Yale Talk: Conversations with Peter Salovey

Episode 4: Yale Health Experts on the COVID-19 Pandemic

**Peter Salovey:** Hello, everyone. I am Peter Salovey, and welcome to a special episode of Yale Talk. Today I’m joined by two Yale experts for a discussion about the COVID-19 pandemic. In just a few months, we have seen what true global disruption looks like. The pandemic has upended our routines, our plans, our goals. Every day, we deal with uncertainty and face new questions about what is ahead.

The crisis has shown us how much we need ideas and solutions from the kind of research and scholarship being conducted at Yale and peer institutions worldwide. We are fortunate to be home to remarkable group of scholars, educators, and practitioners, all dedicated to creating and sharing knowledge and improving lives.

We are joined by two of them now. Ann Kurth is the dean of the Yale School of Nursing, the Linda Koch Lorimer Professor of Nursing, and professor of epidemiology and microbial diseases. And Saad Omer is the director of the Yale Institute for Global Health, the Susan Dwight Bliss Professor of Epidemiology of Microbial Diseases, and professor of medicine. Ann and Saad, thank you so much for taking the time during this crisis to participate in Yale Talk.

So we know, based on public health modeling, that the brunt of the pandemic is ahead of us in the northeast. Some people thing we may be hitting it right now. Unfortunately, though, it appears that the worst may be still yet to come. Ann, what are we doing to prepare for the surge of health care needs in New Haven and in the surrounding communities over the next few weeks?

**Ann Kurth:** Well, thank you, Peter. It is good to hear your voice. Here at Yale we have been planning for weeks, it feels like months, to be able to care for patients who will need both non-COVID care as well as COVID care. So at the Yale Health Plan, Paul Genecin and his nursing team and others have set up a field hospital at the Lanman Center. At Yale New Haven [Hospital], they have converted three floors of the Smilow Cancer [Hospital] floors in order to do COVID care. Dr. Beth Beckman, who is the Yale School of Nursing dean for clinical partnerships, has been integrating and preparing her workforce across all five hospitals of the Yale New Health System. She, by the way, was also one of the first health care workers in Connecticut to be publicized with having COVID. And true to form, she just cared about the safety of her nursing staff and is glad to be back at work.

Working with the city and state health departments, the School of Public Health and others have been working on contact tracing. But I do want to just point out we have a lot discussion—people may have been reading about how many ICU beds do we have, how many ventilators do we have—and these are crucial constraints for care, but the key need is also nursing staff to be able to staff the people in those vents, on those ventilators, and in those beds, 7 days a week, 24 hours a day. So we have been working with all twenty schools of nursing in Connecticut and also at the national level to make sure we keep student education going, even under these current constraints, and to prepare our community to serve for surge support.

We surveyed our Yale School of Nursing alumni, faculty, students, and staff, and over 400 of them have volunteered to be able to serve in a variety of capacities for this COVID response, including patient care and acute patient care. So they will be deployed to help across the systems. We have also developed a survey tool that is web-based off of their phones so we can stay in touch and understand if they are getting sick and when they return to care. And we are working with colleagues, including in engineering and across the university, to ensure that we are able to provide more of the personal protective equipment (PPE) that is so crucial and is in short supply to protect our health workers. So those are just a few of the things that we are doing to be ready.

**Peter**: Thank you, Ann. I couldn’t be more proud of how our School of Medicine, School of Nursing, School of Public Health have all helped out our partners in the community as we negotiate the pandemic.

So we have seen rapid progress between the discovery of this disease just months ago and Phase 1 clinical trials of vaccines in humans. That’s incredibly fast, and Saad, I was thinking about you as the director of the Yale Institute of Global Health and someone who is an expert on vaccines. Maybe you could talk a little bit about how basic research has played a role in these and other developments.

