



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

countries have opted for both home-based and institutional isolation and lockdown, how do the 95% CIs of the curves overlap? A discussion of these issues would be insightful.

We declare no competing interests.

\*Ajeet Singh Bhadoria,  
Kanchan Gawande, Rachit Sharma,  
Archisman Mohapatra, Ravi Kant  
ajeetsinghbhadoria@gmail.com

All India Institute of Medical Sciences, Rishikesh,  
249 203, India (ASB, KG, RK) and Executive Office,  
GRID Council, Delhi, India (RS, AM)

- 1 Dickens BL, Koo JR, Wilder-Smith A, Cook AR. Institutional, not home-based, isolation could contain the COVID-19 outbreak. *Lancet* 2020; **395**: 1541–42.
- 2 Liu Y, Gayle AA, Wilder-Smith A, Rocklöv J. The reproductive number of COVID-19 is higher compared to SARS coronavirus. *J Travel Med* 2020; **27**: taaa021.
- 3 Day M. Covid-19: four fifths of cases are asymptomatic, China figures indicate. *BMJ* 2020; **369**: m1375.
- 4 Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020; **395**: 912–20.
- 5 WHO. Risk assessment and management of exposure of health care workers in the context of COVID-19. Interim guidance. March 19, 2020. [https://apps.who.int/iris/bitstream/handle/10665/331496/WHO-2019-nCov-HCW\\_risk\\_assessment-2020.2-eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/331496/WHO-2019-nCov-HCW_risk_assessment-2020.2-eng.pdf) (accessed May 11, 2020).
- 6 WHO-China Joint Mission on Coronavirus Disease 2019. Report of the WHO-China Joint Mission on coronavirus disease 2019 (COVID-19). Feb 16, 2020. <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf> (accessed Nov 2, 2020).



### Authors' reply

We thank Ajeet Singh Bhadoria and colleagues for their insightful comments in response to our Correspondence.<sup>1</sup> Although we focus on teasing out the impact of institutional isolation beyond the other non-pharmaceutical measures, we agree that isolation of all cases cannot be a stand-alone strategy. The pandemic response to COVID-19 must be a multipronged approach that includes liberal testing, tracing and quarantine of contacts, physical distancing, and widespread use of face masks—such a multipronged approach is particularly crucial for a disease with a high asymptomatic rate.<sup>2</sup> However, we disagree with Bhadoria and colleagues on several other points.

The authors offer two examples of countries with successful mitigation without case isolation, but recent data from the evolving epidemic show that neither Israel nor Germany have truly mitigated the outbreak. As of Sept 18, 2020, Israel became the first country to announce a second country-wide lockdown. Germany has been a role model in Europe based on extensive testing, tracing, and quarantine of contacts, but it did not contain the outbreak to the extent that various Asian countries did. We invite Bhadoria and colleagues to look further east, to China, Taiwan, South Korea, and Vietnam, for templates for success in preventing or mitigating widespread community spread. These countries employed isolation of all cases, even mild ones, often using isolation shelters, hospitals, or other institutions such as hotels.<sup>3,4</sup>

Careful study of the sequential mounting of public health responses in Wuhan, China, to combat their explosive outbreak in January and February, 2020, showed five distinct phases. Only in the fourth and fifth phases, when isolation shelters for all cases (even mild cases) were instituted, did the epidemic curve not only flatten but show a rapid decline in daily new cases, down to zero within a matter of weeks.<sup>5</sup> Of note, these shelters for isolation of mild cases were facilities built as make-shift hospitals in addition to existing health-care facilities.<sup>6</sup>

Why is institutional isolation such an impactful additional tool in the public health armamentarium to combat a respiratory pathogen associated with droplet, contact, and possibly even aerosol transmission? Because voluntary self-isolation of mild cases at home will always lead to some degree of non-compliance, thus further propagating transmission within households and into the community. As viral loads are high even in mild cases, mild cases can efficiently transmit the virus.<sup>7</sup> There are ample reports that secondary attack rates in household settings are higher

than in most other settings. In fact, 46–66% of transmission is household-based (using the standard formula for attributable fraction).<sup>8</sup> We need to zoom in our efforts on those settings where transmission is high.

