

When it Mattered

Episode 46: Julie Schafer

Chitra Ragavan:

Julie Schafer was pursuing what she thought was her dream career in public health, when a chance meeting at an impulse decision settle on a wild ride deep into the world of dangerous pandemics. Schafer's expertise could not be more timely given the COVID-19 pandemic. She works to apply new technologies and approaches to an old foe – influenza – and is applying that knowledge fighting this pandemic. Hello everyone, I'm Chitra Ragavan and this is When It Mattered. This episode is brought to you by Good Story an advisory firm helping technology start-ups find their narrative. I'm joined now by Julie Schafer, the chief technology officer for the organization flu lab, where she seeks to stretch the boundaries of how technology is used to defeat influenza.

Chitra Ragavan:

Julie has held a number of leadership positions in the US government, including Chief of Staff and later Director of strategy for the Biomedical Advanced Research and Development Authority or BARDA at the US department of health and human services. BARDA is the key agency tasked with funding efforts to prevent both naturally emerging and intentional threats. Schafer has served as the director for medical and biodefense preparedness policy in the White House National Security Council under President Barack Obama, where her portfolio included preparedness and response to emerging diseases, such as Zika, efforts to combat antibiotic resistant bacteria and medical countermeasures preparedness. Julie, welcome to the podcast.

Julie Schafer:

Oh, it's such a pleasure to be with you.

Chitra Ragavan:

Tell us a little bit about your background, what you were doing and what was this chance encounter that changed the course of your life and turned you into a lifelong flu and pandemic chaser?

Julie Schafer:

Oh, for sure. I'd love to. Well, so I grew up in Upstate New York. My mom had a bit of a wanderlust and my dad was always game. So I had an opportunity to travel a lot as a child. I was just one of those people that always had to do things my own way. When it was time to go to college, I gravitated toward a school that allowed for students to kind of create their own educational experience. So therefore of course I had a self-designed major and two self-designed minors and none of them were in pandemics. I didn't know

exactly what I wanted to do. I kind of gravitated to what I think I thought of as international development. While I was an undergrad, I did two studies abroad, one in Vietnam, right before the US re-established diplomatic relations.

Julie Schafer:

Then later one in South Africa, not too long after the end of apartheid. When I finished my time in South Africa, I was completely disillusioned as only you can be when you're 21 years old with international development, and just led me to the end of my undergrad with absolutely no idea what I wanted to do. So I was so fortunate that I had family, friends who said, "Hey, come to DC and get a job and figure it out." That's kind of what I did. Once I was settled in DC and had a job, and had a place to ... friends to live with and had kind of developing building my adult life. I had my first stumble into my vocation by volunteering.

Julie Schafer:

I was volunteering at an HIV testing site. At the time before you got a HIV test, you'd have to receive counseling either anonymously or confidentially, depending on your choice. Just really clicked for me. It was one of the first things that I was doing that I just felt like I was really good at. I was good at it being in that counseling situation about being with the intensity of the one-on-one conversation about really intense things. I really loved the testing aspect. I loved that there were that that testing provided such important information to the individual, but then also that fueled that important information to a community.

Chitra Ragavan:

So what happened next?

Julie Schafer:

So then I thought, well, I've got it. I figured out what my path was. Handled. I went to grad school for two degrees, one in public health and concurrently one in social work. That made complete sense for the career I was planning in reproductive and sexual health and that kind of community work. The one thing I knew, as I finished those studies which were wonderful, is that I did not want to feel like I felt like at the end of undergrad when I didn't know what I was going to do and sitting at a graduation ceremony, just quaking in my boots because I didn't know what I wanted to do next. So I made sure that I wanted to have a job squared away before graduation.

Chitra Ragavan:

What was the job?

Julie Schafer:

I went through a bunch of different options. One of the options that I was looking at was a Presidential Management Fellowship with the federal government. Out of all the options I was looking at this made the least amount of sense for what I wanted to do. Working in kind of policy level and the federal government. I kind of thought I would be

working on a community level of kind of doing the kind of things I was doing when I was doing HIV testing and counseling. But I just kept making it through the various application stages and somehow found myself the finalist. For reasons that I could not explain to you, except that it just kind of felt right, I took a position through the fellowship and the immediate office of the Secretary for Health and Human Services in Washington DC.

Chitra Ragavan:

Wow. So be careful what you wish for, right?

Julie Schafer:

Well, yeah. Be careful on how you, those kinds of instincts, your gut feelings, right?

Chitra Ragavan:

Yeah, exactly.

Julie Schafer:

So my gut feeling had told me to go take this job, this Presidential Management Fellowship. Then next thing I knew I was sitting in a little office in a big building wondering what in heaven's name I was thinking in making this decision.

