



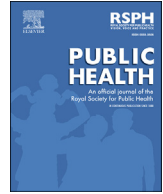
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Letter to the Editor

The end of 'cordon sanitaire' in Wuhan: the role of non-pharmaceutical interventions against COVID-19



Wuhan, the initial epicenter of coronavirus disease 2019 (COVID-19), has lifted its 'cordon sanitaire' on April 8, 2020, after being in place for 76 days. However, epidemics are getting very serious in some countries such as America and Italy. Soon after the start of the outbreak, when the transmission dynamics and epidemiology had become a little bit clearer, the Chinese government has reacted swiftly with liberal testing, immediate case isolation, rigorous contact tracing and quarantine, social distancing, community containment, and mass masking. "Desperate times call for desperate measures," said by Hippocrates, the famous ancient Greek physician, describes vividly the decision to implement lockdown in Wuhan city on January 23, 2020. This was a major decision that needs much political will and wisdom. The Report of the WHO-China Joint Mission on COVID-19 concluded that "such an approach is warranted to save lives and to gain the weeks and months needed for the testing of therapeutics and vaccine development."¹ The effectiveness of these non-pharmaceutical interventions has now become evident and can serve as an important reference in managing the COVID-19 pandemic.

Isolate and quarantine

Temperature checking stations were set up across the transportation hub; designated fever clinics and wards were established in hospitals for suspected cases. Different tiers of healthcare facilities were established in anticipation of the overwhelming number of new cases. Sports stadiums and convention halls were converted into makeshift hospitals to relieve the pressure in hospitals for mild COVID-19 cases. Huoshenshan and Leishenshan hospitals, the two dedicated hospitals with 2600 beds for treating seriously or critically ill patients, were completed in 2 weeks. More than 42,000 medical personnel from all over China were deployed to the epicenter soon after the outbreak.

Transmission linkages would become obscure as the outbreak progresses, making it impossible to quarantine all close contacts; community-wide quarantine should then be considered. If relying on social responsibility for voluntary quarantine is unsuccessful, state-issued quarantine orders should be enforced. The lockdown of 11 million residents with closure of all transportations (urban public transport, subway, ferry, and airport) in and out of Wuhan is the largest quarantine in history. Close contacts were quarantined at home or in designated quarantine facilities. All school and commercial facilities were closed except those related to essential daily supplies and infection control utilities. Rewards were offered to those reporting violators. Community volunteers were organized to support the needs of those under quarantine. The

time-varying effective reproduction number (R_t) in Wuhan declined from 2.35 to 1.05 in late January 2020, which coincided with the introduction of these interventions.²

While the freedom to travel domestically is protected by the constitutional rights in Western countries, these are not absolute when it puts the state at risk, particularly at the time of the pandemic. A combination of isolation, social distancing of the entire population, and either household quarantine or school closure is required to reduce the basic reproduction number (R_0) to ≤ 1 , wherein all four interventions combined would have the greatest effect.³ 'Cordon sanitaire' is a continuum of social distancing and should only be considered if there are no other less restrictive alternatives. Owing to political and economic factors, the willingness of the citizens to receive such draconian measures would vary from country to country.

Liberal testing

For isolation to be effective in preventing transmission, patients should be detected ideally before the onset of viral shedding. Transmission from asymptomatic patients has made temperature- and symptom-based screening less effective.⁴ In China, testing for coronavirus is free and easily accessible; 320,000 tests have been performed in the Guangdong province alone in just over 2 weeks.¹ One reason that is attributed to the reduction of new cases in South Korea has been its widespread testing together with a digital crowdsourced contact-tracing strategy; they have performed more than 608,000 tests as of April 28, 2020.⁵ Testing must be widely available, and hurdles to get tested must be reduced. Rapid testing protocols should also ensure the optimal use of isolation rooms and other facilities at hospitals. Through widely available testing and contact tracing, followed by isolation and quarantining, this will be a part of the strategy of breaking transmission chains. Companies across the world are developing and manufacturing diagnostic kits to increase the abundance of testing kits.

Mass masking

The use of face masks as part of respiratory hygiene is ubiquitous in Southeast Asian countries such as China, South Korea, and Japan. Many provinces in China made it mandatory by law to wear a face mask in public during the COVID-19 outbreak. In contrast, citizens are advised to wear face masks only when they are ill in most non-Asian countries. Some opposing parties believe that the limited supply of face masks should be reserved for healthcare workers. This has led to racial stigmatism and aggravation among mask

wearers in some of the countries during the current pandemic. As a public health intervention, mass masking protects not only the wearer but also each other and would eliminate discrimination. There is limited evidence, but not evidence of absence, on whether mass masking is effective in protection against coronavirus infection.⁶ An adequate supply of medical masks to the public is likely to be a key bottleneck that determines whether such a strategy could be implemented as one of the non-pharmaceutical interventions in a country.

Innovative technologies

Real-time information was broadcasted by the Chinese government through popular instant messaging apps such as WeChat and Weibo. Various IT platforms have increased the accessibility to information and health services and minimized fake news. Video conferencing and telemedicine platforms reduced exposure to healthcare workers. Wuhan Wuchang Smart Field Hospital, one of the makeshift hospitals, was staffed with robots. Robots were equipped with infrared thermometers; they delivered meals and medications and disinfected areas. Smart bracelets and rings worn by patients monitored their vitals, with data fed to remote medical staffs. Unmanned aerial drones transported supplies to those under quarantine; they also replaced police officers in patrolling areas to enforce quarantine restriction. These innovative technologies reshape how we can protect medical personnel and care for our patients during health emergencies.

Learning from the Chinese experience

China enforced unprecedented public health efforts such as surveillance, prompt isolation of patients, quarantine of close contacts, social distancing, and community quarantine. A modeling study showed that changes to contact patterns via workplace and school closure significantly delayed the epidemic peak and flattened the curve of Wuhan.⁷ Another model revealed that larger travel restriction of >90% together with a strong transmissibility reduction delays the epidemic growth such that the daily incidence does not exceed one case per 1000 in China.⁸ The series of multifaceted public health measures led to a reduction in R_t to less than 1.0 on February 6 and to less than 0.3 on March 1, 2020, in Wuhan.⁹ These encouraging results highlight the importance of the synergistic effect of all public health measures. Such measures allow the healthcare system to better prepare its capacity to respond to an overwhelming influx of patients, minimize the morbidity and mortality, while hoping for an effective vaccine or antiviral to come. The WHO Director-General commented that the “Chinese government is to be congratulated for the extraordinary measures it has taken to contain the outbreak.”¹⁰ China is one of the worst hit nations, but paradoxically, its unprecedented action is also one that other countries could consider. The decline of new cases in China and the end of ‘cordon sanitaire’ in Wuhan suggests that the strategies implemented have worked. They are steering in the right direction. We urge other countries to take reference from what China has done and achieved. This may help our ways forward in the combat of COVID-19.¹¹

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