DR. ROTHMAN: We care for people who need our help.

MR. RUBENSTEIN: And today what can the federal government do to help you that they haven't done to date? Or do you think the federal government's done as much as they can do realistically?

DR. ROTHMAN: Well, I think the federal government – you know, we've been down in – I've been down in Washington several times talking to people in the administration. They are really trying hard. They've done a lot of things that have been very helpful. You know, what we need is more testing. I think they're really committed and trying to help that. I think PPE and vents – so personal protective equipment and vents have to get to where they're needed. I think they're really on top of that. And I think the harder issue are things like community mitigation because that seems to be – have it's, as you described, a very local flavor to it. And the ability of the federal government has to enforce that so far has not been – we haven't seen that. So, it's been up to the local governments to do that. But they're trying. They've been very receptive to helping us.

The other thing that, I hate to say this, you know, for us at Hopkins and other centers, we are – we're all out here. And we're putting lives on the line. And the government is going to help, but we're going to need more financial help just to keep ourselves alive. Because we are not worrying about how this is financed and we're just worrying about getting everything we need to take care of the people. And I know that's true in every hospital system in the country. And we will need federal help at some point to allow us, because we can't lay people off. Right now, we need everyone hands on deck, and probably more people than we have. Even people who are retired, who will have to backfill other roles as other clinicians move to the frontlines to help us. So, we're all-hands on deck.

And at some point – and I know the federal government's aware. In this tranche that's going to pass there is some money for hospitals. But we'll probably need more after that. And physicians too because many of us to mitigate have stopped doing elective surgeries. We're not seeing – as few patients face-to-face as we can. We're trying to do telehealth. And Secretary Azar's<sup>3</sup> been great to tell all the states that they need to allow physicians to do telehealth across states, because there's some licensure issues there that we need help with. So, the feds are doing it. But for the health system we are really all-hands on deck. People like Lisa Maragakis and Lauren, we are working 24/7 to prepare for this and to handle a very difficult situation.

MR. RUBENSTEIN: And the federal legislation that passed, or I guess is going to pass the House today, that provides money for hospitals as well, or the medical system? Will you benefit from that in any way, or you don't get anything out of that?

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<sup>3</sup> Alex Azar is the U.S. Secretary of Health and Human Services

DR. ROTHMAN: No, we will – well, we will. It's \$100 billion for hospitals. But I don't think – to be honest, that's a first go at it. Depending how long this lasts and how severe, we'll likely need more after that.

MR. RUBENSTEIN: Now if people want to help at Hopkins – let's suppose you're a retired medical professional, you're retired. You were a nurse, or you were a doctor, or you were a nurse's assistant or a doctor's assistant. Are you asking those people to come in and volunteer, or you're not really equipped to take them back in and get additional help that way?

DR. ROTHMAN: Well, we're not doing that right now, but for instance we and the University of Maryland and the state are going to have a new hospital in the convention center here in Baltimore. Lisa, how many beds is that?

DR. MARAGAKIS: Two hundred, I think, at least to start.

DR. ROTHMAN: Yeah. So, for instance, if people want to help that would be an instance where I think we'll need a workforce to help man that. And I know many places around the country are trying to do the same thing to gear up new hospitals that may need a workforce to do it, because our workforce here we're going to need as this pandemic progresses.

MR. RUBENSTEIN: Now, let me talk about vaccines for a moment. Some people are surprised that it's taken so long to get a vaccine for this. How long's it normally take to get a vaccine, and what do you think is the realistic chance that we'll get a vaccine in the next six months or a year?

DR. ROTHMAN: So, it takes a long time to develop a vaccine because – and this is a very complicated vaccine. So normally – the vaccines we normally use for measles, mumps, what we do is we take a virus, we mutate it so that it replicate very poorly, and we use that as a vaccine – mutated enough that it won't revert. We stopped doing that in things like HIV, for example, because HIV – because of the type of virus it is, there was real concern that even if put a couple mutations in it, it would revert. And since it at that point it was lethal, we didn't do that with HIV. Similarly, these coronaviruses, they mutate pretty quickly. They are positive-strand RNA-type viruses. So, there's a concern that it would revert. So rather than taking the whole virus and making a vaccine, we're taking parts of the virus, chopping them up, and making vaccines out of them.