Chitra Ragavan:

Then what happened?

Julie Schafer:

I'm very fortunate because just as I was about to head into an existential, or maybe a quarter-life crisis. My supervisor came by and she had someone with her and said, "Here, this guy needs your help." It was Bruce Gellin, who was then the head of the National Vaccine Program Office. That inconsequential meeting kind of wound up being the inflection point of my career.

Chitra Ragavan:

Wow. What was the meeting about? What was that conversation and what did you think of it?

Julie Schafer:

Sure. What he needed help for was if he had this draft pandemic influenza preparedness and response plan. It was long overdue to be put out for public comment. The document itself was really long, really, really long. You really kind of full of panic. I mean, it just identified nearly endless needs. In the US at the time, we didn't have nearly enough capacity to make vaccines if we needed them, pandemic vaccine and we really only had, there was very limited global supply of a drug to treat influenza. Most importantly, there's just not a lot of state and local plans or resources. It was a plan that identified a lot of problems and didn't have a lot of solutions.

Chitra Ragavan:

But it wasn't going anywhere, was it?

Julie Schafer:

It wasn't going anywhere. We briefly soldiered on with a plan. We got it cleaned up and put it out for public comment, got a lot of public comment. But really that plan itself, it wasn't really going anywhere. While all of this is happening the context around us was changing.

Chitra Ragavan:

What was that context?

Julie Schafer:

Well, a few things were happening. First of all there was a really concerning outbreak of H5N1 avian influenza that started in Asia and in Southeast Asia. This was what's called a highly pathogenic influenza virus. Meaning that it killed those creatures including humans that were infected with it and had a very high mortality rate when it infected people. So that was a wake up call for a lot of people about how destructive influenza could be. The other thing that happened was it was Hurricane Katrina, which among many other things reinforce the absolute need for coordination and planning among state and local governments and the federal governments and what it looks like if that coordination and planning doesn't take place.

Chitra Ragavan:

So you were working on all of this, right? So how did you then end up at BARDA and tell us a little bit because it's a key agency that's involved now also with COVID. How did you make that transition? You did a bunch of different work including influenza, but not limited to it, right?

Julie Schafer:

Right. You can't talk about BARDA without talking about how the context changed with influenza and after Hurricane Katrina and after all of that. The National Strategy for Pandemic Influenza was released. The reason, normally you wouldn't talk with in such excited terms about a government document but really it was such an important document because what it did was ... I talked about how that first plan that we put out identified a lot of problems and didn't have a lot of solutions. The National Strategy for Pandemic Influenza laid out an approach, a really bold approach to address a really big problem. Looking at it from a federal government perspective, but also every level of government and also the private sector and in everyone else and families and individuals. But the other part that it did, and here's where it BARDA comes in, is that it put it significant money behind that planning.

Julie Schafer:

So it said these constraints you're talking about that old plan, those constraints go away with enough funding. Some of the key things that came out of that plan, and this is what kind of carried me over into my time at BARDA was to radically change what the influenza vaccine landscape look like. I talked a little bit about how, there were so little capacity to make vaccines that if we needed make enough to supply everyone in the US, not even talking about everyone in the world but even just covering, everyone in the US need hundreds of millions of doses of vaccines and we had so little. What that plan did and the funding behind it, we said, "Okay, we're going to build the capacity within the United States to make hundreds of millions of doses of vaccine." That was one of the first things when BARDA was established in 2006. That was one of the first things that BARDA was charged with.

Chitra Ragavan:

You were responsible for a bunch of different strategic decisions that had to be executed within BARDA dealing with the influenza vaccine and a pandemic, right? Potential pandemics.

Julie Schafer:

That's right. I was so fortunate, and I think so many of us can say that we've had kind of helping hands along our careers that kind of led us into different directions. While I started in policy shortly after I moved to BARDA. I moved into the program part. Me with this liberal arts background and then more of a science based graduate school background, moved into the kind of the craft or the trade of what it takes to make a vaccine. Wandering around vaccine manufacturing facilities and figuring out how air handling systems work, and really the nuts and bolts of what it takes to make a whole lot of vaccine and using different approaches, using ones that we know of and also trying different kinds.

Chitra Ragavan:

Then after that you wound up at the National Security Council at the White House.

Julie Schafer:

That's exactly right. So after I'd had some time both doing policy and then working in the program aspects of really the advanced development of vaccines and drugs. I was just starting to feel a little tiny bit restless. I guess the universe heard me and I wound up going over for a detail with the National Security Council. I think that I was suggested for that position because of my pandemic influenza background because it seemed it was a good time. It was shortly after the Ebola outbreaks in West Africa. It seemed like a good time to revisit our pandemic planning.

