WRITING SAMPLE

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Lone Stars on the Medical Frontier: Lauren Ancel Meyers

By Mary Ann Roser

Welcome to the first edition of Lone Stars on the Medical Frontier.

This twice-monthly feature on Lone Star Health News' website turns a spotlight on some of the brightest Texans working in medicine, science and technology. Our Lone Stars will discuss health care innovations and issues expected to influence the direction of medicine in Texas.

Our cadre of Lone Stars will include academics, health care professionals, researchers, thought leaders and entrepreneurs, as well as the CEOs of health care-related start-ups in Texas. They'll share their insights, with an eye on the future of care.

The interviews are conducted by veteran journalist Mary Ann Roser, who was the health and medical writer at the Austin American-Statesman for 16 years. She left daily journalism in 2016 to create communications consulting company Roser Prose LLC.

For this first Q&A, Roser interviewed Lauren Ancel Meyers, an integrative biologist at the University of Texas who has become nationally known for using mathematics to forecast the spread of pandemic diseases.

A Harvard- and Stanford-trained mathematical biologist, Meyers has spent the past 20 years studying pandemic disease spread. During the first pandemic of the 21st century, the 2009 H1N1 "swine flu," Meyers and a half-dozen others at UT—mostly graduate students—developed an algorithm to forecast its spread. That data guided Texas decision-makers on distributing supplies and drugs.

Flash forward 11 years, and Meyers now leads the UT COVID-19 Modeling Consortium, which consists of several dozen scientists in various disciplines. The consortium has created mathematical models of the coronavirus' in all 50 states with data aiding numerous decision-makers, including the Centers for Disease Control and Prevention (CDC). Their models are based on the association between death counts and in-person contacts measured by cellphone GPS data and they are updated daily at: https://covid-19.tacc.utexas.edu/projections/.

An edited version of her comments follows:

Are you alarmed by what you're seeing?

Yes, in general, COVID is very alarming. The thing that has been particularly concerning … is the lack of communication about how significant a threat this really is and how important it is for people to take steps to prevent the spread. That's what's been alarming—the easy, inexpensive things we can do (that many aren't doing), like staying home, wearing face coverings and social distancing.

What does the future hold?

We don't have a crystal ball for what the people will do, and it's really hard to anticipate. But we do know … (with) states that were much more aggressive about relaxing distancing measures, we're seeing the consequences of that. There's a clear relationship between policy and spread of the virus. In Texas, now that the policy has changed to encourage mask wearing and other social-distancing measures, we are beginning to see the pandemic slow down. Whether cases and hospitalizations will continue to subside will depend on individual behavior in the weeks and months ahead.

So, human behavior is a big wild card. Do you have a behaviorist on your team?

We don't have a behaviorist or social scientist on our core team. We are certainly reading the literature and reading reports. Human behavior is one of the two inputs used in forecasting. It's the combination of what the virus does and what humans do … and we try to estimate from the data the extent to which behavior is changing and transmission is changing.

One data source we use is the cellphone mobility data. We are looking at daily feeds. What fraction are staying home, how many trips per day to grocery stores, to the doctors' office. We can see down to the census tract, and we can see before the stay-home orders were put in place, people started staying home. And those trends really hit their peak around mid- to late-April … and then people started leaving the house more. What we can't tell is if people are wearing face masks or keeping the six-foot distance.

How is this pandemic different than the H1N1 flu pandemic?

With H1N1, we just got lucky. It was about as deadly as a seasonal influenza virus. But COVID-19 is more deadly. It boils down to that.

What did you learn from your work during H1N1 that's helping now?

COVID spreads like influenza, person-to-person contact through droplets. We believe that with COVID, people are infectious around the third day. On H1N1, we built a lot of tools and models to help public health agencies and the state of Texas make decisions. … We started sharing those models with other countries so we could make projections. And, really, the modeling we developed during H1N1, we almost directly applied to COVID.

How successful is your COVID-19 forecasting?

Our model has been critical and useful for situational awareness and investigational awareness. Forecasting gets the most attention … and ours is one of a dozen feeding into the CDC's forecasting ensemble in which they look at all the different models … and compare them. You'll see some weeks we do a good job, some weeks not.

(But) in the modeling for decision-making support, it doesn't matter if it's spot-on; we use it to guide decisions. They help bring data and science to the decision table. They may not give the right answer every time, but they clearly frame the question and force the decision-makers to look at what they are trying to achieve. We've really been focusing on what measures should we take (to) never have COVID cases that exceed our hospitals' capacity. And the second objective is to keep the economy as open as possible.

Should schools open in August?

There is some uncertainty around that. One thing is clear, it will be very difficult to open schools safely if we have large waves of transmission underway. Then we will see students show up infected on a fairly frequent basis.

If they can bring the current wave under control, there may be a point where there's less prevalence. Maybe we can open with hybrids and take baby steps and see if we can do it without amplifying it in our communities.

What percentage of the population needs to get COVID before we see herd immunity?

It depends on how long immunity lasts. Very roughly, we estimate that half of cases are asymptomatic. If we assume, optimistically, they are immune for a period of time, somewhere around 60 to 70 percent would need to be infected to achieve full herd immunity. There's uncertainty around that, but it's over 50 percent.

Are we going to see more future pandemics because of climate change?

We have seen an increasing frequency of these threats. There's another strain of swine flu on the radar right now. Climate change could certainly have a huge impact on mosquito-borne viruses, but it's not just climate change, it's human encroachment on wildlife habitat, farming practices and a lot of different factors increasing the frequency of novel viruses being seen. And with global travel, there's more of a chance of spreading them.

Will future pandemics be this bad?

The modern field of pandemic modeling originated in 1987 with H5N1, a deadly bird flu. It never evolved, and it's so incredibly deadly in people. If it became a pandemic, it could be more deadly than anything we've ever seen. Most of the planning over the past decade has involved influenza. When this pandemic ends, we're going to be concerned about the next one.

What message do you want people to take away from this?

Go to the CDC's website and the health department's website. They're going to keep you safe, and they're going to help us avoid the need for another shelter-in-place order. If people take these simple steps, that would go a long way toward slowing spread. Wear a face mask. Encourage others to wear a face mask. If you have even a mild symptom, stay home, and keep a distance. Bend over backwards to protect vulnerable populations, like people over 65. … It's in everyone's interest for this virus not to spread.