

# COVID-19: TACKLING THE NOVEL CORONAVIRUS

LONDON SCHOOL OF  
HYGIENE & TROPICAL MEDICINE



## Step 2.6 Response in China

**Prof Gabriel Leung, Dean of the Li Ka Shing Faculty of Medicine of the University of Hong Kong (HKU) discusses with Dr Yang Liu the COVID-19 outbreak in Wuhan, Hubei Province, China, and the measures that were taken to contain and reduce the impact (recorded on 27th February 2020). Dr Yang Liu also updates us on events and interventions since then below. As you watch and read the update, consider how long there has been disruption from COVID-19 in China, and what sort of measures are likely to be needed long-term.**

The cordon sanitaire on the City of Wuhan was lifted on 8 April 2020, after 76 days. Most medical personnel and members of the China CDC special task force sent to Wuhan (as well as other prefectures in Hubei) have returned home. Public transportation, parks, and other public places have started to re-open; businesses have started to resume. However, other public health measures remain in place, such as temperature screening and digital contact tracing. In mid-April, a large survey aiming to identify those infected through testing was launched. Over 11,000 samples will be collected from 13 districts, to better understand the outbreak of COVID-19 where it emerged.

Public health restrictions have been lifted to different degrees in the rest of mainland China. The majority of businesses (>70%) have resumed nationwide, but to different degrees. Many businesses are requiring employees to do a test for infection (RT-PCR) before resuming work on site. Most schools remain closed, although graduating grades (year 9 and 12) are expected to return from the end of April. Many schools, ranging from kindergarten to university, are assessing the infrastructure needed (e.g., health screening equipment and physical distancing measures) for other grades to return as well. From mid-March, Chinese citizens who do not contribute to social security (through salary paid in China or by Chinese entities overseas) need to pay for quarantine, testing, and treatment out-of-pocket.

From the end of March, mainland China implemented travel restrictions that prevented all foreign nationals from entering. This was in response to internationally imported infections. Fourteen-day quarantine of Chinese citizens returning home from abroad gradually changed from advisory to mandatory.

From the beginning of April, the focus of response has shifted from emergency response to both emergency response and routine management. The potential for transmission by asymptomatic or mildly symptomatic people is receiving attention

from both the scientific and policy communities. Surveillance networks have begun to include asymptomatic individuals in their daily report. These individuals are currently identified through contact-tracing and investigation of clusters. Digital contact tracing systems based on cell-phone applications are being rolled-out in certain geographic areas (e.g., Beijing-Tianjin-Hebei region, Hangzhou city), with the potential of wider application soon.

You can read more on the course of the outbreak in China from Prof Leung and colleagues, who describe the first wave outside Hubei and second wave scenario planning, in a recent published article (in the See Also section).

### Video transcript:

**YANG LIU:** My first question for Professor Leung today would be, what do you think is the motivation, the theory behind these public health measures? And what were your original assessment?

**GABRIEL LEUNG:** Well first of all, I think that the lockdown or the cordon sanitaire, around Wuhan and the neighbouring cities, which had a lot of cases and clearly, epidemics locally, was the correct decision because you really need to make sure that it doesn't spread any more or any further in the rest of the country.

So there are two things you could do. One is you have a cordon sanitaire descend on a certain radius in and around the epicentre of Wuhan and Hubei province. Or you could actually do entry restrictions in the rest of the major Chinese cities and say, anybody who is from that epicentre may not come in. So it's actually two sides of the same coin.

So it's actually much more efficient to have this cordon sanitaire in and around the epicentre. Once you have done that, then what you are essentially dealing with in the rest of the country is to say look, we've already had seeding of the major centres because Wuhan is a major transport hub in central China.

To the north, there's the Beijing-Tianjin cluster. To the south, there is the Guangzhou-Shenzhen Guangdong province cluster. To the east, there is the Yangtze River-Delta cluster of Shanghai, Hangzhou, and Zhejiang province, more generally. And to the west, there is Sichuan province and Chengdu and ChongQing.

So, because of those mobility links with the rest of the country, it already seeded all provinces and cities of the country. But once you've locked down Wuhan as an epicentre, then you have to deal with the imported cases already through isolation and treatment.