**Saad Omer:** Yes, it has been remarkable. But before I get into the specifics, I just wanted to thank you and others for the opportunity to share the progress in the field, specifically in terms of vaccines. It has been remarkable, even very different from what we were doing and where the field was five, ten years ago in similar public health emergencies. So the good news is that due to advances in our ability to sequence genomes quickly, identify targets using both biological and informatics tools, and novel manufacturing technologies, the vaccine products—the vaccine candidates—were developed fairly quickly. The Chinese very quickly shared the genetic code within days of finding out about the disease. Then the NIH [National Institutes of Health] took that code for one of the more promising vaccine batches, identified the targets, and then those targets were shared with a vaccine company or two—well, actually several vaccine companies. But one vaccine company in particular was able to create the messenger RNA, so that is the first product-based vaccine, that’s the first product that is out there. There are two other products in Phase 1 vaccine trials that leverage existing vectors, and the advantage of these developments has been that we are very quick to get to human trials. That’s the good news. The not so good news is, now the really tough part comes of testing it in humans. Even if they have bypassed some of the animal models that are usually part of the development pathway, we are still several months away from getting to the large-scale trials because we are currently in Phase 1 trials where we start with a small number of people. We will go to Phase 2 trials where that number increases, but the licensure and deployment usually comes either after Phase 2B trials or Phase 3 trials, where we go into larger populations, and we really test the safety and efficacy of vaccines. So it’s a really good news story in terms of biological advancements and development, and a story where we could face a few more challenges at least in terms of timeframe when it comes to clinical testing.

**Peter:** Fantastic, and it gives us great optimism, although it shouldn’t be a false optimism. That is, we still have to recognize that prevention, mitigation, is what we all need to focus on until such time as we have a vaccine. And Saad, I also want to thank you for the work you do providing your expertise to our leadership team every morning at 7:00 o’clock.

So Ann, you are also pretty globally oriented in your work. China, South Korea, Italy, other parts of the world have been dealing with COVID-19 longer than the United States has. And I am wondering if you and your colleagues are in contact with nursing leaders and other medical professionals from other countries to share best practices, to learn from their experiences on the frontline, to gather other kinds of insights.

**Ann:** Yes, absolutely, Peter. So many of us have been through the HIV pandemic and so we are really working already across borders to apply some of the lessons learned from that experience, which of course is still a problem worldwide, sharing protocols, including nursing protocols. We are quite concerned about our colleagues in lower- and middle-income country settings where health systems were already incredibly strained prior to this pandemic. They have drastically fewer resources and also often very dense urban megacities. One of our Yale Nursing faculty, Dr. David Vlahov, has a paper out this week on the need to take care of people living in these urban megacity situations through this pandemic.

But it is inspiring to really connect with what is almost a global tribe or family of nurses and midwives because they are the foundation of every health system. Today the World Health Organization also released actually the first State of the World’s Nursing Report. So there are 28 million nurses around world. It’s 60% of all health care workers. We had a phone call with our colleagues in China that was incredibly inspiring. They took the time out of all their busyness and their response to the pandemic to share with us what they’ve learned, including their protocols and some of their clinical lessons. When I asked specifically about the nursing care manual, they immediately said was “Well, it’s in Mandarin, but we will translate it for you in English and get it to you right away.” And our colleagues at Xiangya Hospital in Changsha, where we have had longstanding relationships, as you know, between Yale and our colleagues there, have told us that as of early part of this month their hospital had no transmissions within their facility and no adverse events among their nurses, and we were really very moved that they took the time to let us know that. They are keeping their patients and their nurses safe.

**Peter:** That collaboration is wonderful, and that’s good news to hear. Saad, we were talking to you about Phase 1 clinical trials of vaccines, and with Ann about China. Let’s bring those two together. I know that there are Phase 1 clinical trials going on both here and in China, as well in other parts of the world. I am curious whether those efforts are collaborative in any way. I know all these research groups are working as quickly as possible, but has the pandemic increased collaboration across international lines, has it made it easier to share data, to share approaches, to share results, or not?

**Saad**: Yes and no. In terms of data, approaches, designs—that has been shared a lot more openly and frankly a lot more quickly based on a few platforms such as preprint servers, meaning if you are scientist and you have paper, you don’t have to wait for peer review to share it to the community. Peer review can happen in parallel; you post it to a pre-print server, and one of the two largest preprint servers actually is hosted by Yale, which is called Med Archives, where you post your preprint, and while other scientists and the public health community is learning from your findings, the peer review process can take its time, and even though peer review has happened fairly quickly. Based on that, there has been remarkable speed in dissemination of science and concepts in our understanding of the virus. However, in terms of actual product development—so, there’s a lot that comes before that that has been fast—there have been a few efforts where multinational or even U.S.-based companies have had their existing collaborations in China, for example, and they have been leveraged, but not to the extent possible even now, and not to the extent where we can be confident that we are maximizing the potential each of the players brings to the table. For example, the primary global entity that was created after the Ebola outbreak, called the Coalition of Epidemic Preparedness Innovations, or CEPI, and their idea was to keep these products in store for broad families of viruses, including coronaviruses—it was on their lists—that have pandemic potential. You don’t know which species would emerge, but you can guess, and people have guessed what kinds of families are more risky, to keep those products in store and then take them out of storage, if you will, for quick development in case of a pandemic. So they have been functional, and they have some of the initial development—for example, for the mRNA vaccine and some of the other promising products. Initial money came from them, however, they are highly underfunded. They are funded by the Bill and Melinda Gates Foundation and the Wellcome Trust, on the philanthropic side, but mainly by, or a lot of it comes from governments ranging from Norway and all the way to Ethiopia, but the U.S. government is missing and the U.S. resources are missing from that picture. Until we have those resources, they cannot really actualize their potential. So it’s again, unfortunately, it’s a mixed story. Some of the things have worked in terms of international collaborations, and some of the things need substantial improvement.