Chitra Ragavan:

So now that you've had all of that experience, right? You've had it from every different angle dealing with and studying pandemics, looking at vaccines and then comes COVID. Can you put in perspective sort of everything that you've learned about

influenza and why this is so different and what makes this such a terrible problem and a challenge for the world.

Julie Schafer:

Right. I think that the experience that I had when I was at the National Security Council I went there to address pandemic planning, but almost immediately wound up responding to another outbreak, Zika. I think that there are some threads for influenza and Zika and a number of these other infectious diseases that helped shape why COVID-19 is a particular challenge. First I would say is that all of that time that we spent building that vaccine infrastructure for influenza, well, that just doesn't exist for COVID-19. We didn't have a vaccine backbone waiting to just pop in the exact virus strain that we are presented with and get going on manufacturing. We really had to, to start much closer to the beginning with COVID-19 than with influenza.

Chitra Ragavan:

So essentially there's really nothing, right? You're starting from a blank slate.

Julie Schafer:

Right. In so much of the pandemic planning for influenza, the idea is immediately start making vaccine as soon as possible. Then all the other measures that you do like community mitigation guidance which a lot of that, we all have a lot of firsthand experience with dismissal of students from schools and everybody working from home and everyone staying at home, canceling large gatherings. Those are just things that pandemic influenza is that these are short term measures while we wait for a vaccine. For COVID-19 it's a much longer wait because we don't have that vaccine at the ready.

Chitra Ragavan:

These tools that we're using, social distancing and essentially quarantining and all of that, they're pretty primitive and historic, right?

Julie Schafer:

Right. I mean, if you really think about what are, how much technology we employ in our day to day life. You and I are not sitting in the same room right now. We are in different locations having a conversation. We carry in our pockets very powerful computers. Every part of our life. Our refrigerators can talk to us if we want them to. But how quickly COVID-19 brought us to our knees and had us rely on technology approaches, I wouldn't even call them technologies, but approaches that have been used for a very long time and that were used in 1918 for the great influenza pandemic of 1918 when we really didn't even have a full understanding of what influenza was. But we knew that covering, face masks were important and canceling large gatherings was important. Here we are again using a lot of the same tools.

Chitra Ragavan:

You've devoted your life to studying influenza and yet it's not that easy, right? I mean, you could spend your life studying it. But even though it's a small virus, it's incredibly

complicated. What does it say for, you've done that for 15 years, what does it say for COVID and how far we have to go before we get a handle on this?

Julie Schafer:

You're exactly right. I think viruses are humbling. I think that that's one thing that they all have in common. They're somewhat mysterious in their own ways, but they're always humbling. In the same way that we can focus enormously and put great resources into addressing influenza and still not have a vaccine that works as well as we want, and still don't have drugs that work as well as we want even with all of that attention and focus. Now we're presented with a virus that we know even less about and that seems to have ... We seem to learn every day the way that it affects seemingly every cell in our bodies when infected. I think it's very humbling. The one thing that I have been heartened by is to see that the incredible amount of research that is going on and how more readily available that research is, and having the rise of pre-print journals where new ideas which may be sound scientifically or not but they're out in the public discourse to be talked about amongst scientists early seems to be really key when there are so many mysteries.

Chitra Ragavan:

What has surprised you the most about COVID-19, would you say the virus?

Julie Schafer:

Oh my goodness. What hasn't surprised me? I mean, I think the part that I find most daunting is what seems to be the asymptomatic spread. Because that really cuts right to the heart of how humans interact with each other and to enter every close interaction knowing that you could be at risk of infecting someone else or them and infecting you and neither of you have any knowledge. That makes things really challenging.

Chitra Ragavan:

You know what this fall and winter coming, what sobered me up when we talked earlier was the fact that not only will we have potentially COVID but we may also have the flu. How does one cope?

Julie Schafer:

Right. Something that I think a lot about that doesn't make me the hit at any virtual cocktail party. But there's nothing about this pandemic, this COVID-19 pandemic that in any way lessens the risk of having an influenza pandemic. So we could have the severity of whatever influenza strains that we are presented with next. This current pandemic has no bearing on it. So maybe we'll have a mild influenza year or maybe we'll have a really hard one or maybe an influenza pandemic will emerge at the same time. I think that really is very daunting and makes me very worried and hopeful that the influenza will cut us some slack this year.

