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Labor, Health and Human Services, Education, and Related Agencies

The United States COVID-19 epidemic: early lessons learned and the way forward
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Caitlin Rivers, PhD, MPH

Senior Scholar, Johns Hopkins Center for Health Security
Assistant Professor, Environmental Health and Engineering
Johns Hopkins Bloomberg School of Public Health

Chairwoman DeLauro, Ranking Member Cole, and members of the Committee, thank you for the chance to speak with you today about the COVID-19 response. My name is Caitlin Rivers. I am a senior scholar at the Center for Health Security and an assistant professor in the department of Environmental Health and Engineering at the Johns Hopkins Bloomberg School of Public Health.

I am infectious disease epidemiologist. I have co-authored a number of reports and guidance documents on reopening safely, and lessons from that work are what I want to share with you today. The opinions expressed herein are my own and do not necessarily reflect the views of Johns Hopkins University.

Current situation: The coronavirus pandemic is one the gravest challenges the world has faced in modern times. As of this writing, there have been over 3.3 million cases and 240,000 deaths worldwide, including the tragic loss of over 65,000 American lives. This toll is compounded by the severe economic losses stemming from the strict physical distancing measures we have had to take to slow transmission of COVID-19

and save lives. However, these extreme efforts are working, and the number of new cases in many communities has plateaued or begun to fall.

Nonetheless, it is clear that more difficult times lay ahead. The US still faces 25- to 30,000 new cases and approximately 2,000 deaths every day, a range that held steady for the entire month of April. Many states are in the process of reopening, or are considering doing so, despite inadequate capacities to do diagnostic testing, contact tracing, and insufficient supplies of personal protective equipment. Other states not yet reopening are looking ahead to those decisions, as we all are, to try to understand how and when that transition to reopening should unfold.

It is clear to me that we are in a critical moment in this fight. We risk complacency in accepting the preventable deaths of 2,000 Americans each day. We risk complacency in accepting that our healthcare workers do not have what they need to do their jobs safely. And we risk complacency in recognizing that without continued vigilance in slowing transmission, we will again create the conditions that led to us being the worst-affected country in the world.

And so, at this critical moment, it is important that we renew our focus on the public health actions that we know are effective in defeating COVID-19. These are the strategies of South Korea, Singapore, Taiwan, New Zealand, Germany, Iceland – all of which have successfully managed to slow their spread. I will describe three capacities

needed, which taken together will allow us to transition safely from staying home to a gradual reopening.

Diagnostic testing: The first critical capacity is diagnostic testing. We need, at minimum, enough capacity to test everyone with COVID-like symptoms and have results with 24 hours. We should also be able to regularly test critical workers, like those in healthcare, long term care, correctional facilities, and first responders.

Last week we performed around 1.6 million tests nationwide, an enormous improvement over the one million tests per week in early April. These gains are a testament to an impressive biomedical enterprise that we have built through sustained investments in science and medicine. But it is not enough. Estimates for the number of tests we need range from 3.5 million to tens of millions per week. While testing on the upper end of the range may not be logistically feasible any time soon, even increasing our testing capacity to 3-4 million tests per week would be enormously helpful to enable case-based interventions like contact tracing.

We urgently need a national plan to close that gap. Scaling to the first one million tests per week, though hard-fought, was largely about bringing to bear existing resources. Getting to triple that, or ten times that, will require national level strategic planning and innovation. We should start by understanding, from start to finish, what resources and components are involved in the testing pipeline. Swabs, reagents, test kits, PPE, have all intermittently been implicated in shortages. Next national leaders

should map out, in great detail, the current and expected capacities for each of these elements. What national capacities can we expect at the end of May, and June, and August? Where are the bottlenecks? What untapped resources could we draw from? How will we get from where we are to where we want to be?

If this work has been done, I have not seen it, and I fear that neither have the governors and other state and local leaders who are having to make decisions about how and when to reopen. They need to know whether and when significantly more tests may be reliably available to states. Businesses need to understand whether proposed plans to test workers regularly, for example, are even possible, or whether that capability is simply not coming. The Federal government should take on this strategically important assessment and planning process to increase testing capacity in the US and should make the results publicly available.

Contact tracing: The second needed capacity, closely related to diagnostic testing, is contact tracing. Contact tracing is the key tool that will allow us to move safely from everyone staying home to slow the spread to a more targeted approach. Contact tracing involves public health officials conducting in-depth interviews with people who have a confirmed COVID-19 diagnosis in order to identify all of the contacts who have had an exposure to them, and who are therefore at risk. Those contacts are notified and asked to stay home for 14 days so that if they are infected, they do not accidentally spread the disease further.

We do contact tracing all the time in public health for many different diseases, but we have never done it on the scale that will be needed here. You did include \$11 billion for states, territories and tribes to expand testing and contact tracing and \$1 billion for the Centers for Disease Control and Prevention to expand contact tracing and public health surveillance and epidemiology in the fourth emergency bill, which is an important foundation. States have moved to expand their contact tracing workforce, but more capacity may be needed to as a means to control the outbreak.

In addition to reducing transmission, contact tracing provides us with important data that we need for decision making. For example, we currently have very little understanding of where most people are becoming infected – at home? In special settings like long term care facilities or correctional facilities? All around the community?

If most transmission is occurring at home, that suggests a need to create options for people to isolate or quarantine away from their families, like in hotel rooms. And we know that special settings like nursing homes are high risk for transmission, but if we find out that a very large fraction of new cases originate from those institutions, we may determine that general activities in the community may be lower risk than initially thought. This information on where most transmission is occurring is of critical importance, but it's currently not being prioritized.

