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Beware of the second wave of COVID-19

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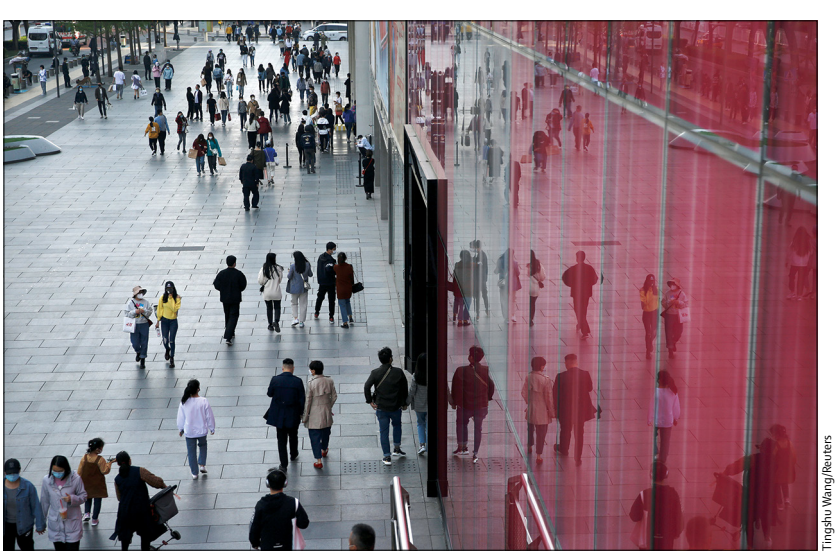
The outbreak of coronavirus disease 2019 (COVID-19), which began in Wuhan, China, in late 2019, has spread to 203 countries as of March 30, 2020, and has been officially declared a global pandemic.[1] With unprecedented public health interventions, local transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) appears now to have been contained in China. Multiple countries are now experiencing the first wave of the COVID-19 epidemic; thus, gaining an understanding of how these interventions prevented the transmission of SARS-CoV-2 in China is urgent.

In *The Lancet,* Kathy Leung and colleagues[2] report their assessment of the transmissibility and severity of COVID-19 during the first wave in four cities and ten provinces in China outside Hubei. The study estimated the instantaneous reproduction number in the selected locations decreased substantially after non-pharmaceutical control measures were implemented on Jan 23, 2020, and has since remained lower than 1. The transmission of SARS-CoV-2 in these locations was mainly driven by imported cases from Hubei until late January, which is, to some extent, similar to the transmission in January in several countries. The epidemics in Chinese provinces outside Hubei were believed to be driven by local transmission dynamics after Jan 31;[3] therefore, the findings of Leung and colleagues' study highlight the fact that the package of non-pharmaceutical interventions in China has the ability to contain transmission—not only imported cases, but also local transmission. The epidemic is accelerating rapidly in multiple countries, indicating shortfalls in preparedness. Given that multiple countries imposed travel restrictions against China in late January, there is a need to model whether earlier implementation of interventions such as social distancing, population behavioural change, and contact tracing would have been able to contain or mitigate the epidemic.

Leung and colleagues also modelled the potential adverse consequences of premature relaxation of interventions, and found that such a decision might lead to transmissibility exceeding 1 again—ie, a second wave of infections. The finding is critical to governments globally, because it warns against premature relaxation of strict interventions. However, the effect of each intervention, or which one was the most effective in



Tingshu Wang/Reuters

containing the spread of the virus, was not addressed in the study. While interventions to control the spread of SARS-CoV-2 are in place, countries will need to work toward returning to normalcy; thus, knowledge of the effect of each intervention is urgently required. Air travel data were used to model the effect of travel restrictions on delaying overall epidemic progression, and were found to have a marked effect at the international scale, but only a 3–5 day delay within China.[4] A study[5] focused on the effects of extending or relaxing physical distancing control measures in Wuhan has suggested that if the measures are gradually relaxed in March, a second wave of cases might occur in the northern hemisphere mid-summer. Country-specific models of the effects of travel restrictions and social distancing, as well as the alternative strategies after the relaxation of these interventions, such as the use of face masks, temperature checks, and contact tracing, are now needed.

Case fatality rate (CFR) is one of the important unknowns of COVID-19. Leung and colleagues estimated the confirmed CFR (cCFR) outside Hubei was 0·98% (95% CI 0·82–1·16), which was consistent with the report from the Chinese Center for Disease Control and Prevention.[6] Since the epidemics in the studied locations did not overwhelm the health-care capacities, the data on the number of confirmed cases are believed to be reliable. Leung and colleagues also found the cCFR was correlated with provincial per capita gross domestic product and the availability of hospital beds per 10 000. In Wuhan, the CFR was up to 5·08% by March 28, 2020.[7] The remarkable difference in the CFRa between these locations and Wuhan might be attributed to the difference in the degrees of health-care capacity. Therefore, consideration should be given to the variations in health-care capacity when implementing interventions. While the epidemic is growing exponentially, the health-care system will face severe burdens. Governments should act and prepare immediately to ensure that the health-care system has adequate labour, resources, and facilities to minimise the mortality risk of COVID-19.

We declare no competing interests.

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Global coalition to accelerate COVID-19 clinical research in resource-limited settings

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There is no available vaccine against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections and no drug with proven clinical efficacy, although there are several candidates that might be effective in prevention or treatment. Encouragingly, the response from the research community to the pandemic of coronavirus disease 2019 (COVID-19) has been vigorous. A review of clinical trial registries, as of March 24, 2020, identified 536 relevant registered clinical trials.[1] Of the 332 COVID-19 related clinical trials, 188 are open for recruitment and 146 trials are preparing to recruit.[1,2] The distribution of these clinical trials is centred in the countries most affected by COVID-19 in the past 2 months, particularly China and South Korea, with high-income countries in Europe and North America planning most of the forthcoming trials. Very few trials are planned in Africa, south and southeast Asia, and central and South America.

The number of confirmed COVID-19 cases reported in resource-poor settings is still relatively small,[3] but