

## Coronavirus Q&A with Dr. Paul Auwaerter, Johns Hopkins

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*Please note this discussion is based on information that is known as of Feb 28, 2020.*

### **Megan Frankel, Healthnetwork Foundation President, on behalf of Healthnetwork Foundation GOLD Supporters (HNF):**

There are a lot of questions about just why this coronavirus seems to be so much different and scarier than the normal seasonal flu. Can you start with an overview and address that issue?

### **Paul Auwaerter, MD, MBA, Clinical Director at the Division of Infectious Diseases at Johns Hopkins, and Healthnetwork Service Excellence Award Recipient (Dr. A):**

If I were to tell you about a new infection that caused 20,000 to 80,000 deaths a year in the United States, hundreds of thousands of hospitalizations and millions of doctor visits, and tens of millions of people being out of work, this would be huge news.

But of course, what I just explained was seasonal influenza.

So, this virus is new. It looks like it's adapted itself to humans pretty readily and falls somewhere in between coronaviruses that have been circulating in pedestrian causes of respiratory tract infection for decades, and the occasional severe coronaviruses like SARS and MERS.

Now, if this is a new virus in a population that has no immunity, then there is the potential for it to move quickly and for many more people to be infected, even more than seasonal influenza.

So, the strategy so far has been trying to contain the virus, which I think is unlikely. Government efforts and quarantines may slow the spread, which has its merits. But I think that's the scary aspect, is that this virus, different than seasonal influenza, probably behaves much like it. But people are not used to it. It's new, and it has the potential for infecting a lot of people all at once.

Over 80% of people will likely only have mild illness that won't require a doctor's visit or hospitalization, but there is the potential for a severe illness. And again, the same people that are high risk for influenza are probably at high risk for severe infection from coronavirus.

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So, I think a lot of the commonsense approaches that should be articulated at this time can be the same as taken from seasonal influenza strategies for people with health problems. You could look at the seasonal influenza list for high risk and just adapt that. I think when there's something brand new, it always seems very scary. And of course, there's many unknowns here. So, it's hard to be completely reassuring. However, I do think the media and the stock market have realized that the social implications of it can be considerable in the short term, so I think that has just magnified anxieties.

**HNF:**

We call it coronavirus, but we've heard the official term is COVID-19. Can you help us straight on all the terminology?

**Dr. A:**

The ECCMID [European Congress of Clinic Microbiology and Infectious Diseases] term is COVID-19 as determined by the World Health Organization. The International Committee on Viral Taxonomy has called the virus SARS-2-CoV. So if you're talking about the disease, it's COVID-19, which personally I think is a silly name because '19's already gone away. It's not a good term. It makes it sound like a car model. But there it is. The SARS-2-CoV speaks to the genetic relatedness to SARS. It is the disease, and then the virus is SARS-2-CoV.

**HNF:**

The mortality rate from the coronavirus seems higher than the normal mortality rate for the seasonal flus. Is this, indeed, a deadlier virus?

**Dr. A:**

It's hard to answer that question. I would tell you early epidemics almost always focused on the sickest of the sick. So, you surely have seen the tip of the iceberg as being ill enough to get to hospital. Almost always those early mortality figures will fall.

The second handicap is, to date, there's been no effective tool for epidemiology [the study of diseases—how, when and where they occur in populations]. The testing so far has not detected people that were infected and recovered to get a true sense for the scope of the infection. Who's asymptomatic? Who only has mild illness? We don't know. It is likely with a new infection moving through a population that rates of viral shedding and so-called viral load within the body may be higher because no one has even partial immunity. So, it probably will be worse than seasonal influenza. It's clearly going to be less than 2%, but at the moment we just don't know what that number is.

**HNF:**

There's a sense that, perhaps coronavirus doesn't follow the path of the seasonal flu, where those who usually die are the immunocompromised, elderly, or very young. With coronavirus it seems like there are younger people and otherwise healthy people being affected. Can you speak to that concern?

