

Q&A: The pandemic's next few months could be the hardest. A researcher explains why

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The pandemic's toll has been staggering. But to UC San Diego's Natasha Martin, it hasn't been surprising.

Martin, who holds a doctorate in mathematical biology from Oxford University, builds models that predict how various public health measures affect the spread of infectious diseases. It's a skill set she has used to study the transmission of hepatitis C and HIV. And now she's plying those same tools to forecast the impact of COVID-19 on San Diego County.

What she sees on the horizon troubles her. Last Tuesday, Martin warned the region's Board of Supervisors that, based on her models, San Diego could see its highest case surges yet in the coming months if the region doesn't take additional steps to slow the spread of a new, more infectious [coronavirus](#) strain first spotted in the U.K.

We caught up with Martin to get her take on the current state of the pandemic and where we might be headed in the months to come. (This conversation has been edited for length and clarity.)

How does modeling the spread of COVID-19 compare to previous diseases you've studied, such as HIV and hepatitis C?

Modeling COVID-19 has been more challenging because there was so much we didn't know about how SARS-CoV-2 is transmitted, vaccination efficacy, and the characteristics of new strains.

I feel a similar urgency working on COVID-19 compared to HIV and hepatitis C, because there are preventable deaths every day from these diseases. Most of my work focuses on improving health among stigmatized and underserved populations, such as people who inject drugs and are disproportionately affected by HIV, viral hepatitis and likely COVID-19.

How often do you tinker with the models that you build, and how well do they work?

We're always refining them. Every week—even twice a week—we take in new data, refine our assumptions and revise our projections. All the models perform differently; some weeks, some models perform better than others. Our hospitalization forecast models I would say have been accurate when we needed them to be accurate. An example is the surge that occurred after Thanksgiving and early in December. There are several models on the California Department of Public Health website, and ours was actually the most pessimistic in terms of predicting the potential surge in cases. The cases exceeded even our projections, but what was helpful was that we raised the alarm about the potential impact of the surge on our hospital capacity in our discussions with hospital leadership.

Gov. Newsom recently lifted the stay-at-home order that's been in place since early December. Was that the right call?

I am cautiously optimistic about the decline we've seen in the number of cases as well as the percent of tests coming back positive compared to the surge that we saw over New Year's. But my concern about the governor's plan is that the state's projections around intensive care unit capacity don't incorporate the potential impact of coronavirus strains such as the B.1.1.7 or "U.K." variant, which seems to be 50 to 70 percent more transmissible than existing strains.

Kristian Andersen's group at Scripps Research estimates that the B.1.1.7 strain accounts for 5 percent of cases right now. I think one to two months is a reasonable estimate for when it'll become the dominant strain. When that happens, it could and likely will lead to an increase in

cases, which will increase hospitalizations and intensive care bed needs. Our modeling indicates the impact could be felt in the next two to three months, or sooner if there is a surge in transmission with the lifting of the regional stay-at-home order. And there's some evidence that the variant may be more lethal, which could further compound the problem. We need to be extremely cautious and willing to go back to stricter measures if and when we see things going in the wrong direction.

It sounds like you won't be surprised if we see another surge in the coming months.

No, unfortunately, I would not be surprised. Once cases start increasing, they can accelerate very quickly. We saw that in November and December, when cases increased rapidly and exceeded our health care capacity. So I hope that this is on everyone's radar, and people are preparing for the worst but hoping for the best.

What will it take to slow the spread of this new, more infectious strain of the coronavirus?

We're going to need to do more, but our approach has become more tailored and intelligent as we've learned more about this virus. For example, we now know aerosols are an important contributor in transmission, and so we need to be concerned about activities in unventilated indoor spaces where people are unmasked. I think masking and reiterating the importance of wearing your mask correctly are going to be critically important.

And when we reopen, we have to be judicious. We can't make the same mistake that we made in the summertime and reopen bars, which caused a surge and, as soon as we closed them, we saw cases go down again. So we have learned what are the most effective ways to reopen portions of

our society while keeping the highest-risk areas closed. And I think we need to double down on that.

I'm sure you know a lot of people are desperate to get back to some semblance of normalcy. What's your message to folks feeling COVID fatigue?

The more we prevent the spread of virus right now in our communities, the lower the likelihood that there will be a new variant that the vaccines will not be effective against. So by our efforts in masking, social distancing as well as vaccination, we're increasing the odds that those vaccines will work.

I had never dared to hope that we would have multiple vaccines available that are 95 percent effective. It's incredibly fortunate. But we can't lose that opportunity by letting so much virus replicate that we get a strain where the current vaccines aren't effective.

Where are we in this pandemic: the beginning, middle or end?

I don't think we're at the end, but we're at a place where we can see where this is going. I'm optimistic that, through vaccines, we can manage this virus in the coming years. Now, does that mean that it's all going to go away? No. I think we'll be living alongside it, but in a manageable way that will allow us to reopen society and resume some amount of normal activity.

How soon could that happen?

We probably need to vaccinate between 75 to 85 percent of our population to achieve herd immunity—it could be slightly higher

because of these new strains. It's going to take a while to get there. If we can reach that target by summer, that will put us in position to reopen and go about our lives in a more normal way. But we need to expect that the coming months will be hard ones until we can reach that level of vaccination.

What's one piece of pre-pandemic normalcy you can't wait to get back?

Like all parents of school-aged children in San Diego County, I am dreaming of a day when my 6-year-old daughter can be back in school alongside her peers. That's what I'm most looking forward to, to be honest. I can see that day on the horizon. And I'm optimistic that we'll get there.

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