Those vaccines are harder to make, and they take longer to do. So, people are doing that. There's a lot of people, a lot of companies involved. There's academics trying to do it. And the first thing to do is you have to take the vaccine and then, A, show it's safe, because we don't want to give people vaccines that are not safe. And then show it's efficacious. And you think about it, you know, as Dr. Fauci said, that's 12-18 months from the time you begin. And, you know, you can try to cut corners, but you know, I don't want – our Hippocratic Oath is to do no harm. So, I don't think anyone would feel comfortable developing a virus – a vaccine that we cannot demonstrate is safe before we give it to people.

MR. RUBENSTEIN: All right. Let's suppose it takes that long to get a vaccine. I understand that. But suppose people say they're very nervous, they want to try something that's already

around. There's some anti-malaria medicine that people I think are experimenting with in New York. Do you recommend that for somebody who wants to take something? Or what do you think?

DR. ROTHMAN: Lisa, do you want to take that?

DR. MARAGAKIS: Sure. So, there are several therapeutic agents that are being used. But right now, we don't have any data to show that we have an effective therapy for this virus. So, the infected individuals are really getting what we call supportive care – the mechanical ventilation, intravenous fluids, treating complications of the infection, and really supporting them as their immune system clears the infection. And this is true for a wide variety of viral illnesses, for which we don't have, you know, effective therapies.

As you said, there are some agents that are being tried. And we have some anecdotal evidence that they may be helpful. Some of those are approved by the FDA for other indications and are therefore available for off-label use for this infection. And then there are clinical trials of other agents that are also ongoing. And we are positioned to participate in those clinical trials for patients who come to Hopkins.

MR. RUBENSTEIN: But for somebody who says: I really want something. What's the harm with trying this malaria drug because it seems to work for malaria? Is there a danger to actually taking this, in your view, or you're not sure yet?

DR. MARAGAKIS: So, I think all medications have side effects. Oh, I'm sorry, Lauren. All medications have side effects and potential complications. So, you know, that's part of the challenge. When you don't have a proven therapy, you are taking a risk. Now obviously we want to do everything we can to help people, but what we really need are clinical trial data to know if something is effective and safe for a given indication.

MR. RUBENSTEIN: OK. Let's talk about CDC for a moment. Do you think CDC has learned things? Could they have done things better? How would you recommend that CDC handle something like this differently in the future? Some people have suggested privatizing it. Any thoughts on CDC – Center for Disease Control, based in Atlanta?

DR. ROTHMAN: You know, Monday morning quarterbacking's pretty easy. So, my – you know, they have tried really hard. They're doing the best they can. This is an unprecedented pandemic. Look, we'll have lessons learned. Hopkins will have lessons learned, CDC, everyone's going to learn from this and be better the next time. But, you know, I personally don't want to second-guess anything, because everyone's trying as hard as they can. And we're all – look, we all are going to learn from this and do it better for the next pandemic.

MR. RUBENSTEIN: The business community in some circles has been saying we need to get the economy going again, and let's get back to work. Do you have any thoughts on whether it's risky to get back to work before we've broken the back of this? And you would say that might take another one or two months of this kind of self-isolation practice? Is that your view, that it's probably a mistake to kind of go back to work? Or how would you comment on that situation?

DR. ROTHMAN: You want me to take it? I'll be happy to. Look, the answer is, we don't know. We would think right now it is too early. And to put a date on that I think is impossible. We just – the curve's way too new to us. This virus is new. We don't know which way the curves will go. So, if you asked me today, absolutely it's too early. If some random day, I don't know. We don't know. We're going to have to, I think, just keep following the virus, virus, following the spread and make some informed decisions. You have some great people in Washington who we trust – Drs. Birx and Fauci. They're very talented people. And I think they're going to have that broad view, and provide, I think, real expertise to that decision.

MR. RUBENSTEIN: Now, you all are leaders in this area now. So, people are looking to you as role models. So, tell us what you're doing to kind of deal with this problem. And you obviously are health care professionals, but what are you doing at home to self-isolate? How are you getting your food? And how are you – how are you dealing with this? Paul?