**Dr. A:**

Yes, the reports to date have suggested the more severe elements. It seems to be more common among people with comorbidities [the simultaneous presence of two chronic diseases or conditions in a person], as well as the elderly. Certainly, healthy people have become ill. And indeed, the physician in China was only in his 30s that succumbed to the illness. With coronaviruses like COVID-19, the illness, there is this sense that people that are exposed to very high burdens of virus may get more ill more quickly and can be more severe. This isn't known for sure, but this has been true for healthcare workers for example with MERS-CoV. So, again, we're in the very early stages here. I do think healthy people can also become ill. It just seems that the rate of severe illness is lower, but those numbers aren't very clear-cut.

## TRAVEL

**HNF:**

Alright, so this is the big question everyone wants to know: Can we travel?

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**Dr. A:**

Generally, travel I would say is a bit like, 'Do you want to buy some insurance? No insurance? Are you very conservative and want to get out a \$3-million policy? If you want to be completely cautious, you would social distance yourself for the next four months, although that does not seem practical. I myself am taking air travel next week. There doesn't seem to be terribly increased risk at the moment domestically. My usual precautions are to make sure I always wash my hands after touching surfaces, carrying alcohol hand sanitizers, and wiping down surfaces. So, those would be my usual recommendations.

Really, you're going to have to make your own risk assessment. Conditions like heart failure, emphysema, asthma place you at higher risk for acquiring disease. So depending on where you're traveling and whether there is coronavirus that's more active in your communities or where you're going. Of course, there are a lot of unknowns. We have limited ability to test for this virus in the United States. At the moment, the testing has to go through the Centers for Disease Control, and kits that were supposed to be sent to local health departments were defective. So, personally, I feel we're quite handicapped at making a good assessment. There's no doubt movement from manufacturers to get emergency FDA approval to incorporate the SARS-2-CoV virus into their respiratory panels. But at the moment, we really have limited ability to detect the virus.

The Johns Hopkins website has a map with daily updating of where cases are being reported. That's a very easy place to go to get a sense for where hot spots are. Also, the CDC travel advisory system, which shows the level one, two, and three and four alerts, is a good source.

**HNF:**

Do your recommendations for travel differ depending if it's domestic plane travel vs. international?

**Dr. A:**

You know, a private jet is wonderful!

**HNF:**

Indeed.

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**Dr. A:**

I mean, obviously, when you're in closed situations with more people, there are more chances. But today, unlike measles, there have not been cases of, 'Oh my gosh, you were in Disneyland and look at all these people that got infected.' Or, 'You were on this plane with this measles passenger and see what happened.' I'm not saying that couldn't happen, but there haven't been those reports yet. Where you've seen problems, for example, being on cruise ships where there have probably been multiple violations of what we would call infection control, and therefore spread in a contained area. So, that's not anything official or guaranteed. It's just my perspective. It's been just observations at this point.

**HNF:**

Are there other things people should pack that might be helpful? We're going to get to the subject of masks, but any other recommendations for things people should take with them when traveling on planes or trains?

**Dr. A:**

Well, the only other thing is, sometimes there may be capricious or well-intentioned actions taken by government authorities and you could be stranded in places. So, you know, taking some extra food bars and these sorts of things. You never know what will happen when traveling with social disruption. So, it's probably prudent to have a few days of just some nibbles, as well.

**HNF:**

As an infectious disease specialist, in general, how do you feel about those air vents on the planes that you can turn on and off?

**Dr. A:**

If you want to be very cautious, I think you may not want to touch them without wiping them first. But typically, in a working commercial aircraft, the recirculated air does a good job at filtering out fungi and bacteria. And this [coronavirus] is a droplet-transmitted virus.

So, it's not really aerosol, which can spread through systems over great distances. That does not seem to be how this virus tends to spread routinely. But if someone's saliva and sneeze is sort of further aerosolized in spread, you know, coughing directly into an air intake or something... You know, it's a droplet spread, which usually means that people acquire it from being within three to six feet of a sneeze that isn't well-covered. Or, more likely, especially for people that have had no history of travel, is they picked up the virus from hard surfaces, where the virus can survive probably nine hours depending on heat and humidity conditions or even longer.