Contact tracing is an opportunity to collect this data. The Federal government should provide guidance around what data should be collected during contact tracing, and states should be encouraged to follow that guidance and publish data about who is getting infected, and in what settings, regularly. States should also report the number of contacts they are able to follow up with each day, and of new cases, what fraction were known contacts. These figures will help us to better understand the contours of the outbreak.

Healthcare capacity: The third and final pillar is healthcare capacity. Many of the cities that were first and severely affected have turned the corner. But it is too soon to breathe easily. We were able to secure enough healthcare capacity to treat everyone with COVID-19 only with extraordinary measures, including cancelling all elective procedures, turning operating rooms into ICUs and standing up alternate care sites. Many states will be lifting stay at home orders at the same time as they begin allowing those long-deferred procedures to begin again. We must be exquisitely careful not to allow our healthcare systems to become overwhelmed through this transition, as they were in New York City, Lombardy, Wuhan during the acceleration phase. But I also want to emphasize that it is not just large cities that face this risk. Even when general community transmission slows, an outbreak in a nursing home or correctional facility could result in a surge of patients requiring hospitalization. This scenario could easily overwhelm rural hospitals, most of which have very little extra capacity.

To guard against that, the Federal government should support states in deciding how and when to reopen and should work with states to carefully monitor for signs that transmission is accelerating. If the number of newly diagnosed cases begins to rebound, or if the number of hospitalizations and deaths increases, additional measures may be needed to regain control. The Federal government should also plan to provide rapid surge capacity for healthcare systems that become strained. Deployable medical teams, like those under the National Disaster Medical System managed by the HHS Assistant Secretary for Preparedness and Response, could provide some relief. However, we have a limited number of these teams and they are made up of civilian volunteer healthcare workers who have regular jobs providing healthcare. The protracted and large-scale nature of this pandemic will require additional capacity. We should plan now for how those teams will be staffed and funded to move from hot spot to hot spot, particularly as we face hurricane season which may draw on the same resources.

We also need to provide safe working conditions for our front-line healthcare workers. There is still a significant shortage of personal protective equipment or PPE, that is the masks gowns and gloves that workers in hospitals, nursing homes and other healthcare sites need to protect themselves and to prevent spreading the virus to other patients. Healthcare workers have been forced to improvise substandard ways to trying to conserve the very limited supplies of PPE they have and this puts them at risk.

These three capacities – testing, contact tracing, and healthcare – are what will enable us to transition safely from staying home to slow the spread into a gradual reopening. We should be working now to ensure we have the tools to do that successfully.

With Congress' leadership, we now have opportunities to not only respond to the current pandemic but to ensure we are better equipped to prevent this level of health, economic, and societal damage during future outbreaks. I would like to propose two important initiatives that, if adequately funded, could appreciably improve our chances of controlling the next epidemic before it overwhelms our existing systems.

Outbreak science: We have seen on the White House Task Force briefings, and on the nightly news, that infectious disease modeling, or “outbreak science,” is playing an important role in guiding the COVID-19 response. What many people don't realize is that the expertise to produce those models is not a standing capability. There are a few small teams within HHS who do this kind of work, but the number of questions to be answered during a pandemic outpaces the capacities that exist within the federal government. To fill that gap, academic modelers volunteer to support the response.

This approach stands in stark contrast to weather forecasting, which the nation has invested in for decades through the National Weather Service. As a result of that investment, we enjoy accurate weather forecasts that allow us to make important

decisions about travel, commerce, and defense with confidence. We don't have that for outbreaks. But this pandemic underscores why that must change. We urge Congress to consider establishing a national center that would perform epidemic forecasting and analytics, patterned after the National Weather Service. Such a center could be relied upon to produce disease forecasts and analytics to support high-consequence policy decisions made by federal and state officials who are working to protect the public.

There is some misconception that because COVID-19 is unprecedented, it is not worth designing new systems around. But in fact, outbreaks that threaten our national interests are unsettlingly common. Since 2000 we have faced the anthrax attacks, SARS, H1N1 influenza, Ebola in West Africa, Zika, and now COVID-19. And it is not just during pandemics that this outbreak science is valuable. Every year, seasonal influenza threatens hundreds of thousands of Americans. In fact, seasonal influenza is where these forecasting capabilities are currently best developed and organized.

Medical Countermeasures for Unknown Threats: With nearly 200 epidemics occurring each year, the next fast-moving, novel infectious disease pandemic could be right around the corner. Our best defense, in addition to a strong and well-funded public health system, is safe and effective medical countermeasures. As we are all painfully aware at this moment, development of these life-saving products takes a long time, especially for novel pathogens like SARS-CoV-2.

When the next deadly pathogen emerges, the U.S. needs to move much faster to develop and deploy medical countermeasures. Existing programs at HHS and DOD are primarily directed towards specific, known, high-priority health security threats. There is no sustained funding or strategy dedicated to accelerating the development of medical countermeasures for unidentified infectious disease threats.

The U.S. must set an ambitious goal of rapidly developing medical countermeasures for novel or unknown threats in months, not years. Innovative technologies, and game changing science must be harnessed to meet this goal. Dedicated funding could be provided through the HHS Biomedical Advanced Research and Development Authority and the DOD Joint Program Executive Office for Chemical and Biological Defense to enable these agencies to initiate a robust and coordinated strategy to accelerate medical countermeasures for unknown pathogens before the next virus threatens the globe.

Conclusion: Thanks to the leadership of the House Appropriations Committee, the country has made important progress towards combatting the COVID-19 pandemic. Additional capacities in diagnostic testing, contact tracing, and the health system will be required to successfully combat the virus in the weeks, months and years to come. We must prioritize that work now so that we can minimize future public health and economic consequences of this pandemic.