

COVID-19 Chapter 3: Control

Colleen Kraft My name is Colleen Kraft. So I wear a number of hats at Emory. I just took a new job right before this started, and so I think a lot of what I'm coping with has to do with my own sort of perfectionism and self-criticism. I started out doing more on the preparedness planning aspect, which was very administrative and that's also my new role at Emory. And so that was a nice, a nice thing for me to walk into because I was already kind of going into the executive leadership group of our hospital. So it was kind of nice to be sort of also a subject matter expert. But what's happened as patients have started to arrive and be diagnosed in our community is that I've realized that my role has dramatically changed into being, sort of the, helping with the clinical laboratory. Cause remember that's one of the hats I wear is in diagnostic testing. So I'm both a clinician that sees patients but also work in our clinical lab, which I, I love doing both of those things. And so I, this morning for instance, spent three hours prioritizing 400 samples into 92 and working with people to data analyze that. You might say, why would an MD do that? That makes no sense. However, we have a full staff of people that need to be doing the rest of the work for the hospital.

And so, what you're seeing is people are being kind of, it's like we need to establish the process before we have to hand it off. Right? Cause there's a lot of ups and downs. There's a lot of things coming at us. Like I just explained, just feeling like everybody needs something from me. Like, I cannot leave my phone for five minutes without it blowing up with text messages or calls or emails. It's, it's insane. You don't, like, there's no way to feel disconnected. And so my role has changed from being sort of, you know, thoughtful, trying to be organized, planning, you know, interjecting, to being like physically sorting through with, you know, a number of supervisors from three different laboratories, how we're going to prioritize our testing because I want to make sure that we're doing, you know, the best thing for our patients and our employees and also communicating outward because of course, no one's ever happy with the turnaround time, especially with the media about testing kits. I think it's also encouraged the demand that "we have to have this diagnosis today" when I'm like, well, we just discovered this like two and a half months ago, everybody.

So I think that, you know, that's what a leader I think is supposed to do. I'm not sure I'm being a leader. But I think that that's what you're supposed to do, which is jump in, be helpful, try to create a process because you can see all the aspects of the process and then keep doing iterations to the process so you can hand it off. I think that's what I'm supposed to be doing. But again, I think some of my stresses, I'm not sure what I'm supposed to be doing cause I'm, there's so much to do. Right? Am I supposed to draft this email? I'm supposed to talk to this, I'm also on our governor's task force, which has happened since we talked, and that's been an incredible opportunity. So today I sorted samples for three hours and then I worked with some data analysts about how we can get these, I've been creating a manual spreadsheet. How, I mean, this is all very boring. And then I worked with people to pull this data so I don't have to pull it. And then, you know, just helping with the process and then being in a zillion jillion meetings, like while I'm doing this a lot of times because there's just so many executive meetings that I have to be in. So it's been quite crazy.

And then I'm, today I'm carrying the pager. So the ER has been calling me all day on whether or not to admit. We're cohorting our patients, so if there's the suspicion that they have COVID we'll put them on a couple of wards, not all over the hospital. So we're the gatekeepers for deciding if those people get to the cohort.

So it's like being pulled in a million directions and I am truly exhausted, working 15 hours a day at the hospital. So whereas my kids get to stay at home, and I would love to be at home with them, I am spending even more time at work. So that's, that's sort of also probably what you hear in my voice is the strain of exhaustion, but, you know, we'll get through it.

[musical interlude]

Erin Welsh So that might have been a familiar voice for you. That was Dr. Colleen Kraft, who spoke on our clinical disease minisode of this Anatomy of a Pandemic series. And she was also on our first coronavirus episode back in February. Hi, I'm Erin Welsh.

Erin Updyke And I'm Erin Allmann Updyke.

Erin Welsh And this is This Podcast Will Kill You.

Erin Updyke Welcome to the third installment of our Anatomy of a Pandemic series. They're not minisodes.

Erin Welsh No. [chuckles]

Erin Updyke What have we covered so far, Erin?

Erin Welsh Well, a lot. [chuckles] We've talked about the virus itself, SARS-CoV-2, and then we talked about the disease that it causes, COVID-19. And so now, the next question is, we're in a pandemic. What do we do about it? We're here, in this situation, living through what we have known was possible since at least 1918, but this has never happened on this scale since. So what do we actually do about it, how do we try and control it, and so yeah, that's what we're gonna talk about today.

Erin Updyke But first, of course, is quarantini time!

[laughter]

Erin Welsh What are we drinking now?

Erin Updyke This time we're drinking Quarantini number 3, which is gin, some delicious rosemary simple syrup. You could use dried rosemary to make simple syrup out of, and some lemon juice.

Erin Welsh Yep. It's pretty delicious, actually, very refreshing.

Erin Updyke Very refreshing. And I do want to address yet again that we don't recommend drinking all of these quarantinis in one day. If you're binge listening to these episodes, please don't binge drink.