**HNF:**

Some people have asked about evacuation if they are traveling abroad. It would seem that medical evacuation companies likely can't operate freely to move people around if there's a suspicion that the person has coronavirus.

**Dr. A:**

Besides personal illness risk, one of the greater risks are just the social disruption. What if, suddenly, the United States bans entry into the country? So, these are the things, you know, that no one knows.

**HNF:**

Let's talk about interactions with people who are returning to the U.S. after international travel. For example, someone is wondering if they should ask their parents to stay away from their young kids for a couple weeks after returning from a trip to the Philippines.

**Dr. A:**

Well, again, it's not clear yet if young children are really at particularly heightened risk for this. But if they've traveled internationally, we don't quite know the parts of the world that are involved. If there's not a compelling reason to visit in the next two weeks, I think there are some reasons to suggest, 'Look, you know, why don't we just agree to talk by phone?'

**HNF:**

We had some questions about traveling to and from the Bahamas or St. Lucia.

**Dr. A:**

Again, none of those countries probably have a lot of screening capacity. So, we don't know. I think I would just reference the precautions I've said earlier.

**HNF:**

If I'm hearing you correctly, perhaps cruise ships are a little bit higher risk than if you are traveling by plane because you're in a confined space for a longer period of time. Is that true?

**Dr. A:**

Yes, I would say so because, what are you going to do on a plane? You're going to wipe down your seat and the tabletop, right? And you're going to get served food. I mean, maybe you don't eat the food that's been given to you. You can get into these crazy things, and it's unclear how effective any of that would be. But being on a cruise ship, you know, you're in an area where there are a lot of people who are all sort of contained. So, you know, the recipe is there for infection. That's why if you think about the norovirus, those shut down cruise ships very quickly. Now, it's not clear, because this isn't a fecal-oral virus we think, that it would spread quite like the norovirus, but you could see how quickly people can get sick on a cruise ship, right? And you haven't heard of a norovirus outbreak on an airplane, right?

## EMPLOYEES IN CHINA

**HNF:**

Many of our folks have factories and employees elsewhere. So, can we tackle the question someone had about precautions for their employees in China?

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**Dr. A:**

That is hard. You know, the Chinese government is often dictating local quarantines. I'm going to punt on that one. I don't know what to say.

## INTERNATIONAL CONFERENCES

**HNF:**

For all the questions related to attending conferences, I think we can refer back to your earlier travel advice and recommendations to check the CDC travel advisory.

**Dr. A:**

Yes. And you know, I think a lot of the major meetings will be issuing advisories. I'm supposed to go to Paris in mid-April to the European Congress on Clinical Microbiology and Infectious Diseases. They just issued a note saying the conference is still on, you know, because a lot of people are asking those questions. So, again, I think it's the same thing that I referred to earlier. You're going to have to make your own judgment. No one's going to tell you it's safe. You have to decide what's reasonable risk.

**HNF:**

Right. And would that also be true for U.S.-based companies that have employees coming from other countries to the U.S., it's really just assessing your risk and the necessity and determining for yourself?

**Dr. A:**

Right. And I've advised one company that, for example, if you have someone who's returning from an area in Southeast Asia, perhaps you would do a liberal 2-3 week work-from-home policy, right? That would make sense, right? So, that's an easy one if that's feasible within the corporate structures.

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## MANUFACTURED GOODS

**HNF:**

Many of our folks have factories overseas. Is it possible the virus can be transmitted by receiving something that was manufactured somewhere in a danger zone?

**Dr. A:**

With the right temperature and humidity concentrations, coronavirus has been described as surviving for up to 28 days. Now, I think that's unlikely. With other coronaviruses it's all in the conditions. Sometimes, the virus only survives hours, sometimes days. There are these reports of up to 28 days. But you know, you're on a sealed surface at 68 degrees controlled with 50% humidity—I mean, things that aren't likely to happen. And most things are going by air or shipped by container ship. So, I think you're okay.

