Strengthening China’s Public Health Response System: From SARS to COVID-19

Today, the world is experiencing a pandemic caused by a novel coronavirus. COVID-19 is the third disease from a coronavirus to cause a global outbreak, after severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), and the second that emerged from China. During the 17 years between the SARS and the COVID-19 outbreaks, China has quadrupled its share of the world economy, lifted hundreds of millions of people out of poverty, and established a national health insurance system covering 95% of its 1.4 billion people. Will China’s public health response to a coronavirus epidemic be different this time?

The index case of the SARS outbreak occurred in Guangdong Province on November 16, 2002. At the time, China lacked a national center for disease control that would have been responsible for maintaining a robust surveillance system for detecting emerging diseases. With no information from the government or the media, the Chinese public was not made aware of the outbreak until cell phone messages about a “deadly flu” started to circulate in early February 2003 in Guangzhou.1 By mid-March 2003, SARS clusters started to appear in Vietnam, Hong Kong, Singapore, and Canada. On March 27, 2003, a World Health Organization (WHO) team went to China and concluded that China’s report of more than 300 atypical pneumonia cases from February were SARS cases.2 SARS ended up infecting more than 8000 people globally and led to 774 deaths.

Between April and May 2003, more than 1000 officials—including China’s minister of health and the mayor of Beijing—were fired or penalized for their slow response to SARS.3 The government then quarantined tens of thousands of people and locked down villages and city blocks. A new hospital in Beijing was built within 20 days to accommodate and quarantine SARS patients. The epidemic began to subside in late May, and, by June 27, the WHO announced that China was “SARS free.”

SARS revealed how unprepared China’s public health system was then and prompted the country to rethink its approach to pandemic preparedness. The government soon invested 6.8 billion RMB (renminbi; $850 million) to construct a new three-tiered network of disease control and prevention systems. The SARS outbreak also spurred China to strengthen its relationships with the United States and the wider international community regarding public health issues. In 2004, the Chinese National Influenza Center (CNIC) and the US Centers for Disease Control and Prevention (CDC) initiated cooperative agreements to build Chinese capacity in influenza surveillance. In 2005, the two governments inaugurated the Collaborative Program on Emerging and Re-Emerging Infectious Diseases, which turned into the US CDC’s China Center. That same year, both countries established the US-China Health Care Forum to address bilateral commercial, trade, and policy issues relating to health. In 2009, China became the first country to mass produce an H1N1 vaccine.

From 2010 to 2014, China expanded the CNIC to include 408 laboratories and 554 sentinel hospitals nationwide, trained 2500 public health staff, and became the fifth WHO Collaborating Centre for Reference and Research on Influenza.5 The center helped China quickly report a new viral strain, H7N9, to the WHO in 2013; post the full viral genome sequences; develop a vaccine in October 2013 (the first influenza vaccine developed in China); and share its method with the world. Meanwhile, China’s CDC consists of 3481 units and 877,000 public health professional positions at all levels of governments.4

Conversely, a recent evaluation of public health emergency management in China found that its legal, regulatory, and policy assessment need to be strengthened,5 and another review mentioned China’s CDC’s difficulty in recruiting qualified professionals and cast doubts on its readiness to face a new pandemic.4 COVID-19 hit China in late 2019, and the outbreak intensified just before the Lunar New Year, when millions of Chinese were expected to travel for the holiday. The Chinese government’s announcement of a public health emergency and decision to trigger the national case-reporting system for COVID-19 took 50 days to materialize, compared with 138 days for SARS. This improvement was because Chinese scientists were able to quickly culture the virus and share the genomic sequencing data with international researchers.6 The genetic

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sequencing data helped the development of a RT–PCR (reverse transcription–polymerase chain reaction) testing kit for the novel virus and helped link international cases to China. Beyond that, there are a few similarities in the Chinese government’s response to SARS and COVID-19: The government (1) delayed publicly acknowledging the outbreak, (2) downplayed the severity of the outbreak in its early days, and (3) relied on quarantine, social control, and large-scale mobilization of the health care system to stop the outbreak. If we posit that stability is what the Chinese political system values most, and if we understand that an acute public health threat (such as an epidemic) is precisely the type of event that can threaten stability, then it is not too difficult to understand the Chinese government’s reluctance to acknowledge an epidemic. In this case, the wide use of social media helped local officials significantly shorten the time it took to clear the hurdle of acknowledging the outbreak.

Clearing the second hurdle—the desire to downplay the severity of the threat at the beginning of an epidemic—proved more challenging. The first two expert teams, which went to Wuhan, China, on December 30, 2019, and January 8, 2020, didn’t make sufficient efforts to expand the narrow epidemiological case definition that tied the case reporting to the seafood market with which the first few cases were associated and announced that there was no person-to-person transmission. It was not until the COVID-19 cases were confirmed in Thailand and Japan in patients who had no exposure to Chinese seafood markets that China’s Ministry of Health sent a third expert to Wuhan. This time, the person-to-person transmission was immediately confirmed. The Ministry of Health announced a public health emergency, and the national case-reporting system was triggered on January 20. The initially inaccurate portrayal of the disease and its transmission pathway might have allowed the virus to spread widely in Wuhan, to other cities in China, and to the world.

As in the case of SARS, once the public health emergency was announced, China implemented a mass quarantine to contain the outbreak. China’s decision to enforce a city lockdown has been praised by the WHO and probably afforded other countries precious time to activate their public health responses. However, there are debates about the effectiveness of a lockdown covering such a large area.

Crisis management can provide a unique angle for examining the strengths and weaknesses of a public health response system. COVID-19 has shown that the Chinese government’s investments—along with support from international global health agencies—have greatly improved China’s global health technology and capability. Additionally, the Chinese government has demonstrated its strength in mobilizing national resources to contain an outbreak. However, COVID-19 has again revealed that a tendency in conventional Chinese politics to exaggerate positive developments and minimize bad news might have both jeopardized a swift response to an emerging crisis and allowed more time for the disease to spread.

In the wake of COVID-19, China may want to confront the barriers and consider how to further strengthen the public health system legally, politically, and economically. 

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CONFLICTS OF INTEREST
The author has no conflicts of interest to disclose.

REFERENCES