Chitra Ragavan:

I want to talk a little bit about vaccines and then testing and then preparedness. In terms of vaccines, what do you see will happen given that what you've seen in the past with the flu vaccine development and having to constantly iterate every year as the virus mutates and causes a lot of grief?

Julie Schafer:

Yes. Well, I think we're really at that stage where we're watching and waiting. I mean, I think we don't know exactly which vaccines are going to work the best against this virus. There's a lot of unknowns there. I think the other thing that remains to be seen is how much the virus will change or not change. It seems to be right now, and of course everything we're always learning more that this virus doesn't mutate quite as often as influenza. Which doesn't say much because influenza just seems to mutate quite a lot.

Julie Schafer:

So if the virus is more stable than that means that a vaccine in the same formulation, whatever is chosen, should be able to offer protection for longer. That's certainly everyone's hope. But there is a great deal of unknown and all of the variables are unknown. Unlike say an influenza pandemic where we know what platform of vaccine we're going to use. The exact influenza strain that's put into that platform would be dependent on the pandemic, but the technology and the approach which we already know what that is. And with COVID-19, we're figuring that out. So we really are, as they say, building the plane while flying.

Chitra Ragavan:

With influenza, for instance, you were saying when we talked earlier that unlike smallpox which could be eradicated because you don't have animal reservoirs, with the flu virus with wild birds carrying it around the world it makes it impossible to eradicate. I mean, what do we know about COVID-19 and where we might end up with it?

Julie Schafer:

Right. I mean, closer to influenza certainly than a virus like smallpox. We're fairly sure that this virus originally came from bats and we know that this virus can infect a whole, a wide range of creatures much like influenza can. That all makes it ... That the goal is not eradication. The goal is finding a way to protect humans from becoming ill from the virus. We can't get rid of it, the idea is not to banish the virus from the earth, but to keep it from harming humans.

Chitra Ragavan:

So in terms of vaccines, what's a realistic scenario? You hear a lot about, "We're going to rush this and this is going to happen, and we already have all these candidates being tested." But from your experience what should we expect?

Julie Schafer:

I mean, we're in such uncharted territory. The timelines that we're discussing are far faster than any timeline that anyone has, than we've ever tried. It doesn't mean that

anyone is proposing taking shortcuts on the important safety and efficacy testing. It really means that they're looking at all the places where things can be accelerated and where we can apply the technologies that we haven't before toward this problem. The part that count the most in terms of does this, is this vaccine safe to use on people? Does it do what we want it to do? There are no shortcuts to that. That's the part that also has the greatest uncertainty.

Chitra Ragavan:

So let's talk about testing. Why can't more people get tested? I mean, what are the issues? It seems like Europe is doing an incredible job of testing people. Asian countries are doing it. What's the hold-up and what's the hang-up?

Julie Schafer:

Well, I don't know if there's any one person who has their full arms around exactly what the hang-up is. I mean, I think as many people has been documented in many places that we the US got off to a slow start and that has been really, it's a hole that's been hard to dig out of in terms of availability of testing. Good things that have happened, that there are plenty of different tests that are now available through the FDA's Emergency Use Authorization. The bad news is that as more of them are being used, because the process for an Emergency Use Authorization is a little bit different than a usual approval or clearance.

Julie Schafer:

Not all of them have performed as well as we've wanted them to. I mean, so first we had problems that we had some constraints around getting those first tests going. Then now that we have lots of different tests available, we have some constraints around how well they perform. Then of course, we're always going to have constraints when everybody needs and uses the same materials at the same time, we will have constraints on availability of materials like swabs or the chemicals that are needed to make the tests work. When everything is happening at the same time around the world these kinds of supply constraints happen.

Chitra Ragavan:

Is that happening? Is that one of the reasons?

Julie Schafer:

I mean, I think that that's not luckily the biggest reason but it is something that I think there've been spot kind of constraints around supplies, which is again to be expected. I think that all of those things make it ... Then because of the unique way that the United States works in terms of how healthcare works with us and how our States and locals and federal different entities and it can make it really challenging to have kind of unified testing systems that might be occurring in other countries.

Chitra Ragavan:

You've been in this for 15 years, you've dealt with pandemics, you've planned for pandemics. Just looking at where we are now, what has that taught you?

Julie Schafer:

Well, I mean, I think a lot of us we think we've seen a pandemic, we've seen one pandemic. In 2005 we planned for a very severe influenza pandemic. Then we got one in 2009 that didn't look anything like what we planned for. Then now we have a pandemic that's not an influenza pandemic, but it has more elements of what we planned for in 2005 than the actual influenza one we saw in 2009. I think that one thing that I've learned is that it's important to do planning, but the actual plans are not used as often as what people learn from doing the planning itself. So the relationships that are built by doing those plans and the time that people take to kind of think through scenarios is probably more valuable than anything that's typed up and collecting dust on the corner of your desk.