DR. ROTHMAN: Yeah, so I socialize – I have my – I have kids home from college, and I have a kid home from med school. So, we socially isolate. And do a lot of hand washing. When I get home first thing, I do is I get out of my clothes and they get washed. We're changing our towels every day. We are changing the bedside glass every day. I wash my hands when I come in, and so does everyone. I think all those great, personal hygiene that people are talking about, they have to be practiced all the time. I don't know if Lauren and Lisa have other tricks that they're using, but.

DR. SAUER: [Laughs.] Yeah, I think in general you just want to be as health as you possibly can, while knowing that you have to self-isolate. It can be actually just isolating for people, so doing things like Zoom check-ins with your friends and family members who you can't actually go see – just like what we're doing here – taking advantage of the technology that we're lucky to have right now, you know, trying to get outside and get exercise, if you can do that safety without going to places, you know, like gyms, many of which are closed right now. And then eating healthy, taking mental health breaks, getting off your devices and taking little breaks from the onslaught of news is really important right now.

MR. RUBENSTEIN: What is a mental health break?

DR. SAUER: There's some great apps that help you do short meditations, relaxation tools, a few short yoga classes online – anything you can do to sort of turn off the information influx that people are getting and just give yourself a break. Whether it's five long, slow breaths or an hour-long yoga class, it can – it can really help.

MR. RUBENSTEIN: If I did an hour-long yoga class, I might have the coronavirus. [Laughter.] But OK. What are you doing?

DR. MARAGAKIS: All the things that have been mentioned. I think the thing that I would add is that social distancing is a new habit for us. And so even in the setting of Johns Hopkins, where we are coming in and working together on this difficult problem and providing care to patients, we are reminding each other on a daily and hourly basis to maintain a six-foot distance

between each other. And that makes having a conversation hard. It makes it hard to gather around a conference phone.

But we have really taken those steps, and really watch out for each other, and remind each other, the same way we do for many other safety measures that we do in health care. And it's critically important. We, like anyone in the community, are susceptible for our own workforce becoming ill. Not just because we're taking care of the patients who have the disease, but also because we also go home, and go to the store, and spend time with our families, and others. So, in all of those settings, making sure that we maintain that distance between each other and do hand hygiene.

MR. RUBENSTEIN: And what are you doing, Lisa? Are you staying at home, or with your family? How do you deal with it?

DR. MARAGAKIS: So, as Paul said, you know, many of us are working extremely long hours. And so those of us who are really in the command center, almost around the clock, have taken advantage of a hotel that is across the street from the hospital. And I'm spending most time there. But I think as Paul and Lauren have said very well, you know, it's very important to get home and see your family too, and to take some time and take care of yourself so that you don't get run down and more susceptible to illness.

MR. RUBENSTEIN: How is the esprit de corps of your medical workers? Are they worried that they're going to get infected? And how are you dealing with their mental problems if they have any?

DR. ROTHMAN: So that's a great question. You know, I've never been prouder of the workforce we have, the nurses and the physicians, the respiratory technologists, security. Everyone here is so dedicated. So, there is – there is this esprit de corps that is unbelievable. It's true, I'm sure, at most health centers, but clearly at Hopkins. People are so committed, the truth is, putting themselves and their health on the line to take care of people. That being said, we do worry, because this is – this is not a battle. This is a siege. This is not going to end in one or two or three weeks. This is going to take several weeks, if not months.

And so, we do worry about burnout of our workforce. We are doing a series – we have our office of wellbeing and our joy in medicine taskforce that is doing a variety of things to make sure that our frontline staff, nurses, and physicians are taking care of themselves because it's hard. And people – to be honest, there are people who are frightened. And we're trying to alleviate their fears and make sure they have – most importantly, make sure they have the gear and equipment they need to keep themselves safe.

MR. RUBENSTEIN: Now, it's been reported that in Italy, for example, if you're over the age of, now, I think it's 60, you may not get the medical treatment that you might otherwise get because of the lack of resources. In the United States or at Hopkins, has that yet been the case, where if somebody is 70 or 80 you say, well, look, we just probably can't save them? That hasn't happened yet at Hopkins, or you anticipate that could happen?

DR. ROTHMAN: That has not happened yet. We are – that’s, again, go back to this social mitigation. The way to prevent that from happening here in the United States is to mitigate the disease now so that we don’t overwhelm, and the peak of the surge goes up. Because what’s happening – it’s that peak of the surge. It is overwhelming the health care system. So, I don’t think we’ve seen that. And I don’t hear that that’s happened yet. The place we worry about is New York, because I’ve talked to hospital leadership up in New York City, and they are – they are at the point where it’s concerning to all of us, actually, that they’ll have enough people and equipment to care for everyone. So, I am a little worried about New York City right now.

