VIEWPOINT

The Novel Coronavirus Originating in Wuhan, China
Challenges for Global Health Governance

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Viewpoint

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On December 31, 2019, China reported to the World Health Organization (WHO) cases of pneumonia in Wuhan, Hubei Province, China, caused by a novel coronavirus, currently designated 2019-nCoV. Mounting cases and deaths pose major public health and governance challenges. China's imposition of an unprecedented *cordon sanitaire* (a guarded area preventing anyone from leaving) in Hubei Province has also sparked controversy concerning its implementation and effectiveness. Cases have now spread to at least 4 continents. As of January 28, there are more than 4500 confirmed cases (98% in China) and more than 100 deaths.[1] In this Viewpoint, we describe the current status of 2019-nCoV, assess the response, and offer proposals for strategies to bring the outbreak under control.

Current Status

China rapidly isolated the novel coronavirus on January 7 and shared viral genome data with the international community 3 days later. Since that time, China has reported increasing numbers of cases and deaths, partly attributable to wider diagnostic testing as awareness of the outbreak grows. Health officials have identified evidence of transmission along a chain of 4 "generations" (a person who originally contracted the virus from a nonhuman source infected someone else, who infected another individual, who then infected another individual), suggesting sustained human-to-human transmission. Current estimates are that 2019-nCoV has an incubation period of 2 to 14 days, with potential asymptomatic transmission.[1,2]

Multiple countries have confirmed travel-associated cases, including Australia, Cambodia, Canada, France, Germany, Japan, Nepal, Singapore, South Korea, Taiwan, Thailand, United Arab Emirates, United States, and Vietnam. Vietnam identified the first human-to-human transmission outside China. Yet fundamental knowledge gaps exist on how to accurately characterize the risk, including confirmation of the zoonotic source, efficiency of transmission, precise clinical symptoms, and the range of disease severity and case fatalities.

Control Measures in China

The Chinese Lunar New Year is the largest annual mass travel event worldwide, risking amplification of the spread of 2019-nCoV. In response, China severely restricted movement across Hubei Province in 16 cities, affecting more than 50 million people.[3] Authorities have closed public transit and canceled outbound transportation (air, train, and long-haul buses). Vehicular traffic in Wuhan was banned. China also imposed a ban on overseas travel with tour groups and suspended sale of flight and hotel packages. Authorities canceled Lunar New Year gatherings in Beijing as well as intraprovince bus service into the nation's capital. China's Finance Ministry announced ¥1 billion (US $145 million) to fund the response as well as the rapid construction of 2 hospitals in Wuhan to treat those affected.

The Hong Kong Special Administrative Region declared its highest-tier emergency, curtailed public events, and barred travelers from Hubei Province. Travelers from mainland China must complete health declarations. Hong Kong has also closed schools and universities at least until mid-February.[4]

Control Measures by Governments Worldwide

As travel-associated cases of 2019-nCoV escalate, countries have implemented border screening. China itself sharply curtailed travel to and from Hubei Province. Consequently, governments have not yet felt the need to ban travel from China, with 2 exceptions: North Korea has prohibited entry of all Chinese travelers and Kyrgyzstan has closed its border with China. During previous outbreaks like SARS (severe acute respiratory syndrome) and Ebola, governments curtailed travel and trade, so future directives seem reasonably foreseeable.

Multiple countries (eg, Australia, Thailand, South Korea, Japan, India, Italy, Singapore, Malaysia, and Nigeria) have commenced temperature screening, symptom screening, and/or questionnaires for arriving passengers from China. The US Centers for Disease Control and Prevention launched enhanced, noninvasive screening of travelers from Wuhan at 20 major airports, while the US State Department issued its highest-level travel advisory for Hubei Province: level 4, "do not travel." The State Department now advises that people should "reconsider travel" for all of mainland China.

Nonpharmaceutical Interventions

The sheer scale of China's *cordon sanitaire* across Hubei Province is unprecedented. Health authorities quarantined major cities during the 1918-1919 influenza pandemic, but with little lasting effect on the epidemic's spread.[5] The Ebola epidemic in West Africa (2013-2016) spurred quarantines, such as the Liberian government's unsuccessful and heavily criticized *cordon sanitaire* of 60 000 to 120 000 people in West Point, Monrovia. The order led to violence and public mistrust that risked amplifying the spread of Ebola.