**Peter:** So Ann, let me go back to you. Across the country, people are being asked to make all kinds of sacrifices in a way that perhaps hasn’t been asked of them or even needed in generations, and I know you have a lot of experience in dealing with the challenges related to adherence with medical advice in communities in the U.S. as well as elsewhere. So how do you convince people to follow evidence-based advice without causing a panic, without creating a sense of hopelessness, without losing people’s engagement? It seems like every night on the evening news there is an example of some kind of almost grotesque act of noncompliance being featured. And so, what do you do? How do you get people to stick with it?

**Ann**: Thank you. I think it’s useful to just take a moment. Look, we’re at a time and place right now where half the world is in some degree of lockdown. We have physical distancing and an economic impact on a scale that has not been seen in our lifetimes. So it’s overwhelming, and people react, I think, to that in different ways at different times. They bring preconceived ideas and politics to it, and what we have to be able to say at this point is that we actually are all in this together. It can be powerful and helpful to remember that there are things we can do to take care of ourselves as well as our communities, and that that degree of self-efficacy is something that we can actually leverage. Those of you who remember World War II will remember how coming together, and even small acts like victory gardens, made a difference. Those of us who were through HIV realized that being able to advocate and come together, to advocate for new medications, faster science, as well as saving people’s political rights, was powerful. There are small things we can all do, and part of that is of course maintaining the physical distancing until such time as we really have a number of parameters met where we can safely unlock society and our economies. And just the simple things like when you do go out, be sure that you’re covering your coughs. There is now recommendation from the CDC to wear cloth masks, *not* the masks that health workers need for the health system, please. Stay home if you’re sick, if you’re able to. And then as things evolve and we get better tests, such as antibody testing, we might be able to see who has had COVID, who might have some degree of immunity, and we will be able to emerge more. But in the meantime, being able to stick with a trusted source, science-based, consistent messaging with honesty and realism, as you just did, Peter, to say that we are not making false promises about how quickly we can get out of this current state, but to also call ourselves to a higher purpose. This is the time to come together, and we’ve done that in the past, whether it’s world wars or 9/11 or other zoonotic devastations like HIV, and we can do it again.

**Peter**: So there is concern that even if we manage to end this pandemic over the summer, there could be a resurgence of the novel coronavirus in the fall. What can we do about that risk?

**Saad**: That is a really good question. The moment social distancing was implementing under various names—shelter in place or lockdown, that depends on the degree, etc.—some of us internally, a lot of it internally, but also with our collaborators outside Yale, started working on quantitatively-informed, and in some places biologically-informed, options to scale it down safely, to reduce these restrictions safely. And only yesterday I had a paper out in the *Journal of the American Medical Association* where I described some of this in a little bit more detail, but if you want to also look at that. But very briefly, there are four things that could let us—before we get a vaccine, vaccines are the end game—four things that would help us open up the society safely. First of all, everyone has been talking about testing, but testing in and of itself is just one part of a strategy that focuses on testing, testing the cases that are presenting to your health facilities; contract tracing, so who they got into contact with; then figuring out which of these contacts are symptomatic, so testing the contacts; and the ones that are asymptomatic, quarantining them. So just a little clarification of terminology: isolation is for symptomatic cases, in terms of the technical jargon, and quarantining is for asymptomatic cases, although, in the popular press they are used interchangeably. So what you do is go through these chains of transmission, and you keep on testing the symptomatic contacts, and isolating them, and then quarantining the asymptomatic ones. So as you ramp that up, you get to a stage where you can safely suppress the outbreaks.