Erin Welsh But if you want to drink along with us and you don't feel like drinking alcohol or you don't want to drink alcohol, we also have placebo recipes that we will post for all of our quarantini recipes. And you can find those on our website, thispodcastwillkillyou.com, and we'll also tweet, insta, facebook these recipes.

Erin Updyke You could definitely binge drink the placebo recipes, because they don't usually have that much sugar in them.

Erin Welsh Yeah.

Erin Updyke They're quite good.

Erin Welsh Yeah. And maybe even hydrating.

Erin Updyke Yeah!

[laughter]

Erin Welsh Okay, so what should we know before we dive into this episode?

Erin Updyke So, when we recorded our first coronavirus episode back in early February, it was still, or at least we thought at that point, that it was still fairly well contained, at least China had instituted pretty strict policies to try and control the epidemic there, and while cases were appearing across the globe, at that point we were mostly, we thought, able to identify these cases and use what's called 'contact tracing' to try and pinpoint where that person became infected and who they came in contact with, who they could have potentially exposed so that we could try to stem the infection that way.

Erin Welsh So early on in an outbreak, this contact tracing is a super valuable tool that helps public health professionals identify and isolate cases, and then identify and quarantine healthy people who have been exposed, in an attempt to try and squash the infection before it really spreads in a population. But that, of course, was then, and this, of course, is now.

Erin Updyke It sure is. So now it's clear that community transmission, meaning, transmission from person-to-person not only in close family settings or only travel related cases, but transmission kind of freely in and among communities is happening across the globe at this point. Which is why the World Health Organization has declared this a pandemic. So, now the question is, what do we do about this? Because as you may have heard from chapters 1 and 2, this is a disease that in some cases can be really severe, and we are at risk of overflowing our hospitals or in some parts of the world, hospitals are already over capacity, which means that people may be dying not just from disease but also from lack of access to supportive care.

Erin Welsh So you've probably heard a lot of talk about 'social distancing' and how to 'flatten the curve'. But what do these two things mean and why are they important? Okay, so social distancing is literally exactly what it sounds like, it's putting a greater distance between you and other humans. And in our February coronavirus episode, Dr. Marshall Lyon actually mentioned it! Which like, yeah we knew-

Erin Updyke We knew this was a strategy, especially for respiratory illnesses.

Erin Welsh Yeah we knew this was a strategy. Why does this work? Why does social distancing work? Well, since we are dealing with a virus that is transmitted from respiratory droplets, so from your saliva, by literally just coming into contact with other people's saliva directly, or stuff that their saliva may have touched like doorknobs or grocery cart handles, or even just their filthy hands or whatever, if you don't come into contact with these things then you can prevent yourself from getting infected. Now, this works on the flip side, if you are sick, by not going out, to the club, to the party, into work, into school, then you aren't spreading your virus-laden saliva all over the world for other people to come in contact with. And we also recognize that staying at home may not be an option for everyone.

Erin Updyke Mmhmm.

Erin Welsh And that's what makes it even more important. That if you do have the privilege to stay at home, if you do have that ability, then you need to do so. It is a social responsibility aspect at this point.

Erin Updyke Absolutely. And remember that we've learned that this is a virus that might not even make you feel all that sick, but it could still make those around you super sick. So by practicing social distancing we are protecting ourselves and those around us who might be more vulnerable to severe infection. We really can't stress enough that this is what we should all be doing to be good citizens, friends, neighbors, humans. The other thing is washing your hands, washing your hands, washing your hands.

[laughter]

Erin Welsh Okay so what about masks? So masks can be effective if you are sick, in like helping to prevent the spread of droplets when you cough. I saw a really interesting GIF of, or gif, I don't want to anger anyone.

[laughter]

Erin Updyke That's the last thing we need right now.

Erin Welsh I have just been revealed as a GIF-sayer, not a gif-sayer. Um, and it had examples of what it looked like when you cough directly into the air, when you breathe normally, how much your respiratory droplets are traveling, and you can see it directly. When you cough into your hand versus your elbow versus into a mask, like a dust mask, versus into an N95 mask versus, it's like really cool.

Erin Updyke That's really cool. Could we find that and post that? Because I'd love to see that.

Erin Welsh Yeah. Reddit, man.

Erin Updyke Reddit, man.

Erin Welsh But, if you're sick you shouldn't be out coughing on people anyways, especially not right now when no one should be out and about unless you have to be. And so if you do have to be, masks can be a great way to prevent the spread of those respiratory droplets. But if you are not sick, masks don't do much to prevent you from getting sick because a) you have to touch your face to put on the masks and you're probably going to adjusting them frequently, b) they don't cover your eyes, which the virus can go into your mucous membranes, that's one of the routes of entry, c) some of the ones you buy over the counter are too large a pore size to actually prevent viral entry anyways, and at this point, hospitals and clinics are running out of masks so, everyone buying them up is not helping anyone at this point. I mean, if wearing a mask helps keep people six feet away from you, if that's the idea behind them which I feel like in other scenarios it might be, that could work, but right now in this pandemic, it's not super helpful.