Gaining the public's trust is critical to any public health strategy. The health system should facilitate and encourage individuals to promptly seek testing and treatment, as well as to cooperate with containment measures such as isolation and contact investigations. According to Wuhan officials, by the time China implemented the *cordon sanitaire*, up to 5 million individuals had already

traveled from Wuhan for Lunar New Year.[6] While social distancing measures can delay viral spread, involuntary restrictions of movement within Hubei are likely to erode community trust and undermine cooperation with health authorities. Within the *cordon sanitaire*, logistical issues are evident, already resulting in shortages of pharmaceuticals and medical equipment. With hospitals and clinics overcrowded and public transport limited, symptomatic individuals may delay access to treatment. There is also the possibility that congregating people in congested cities may still lead to infection, albeit in divergent ways.

Beyond the public health effects, enforcing *cordons sanitaires* can violate human rights, including the rights to dignity, privacy, and freedom of movement. The International Health Regulations (IHR) proscribe unnecessary interference with international travel and trade, while also requiring respect for the human rights of travelers. States must impose the "least restrictive" measures necessary to safeguard public health.[7] While border screening has had questionable efficacy for detecting cases in past disease outbreaks, the enhanced noninvasive screening implemented by US officials appears consistent with IHR requirements, provided it is conducted in a manner that treats travelers with respect for their dignity, human rights, and fundamental freedoms.[7]

Role of the WHO

The IHR grants the WHO director-general power to declare a public health emergency of international concern (PHEIC) for an extraordinary event that poses a public health risk to other states through international spread and requires a coordinated international response. It is clear that the 2019-nCoV outbreak fully meets these legal criteria for a PHEIC. The director-general announced that on January 30 the Emergency Committee will reconvene to consider if the coronavirus outbreak constitutes a global health emergency. The escalating 2019-nCoV outbreak poses a significant risk to human health, international spread, and interference with international traffic.

WHO has declared 5 PHEICs: H1N1 (2009), polio (2014), Ebola in West Africa (2014), Zika (2016), and Ebola in the Democratic Republic of Congo (2019). The IHR does not grant WHO special powers or financing in the event of a PHEIC, suggesting an imperative to reform the regulations to give traction to an emergency declaration.[8] Still, declaring a PHEIC is a powerful signal to the international community to launch a surge public health response, galvanizing political action and mobilizing funding. When declaring a PHEIC, the director-general can make influential, albeit legally nonbinding, recommendations. Declaring a health emergency would be a critical opportunity for WHO leadership to set norms, devise a global strategy, and uphold principles meticulously articulated by 196 states party to the IHR.

Bringing 2019-nCoV Under Control

The 2019-nCoV outbreak is currently not under control, with a high risk of spread in China and globally. Managing the outbreak requires international cooperation using traditional public health strategies that ultimately succeeded with SARS. The scientific community must fully characterize 2019-nCoV; epidemiologists must conduct intensive contact investigations; researchers should move rapidly toward development of medical countermeasures; and supply chains must mobilize to meet human needs for food, water, and medicine.

While China has considerable resources and technical competence, containment of 2019-nCoV requires a coordinated international response. WHO should exercise leadership, urgently convening a multidisciplinary committee to devise a global action plan for novel outbreaks, including surveillance, contact investigations, testing, and treatment; fostering public trust and cooperation; transparently sharing scientific information; and incentivizing academia and industry to develop vaccines and antiviral medications.

It is too early to predict how widespread and pathogenic 2019-nCov will become. It is better to act decisively now rather than wait to see how the outbreak unfolds globally. Beyond all, this global health threat teaches, once again, that it is far better to invest in preparedness to prevent, rapidly identify, and contain outbreaks at their source. Reacting after a novel infection has spread widely (perhaps overreacting with travel bans and quarantines) costs lives, economic resources, and the well-being of millions of people currently cordoned off in a zone of contagion.

ARTICLE INFORMATION

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