MR. RUBENSTEIN: So, as we get ready to wrap up, just one or two final questions I have for you. One is, what lessons – what would you like to convey, Paul and Lisa and Lauren, to people watching about this situation? What is the message you’d like to convey about the crisis, and about Hopkins?

DR. SAUER: So, I think one of the key messages is that the importance of social distancing can’t be understated. The public health measures that our state, local, federal health leaders are asking people to put in place are absolutely critical. They’re not just critical now. They’re critical for the near future, and for the long-term future stability of our health system. So, please, you know, taking the lessons that New York is having the challenges of learning right now and implementing everything we can do to mitigate that peak that Dr. Rothman was talking about. That is a key lesson here. We need to take advantage of the time we’ve been afforded to continue to prepare, and to continue to reduce the risk of all these people coming to the health – to the health system.

MR. RUBENSTEIN: OK. Lisa?

DR. MARAGAKIS: I would add that this, among all crises, really demonstrates the extreme importance of ongoing readiness and preparedness. And I know we’re in the midst of the crisis right now, but definitely one of the main lessons from this is going to be, I think, a renewed commitment to very rigorous preparedness activities, and ongoing resources, and planning, and drills in between major crises like this that are just critical. I am grateful every day for the work that we have done in this regard.

And the enormity of the crisis just shows us that we – you know, we could have done more, or in the future we may choose to do more. It’s always a balance because we always have priorities that are right in front of us, and that feel very immediate. And preparedness is a difficult thing to pour resources into because it’s about an unknown event that may happen at an unknown time. But when it comes, you’re so glad you’ve done all of it.

MR. RUBENSTEIN: Paul.

DR. ROTHMAN: So first of all, David, I would like to thank you for allowing us to talk to The Economic Club today. Really appreciate both your support for Hopkins, but also for allowing us to get to talk to folks. Again, I am just so proud of the people at Hopkins. You know, these people all putting their lives on the line. And they are working literally all the time to help care

for these patients. And I wanted to, again, thank them for all their efforts, because this is going to be hard.

MR. RUBENSTEIN: All right. Well, Paul, Lisa, and Lauren, I want to thank you for giving up part of your morning. And I realize that you have many other important things to do, so appreciate your giving us the time. Very helpful. I think our membership certainly learned a lot. And if we can do anything in particular to help you, please let us know. I'm going to sign off now and just let everybody know that our website will carry this all day, today after we sign off. You can go to [www.EconomicClub.org](http://www.EconomicClub.org) and you can watch this again, if you like, and have other people watch it.

Thank you, again, Paul, Lisa, and Lauren. I appreciate it very much.

DR. ROTHMAN: Thank you, David.

DR. SAUER: Thank you.

DR. MARAGAKIS: Thank you for having us.

MR. RUBENSTEIN: Bye.



**Paul B. Rothman, M.D.**  
**Dean, School of Medicine and CEO, Johns Hopkins Medicine**

Paul B. Rothman is the Frances Watt Baker, M.D., and Lenox D. Baker Jr., M.D., Dean of the Medical Faculty; vice president for medicine of The Johns Hopkins University; and CEO of Johns Hopkins Medicine. As dean/CEO, Dr. Rothman oversees both the school of medicine and the Johns Hopkins Health System, which encompasses six hospitals, hundreds of community physicians and a self-funded health plan.

Dr. Rothman was born in New York City in 1958 and grew up in Bayside, Queens. He began his research career as an undergraduate at the Massachusetts Institute of Technology, where he studied *E. coli* DNA repair under Graham C. Walker. He was also captain of the varsity crew team. He completed his B.S. in biology in 1980 and was elected to Phi Beta Kappa. He then entered medical school at Yale University. While attending Yale, Dr. Rothman had the opportunity to study T cell subsets in the lab of Leonard Chess at Columbia University. He received his medical degree in 1984, earning a place in the prestigious Alpha Omega Alpha Honor Medical Society.

