

United States Senate Committee on Health, Education, Labor, and Pensions
“The Path Forward: Building on Lessons Learned from the COVID-19 Pandemic”

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Chairman Murray, Ranking Member Burr and distinguished members of the Committee, thank you for the opportunity to speak with you today about the COVID-19 pandemic.

I am the Deputy Director of the Johns Hopkins Center for Health Security and a Senior Scientist in the Department of Environmental Health and Engineering at the Johns Hopkins Bloomberg School of Public Health. The opinions expressed herein are my own and do not necessarily reflect the views of the Johns Hopkins University.

For over 20 years, the mission of our Center for Health Security has been to protect people’s health from epidemics and disasters and ensure that communities are resilient to major challenges. We have 30 faculty at the Center with expertise in fields including infectious disease, epidemiology, medicine, law, the social sciences, and immunology.

During the past year and a half, I have co-led our Center’s policy work in response to the pandemic and our efforts to understand what the nation should do to be better prepared for even more catastrophic pandemics in the future. Last year our Center launched the Capitol Hill Steering Committee on Pandemic Preparedness and Health Security, a bipartisan, bicameral educational initiative to provide Congressional staffers and other stakeholders with information and analysis on current and future national health security priorities. I would like to acknowledge the excellent leadership of HELP Committee members, Senators Baldwin, Burr and Casey – three of the four Senate co-chairs of the steering committee – along with Senator Cindy Hyde-Smith of Mississippi and Senators Ben Cardin and Chris Van Hollen of Maryland.

I also would like to express my appreciation for this Committee's long-standing leadership and bipartisan work to improve our nation's pandemic preparedness and biodefense. For as long as I can remember, the HELP Committee has crafted and supported comprehensive, bipartisan policies. Thank you for continuing that tradition.

Covid-19 has done great damage to our country in terms of sickness, loss-of-life, terrible economic consequence, and job loss. And we are not in the clear yet.

The profound effects of this pandemic should galvanize members of Congress to do everything in their power to prevent this, or worse, from happening again and to be better prepared if it does. We should aim for creating a pandemic-free future. Investing \$30 billion over the next 4 years to improve pandemic preparedness, as called for in the American Jobs Plan, would get us

on a more solid footing by bolstering our public health capabilities, innovation, and biomedical preparedness to better protect Americans.

When we take a step back and look at the big picture to identify important lessons learned from the COVID-19 pandemic, what jumps out is the need to fundamentally shift from being largely *reactive* to being more *proactive* across the board.

Before the next large scale outbreak occurs, we need to be more proactive in improving our situational awareness through better data collection, diagnostics, surveillance and genomic sequencing; more proactive in bringing our antiquated public health infrastructure into the 21st century; more proactive in using cutting-edge technologies to quickly develop medical countermeasures; more proactive in having a reliable supply chain and stockpile in place; more proactive in our ability to provide excellent care for patients in our health system, even during large surges; and more proactive in earning the trust of diverse communities before a pandemic so that there is greater support for outbreak response measures. We have learned the hard way that trying to play catch up and accomplish these things in the midst of a pandemic is like swimming against a strong rip tide.

Our Johns Hopkins Center for Health Security has submitted [recommendations](#) to Senator Murray and Senator Burr for improving the nation's public health and medical preparedness response programs.

In my remarks today I will focus on two of the important areas where we need to shift to a more proactive stance if we want to be better prepared for a future pandemic – one that could be more catastrophic than COVID-19. The first area is advancing biomedical preparedness and the second is improving our public health infrastructure.

I want to stress that the examples I will give of innovations in each of these areas are not futuristic, out-of-reach goals. They are achievable and realistic improvements that, with the support of Congress, can enormously advance our nation's preparedness for future pandemics.

1. Advancing Innovation in our Biomedical Preparedness

Three ambitious but achievable goals for advancing innovation in our biomedical preparedness are: 1) establish a dedicated "Disease X" medical countermeasure program; 2) incentivize innovation in masks and respirators for health care workers and the public; and 3) prioritize development and review of at-home diagnostic technologies.