Erin Updyke Yeah. And what about this notion of 'flattening the curve'? I feel like we've talked on this podcast before what an 'epidemic curve' tends to look like, right? So most of you at this point have probably seen one drawn out, especially if you've been looking at all at the case numbers of COVID-19 plotted out on a graph. But basically, in all epidemics, the number of cases tends to increase exponentially at first, so it's a pretty sharp line up at first, and then eventually it reaches some kind of peak, and then it will begin to dip back down slowly. So it kind of looks like an upside down U. That's what a normal epidemic curve looks like. So 'flattening the curve' literally means trying to slow down that upstroke of that upside down U so that the rate of infection is slower. What this does is it makes it so that the peak, the top point of that curve, is pushed down. So this could mean potentially a prolonged over time course of an epidemic, but the rate of infections is slower, which means that a) hospitals don't get overrun with super sick people all at once, and we've said so many times already that this is a real, major concern in the case of COVID-19, and b) we have more time to test and develop both treatments and, hopefully, a vaccine. So flattening the curve is something that can be really useful in trying to lessen the overall impact that an epidemic has. So you might have heard a bit about this notion of 'herd immunity' as a strategy. This is a terrible strategy.

Erin Welsh It's a terrible strategy.

Erin Updyke It's a terrible strategy, what it is is an unethical strategy.

Erin Welsh Right.

Erin Updyke Because it is not a strategy. It's basically saying, "we're not gonna do anything, we're gonna let everyone get infected, and eventually, everyone will get infected and

they'll either die from the infection or they'll become resistant because they've developed immunity to that infection." That's not an ethical public health strategy to prevent deaths from this disease. It's not. It's not a strategy.

Erin Welsh Nope, uh uh.

Erin Updyke But that is essentially what would happen if you were to not do anything to try and control this outbreak. Okay? Did that make sense?

Erin Welsh Mmhmm. Yeah.

Erin Updyke Because herd immunity is essentially the idea that once enough people in the population have been exposed, either through infection or through vaccination, then eventually there are so few susceptible people left in that population that the pathogen can't spread anymore.

Erin Welsh Mmhmm.

Erin Updyke Um, but that, the results of that is a lot of people dying. So.

Erin Welsh Yep, yes. Okay. So this episode we were fortunate to interview Dr. Krutika Kuppalli, an expert on global health security and pandemic preparedness. We asked her all of your questions about outbreak control and whether all the efforts we are making at national and international scales are going to work. We'll hear from her, right after this break.

[musical interlude]

Krutika Kuppalli My name's Krutika Kuppalli, I'm an infectious disease physician. I did my training at Emory University in Atlanta. And my background is on emerging infections, outbreak response, pandemic preparedness and global health security. I was the medical director for an Ebola treatment unit in West Africa during the 2014 outbreak. And after that got involved with health system strengthening and preparedness responses for emerging infections. And I'm currently the vice chair of the Infectious Disease Society of America Global Health Committee, and in that role have been also spearheading efforts to develop a global health security working group focused on the training of frontline workers on the response for emerging infections, and also just developing best practices for treatment of these types of infections. We were doing this, actually, last year. So I guess that gives you an idea of what we were thinking about.

Erin Welsh Thank you so much. Well, we're very excited to have your expertise on this podcast. Let's start off by asking, basically, you know, we know that at this point community transmission in a lot of the U.S. is pretty well established, so what can be done now to slow that down?

Krutika Kuppalli Yeah, that's a really great question. So, we definitely know that community transmission is happening. As of today, we know that there are 7,324 cases in the

U.S. and over a hundred deaths. And, so, we just expect those numbers to go up as testing capacity increases. And we're really at that point where we need to do things to mitigate transmission. So there's substantial interventions that need to be implemented based on the urgency of protecting our health care systems and also protecting our vulnerable population. So the plans we've been instituted locally, you know, may vary place to place and they're restricting gatherings. The White House, the CDC announced this plan for 15 days to stop the coronavirus where they, you know, restricted gatherings to less than 10 people. Encourage working from home or teleworking, arranging for distance learning, and you know, there are many short-term closures occurring all over the country right now. And in some places some of those restrictions are even more stringent. You know, where I am in California, we have a order to shelter in place, which means really just, you cannot leave your place unless you need to leave for essential reasons.