He went on to a medical residency and rheumatology fellowship at what was then called Columbia-Presbyterian Medical Center in New York City before joining the medical faculty of the Columbia University College of Physicians and Surgeons in 1986. There, he also completed a postdoctoral biochemistry fellowship with Frederick W. Alt, a Howard Hughes Medical Institute investigator, studying immunoglobulin class-switch recombination. At Columbia, Dr. Rothman rose to become the Richard J. Stock Professor of Medicine (Immunology) and Microbiology and chief of the pulmonary, allergy and critical care division.

A molecular immunologist, Dr. Rothman's research focused on immune system molecules known as cytokines. Specifically, he investigated the role these molecules play in the normal development of blood cells and the abnormal blood-cell development that leads to leukemia. He also studied the function of cytokines in immune system responses to asthma and allergies. His work was consistently funded by the National Institutes of Health.

In 2004, Dr. Rothman accepted a position as head of internal medicine at the Carver College of Medicine at the University of Iowa. In 2008, he was named dean of the Carver College of Medicine and leader of its clinical practice plan, a role in which he served for four years. In July 2012, he became the 14th dean of the Johns Hopkins University School of Medicine and just the second CEO of Johns Hopkins Medicine.

Dr. Rothman's honors include a James S. McDonnell Foundation Career Development Award, a Pfizer Scholars Award, a Pew Scholar in the Biomedical Sciences Award, a Leukemia Society of America Scholar Award and the Pharmacia Allergy Research Foundation International Award. He is a member of the American Society for Clinical Investigation and is a fellow of the American College of Physicians. He was elected to the National Academy of Medicine in 2016,

one of the highest honors in the fields of health and medicine, recognizing individuals who have demonstrated outstanding professional achievements and commitment to service. He was also elected as a fellow of the American Association for the Advancement of Sciences and as a member of the American Clinical and Climatological Association. He served as president of the Association of American Physicians for 2014–15.

Dr. Rothman is married to Frances Meyer, a gastroenterologist. They live in Baltimore County and have three children: Alissa, Daniel and Eric.



**Lisa Maragakis, M.D., MPH**  
**Associate Professor of Medicine, Johns Hopkins University**  
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Lisa Maragakis, M.D., M.P.H., FSHEA, FIDSA is an associate professor of medicine at Johns Hopkins University School of Medicine. Dr. Maragakis is the Senior Director of Infection Prevention, at The Johns Hopkins Health System and the Hospital Epidemiologist for The Johns Hopkins Hospital.

In these roles, she is responsible for the conceptualization, planning, implementation, and development of the Johns Hopkins Health System's infection control and prevention program.

Her research interests are the epidemiology, prevention and control of healthcare-acquired infections and antimicrobial-resistant gram-negative bacilli. Dr. Maragakis serves on the Centers for Disease Control and Prevention's Healthcare Infection Control Practices Advisory Committee (HICPAC).



**Lauren Sauer, M.S.**  
**Assistant Professor, Department of Emergency Medicine**  
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Lauren Sauer is the director of Operations with the Johns Hopkins Office of Critical Event Preparedness and Response (CEPAR). She is also a research associate in the Department of Emergency Medicine and a doctoral candidate in health and public policy in the Johns Hopkins Department of Health Policy and Management, where she studies quality of aid in response to disasters and the effects of disasters on health care infrastructure.

She joined the department in 2005 and became a research faculty member in 2011. Sauer is also the program manager for the National Center for the Study of Preparedness and Catastrophic Event Response (PACER), a Department of Homeland Security Emeritus Center of Excellence. She is the current chair for the Society for Academic Emergency Medicine's Disaster Interest Group and the co-director of the Johns Hopkins University School of Medicine disaster course.

She is a core team leader on the Johns Hopkins Go Team, a deployable medical asset. She has worked remotely and on the ground for several disaster responses, including Hurricane Katrina, the 2009 California wildfires, the Haiti earthquake, the Pakistan floods and, more recently, the Ebola virus disease outbreak in West Africa.

Sauer has spoken both nationally and internationally on a variety of disaster medicine topics. She has also participated in the U.S. Navy's Continuing Promise missions in 2010 and 2011 and its Pacific Partnership mission in 2012. She has authored and co-authored numerous publications in disaster medicine, public health preparedness and surge capacity metrics. She sits on the editorial board of the *American Journal of Disaster Medicine*.