## HAND SANITIZER & FACE MASKS

**HNF:**

You mentioned hand sanitizers earlier. Can you speak to the effectiveness of those and what people should keep in mind related to how protected they are with things like hand sanitizers?

**Dr. A:**

No one has studies with this particular virus, but you know, bleach and alcohol-based wipes have been well shown to reduce chances of acquiring influenza, for example. What you're trying to do is reduce chances and circumstances. Of course, if somehow you can keep your hands away from your face, that would be extraordinary, but it's almost impossible for humans to do that.

**HNF:**

We have one gentleman who runs an eye clinic, and he is concerned about patients coming in who are sick.

**Dr. A:**

So, as you know, we're asking anyone who's ill with a cough to wear a face mask. Face masks are most effective for people that are ill because if they do sneeze, it contains their sneeze more effectively.

Face masks generally do not help with a droplet virus because as I mentioned, that isn't so much passed from direct inhalation as it from getting on your hands or surfaces and those sorts of things.

So I think people are buying face masks because it makes them feel better doing something rather than nothing. But that's probably not a very effective strategy for this kind of droplet virus.

**HNF:**

We've gotten some very specific questions on recommended face masks. Can you talk about masks more?

**Dr. A:**

If you think a virus would be aerosolized, so, if you're working in a hospital and doing respiratory secretion, aspiration, if you're doing a bronchoscopy, that aerosolizes secretions because you're using a vacuum. That's where you'd want to use N95 or higher levels of protection. N95s will protect you from droplets from inhalation. But, again, that's not the main way people tend to acquire this.

So, for example, the reason measles is so contagious is it's an aerosol virus that will hang around a bit in the air. It's very light and so on. It doesn't survive a lot on surfaces. So, that's why measles is very contagious. One thing about coronavirus is we just don't well-understand the so-called super-spreaders, right? You may have heard of this term. What is it about people that are super-spreaders? And we certainly don't know about that for CoV. But for SARS and MERS, we really weren't sure why some people seem to infect a lot of

people and others did not. Some of this could be due to viral load issues and so on. So there's still lots of uncertainty there.

**HNF:**

That term super-spreaders—it's a person that has a higher rate of infecting other people, right?

**Dr. A:**

That's exactly right. And, you know, in South Korea with SARS, there's one church you may have heard of, where this one woman gave at least 37 people in her church coronavirus. Now, why that person did that and others don't is very unclear. So, it's quite a variable. So, what we take as our values are often mathematical values that tend to generally talk about people as if everyone's the same when they're not.

## SARS & MERS

**HNF:**

SARS seemed like it was all the buzz for a while. And now, you don't hear about it. As a lay person, I don't even know if it's still a thing.

**Dr. A:**

It's not.

**HNF:**

Is that how you see coronavirus potentially going or do you think this is something that's going to be around for a long time?

**Dr. A:**

We don't know. MERS continues to be problematic to some degree every season in the Arabian Peninsula. SARS went away. This virus clearly is behaving more like a regular coronavirus. So, I think it's here to stay. However, coronaviruses are very interesting. In Europe, for example, coronaviruses can occur year-round, but they're mainly a respiratory season virus. They're seen mostly from December through March. Will it behave like that? Question mark. We don't know.

But if you take those same routine coronaviruses, they're more year-round for example in Southeast Asia where. Why? We don't know. So, there's clearly some geography even though the viruses are genetically the same. There's different environments and maybe different host factors even in genetics. We don't know so much about that. But those are just some examples from regular coronaviruses—you know, the four or more strains that have been circulating for many, many years. We don't know about coronavirus.

## CHILDREN

**HNF:**

We had several questions about how the virus affects children and pregnant women.

**Dr. A:**

There's no information that children are more susceptible. In the Chinese experience, it's been mostly adults with significant infections. We just don't know. Typically, children will just have routine cold-like symptoms. At least that's what's been reported. Severe complications seem to be rare, but they have been reported. Same with pregnancy. I haven't really seen enough information that would really help on that question.