Erin Welsh Yeah. I mean this is, this sort of seems like in some ways looking at what's happening in Italy and trying to see parallels in other parts of the world, especially in the U.S. it seems like, you know, we're a bit behind the curve in terms of implementing some of these social distancing or self-isolation practices. And I think it's challenging too because in States where perhaps the case number is currently low, that doesn't mean it'll remain low. And I think there's maybe less vigilance. And so I think it seems essential to really practice this social distancing and self-isolation everywhere. Is that, is that sort of what your thinking is as well?

Krutika Kuppalli Yeah, absolutely, right? I think you know, there's certain places that have been hit hard and they're areas that, you know, quite frankly, I would have thought would have been hit hard by something like this. They're major metropolitan areas, so, areas on the West Coast, New York, Washington, DC., All those areas are areas that, in essence, you would consider being places that are high risk. However, just because those areas have been hard hit doesn't mean that other parts of the country are not at risk and they don't need to implement these measures as well. Because, really all it takes is, you know, one person and they can spread it to the next person and then to the next person, and that's how it propagates. And so that's why these measures have been implemented at this point in time.

Erin Welsh Mhm. You know, a lot of different countries including the U.S. have implemented travel bans or have closed borders. How effective is that at this point in time in terms of slowing down the disease?

Krutika Kuppalli Yeah, so I think that's a really wonderful question. And so, I think if you look at, you know what modelers do and you know, we talk about this, you know, how effective are travel bans and, you know, do they prevent infection? You know, overarchingly the data will show that travel bans don't prevent infections. You know, that big lockdown that China had back in January, that wasn't necessarily to prevent infection from spreading. We could've predicted that, you know, this infection was going to spread to the rest of the world. But what does it does is it slows infections, right? And especially at this point in time, we know that the cat is out of the bag, so to say, everywhere. But I think one of the things that has happened with the travel ban is, you know, what it does is it tries to ease up the load on the healthcare

system. So by preventing other people from coming into the country that may be sick, that potentially could be decreasing the load of positive patients coming into the country that could have a burden to your own healthcare system.

Erin Welsh Mmhm, gotcha. So these control measures, so closing borders, closing school, canceling large public meetings strongly suggesting self-isolation or even doing the shelter in place, how can we tell whether these strategies are actually working?

Krutika Kuppalli Yeah. So, you know, one way we're going to be able to tell that these strategies are working is by doing what Dr. Tedros, the director general of the WHO said yesterday we need to test, test, test. And the more we test, and the more we have an idea of what's going in our community, that will give us a better idea if what we're doing is working. So if we test and we get a better idea of what's going on in the community with time, if these measures are working and hopefully they will, the number of positive tests will go down like we have seen in China like, we were seeing in South Korea. And that's an important thing to do because obviously the point of putting these measures in place is to see if we can get control of what's going on.

Erin Welsh Mmhm. And so, you know, based on that, and based on this test, test, test, I mean, there is a lag time or it seems to be a lag time, between getting as many people tested and then getting the results. And you know, there's, it's going to take a little bit of time. So how soon do you think we'll be able to see whether these things are having an effect?

Krutika Kuppalli So, you know, I think it's going to be a while and I think people really need to be prepared to be inconvenienced for awhile. You know, there is a modeling paper that came out of Imperial College earlier this week suggesting that we could be in this for the rest of the year and into next year. And I don't think that's an unreasonable thought process. Because we need to get an idea of the number of cases going on. Then we need to make sure that we're getting numbers, you know, under control. And then, once we have a better idea of what's going on, getting the numbers under control, we really need to think about okay, well how are we going to move forward to make sure we don't just you know, all of a sudden lift all these public health measures and then we're back at square one again. So I really think that people need to understand that this is going to be going on for a while and not just a couple of weeks or a couple months. I can just is something that we need to plan for.

Erin Welsh So a lot of comparisons have been made between this epidemic, this pandemic and the seasonal flu. And some people, especially earlier on in the pandemic, people asked, you know, why are we taking such measures to control this if the flu is just as deadly or if the flu is so deadly as well?

Krutika Kuppalli Yeah, I think that's a great question. It's one that I've been asked a couple of times. And so I think first off, people need to understand that this is not influenza. I think the only appropriate comparison to influenza with COVID-19 is that the measures we use to prevent both diseases are the same. So hand-washing, covering your respiratory secretions, and if you're sick stay at home. And the other appropriate comparison is that they both cause respiratory viral illnesses. Beyond that, I think

