

As coronavirus outbreak evolves, key questions remain

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As the Chinese government increases efforts to contain the spread of coronavirus in Wuhan, one of the country's central cities and the epicenter of the outbreak, the death toll and infection rate of the disease continues to climb.

As of Tuesday morning, 106 deaths can be attributed to the disease and at least 4,500 cases of coronavirus have been confirmed, an overnight increase of 60%. Five cases have been confirmed in the U.S., and the Centers for Disease Control and Prevention report that an additional 110 cases are under investigation in 26 states. Other cases have been confirmed in France, South Korea, Japan, Nepal, Thailand, Cambodia, Singapore, Vietnam, Taiwan, Canada and Sri Lanka.

On Monday, Chinese officials expanded a quarantine in Wuhan to include 50 million people in more than a dozen cities, although the mayor of Wuhan told reporters that 5 million residents had left the region before travel restrictions were put in place.

For a closer look at how the outbreak has evolved, the Hub reached out to Jennifer Nuzzo, a senior scholar at the Johns Hopkins Center for Health Security and an associate professor in the Bloomberg School of Public Health. Nuzzo directs the Outbreak Observatory, which works to document infectious disease outbreaks and how governments respond in order to develop operational research and improve preparedness and response.

"We expect to see the number of cases increase as we increase surveillance, but we also need to pay attention to how the number of deaths is increasing, and what proportion of reported cases result in death," Nuzzo said. "Ultimately, what is important is understanding how severe the illness is."

Nuzzo shared her thoughts on what we've learned in the past week, her reaction to the quarantine imposed on 50 million residents of Chinese cities, and what she expects to see as the spread of coronavirus progresses.

What do we know about the outbreak now that we didn't know a week ago?

One of the things that we are increasingly convinced of is whether this virus can be spread between people in a sustained fashion. That now very much appears to be the case, which obviously ratchets up our concerns about the potential for this virus to spread.

What about the report from the Chinese government that the virus may be contagious before people show symptoms?

That's an area where there's still very much a [question mark](#). Where we are today, there's actually quite limited evidence to support that, so I am still skeptical about that until there is more published data available.

What questions do you still have about the virus and its spread?

I'm very much interested in better understanding what the severity of the

illnesses are that are associated with this virus. Case numbers are one thing—they can tell us about how widely the virus may be spreading—but case numbers alone aren't really the factor that worry us as public health experts.

We expect to see the number of cases increase as we increase surveillance, but we also need to pay attention to how the number of deaths is increasing, and what proportion of reported cases result in death. Ultimately, what is important is understanding how severe the illness is. Clearly, we know now that some people can get quite ill and a number of people have died from this virus, but for the most part the people who have died are those who have had underlying conditions that can make them susceptible to illness and death from other respiratory viruses. So one thing we are still trying to understand is how severe the illnesses are that are associated with this virus.

One puzzling question is that the majority of cases reported in countries outside of China have been relatively mild. Why would that be? Is it that healthier people are more inclined to travel? Or is it that there's something about being in China that makes it likelier for the illness to progress? Is it simply too early to see severe illnesses in these countries? There are a lot of questions raised by this observation.

Has China done enough to contain the outbreak?

There are some key questions that we have to put more effort into understanding before we can truly understand how much a risk the situation is, but I'm very alarmed by reports that 5 million people have left Wuhan. Especially because in many countries, the screening efforts are contingent on there being a relatively small geographic footprint for the epicenter of this. Screening agents can ask "Were you recently in Wuhan," but "Were you in China?" and "Were you in Asia?" become a much harder endeavor to screen and identify cases.

Is the quarantine an effective containment technique?

I'm deeply worried about the quarantines, mostly because historically they've had the tendency to backfire. And we always worry when governments announce an intention to take heavy-handed measures that are very hard to pull off in a way that doesn't actually harm the people subjected to them. You have to think about the effects of being asked to not go anywhere and of shutting down mass transit and what that does to the availability of food and consumer goods. It's just a massive endeavor that I'm very skeptical can be pulled off in a way that doesn't cause harm.

And also—people's willingness to comply with measures may be dependent on their belief that is in their best interest. If the Chinese government is doing this in the name of trying to control the spread of the virus but you already have 5 million people leaving, then additionally people may want to break free from the restrictions. We really worry in that scenario about cases being driven underground—people not wanting to come forward with their illness because they don't want to be subjected to restrictions or perceived penalties. But you have to balance that with the complications caused by the geographic scattering of cases.

What about the U.S.? Are we prepared to respond to coronavirus?

I think that an important thing to consider is what our approach for diagnosing, testing, and isolating patients will be. The single most important thing that can be done in this scenario is to isolate sick patients so that they don't spread the virus to others. But in order to know who needs to be isolated, we need to have appropriate levels of diagnostic testing. Health officials in the U.S. are obviously working on it, and I have confidence that in a week we'll be in a better situation. But if the

2009 H1N1 flu pandemic is a measure, we can expect that if this virus starts spreading widely, at some point the laboratories won't be able to test everybody and will have to reprioritize who gets tested, and maybe at some point even stop testing as a means of surveillance and focus more on testing for diagnostic and for treatment purposes.

We've also had a number of identified cases isolated in hospitals, and I personally think that's not a great idea unless these patients require medical intervention. If there's a way that keeps infected people who are not very sick at home, that's preferable to potentially bringing a virus into a health care environment. We're already short on the capacity to treat influenza patients, and all sorts of people show up at hospitals for other, more pressing health needs. If somebody is sick enough to need hospitalization, then of course they should be admitted. But a number of these exported cases have a fever and a runny nose. It's hard for me to imagine that they need to spend weeks in a hospital until health workers can't detect any [virus](#). That doesn't really seem like a good use of resources.

What do you expect to see from other governments around the world in response to this outbreak?

I think that we will probably see a situation in which governments will feel compelled to act, but it is possible to make things worse by how we act. If we take measures that aren't evidence-based, it can actually do more harm than good. And that's a very hard thing to figure out, which actions are best, and often there's a tendency by governments to want to be perceived as being strong and responsive. Like the China quarantine example—it could actually backfire and make the situation worse.

Provided by Johns Hopkins University

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