**HNF:**

You kindly addressed this already but do you suspect this could act like the seasonal flu where as it warms up in different parts, it will decrease?

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**Dr. A:**

That's possible, but we just don't know.

## COMPROMISED IMMUNE SYSTEMS

**HNF:**

There's a question about someone who has a compromised immune system from chemo—is it a good idea to practice social distancing now?

**Dr. A:**

What we don't know is, who is walking around with an asymptomatic infection? Who might have a cold that's the coronavirus versus a routine cold? We don't know. So, it's just a decision to make.

At some point, I think we'll have a sense if this virus is here at a greater presence. The one way we would know that is by the rates of hospitalization for pneumonia and influenza-like illness in hospitals, which is nationally reported. That's how influenza virus is monitored. So, we do sort of have a back-up reporting system even if we do not have a lot of testing kits. So if there are spikes in rates of pneumonia in hospitals, that would be a sign the virus is indeed here. So I think until we see some of those things, I'm not sure it's worth doing that. But it's something to keep an eye on.

**HNF:**

Someone had a question about an 18-year-old with Crohn's. Another person had their spleen removed and is wondering if that makes them immune compromised for fighting off CoVid19.

**Dr. A:**

For Crohn's you could look at the seasonal influenza list for high risk and adapt that. Especially if he's on immunosuppressive medications, that would apply.

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Spleen removal generally does not compromise the body's ability to fight viral infections. Some people after respiratory viruses do get bacterial pneumonia. So, that is a potential risk from the spleen. But that's sort of a low percentage chance.

## FLU SHOTS

**HNF:**

We had a question about flu shots and pneumonia shots—will they help at all?

**Dr. A:**

With the other coronaviruses, a number of the more severe infections occurred when people got two viruses at the same time, like influenza *and* coronavirus. So I do believe if you have not gotten your influenza shot and/or if you qualify for the pneumococcal vaccine, those would be prudent maneuvers to do.

**HNF:**

So, it's not too late to get the seasonal flu shot?

**Dr. A:**

No. You can still find it in drug stores and so on. The flu season is still ongoing in many communities.

## SYMPTOMS & TREATMENTS

**HNF:**

It sounds like the symptoms can be hard to distinguish if someone is infected. What would one be showing if they have the virus?

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**Dr. A:**

Fever, cough, fatigue, muscle aches. Of course, shortness of breath. If you're short of breath, you should go to the hospital.

**HNF:**

If someone wanted to self-quarantine, is that even possible if they share a home with others, or one of the people in the house is sick?

**Dr. A:**

If someone's ill, you know, the advice is usually to try to sleep in a separate place, use a separate bathroom.

**HNF:**

Is there progress on a vaccine or even a treatment for this?

**Dr. A:**

Yeah. So, Gilead has a randomized control trial of using Desevir. This drug looks effective against other coronaviruses, like MERS, in a test tube, and also in studies using primates against MERS. It was developed for Ebola virus and did not work as well against Ebola virus, but may have activity against coronaviruses. We don't know, data about safety and toxicity. So, stay tuned. But if this does prove effective, it could be very helpful. It also looked in primate studies that was preventative, that is, if you took it, it would prevent infection. Again, that's in primates. We don't know in humans. So, we'll have to see. There are many other questions like could production be ramped up to provide millions of doses and so on? We don't know.

On the vaccine front, there are companies, one is Moderna in Cambridge, Massachusetts, that say they're far along in developing a SARS-2-CoV vaccine. Vaccines will take time to develop, analyze, check for safety, and administer. Even when we had pandemic influenza in 2009, it did take a while with first reports in the spring, and it took, really six-plus months to get a vaccine. So, we'll see what happens. But if this is more of a year-round virus that's

moving, it's still going to be hard to imagine how a vaccine will probably limit this if it's spread as easily as it seems to be at this point in time.

**HNF:**

Are antiviral drugs like Tamiflu effective at all, helping to lessen the symptoms?