The advantages of isolation of infected individuals in designated facilities are manifold. First, moving infected people out of their households and communities will interrupt chains of onward transmission. Second, even make-shift isolation shelters can provide medical monitoring to identify those patients who might clinically deteriorate, which usually happens around day 7–12 of illness. About 11% of mild cases deteriorate, often rapidly, with hypoxaemic pneumonia;<sup>6</sup> hence mechanisms for rapid referrals from low-care isolation shelters to hospitals with higher levels of medical care will enhance clinical prognosis. Third, many self-isolating patients report loneliness and lack of access to daily necessities such as food. Isolation shelters can provide food, social activities, and company.<sup>4</sup> Finally, isolation of all cases, even mild ones, will benefit the society at large as containing outbreaks early will prevent damaging lockdowns. It will also allow for speedier recovery of the economy as now seen in China.

Despite these advantages, we agree with Bhadoria and colleagues that there are several challenges with facility-based isolation of mild COVID-19. Make-shift hospitals or shelters where hundreds of infected people are cohorted might not be culturally acceptable in many societies—though such facilities have a long history—and cannot be legally enforceable in some jurisdictions. There are, however, other potentially more palatable options to isolate COVID-19 patients. Hotels or dormitories could be re-purposed, for example. Given the high global incidence of mild COVID-19 cases, we might not be able to rapidly scale up such facilities for all of those with mild disease. Those who live in multi-generational families, those staying at home with individuals at risk of severe COVID-19 outcomes, and

those who live in single households and might benefit from company and provision of food should be prioritised.

Appropriate communication and awareness need to be enhanced for better community acceptance of facility-based isolation. If populations are made aware of the public health benefit of institutional isolation, appreciate the fact that such isolation will lead to better protection of their loved ones, and is associated with better clinical care for themselves, including easy access to food and practical support, maybe public acceptance will increase.

We declare no competing interests.

\*Annelies Wilder-Smith, Alex R Cook, Borame L Dickens  
anneliesws@gmail.com

Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore (AW-S); Department of Disease Control, London School of Hygiene & Tropical Medicine, London WC1E 7HT, UK (AW-S); Heidelberg Institute of Global Health, University of Heidelberg, Germany (AW-S); and Saw Swee Hock School of Public Health, National University of Singapore and National University Health System, Singapore (ARC, BLD)

- Dickens BL, Koo JR, Wilder-Smith A, Cook AR. Institutional, not home-based, isolation could contain the COVID-19 outbreak. *Lancet* 2020; **395**: 1541–42.
- Wilder-Smith A, Freedman DO. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *J Travel Med* 2020; **27**: taaa020.
- Wilasang C, Sararat C, Jitsuk NC, et al. Reduction in effective reproduction number of COVID-19 is higher in countries employing active case detection with prompt isolation. *J Travel Med* 2020; **27**: taaa095.
- Chen S, Zhang Z, Yang J, et al. Fangcang shelter hospitals: a novel concept for responding to public health emergencies. *Lancet* 2020; **395**: 1305–14.
- Pan A, Liu L, Wang C, et al. Association of public health interventions with the epidemiology of the COVID-19 outbreak in Wuhan, China. *JAMA* 2020; **323**: 1915–23.
- WHO. Report of the WHO–China joint mission on coronavirus disease 2019 (COVID-19). 2020. <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf> (accessed Oct 26, 2020).
- Zou L, Ruan F, Huang M, et al. SARS-CoV-2 viral load in upper respiratory specimens of infected patients. *N Engl J Med* 2020; **382**: 1177–79.
- Lee EC, Wada NI, Grabowski MK, Gurley ES, Lessler J. The engines of SARS-CoV-2 spread. *Science* 2020; **370**: 406–07.