that the comparisons really are not appropriate comparisons. You know, first off, the R0 for flu is about one. So what that means is if I have influenza, on average, the number of people I'm going to infect is about one person. Whereas currently, the estimates of the R0 for COVID-19 is about 2 to 2.5. So that means if I'm infected, on average, I'm gonna infect two to two and a half people. Additionally, the fatality rate for influenza is about 0.5-0.1%. Versus for COVID-19, it's estimated to be higher at 3.4%. The other thing about influenza versus COVID-19 is the hospitalization rate for influenza is about 2% versus for COVID-19 has been shown to be about 19%. And so that is a huge difference in the burden that it has on our health care system. And studies are showing that people who are getting admitted for COVID-19 can be admitted anywhere and require hospitalization anywhere from two to six weeks. So once people get admitted, they may require prolonged hospitalization, again, to taking that burden onto her healthcare system for a long time. And as that accumulates, that will become a problem. And then the final point I want to make is for influenza, we have a vaccine, we have therapeutics. And for COVID-19, this is a brand-new infection. It's never been circulating in our population, no one's been exposed to it before. So we're not quite sure, you know, how people are going to respond. We're still learning about the transmission dynamics. We're still learning about the clinical course of the disease, and we don't have any therapeutics and we don't have a vaccine. So I think people really need to start thinking about COVID-19 as being different. It's not the flu, we just don't making the comparison to influenza.

Erin Welsh Those are all excellent points. Really well stated. So, you know, your, a lot of your expertise is in pandemic preparedness. And so one of the things we wanted to ask you was how well you feel the U.S. was prepared for an epidemic such as COVID-19.

Krutika Kuppalli Yeah, that's, you know, that's a hard question. I think it's always easy to play Monday morning quarterback, so to speak. When something happens and you can say, "Oh, well I should've done this, I should've done that, and they should have done this." Right? I think those of us who work in the field have always been concerned that a disease like this, what we call "disease X," the unknown disease was going to emerge. And I think that we've always been talking about the need to be prepared. And you know, when something like this happened, it demonstrates the weaknesses in our preparedness system. Do I think that we are more prepared than we were back in 2009 during the H1 N1, in 2014 during Ebola? Yes. Do I think that we have a further way to go? Yes. I think that, you know, when all is said and done, this outbreak is going to change how we, as the United States, how we as a global community, think about pandemic preparedness, and how we think about infectious diseases. Because this has shown us a lot of things that we can do better on.

Erin Welsh Yeah, I've, I've had many conversations talking about how it's really challenging for epidemiologists and people who work in, you know, global health security. It's sort of like you can, there's only, you can either be overprepared or under-prepared cause everything, it's going to be evaluated in hindsight, and it's going to be, "Oh, you should've done this, you should've done that." Or, "Oh, you, it was it wasn't necessary to do this and do that." So it's a, it's sort of, there's no winning in this game sometimes, is what it feels like.

Krutika Kuppalli Yeah, absolutely. Well, it's kind of like being an infectious disease doctor, right? So we are, the service we bring is really valuable. They've done tons of studies showing that the value of an infectious disease doctors is great. When we take care of patients with various infections, patients do better, right? But that doesn't translate into the quote unquote dollars that the hospital systems see, so they don't necessarily want to invest in us. And it's almost the same analogy here when you're talking about preparedness, right? If we're underprepared, then we see all the things that happen, right? But if we're over-prepared, then nobody actually sees what happens. So then you almost have to justify your existence or the things you're doing

Erin Welsh Mmhm, mmhm, yeah, exactly. So, you know, so far, you know, using that hindsight, playing the Monday morning quarterback, what are some of the important lessons that we learned so far in this epidemic, even though it continues to progress, and do you think we can apply that to maybe helping us stop the spread of this current pandemic or in our preparedness for future pandemics?

Krutika Kuppalli Yeah, I think that's another really good question. So I think one of the things we really need to think about is how we develop local and statewide preparedness plans. There needs to be coordination between public and private partnerships, public and private hospital systems. I think that we need to have improved communication systems in this day and age of electronic communication, how we can better communicate with all the different teams that are involved. I think we need to have, you know, enhanced surveillance systems. We should have been leveraging our surveillance systems probably earlier on during this outbreak to get a better idea of what was going on with this outbreak. I think we need to invest in research and development, not just therapeutics and vaccines, but also, really understanding what the best practices are during an outbreak for trying to contain the spread of outbreaks. And we need to think about how to stockpile the appropriate medications, PPE, masks. We do have a national stockpile, but I think we need to think about how to have regional stockpiles. I think we need to think about how we can ramp up production of important things that we might need during an outbreak. I also think that probably one of the most important things is thinking about how long-term to invest in our health care responders. Infectious disease physicians, people who work in public health. We are a workforce that is understaffed. We are workforce that is in dire need of people to go into our workforce. And part of the reason people don't go into our workforce is we are one of the, least well-compensated workforces. And so, I think that's one thing that needs to be thought of and needs to be addressed because obviously there's going to be a need for this. This is a need. And we need to think about how to sustain our workforce.

Erin Welsh Excellent. Yeah, I think those are really great points yet again. And so for a lot of this interview, we've kind of focused on what's being done in the U.S. at a national scale, but you know what I've seen pop up in the news here and there, but doesn't seem like there's been enough attention drawn to it perhaps is the risk of this disease spreading and essentially exploding in some countries that may not have the

resources to combat it the way that a lot of European and North American countries do. Can you speak to that at all and what kind of risks we're seeing there?