We have seen firsthand during this pandemic how powerful and lifesaving it is to have rapid and safe vaccines and therapeutics, as well as reliable diagnostics against novel infectious disease threats. The Biomedical Advanced Research and Development Authority (BARDA) within the Office of the Assistant Secretary for Preparedness and Response (ASPR) at the Department of Health & Human Services (HHS) has a proven track record of partnering with

private industry and developing medical countermeasures against a defined list of biological threat agents.

However, there is no sustained funding, program, or strategy dedicated to accelerating the development of medical countermeasures for previously unidentified infectious disease threats. The U.S. should set an ambitious goal of rapidly developing medical countermeasures for novel or unknown viral threats in just a few months. Innovative technologies, outside-the-box thinking, sustainable partnerships, and game-changing science can be harnessed to meet this goal.

Disease X

The next deadly virus, or “Disease X,” could be right around the corner. The U.S. will need to move even faster to develop and deploy medical countermeasures to save lives and safeguard the economy. Accordingly, a new dedicated Disease X Medical Countermeasures Initiative should be created to accelerate this process at BARDA, in coordination with DOD and other federal stakeholders. BARDA needs sufficient and sustained federal funding dedicated to developing medical countermeasures against future viral threats that are unknown and therefore not on the “material threat determination” list.

It is not possible to identify which specific virus will cause the next pandemic, but we do know that certain viral families possess the kinds of attributes – such as high lethality, high transmissibility, and asymptomatic spread – that are likely to lead to large scale outbreaks. Because we know that viral families with these attributes can produce our next pandemic pathogen, BARDA could, with sufficient, sustained resources, advance the development of the technologies and vaccine platforms that are best suited to use against these viral families, and support innovations that enable rapid, large-scale response. That way, when the next viral pandemic pathogen emerges, we would have the ability to quickly adapt those technologies and platforms to develop effective vaccines and other medical countermeasures before the outbreak picks up speed.

Next Generation Masks & Respirators

Just as we need to commit to developing medical countermeasures in weeks, not months or years, we should likewise increase our expectations for effective masks for medical workers, essential workers, and the public. Innovations in this area are long overdue. Medical masks and respirators for health care workers are essential pieces of personal protection equipment (PPE), especially during outbreaks of contagious respiratory pathogens. However, despite their importance and daily utility, health care workers have been using basically the same surgical masks, procedure masks, and respirators for decades. Through incentivizing innovation, we can develop masks and respirators that are reusable, better fitting, and more comfortable for long stretches.

The public should also have better-quality masks that are certified to meet breathability, wearability, and effectiveness standards established by government. It’s great that anyone can buy a cloth mask almost anywhere these days, but there is little quality control for public use

masks. BARDA launched a Mask Innovation Challenge, and they should continue to foster technical advances in this area. Using new information gleaned from this challenge, BARDA could create target product profiles for new and better-quality medical respirators and public use masks.

As with other types of PPE and medical supplies, we must ensure the stability of a reliable supply chain for a range of respiratory devices. Currently, most masks and respirators are either made overseas, or their materials are sourced from overseas. Once devices meet new target product profiles established, BARDA should provide financial support if needed to domestic companies to scale up production, and the SNS should purchase enough to meet anticipated future needs based on modeling of various severe scenarios.

Although it is uncomfortable to imagine, a future viral pathogen could be even deadlier and spread more easily than SARS-CoV-2. On the most basic level, health care workers, other essential workers, and the public must have an abundant supply of masks that can protect them from infection while countermeasures are being prepared.

At-Home Diagnostics

Another area ripe for innovation are at-home diagnostics for viral threats. Limitations around access to reliable diagnostic testing have dominated much of the response to COVID-19. As outbreaks emerged in countries around the world, the US was unable to quickly deploy reliable testing tools. Looking ahead, a world in which individuals and families have access to reliable home testing for infectious disease threats is in reach if we set that as our goal. We can change the paradigm if there is enough will and commitment to do so. People already can take home HIV tests, and BARDA is currently funding advanced development of at-home diagnostics for influenza. Imagine if you could conveniently and cheaply test yourself and your family for things like strep throat, flu or a new dangerous virus. Currently, we mostly fly in the dark without knowing what kinds of viruses are infecting us or circulating in our communities.