## Unnecessary obstacles to COVID-19 mass testing

Whether an effective COVID-19 vaccine will be universally available in the UK within a year is unclear. The UK Government has now accepted that in the interim, the only way to restore the normal life that COVID-19 has overturned for so many people is whole-population testing about once per week with integrated contact tracing.<sup>1</sup> However, while profitable for consultants and contractors, Operation Moonshot mass testing plans<sup>2</sup> might fail as badly as their current testing and tracing systems.

Public health specialists working at the local level have more experience than Deloitte, Serco, or G4S in population screening and contact tracing, and the best (and cheapest) tests for rapid roll-out might well be non-proprietary PCR and loop-mediated isothermal amplification (LAMP) protocols. No approved commercial tests were available when the pandemic emerged, so the government has decided “to provide first-generation in-house assays for public health laboratories as an interim measure and for gradual migration to a commercial alternative.”<sup>3</sup>

We urge the government to reconsider this commitment to unspecified commercial contracts that cannot supply the 10 million tests per day needed for weekly testing in the UK. Rapid tests administered by a trained person, although essential in airports and various other public venues, are not suitable for weekly whole-population screening. Self-collected samples analysed in a laboratory can provide reliable same-day results entered online, triggering household isolation and immediate contact tracing.<sup>1</sup> Whether sample testing takes 5 min or 3 h is less important than the proportion of results that are reported both personally and centrally within a day or less. Both RT-PCR and RT-LAMP can be almost as sensitive as quantitative PCR, the gold standard test, and false positives can be virtually eliminated by a confirmatory

test. Cost-benefit evaluation of RT-PCR and RT-LAMP tests on self-taken saliva samples compared with rapid point-of-care nasal swab tests and other systems can be carried out during roll-out of organised population screening, which should expand as rapidly as the supply of kits, equipment, and reagents permits. As population screening expands, this ongoing comparison of RT-PCR and RT-LAMP against commercial alternatives will identify the best tests for screening and for other purposes.

Large university and independent labs will contribute to the roll-out and evaluation of population screening in their city or district, supplementing the capacity of the lighthouse labs while local RT-LAMP testing facilities are being established. They can provide expertise, a trained workforce (including volunteers), and, in many cases, the extra PCR machines.

We declare no competing interests.

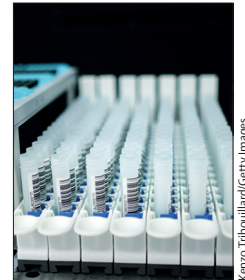
\*Julian Peto, David J Hunter, Elio Riboli, Julian L Griffin  
julian.peto@lshtm.ac.uk

Faculty of Epidemiology and Population Health, London School of Hygiene & Tropical Medicine, London WC1E 7HT, UK (JP); Nuffield Department of Population Health, University of Oxford, Oxford, UK (DJH); School of Public Health, Imperial College London, London, UK (ER); and Faculty of Medicine, Imperial College London, London, UK (JLG)

- Peto J, Carpenter J, Davey Smith G, et al. Weekly COVID-19 testing with household quarantine and contact tracing is feasible and would probably end the epidemic. *R Soc Open Sci* 2020; **7**: 200915.
- Iacobucci B, Coombes R. Covid-19: government plans to spend £100bn on expanding testing to 10 million a day. *BMJ* 2020; **370**: m3520.
- Public Health England. Rapid assessment of selected commercial molecular diagnostic tests for the laboratory detection of COVID-19 infections. London: Public Health England, 2020.

## Influenza control during the COVID-19 pandemic

As the northern hemisphere influenza season begins, challenges loom for health systems bracing to manage a simultaneous rise in cases of COVID-19 and influenza. Successive winters have taught us that the burden of influenza is high in ordinary times, and a



Kenzo Tribouillard/Getty Images

Published Online  
October 16, 2020  
[https://doi.org/10.1016/S0140-6736\(20\)32170-X](https://doi.org/10.1016/S0140-6736(20)32170-X)



Published Online  
October 22, 2020  
[https://doi.org/10.1016/S0140-6736\(20\)32166-8](https://doi.org/10.1016/S0140-6736(20)32166-8)