Krutika
Kuppalli

Yeah. I think that is an absolutely important point. And if you go back to when this was declared a public health emergency of international concern by the WHO, that was one of the main points that they made in making that declaration at the time. Is their concern was, how this could affect countries that don't have very strong health care infrastructures and are research limited. And they really wanted to emphasize how important it is that we help try and support those systems. And, you know, I always say, especially in global health that we are all as strong as our weakest link. And so wherever that country may be, we need to help make sure that globally our healthcare systems are strong, our surveillance systems are strong and we have the workforce that is trained to help respond to these types of problems. I think if anything that this outbreak has shown us, is it's very easy for infections to spread from country to country. So we need to invest in these things globally.

Erin Welsh

Absolutely. So in our first episode on coronaviruses, we asked each of our experts, you know, what about this disease concerns you and what about the response or how we have dealt with it so far is maybe a, you know, inspiring or cause for optimism, something about, you know, something that's a little bit of a silver lining in a way.

Krutika
Kuppalli

Sure. So I'm going to address the first part first. So I think the thing that concerns me is what we're seeing happening now, which was what I was concerned about back in January. That this was going to spike globally, that this was going to have a huge effect on health care of people worldwide. It was going to affect the global economy and it was going to have long lasting repercussions. And I still worry about that. I think the other thing I worry about is that it's going to have a long-term effect on our first responders. Having been on the front lines of prior epidemics and the mental and emotional toll that it takes when you're taking care of this many patients that are this sick all the time, who end up passing away, has a toll on you. And I feel particularly right now for the people in China, the people in Italy, that are seeing this on a mass scale. And so I think that's something that hasn't been talked about but we need to talk about. And not just the healthcare providers, but also the patients. When I, when you asked me what about this has reassured me. I think it's really been how the scientific community has come together. I've been hearing and seeing so many stories of people coming together to do for the greater good of our community and our patients. And I think the stories I hear have just been really wonderful, and really warmed my heart. People at institutions putting aside their own research to try and help get lab testing up to capacity. You know, physicians of course working overtime to help take care of patients to help try and decrease that burden. Some of my colleagues at one institution, their division chief is over 75 and was supposed to be on service this week and they didn't want him to be on service with COVID-19 circulating. So they came up with a plan to take over his clinical service for him. So, I think seeing, you know colleagues stepping up everywhere to help take care of each other has been really amazing.

Erin Welsh Yeah, that is incredible. It's always so inspiring to hear these stories of healthcare workers sort of, you know, who are on the front lines and as you mentioned, completely emotionally and physically drained. And I do, I agree it's not something I've heard talked a lot about yet at during this current pandemic. And so, you know, just a moment of appreciation for everyone who's out there fighting this fight.

Krutika Kuppalli Yeah. Right. No, I think, right. That's the message we try and get out. Right? Like I think over the weekend it was really, I, you know, I was hearing from a couple of friends, right? It's like I'm working my tail off and then I drive home and I see like this bar packed full with people. It's like, why am I doing this when, you know, these people don't seem to have any regard or, you know, and I think it's really trying to make everybody in the world understand at this point that you can have a role in shifting what's going on and you are important in helping to shift what's going on. It's not just the front-line providers, it's not just the support staff. It's everybody needs to play a role in this. And I think when we can empower everybody that makes such a difference in this situation. Because all it takes is a couple of people or a group of people that will make this disease hard to get under control.

Erin Welsh Yeah, I think it is, it is a matter of social responsibility and it is frustrating, you know, I think I saw an advertisement for a bar in Chicago that was like, "Oh, you know, the parade is canceled, but we're still open come on in." It's like, how, where's the, yeah [laughter] What are you doing?! That's completely undermining all of these public health efforts? And it's sort of being, yeah, it's just like complete disregard for all of the hard work that people are doing to try to slow down or stop this pandemic.

Krutika Kuppalli Right, absolutely. So one of the things I talked a lot about with some of my colleagues is, you know, they've done this messaging right if you're older, you're at risk, you're older, you're at risk. Which is absolutely appropriate. But, what younger people don't hear is that they can get it. And absolutely young people are getting it. Absolutely young people are having adverse events from it. And that's one part of it. And then the second part of it is also, you know, you can get it and have mild symptoms and then you can be the person that transmits it to your grandparents, to your parents, to your other loved ones. And how horrible would you feel if that's what happened?

Erin Welsh Right!

Krutika Kuppalli You don't want to be that person. I guess, you know, especially for someone like myself who has worked in Africa, has worked in India. But, I think especially having been in Africa during the Ebola outbreak, and like, seeing what happened with my own eyes, the destruction, the devastation. But it's just like here, we're so lucky like, when we tell people to stay at home, for most people, not everybody, obviously there's a whole 'nother set of issues and people who are disenfranchised and have, you know, other socioeconomic issues and, you know, we're hopefully trying to work through those to try and get those people safe. But if all I'm telling you to do is stay at home, that's not that hard, not that hard of a thing to do.

