From SARS to 2019-Coronavirus (nCoV)

U.S.-China Collaborations on Pandemic Response

Addendum

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From SARS to 2019-Coronavirus (nCoV): U.S.-China Collaborations on Pandemic Response

Testimony of Jennifer Bouey[1]
The RAND Corporation[2]

Addendum to Testimony Before the Committee on Foreign Affairs
Subcommittee on Asia, the Pacific, and Nonproliferation
United States House of Representatives

Submitted March 5, 2020

Following the hearing on February 5, 2020, the committee sought additional information and requested answers to the questions in this document.[3] The answers were submitted for the record.

Questions from Representative Ann Wagner

Question 1

China has been praised for releasing the genetic sequence of the virus, but the New York Times *has reported that China repeatedly chose to suppress information early in the outbreak, to the detriment of response efforts. What effect has this had on the severity of the outbreak? Has China made adjustments to prioritize transparency and information sharing?*

Answer

In my written testimony, I compared China's response to the coronavirus disease 2019 (COVID-19) outbreak with its response to the 2002–2003 Severe Acute Respiratory Syndrome (SARS) outbreak.[4] I concluded that the Chinese government's response to COVID-19 has

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[1] The opinions and conclusions expressed in this testimony are the author's alone and should not be interpreted as representing those of the RAND Corporation or any of the sponsors of its research.

[2] The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest.

[3] Jennifer Bouey, "From SARS to 2019-Coronavirus (nCoV): U.S.-China Collaborations on Pandemic Response," testimony presented before the House Foreign Affairs Subcommittee on Asia, the Pacific, and Nonproliferation on February 5, 2020, Santa Monica, Calif.: RAND Corporation, CT-501, 2020.

[4] Since the February 5 hearing, the official name of the virus has changed to coronavirus disease 2019 (COVID-19).

generally followed a similar pattern to that of the SARS outbreak, but the current response also has a few major differences that have helped mitigate some of the negative effects.

The differences consist of a fast isolation, the culture and identification of the novel virus (seven days after the announcement of the pneumonia cluster), and the public release of the virus genomic data (four days after preparation of the virus culture) from Fudan University, the Chinese Center for Disease Control and Prevention (China CDC), the Chinese Academy of Medical Science, and Zhejiang Provincial CDC. The achievement of releasing the genomic data reflected the following: First, Chinese scientists have demonstrated an expert proficiency in applying the genetic sequencing technology, RT-PCR (reverse transcription polymerase chain reaction) testing development, and vaccine development for emerging infectious diseases in the past decade. They applied similar technology in 2013 to successfully identify the H7N9 influenza virus, sequenced the virus's genome, and developed the H7N9 vaccine within a few months.[5] Second, there is a strong culture of data sharing among scientists in the global health field. The new coronavirus genomic data were shared by Chinese scientists through a publicly accessible database (GenBank of the National Institutes of Health [NIH] and Global Initiative on Sharing All Influenza Data [GISAID]) to support global efforts to develop vaccines, diagnostics, and risk assessment. Several international groups have been working from these genomic data to design primers for the PCR tests to support global public health laboratories. Labs in Berlin and Hong Kong published details of a real-time PCR diagnostic test and workflow on January 23. This formed the basis of shipments of 250,000 kits that the World Health Organization (WHO) dispatched to 159 labs across the globe.[6] Compared with what happened in 2003 with SARS, the advantage of having genomic technology in China and global health research platforms helped the world to link different COVID-19 cases to one source and develop the testing kits critical for patient screening and vaccine development.

I also described in my testimony the repeated patterns of delay and downplay of the severity in the early management of COVID-19 in Wuhan, including a local public announcement of initial cluster of pneumonia in the hospitals in Wuhan only after the whistleblower's disclosure on social media (December 30) and the downplaying of the severity (e.g., initial assessments suggested that there would be no person-to-person transmission) of the outbreak by the two China CDC investigation teams between January 2 and January 20. Although these initial reactions could have been based on the best available evidence at the time, some of these delays and the downplaying of a significant public health event may be attributable to the political culture in China that promotes stability and good news, as well as the fear and avoidance of any disruptive event.

Subsequent events revealed another systemic issue: A discourse between the provincial government and the central government showed that the provincial government considered the events to be its own responsibility and resisted the central government's involvement. Yet,

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[5] Xianwen Ren, Fan Yang, Yongfeng Hu, Ting Zhang, Liguo Liu, Jie Dong, Lilian Sun, Yafang Zhu, Yan Xiao, Li Li, Jian Yang, Jianwei Wang, and Qi Jin, "Full Genome of Influenza A (H7N9) Virus Derived by Direct Sequencing Without Culture," *Emerging Infectious Diseases*, Vol. 19, No. 11, 2013, pp. 1881–1884.
[6] Cormac Sheridan, "Coronavirus and the Race to Distribute Reliable Diagnostics," *Nature*, updated February 21, 2020.

according to Law of the People's Republic of China on the Prevention and Treatment of Infectious Disease,[7] only the central government can announce a public health emergency. This likely delayed an appropriate response.

Nevertheless, the response, when it occurred, was massive. The government's use of mass quarantine as the primary intervention for management of the coronavirus and the national mobilization of health care workers (41,000 medical personnel) and resources to support the crisis zone are similar to the government's previous strategies during SARS. China's authoritarian political system allows the government to impose drastic public health interventions at scales that would be very difficult to implement in almost any other country, and most Chinese people have absorbed the negative implications for their livelihoods over the past month. In addition, as the WHO and others have recognized, mass quarantines bought time for other countries to review and prepare for the inevitable spread of COVID-19 beyond China's borders.