You quarantine the close contacts of those cases, and within each of these major centres, you impose, not a lockdown per se, but a series of graded self- quarantine measures based on community organisation arrangements that you find all over the country, enabled by AI and social media big data, i.e. Your WeChat accounts, your Alibaba account, and so on.

And once you do all those things, then the within community force of infection is come down dramatically because everybody stays back home. So essentially, all of the infected so-called seeds would be back in their own household, and the community force of infection comes down.

It gets transferred to the household, but there is a limited number of people you can pass it to within the household because you can't cross-infect your neighbours. And so within one or two or three serial intervals at most, those chains of transmissions basically fade out.

And that's how the whole epidemic is controlled in the rest of the country. Now of course, now you have Wuhan also doing similar things within the city boundaries. So again, you have the case count coming way back down.

Now looking ahead, what you need to look out for is the economy had a very sharp dip, or dive even, and so you can't keep on these very extreme drastic, even draconian measures, forever. So once you've got over mostly the first wave, then you have to allow a controlled resumption of economic activity.

And economic activity means mobility restrictions are gradually lifted and societal functions try to go back to normal. And once you do that, you would most probably see a second wave. The question is, can you keep that second wave at a manageable level?

YANG LIU: Given the current epidemiologic evidence, do you think the ongoing or the fact that a lot of people-- a lot of countries are currently considering school closure as an intervention option. What do you think of this option?

GABRIEL LEUNG: So a lot of places have already closed schools. Some have deliberately chosen not to close schools. There really isn't a scientifically based right answer yet. I think it depends on a lot of things. Crucially, if you look at the science of transmission, nobody knows whether children i.e. School goers, are number one, as susceptible as the adult population.

Or perhaps they are susceptible, but they just don't present very much clinically. And even when they do, it's mostly mild disease. And let's assume that they are susceptible and they are infected, but are they infective? That is, do they pass it on?

If they are not infective even though they may be susceptible, then there is no point closing schools because they are not an important part of the transmission matrix. But if they are infective like in flu, then school closures would be a good thing to do from a transmission point of view.

Now there are other considerations and that is, can your contextual population, for whom you're considering school closures, actually deal with this major disruption? Would it destabilise your societal functions or would it actually stabilise it? And in different places, the answer is different. Thirdly, would your population accept school closure and therefore, follow the guidance? Or would they abreact in such a way that it would do more harm than good.

YANG LIU: Can you talk a little bit more about the societal and economic implications of the outbreak itself and the public health measures that are happening after?

GABRIEL LEUNG: I mean I think that if you just start with the health system-- so if you have an overwhelming number of infected patients who require care, you will be necessarily displacing other patients who would otherwise be using those same hospital beds and facilities and requiring the services of those doctors and nurses.

And that's not a trivial issue. So when you are talking about the health care burden or the mortality and morbidity burden, you would need to count the opportunity costs of whom you are displacing. And that's just within the health sector.

Then you think about-- all right, if I impose these very drastic, even draconian measures, then each of these measures will come with a social price tag, an economic price tag. And can I bear it, and if I cannot, then should I do it? 20 years on from SARS, the world's globalised supply chains notwithstanding recent trade tensions, are so enmeshed and so just-in-time.

And therefore, any single country, and let alone a giant country like China, being disrupted at this scale, because of COVID 19, will have very large ripple effects. And as the risk spreads to other countries who are now going through the beginnings of the first wave, then you will find actually difference of these ripples travelling in different directions.

Country-to-country coordination and solidarity are trying to be coordinated at the supranational level by say, W.H.O, the World Bank, ADB, the African Development Bank, EIB. Those are the actors who need to come in and really try to help the world get through this.

## See Also

**Coronavirus (COVID-19) Outbreak – Insights from Leading Expert Prof Gabriel Leung**

<https://www.lshtm.ac.uk/newsevents/events/coronavirus-covid-19-outbreak-insights-leading-expert-prof-gabriel-leung>

**Association of Public Health Interventions With the Epidemiology of the COVID-19 Outbreak in Wuhan, China**

<https://jamanetwork.com/journals/jama/fullarticle/2764658>

**First-wave COVID-19 transmissibility and severity in China outside Hubei after control measures, and second-wave scenario planning: a modelling impact assessment**

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30746-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30746-7/fulltext)