Erin Welsh Right? It is. I mean, yeah, for the people as you mentioned, who can stay at home, who can afford to stay at home and you know, the cost of staying at home versus the cost of going out and potentially getting infected or, you know, getting infected and then passing that on to somebody else. Like those, you can't even compare those. I think it's very hard to get that message across, particularly when, as you, as you mentioned, and we've been delayed on the response of like, "Oh, well, you know, young people, you're, you're fine, you're safe from it." And it's like, well, you know, that you may be at lower risk. However, that does not mean that you do not have a response, a social responsibility to slow down the spread of this disease. So it's, it's a hard, it's a hard message for people to, I think to hear because it's like, wait a second, how does this work? So hopefully, you know, as this message gets louder and louder and as we understand more about the transmission, this will be something that you know, will be taken seriously at, in all locations, among all people.

Krutika Kuppalli Well, and the other, it's just very quick thing to add onto this, right? Is that this is information based off the Chinese data, right? I mean we're starting hopefully to get information from Europe and other places. And I think the point that, I guess the overall point I'm trying to make is, you know, we have information in one group, one ethnicity of people. And this goes back to your idea or your question about why we, it's important to have, you know, information globally on this, right? We know that we look at things like race, ethnicity, gender when it comes to diseases. So, you know, I think it's important to get information that's coming out of Europe, getting it out of South Korea, coming out of Australia, other countries and what the patient populations look like there because it could be different. And I think that's a really important thing people need to keep in mind too.

[musical interlude]

Erin Updyke That was awesome. I wish that I got to sit in on that interview, Erin, I'm bummed to have missed it!

[laughter]

Erin Welsh Well, I'm sure that there'll be more opportunities as this continues.

Erin Updyke Mmhmm. But we learned a lot, I think, from listening to that interview.

Erin Welsh We did.

Erin Updyke So the first thing that we learned is that some parts of the world and some parts of the US have been hit harder than other parts so far. But that doesn't mean any one place is immune to the spread of this infection. We've said it before but it bears repeating, viruses know no borders. So the precautions that have been put in place in some areas really need to be enacted across the board in order to have a big effect. I actually saw a great map today that we'll link to, that estimated the latest possible time that every state needs to implement these measures, like shelter in place, in order to reduce the overall burden and actually flatten the curve.

Erin Welsh Was it like “yesterday”, “last week”?

Erin Updyke For a lot of the states, yeah it is like last week or the week before. But even in states where there aren't a lot of cases now, it's like this week or next week, essentially. So.

Erin Welsh Yeah! I feel like being completely immersed in all of this, that's the one thing that keeps coming out.

Erin Updyke Mhmm.

Erin Welsh Is that these things we need to have already done and if we haven't done them yet, we need to do them now.

Erin Updyke Yep.

Erin Welsh That plus social distancing. If you can afford to stay at home, stay at home. It is your social responsibility.

Erin Updyke I think that is my fifth point, Erin.

Erin Welsh Oh, sorry okay.

[laughter]

Erin Welsh Okay well the second point is that big large measures like travel bans and so on, they don't necessarily make it so that infection isn't going to happen, and they don't fully prevent the spread, but they can help to slow the spread of infection. So it's a more nuanced discussion, I think, than a black-and-white picture. However, and this one is super important. This is not an excuse for racism.

Erin Updyke No, it's not.

Erin Welsh There has been and there continues to be, way, way, way too much racism going around. This is not a Chinese virus. This is a global phenomenon that could have originated literally anywhere, and now it's everywhere, and anyone and everyone, no matter what you look like or sound like, no matter your gender, religion, skin color, or anything else, anyone can be infected, and anyone could pass this virus to others. That's how viruses work. There are rules for naming-

Erin Updyke [chuckles]

Erin Welsh -that the WHO has put into place since 2015. A whole crew of experts with probably over a hundred or at least decades of years of experience and a way more nuanced understanding of naming rules and the social impact or stigmatizing impact that certain names can have on diseases. This wasn't just a random decision made. This was a carefully thought-out list of rules for why we name diseases the way we name them now.

Erin Updyke Yep. Major. Number three. Another important thing we learned, this is not the flu. I mean, we knew that.

Erin Welsh We knew that.

Erin Updyke Especially if you listened to Chapter 2. But, this has been, some people saying this in the media. Some people, ahem, in the US.