Congressional funding, and the development and review of at-home diagnostic technologies by BARDA, FDA, and CMS should be prioritized. BARDA could increase the development of direct-to-consumer home tests for infectious diseases. FDA could help to streamline regulatory pathways for such devices. And CMS and private insurers should provide payment and reimbursement schedules for these devices to facilitate uptake. There are now some at-home COVID tests on the market, but it took us more than a year into the crisis to get there, and their pricing puts them out of reach for many people.

At-home diagnostics for infectious diseases, coupled to information technology, could have a transformative benefit for current and future pandemic response. Not only could it decrease the unnecessary use of antibiotics, but it could also greatly improve our early warning surveillance for infectious disease threats.

For these and other achievable advances in our nation's biomedical preparedness, it is critical to have strong federal leadership that is motivated and empowered to maintain the

momentum and contribute to the success of our pandemic response efforts. In this regard, it is important to have a strong, operational, well-functioning office of the Assistant Secretary for Preparedness and Response which has the hiring and budgeting authorities it needs to respond quickly and proactively during serious health emergencies that the nation could face.

2. Advancing Innovation in our Public Health Infrastructure

In addition to innovation in biomedical preparedness, we must support innovation in our public health capabilities at the state and local levels; they are our first line of defense against dangerous outbreaks. We also need to fully support the creation and annual funding of a National Center for Epidemic Forecasting and Outbreak Analytics.

State and Local Public Health Capacity

Because we have never sufficiently prioritized public health in the past, its infrastructure is woefully inadequate now. Some of our state and local public health agencies are still reliant on 1950's technologies – using pencil, paper, and fax machines to manage data – while the hospitals down the street from them are fully in the 21st century. There is a technological disconnect between public health and health systems that greatly hinders our ability to collect, share, and appropriately respond to actionable data during a public health crisis.

A strong public health infrastructure is not something that can be ramped up after a large-scale outbreak has already gained steam. We have certainly seen this across the board during the COVID-19 pandemic from spotty and irregular collection and reporting of COVID-19 case data to the too little/too late attempt to hire contact tracers to trace infections once there was already rampant community spread of the virus.

Although Congress has appropriated \$1 billion for data modernization across the CARES Act and the American Rescue Plan, it will take years for our country's public health data infrastructure to be brought up to speed. In the meantime, we are now in a position where we are facing a new wave of Covid-19 without the data we need to make crucial decisions. We do not conduct surveillance in a way that gives us real time data about who is getting sick from which variant. Many states are moving to weekday-only or even weekly reporting of cases. Data on mild breakthrough cases of fully vaccinated people is not being collected. There is no central tracking of outbreaks in schools. These kinds of gaps make it difficult to understand how the virus is circulating in our communities.

What does a more proactive strategy for public health infrastructure look like? Given sufficient resources, people, and modern IT systems, public health agencies at the local and state levels could be seamlessly connected to health care providers and labs and collect more accurate, standardized, real-time data. We need to leave the disjointed, local reporting systems behind and develop uniform systems for reporting on testing, positive cases, hospitalizations, and deaths.

National Center for Epidemic Forecasting and Outbreak Analytics

There is \$500 million in the American Rescue Plan for the National Center for Epidemic Forecasting and Outbreak Analytics, as well as data modernization. To establish this as a permanent capability, the epidemic forecasting center should be included in annual appropriations to support its ongoing mission.

I thank Congress for the investments it has already made in our data infrastructure and encourage a continued commitment to supporting our nation's public health institutions with the authorities and funding they need to ensure we have a proper infrastructure in place for the next pandemic.

Again, I hope that my testimony has shown that there are commonsense, attainable things we can do today, with your vision, leadership, and support, to save American lives and our nation's jobs and economy tomorrow.

Thank you for inviting me to contribute to the hearing and for your important work on pandemic preparedness. I look forward to answering any questions you may have.