The second thing is, without raising a new concern, the odds of transmission in familial clusters are much higher. They were higher in China, we had known that from China, and they’re higher in the U.S. as well. So the typical story often is that someone who goes outside, who’s more mobile, comes back and has mild to moderate symptoms, sometimes severe symptoms, but transmits within these familial clusters, so sometimes within a conventional household, but sometimes extended family, and then the person who’s more vulnerable gets the more severe disease. So in China there were 64% of the cases were through these familiar clusters. So some of us are working, and we had a call with the state today where we discussed a strategy there, we may start with New Haven as well, and then I’m talking to governments outside the U.S. as well, where that could be the new focus, where we reduce safely, while maintaining compassionate home-based care, to implement the CDC and WHO guidelines to reduce the probability of transmission within familial clusters.

The third thing is that even a drug that is not perfect but reduces the ICU stay, for example, by 20% to 30% will ease the pressure on the health care system.

The fourth thing is related to vaccines, so yes, the vaccines are going to be available 18 months from now, but in order to be prepared for that delivery, prioritization, safety, and all sorts of other biological, epidemiological, and policy questions need to be answered before that. So preparing from that aspect for vaccines is also important. These are the four things that will provide policy option to safely reduce some of these measures. I don’t think, to be very honest, without raising expectations, even with these things, large gatherings like sports events, etc., will be the last one to be eased up on, but some of the other activities, if we meet some of the other criteria, for some of the other activities may be safely opened up.

**Peter:** Thank you, Saad. We’re also, as a campus, preparing for all possible contingencies in the fall.

Ann, Saad, as COVID-19 spreads across the globe, what can we expect when this disease begins to affect developing countries—nations where the health care infrastructure is already strained and underfunded? How are we using the data of COVID-19 survivors? What can we learn from data of people who’ve recovered quickly from the disease?

**Ann:** We are extremely concerned about our colleagues, particularly in lower-income country settings where the health systems already were so under-resourced and constrained, as well as the population density, and the fact that you can say work from home, but if people’s day jobs require them to be mobile to have money to even feed their family, it really puts constraints on the physical distancing notions. So we are working through the Institute of Global Health, we’re talking with CDC Africa, our colleagues there. I’m working with some existing partnerships in some key countries in west, eastern, and southern Africa, as well as I mentioned before, continuing to collaborate with colleagues in China and elsewhere in Asia, to learn from some of their approaches so that we really can address what could be just an incredibly devastating feature of the epidemic curve in these countries.

In terms of the learning from survivors, it’s a good question. We already have a wonderful website that has been put up and led by the School of Medicine and the Schools of Nursing, Public Health, Engineering, and others across the university—it’s one example of Peter’s “One Yale” —COVID.yale.edu, which will have portals listing all the existing clinical trials and vaccine trials and other research studies that are available to sign up for, as well as to just track. That’s one of the features on that website. There’s at least 45 studies now that Yale is already put through the human subjects review and related to COVID. And one of those, there is interest in a specific type of study where people would look at what’s called convalescent plasma to see if people who have recovered from COVID, if their antibodies can be used as a treatment. So that’s one example.

**Saad:** I just want to say, very nicely described by Ann, especially our interaction, the Yale Institute for Global Health’s, interaction with countries in Africa and South Asia, specifically both directly and through the Africa CDC, which was established after Ebola, where they have specific asks from us in terms of technical assistance. The other thing I would mention in terms of learning from existing data: one of the initial things where two to three schools came together and we helped convene faculty from a few schools, to create this biorepository. We knew it was coming, we knew we had to be prepared, but we had to be prepared not just in terms of health care response, but learning from the biological aspects and the clinical aspects and the public health aspects of this outbreak. So we established our biorepository, and we were the first, one of the first institutions, to actually do that. It was really a combined effort between multiple schools, more sort of prominently the Schools of Medicine and Public Health, but has now expanded to other schools including nursing, etc. So that has enabled us to collect data which we have—we, meaning the broader Yale community—has started analyzing even now and have some initial insights.

**Peter**: I’ve heard from alumni working in the public health sector that there may not be adequate data collection for underrepresented populations. Is Yale collecting or analyzing data from underrepresented groups for COVID-19?

**Saad**: So if I may say so, like all our data collection instruments that go with the biorepository, for example, and other efforts have that question because both demographic, racial and social, determinants of health are a well-recognized entity and we would be remiss if we didn’t collect those data.

**Ann**: Now I’ll just jump in and say, you know in many regards, we’re always concerned about health disparities. And in many regards as many pandemics do, this one is really revealing that the cracks in our society, in our economies, the fragility of outcomes for different groups and for all of us really. And so I think that is the silver lining we have to look for on the other side of this pandemic, is, can we make our society better including reducing disparities? That’s the opportunity.