[laughter]

Erin Updyke So the infection that SARS-CoV-2 can cause, the disease we know of as COVID-19, so far as we can tell has a higher case fatality rate even in the best case scenarios that we've seen so far. It also has a much higher hospitalization rate, and we've talked so many times that a large part of the need to flatten the curve is to reduce the strain on our healthcare systems. Because if people can't get in to seek medical care if they get really ill, or, if people can't go to the hospital for other reasons because all the hospitals are full of COVID-19 patients, then this crisis becomes even more uncontrollable and tragic. And, unlike influenza, we don't yet have any immunity to this virus whatsoever. If you've ever gotten the flu or ever gotten your flu shot which of course, all of our listeners are up to date on their flu shots, then you have the potential, at least some ability to fight off a new influenza infection. You have some kind of immunity. But with this, we've got nothing.

Erin Welsh Number four on our list of things we can take away from this conversation is that we currently are, and have been for a long time, under-resourced for an outbreak like this and this outbreak in particular, even here in the US. And this has direct implications on just how bad an outbreak gets. So we need to continue to invest in communication, coordination, and surveillance efforts not only early on in outbreaks but all the time so that we can pick up on outbreaks early enough in the process to really be able to prevent these kind of events in the future. Emergency preparedness, global health security, but on national and international scales, it's something we need to invest more in. And this is something that we talked about even in that first coronavirus episode back in early February. This is something that epidemiologists and people who work in international health have been saying for years and years and years. We need more funding. Because especially in countries that may not have the resources to do the surveillance that is necessary to detect novel or emerging pathogens, like, I think as Dr. Kuppalli says, our international public health is only as strong as the weakest link.

Erin Updyke Mmhmm.

Erin Welsh And we all need to strengthen that. Because otherwise, we have something that is going to spill over time and time again. And as I said in the first coronavirus episode, this is not a new pattern. This is not something that is a unique event. This is something that has happened before and very much has the potential to happen again, but with a different virus that we are once again unprepared and unable to detect or test or treat.

Erin Updyke Exactly. The last thing, number five, and I think probably the most important take away points from probably any of these episodes, we've said it before, we all have a social responsibility at this point to do what we can to help prevent the spread of this infection. This isn't someone else's problem. This is all of our problems and we all have the ability to help, in some capacity. Staying home, that's helping. Because the thing is, not everyone can stay home. Our healthcare workers are on the front lines, not only going into work every day but literally putting their bodies in between this infection and the rest of the world. And it's not only healthcare workers, lots of people have to keep going to work in order for us all to be able to survive, right? People who work at grocery stores, emergency services, public transit workers, food production, these people have to be out and going to work. And the other thing is that for so many people, staying home means they're not making any money. So for people who live not just paycheck to paycheck but shift to shift, and that's a lot of people, for them to stay at home and lose out on paychecks because everything is closed and they can't go back to work, this has a massive impact on people's lives and livelihoods. Staying home for many people means they're at risk of losing or, in many cases, have already lost their jobs and maybe even their health insurance. And in this country, in the US especially, this pandemic is really exposing the massive holes in our social safety net.

Erin Welsh I mean, do we even have a social safety net?

Erin Updyke Yeah, I mean do we, really? It's really atrocious.

Erin Welsh Uh huh.

Erin Updyke And the longer this outbreak lasts, the larger this impact is going to be. So the best thing that we can try and do for everyone is to just stay home and stop the spread of this virus.

Erin Welsh Well put.

Erin Updyke Thank you.

Erin Welsh Sources?

Erin Updyke Sources.

Erin Welsh So we just have one here, and this is the one that we referenced in the interview with Dr. Kuppalli and this is by Ferguson et al. "Report 9". So this is that famous, or notorious, I guess-

[chuckles]

Erin Welsh -Imperial College of London report that came out last week that talked about the various strategies for controlling the spread of this virus and the various outcomes depending on which strategy we use, whether no control, mitigation, or suppression.

Erin Updyke Mmhmm. We'll also put a link on our website to that map that I mentioned as well. It's pretty cool. Interactive.

Erin Welsh Yes, and if we can find the GIF of that. And then there's a really cool GIF/gif of the flattening of the curve illustration. I saw it, it's really good. I don't know if you've seen that rolling around on Twitter.

Erin Updyke Well my favorite is the 'cattening the curve'.

Erin Welsh Oh my god yeah. I've seen that one too.

[laughter]

Erin Welsh I was like, what are you, did you misspeak? Okay no.

[laughter]

Erin Updyke No I didn't misspeak. Ah anyways.

Erin Welsh Anyways, thank you again so very much to Dr. Kuppalli. We really appreciate you taking the time to chat with us.

Erin Updyke Yeah, thank you so much. And thank you to Bloodmobile for providing the music for this episode and all of our episodes.

Erin Welsh And thank you to you, listeners, who have stuck with us through episode three of this Anatomy of a Pandemic. You've got more comin.

[laughter]

Erin Welsh Strap in. Okay, well until next time, wash your hands...

Erin Updyke You filthy animals!

[musical outro]