Chitra Ragavan:

In terms of pandemic preparedness, right? I mean, you've seen the crisis of lack of stockpiles, of ventilators and masks, critical medical supplies. We have a federal agency BARDA that's tasked with all of these. We've have a strategy. We've got experts, but how does one prepare for something like this without over-preparing or under-preparing?

Julie Schafer:

Right. Gosh, that really is the hardest part. Because a lot of the stuff that is most important to do like stockpiling of key medical material that we know we're going to need like masks and respirators, gowns, certain equipment that we just ... ventilators, things like that. It's very costly to purchase and then maintain these things, I mean, retained in the strategic national stockpile. They require ... Everyone always has five different places that we could put a dollar in terms of any kind of budget, budgeting in our homes and then certainly federal budget. What it takes to set aside those enormous funds, enormous sums of money. Then pay into that to maintain their storage when they may never be used and then replace them when they expire.

Julie Schafer:

It's very challenging. Humans have a hard time doing that kind of risk planning. Million books have been written on the subject so I won't attempt to write another one in this conversation. But I think that a lot of it really comes down to the real, the way that humans make decisions. That in this moment, right now in this crisis moment, people care more about masks and respirators than in any time during my career. When this is all over, they will go back to being what they were before, probably which is deeply unsexy to everyone but me and maybe 20 other people. So I think that it's that maintaining that attention to that kind of preparedness is incredibly challenging.

Chitra Ragavan:

Yeah. I guess the human memory too, right? We just forget what we want to forget. Habits are very hard to change.

Julie Schafer:

They are. As humans and as decision makers we tend to address what's right in front of us. So planning ahead for something that might happen or may not happen is really challenging in a context when five things are in front of you kind of screaming in your face.

Chitra Ragavan:

Based on all of your wealth of experience and knowledge. If there was one thing we could have done differently with the caveat that hindsight obviously is 2020, and we're not second guessing, but if there were one thing we could have done differently that might have changed the course of this, what might that be?

Julie Schafer:

I think early testing. I think that if we had understood, if we had had more testing available much earlier, we would have had a much better handle on what was going on in US, just within the US context alone. That could have really made a huge difference especially in environments like New York City.

Chitra Ragavan:

Julie, looking back at that day when you sat in your office and watch Bruce Gellin walk in there with that languishing pandemic influenza plan in his hands. What would you say to that young woman about this journey that you've been on?

Julie Schafer:

Well, I think that I would say to her that, well, actually you know what I would say that I'm glad you did it just how you did it which is just keep saying yes to unusual opportunities that present themselves. Because it leads to some of the most interesting experiences that a person could have in a career or just even in a life.

Chitra Ragavan:

That's great. We should add that Dr. Gellin currently is President of Global Immunization at the Sabin Vaccine Institute. So very very prominent figure. Do you look back on that time together and wonder where we are today and talk about it?

Julie Schafer:

We sure do. I mean, the great thing about a lot of the relationships that I formed during those early days of pandemic planning is that they are still good colleagues and Bruce and I collaborate on a project around universal influenza vaccine now. So we've continued our quest all these years later.

Chitra Ragavan:

We're all serving on this, NOCOVID coalition, of course which is the nonpartisan coalition that has all these experts trying to communicate accurate facts about COVID to Americans particularly in high risk and hard hit places.

Julie Schafer:

Yes. It's been such a pleasure, really feels like it combined so many of the things that have mattered so much to me throughout my career, even before I knew what my career would be.

Chitra Ragavan:

Have you had any, what I call viral insights about your life and work because of COVID-19, that moment of clarity that's brought upon by a crisis?

Julie Schafer:

I think that so many of the things that I think would be most helpful for addressing COVID-19 are the things that I'm most passionate about. In terms of understanding, having wearables that will tell us that we're sick before we're sick, presymptomatic identification of infection. And having testing that's available in our homes. Those things that I've always been so passionate about, this has only reinforced that I was passionate about the right things and that it actually, it fueled my fire to get there on those technologies.

Chitra Ragavan:

Oh, that's wonderful. Julie, it's so great to have you on to talk about deadly viruses and the havoc that they wreak. Thanks for joining-

Julie Schafer:

It's my favorite topic. Thank you so much.

Chitra Ragavan:

Julie Schafer is the chief technology officer for the nonprofit Flu Lab, where she seeks to stretch the boundaries of how technology is used to defeat influenza. This is When it Mattered. I'm Chitra Ragavan.

Chitra Ragavan:

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