In summary, although the capacity of science and technology in China has been improved dramatically in recent years, such progress is constrained by the political system's limited capacity for early response. However, China is not the only country confronting such a challenge. As subsequent events have shown, the differential effects of global contagion, with severe effects in some countries, such as South Korea and Iran, suggest that many other countries were unprepared, despite the lead time they had. Further, if there had been confirmed person-to-person transmission in early January and if a travel ban in Wuhan had started two weeks earlier, say by January 10 (the start of the Chinese New Year travel season), there might have been many fewer infections in other areas of China and the world. However, given the highly contagious nature of the virus and the high prevalence of asymptomatic infections, whether the course of a widespread epidemic could have been averted is far from certain.

China is currently concentrating most of its efforts to contain the epidemic and allow the economy to recover. China's National Natural Science Foundation (similar to the U.S. National Science Foundation combined with NIH) has already sent out calls for research on public health governance and assessment of the economic and social impact of public health events associated with COVID-19. It is likely that many problems revealed by COVID-19 will be studied. Seventeen years ago, SARS prompted China to restructure its CDC and spurred close collaborations between China and other counties on global health issues. These collaborations improved China's public health data system and promoted transparency. The United States has been working with China for many years to help China build a public health surveillance system, data analysis, and system capacity since SARS, although the collaboration is currently weakened between the two countries because of the U.S. CDC's budget cut, the U.S.-China trade war, technology decoupling, and eroding mutual trust. Such "decoupling" prospects for the future may make data sharing more difficult.

[7] Chinese Ministry of Commerce, Law of the People's Republic of China on the Prevention and Treatment of Infectious Disease, February 21, 1989.
(http://english.mofcom.gov.cn/article/lawsdata/chineselaw/200211/20021100050619.shtml).

Question 2

What weaknesses in international information sharing and response coordination has the coronavirus outbreak illuminated? What is being done to correct these problems?

Answer

The COVID-19 epidemic reminded us that the speed with which disease outbreaks are recognized is critical for establishing effective control efforts. There are three ways that information about a new infectious disease can be shared internationally to help coordinate the response:

1. **Through the WHO:** The WHO is the only international, multilateral organization that has had International Health Regulations that require its member states to report public health surveillance findings since SARS. The WHO office in Beijing notified the WHO of the pneumonia clusters on December 31 and the public health emergency of coronavirus infection on January 20, when the domestic emergency system was triggered. The WHO sent a small mission to Wuhan in mid-January. The director-general visited Beijing in January. The WHO announced a public health emergency of International Concern on January 30. The WHO assembled a team of international health experts and conducted investigations in four Chinese cities, including Wuhan, between February 10 and 17.
2. **Through bilateral or multilateral collaborations on emerging infectious diseases:** After SARS, a U.S. Health and Human Services health attaché position was established at the U.S. Embassy in Beijing in 2003. The U.S. CDC and the Chinese National Influenza Center signed a memorandum of understanding to build Chinese capacity in influenza surveillance in 2004. Both countries inaugurated the Collaborative Program on Emerging and Re-Emerging Infectious Diseases in 2005. The U.S. CDC and China CDC shared information and collaborated on epidemic controls for HIV/AIDS (2003–2018), avian flu (2005), swine flu (2009), H7N9 (2013), and Ebola (2014). As I mentioned in my testimony, the collaboration on global health issues has been significantly reduced in recent years because of the U.S. CDC's budget cuts and strained U.S.-China relations. Although the CDC and NIH still have positions in Beijing, most health-related and scientific collaborations have been significantly minimized.
3. **Through an informal information database:** Another way for the WHO and public health agencies to detect emerging infectious diseases is through analyzing internet search terms, online news articles, user-generated content, or social media data. Clues on emerging diseases can be picked up from the local media and online sources and fed into informal global disease reporting systems, such as Program for Monitoring Emerging Diseases (ProMED), the Global Public Health Intelligence Network (GPHIN), and HealthMap. Studies have shown that a freer press and greater internet usage correlate with reduced lags in infectious diseases reporting to the public.[8] Although China has 840

[8] Lindsey McAlarnen, Katherine Smith, John S. Brownstein, and Christopher Jerde, "Internet and Free Press Are Associated with Reduced Lags in Global Outbreak Reporting," *PLOS Current Outbreaks*, October 30, 2014.

million internet users, China has its own social media platform (WeChat) and internet search engine (Baidu) and routinely blocks Google, Twitter, Facebook, and overseas internet sites. Therefore, a robust informal disease detection mechanism is less applicable to China than to countries with less control over internet-based information and platforms.

In summary, the WHO plays the primary role in requiring country reports on infectious disease outbreaks and in coordinating with countries' health systems to conduct infectious disease prevention and containment. However, because of the limitations on funding and personnel, the WHO relies strongly on the country reports for initial reporting. The WHO can only verify the information on the country reports by sending its own investigation team if a federal government invites WHO teams to travel to the country. Bilateral collaborations promote data sharing on emerging diseases; however, the collaboration depends on the relationship between the two countries. Information sharing can be curtailed when the overall bilateral relationship experiences difficulties. An *informal* infectious disease database requires an open and consistent internet system used by all countries. Therefore, the information available from this channel is not consistent across the globe. Improvement on data sharing for disease detection and control will rely on protected international collaborations and open access to internet search engines.