**Dr. A:**

Well, I think they're administered because people don't know if you have influenza or coronavirus. It probably has no activity against coronavirus because of the way it selectively works on a certain molecule to release influenza from an infected host cell. So, unlikely to have activity.

**HNF:**

And when someone dies of this, what happens? What is the mechanism that causes death?

**Dr. A:**

Well, it's generally been a lung injury syndrome. So, people will develop something called ARDS. And then it appears, you know, because of the severity of the illness, they could also have what's called multi-organ system failure. This is also true for what sometimes is seen from influenza. It could just be an inability to provide oxygen. Some people have used ECMO (the extracorporeal membrane oxygenation system) for COVID-19 patients. So, it could just be purely a lung respiratory oxygenation issue, but especially the more frail patients, the intensity of infection could cause other organ systems to fail.

**HNF:**

There were several questions about things like boosting your immune system with things like emergency or nutritional supplements. Do those have any effect at all?



**Dr. A:**

You know, it helps the anxiety. Americans and American medicine like doing things, right? It's not necessarily the right thing to do. There's not necessarily an evidence basis, but people feel better if they put masks on and take a supplement. But I can't tell you there's any evidence-based reason for doing those other than to make yourself feel better.

**HNF:**

And then if people...it's a tricky question because the symptoms are so common, but if someone does suspect that they have this or may have the coronavirus, what should they do?

**Dr. A:**

I think if they're not very ill, stay home. If health problems worsen, talk to their doctor. There's no known treatment right now. However, if you are feeling very ill, have a high-sustained fever or especially if you're short of breath, you should go to the hospital. If you just have a cough, cold, mild fever, even if you have some shaking and chills and so on, if you don't feel too much out of sorts, it's probably best to stay home because you'll less likely expose other people and so on. But if illness is progressing, then by all means, head to a hospital.

**HNF:**

Got it. And then for those with autoimmune disorders, is the risk any greater because of a compromised immune system?

**Dr. A:**

They probably will be at heightened risk for more severe illness, but the same rules would apply. Meaning, you know, they may get sicker faster. But if there are signs that they're feeling very ill or, you know, short of breath, it would be the same advice.

**HNF:**

What about immunity?

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**Dr. A:**

I have to say, I'm not sure about that. There's just not enough that we know. Typically for example, people have not gotten MERS twice, for example.

## CONCLUDING REMARKS

**HNF:**

Are there other general things or advice or resources that you would recommend for people?

**Dr. A:**

Beware of fake medical news. That's really important because this virus is very easy to be weaponized by social media, and sort of go into this political stew and it already has. So check the websites and make sure they're from a reliable source. Make sure that the stories aren't just culling up something that's repurposing old data. Check who is being quoted. I mean, if there are anonymous sources and so on and so forth, I wouldn't believe it. Make sure someone's speaking credibly and they're from an academic institution or a part of the United States government. And even then, you're going to have someone making reasoned explanations and talking about uncertainties, which is just the reality right now.

The Centers for Disease Control will have frequent updates to their website. This is a fast-moving issue, but there is both information for health professionals as well as, you know, the lay public there. So, that is an excellent resource.

And then I would say, potentially asking your own physicians because they are probably trying to filter this out just as much as you are with a little more of a head in terms of the prior experiences. I mean, I'm thinking about, 'Oh well, when I was a trainee, there was hantavirus. You know, I've lived through SARS. I've lived through MERS, Ebola virus, the pandemic influenza. So, you know, all of those have been significant. Influenza, you know, I think wasn't as appreciated as to the severity because it was just routine, the flu. So, this is

brand new. So, this does ratchet things up, and there was an economic impact from SARS, which I think people sort of forgot about, that especially impacted Asia. But this is likely going to be wider. We do have oceans separating us, which is good. We'll just have to see.

**HNF:**

Well, thank you. We really appreciate this wonderful time you've given us today.

**Dr. A:**

You're welcome. I think your people ask excellent questions, and thanks for organizing those.