**Peter**: Saad, when this crisis is behind us, what do you think we will have learned about pandemic preparedness should something like this happen again in the future? You know, what are we learning about our strengths and weaknesses as a country, maybe also as a university, in our ability to prevent or mitigate a pandemic?

**Saad**: So I’ll respond first as a country. And actually some of us, and I have talked to my peers at Yale and other institutions, we are actually keeping notes, because we are bearing witness from a slightly different vantage point, where we can synthesize some of the information. We can spot challenges, both scientific and policy level challenges. So we are keeping notes. And we are actively thinking about, how do we do this better? Because we actually did keep notes, as a community and as actually as individuals, during the 2009 pandemic, as well, and we benefited from those lessons, even now. First of all, we will have to take a 360-degree view, or full chessboard view, of preparedness. And we obviously have to start from the science: investments in vaccine and countermeasure development. And so that starts with basic science, and one concept that has evolved, two [to] three years ago, is focusing rather than on a specific vaccine—this concept is known as the “disease X concept.” Meaning, yes, we can’t predict, as I said, specific species, but we can predict that the kinds of characteristics a species would have if it jumps, for example, from animals to humans, or a human virus mutates, or whatever the starting point of a pandemic is. So this disease X-based investment spans at the basic science level, so we do need some basic science innovations—for example, further focus on technologies that take us from a genetic code to actual vaccine quickly. We need innovation in clinical trial designs, both for therapeutics and existing protocols that let us test these innovations, or potential innovations, so that we’re not just collecting experience, we’re doing it systematically and we’re doing it under trial design as emergencies unfold. The other thing we need to ramp up (it was ramped up starting in 2005): we had investments as a country in global health security. And that was ramped down, if you will, it decreased in recent years. And the investment was that, look: things that affect us can come from anywhere, so it’s not just China. The so-called swine flu, and it could have been more infectious or more fatal, and just a slight difference in the genetic code of the virus could have caused it to be more substantial in terms of mortality, for example. It came from either Mexico or the U.S. So we need to invest in global health security. We need to invest in surveillance systems, both for humans—epidemiological surveillance systems both for humans and for animals—to use these innovative tools to predict and mitigate the risk of outbreaks. We need policy-level innovations. And I think those of us who have engaged with various federal institutions—and are big fans of them—I think we realize that, for example, there will have to be a CDC reform. And without going into the specifics of it, we’ll have to modernize the premier public health agency, not just of this country but of the world. And then we’ll have to have a national preparedness framework where it’s not just public health’s responsibility, it’s a national responsibility to be prepared and play our role, not just as a prepared nation, but as a prepared member of the global community.

And now briefly for the university: one thing I realized early on, and I keep on being reminded of that as I interact with colleagues around Yale from economics to public health to medicine to nursing to engineering to forestry around this, and these are just off the top of my head, the past two and a half days of meetings that I’ve had around specific projects around COVID-19. The thing as I said, that I keep on being reminded of, is that the best assets of a university are its intellectual assets. And how we align them, how we prepare those assets in anticipation of national emergencies, will be a task that we should pay attention to as a university.

**Peter:** I think one of the aspects of the pandemic that has been positive for universities is the public acceptance, I think in most quarters, of expertise. People develop a certain kind of trust, and in the times we live in, that hasn’t always been the case, but I think the pandemic has helped restore some of the trust in expertise.

Ann and Saad, I am grateful to you for answering my questions. I appreciate what you and other faculty, clinical staff, and investigators are doing to address the challenges posed by COVID-19.

Recent events have underscored for me that, now more than ever, the world needs universities to create knowledge and search for breakthroughs to fight disease, to alleviate suffering, and to improve the world. From medicine, nursing, and public health, to psychology, economics, history, and management, faculty and other investigators are contributing to vital research, helping our health care system adapt, communicating with the public, and teaching students. We are working together to take bold measures to protect our communities and our neighbors. Our efforts demonstrate not only the power of scholarship but also compassion and collaboration. Joining together with scholars and universities around the world, Yale’s search for answers will continue. That certainly gives me hope during this unsettling time.

To our friends and members of the Yale community, thank you for joining me for Yale Talk. Until our next conversation, best wishes and take care.

The theme music, “Butterflies and Bees,” is composed by Yale Professor of Music and Director of University Bands Thomas C. Duffy and is performed by the Yale Concert Band.