

COVID-19: Getting ahead of the epidemic curve by early implementation of social distancing

To the Editor: The response to the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the causative agent of coronavirus disease 2019 (COVID-19), has largely been reactive. There are a few exceptions of countries taking proactive measures. Some countries in Asia, including Taiwan and Singapore, were able to limit the spread despite close links to China,^[1,2] and South Korea and China were able to mobilise to contain an initial rapidly spreading epidemic through mass testing and early interventions.^[2,3] As COVID-19 has now reached Africa, South Africa (SA) could be a regional leader in its response and reduce the impact of the disease on its population by acting early.

COVID-19 has important characteristics that complicate control measures: there is evidence of infectiousness during the incubation period,^[4] infectivity of asymptomatic patients,^[5,6] and a large proportion of clinically mild cases,^[5] who are unlikely to be identified through surveillance for severe respiratory disease and remain mobile and therefore at risk of transmitting infection. Screening of travellers for fever and a previous stay in an area with widespread transmission is not fully effective in curbing transmission, detecting as few as 50% of infected travellers.^[7]

SARS-CoV-2 is easily transmitted from person to person, probably through large droplets and fomites (contaminated surfaces). In addition, as a novel human virus, there is no pre-existing immunity in the population. Without effective control measures, case numbers therefore increase exponentially, with a generation time estimated to be 4 days and the reproductive number (the number of susceptible individuals infected by one positive person) estimated at between 1.5 and 3.5, probably dependent on local conditions.^[5,8] By the time severe infections in individuals without a travel or contact history are identified, there is usually substantial community spread. This situation poses the risk of overwhelming the healthcare sector, as is evident from the outbreaks in northern Italy and Washington State, USA, where transmission is thought to have been occurring for several weeks before identification of severe respiratory infections due to SARS-CoV-2 in vulnerable populations.^[9] Based on limited screening and testing capacity, criteria for SARS-CoV-2 testing currently only include travellers from high-risk areas, their contacts, and patients with severe respiratory infections. Testing is therefore unlikely to detect community transmission early.

Several cases of importation of SARS-CoV-2 into SA have been identified and the patients isolated with initiation of contract tracing. It is, however, very likely that some cases have not been detected and that low-level community spread was already established by early March 2020. Given the trajectory of the outbreak in China and Italy, SA can expect that unless onward transmission is reduced early, COVID-19 infections may reach high levels by May 2020. This would be likely to overlap with the annual influenza season and a peak in other respiratory virus infections. Not only flattening the outbreak curve, but also avoiding a peak in COVID-19 cases occurring over the winter months, are compelling reasons to consider early and decisive action to rapidly implement social distancing in SA.

Social distancing measures include prohibition of large gatherings, including cancellation of large events, school closures, and reduction of close contact between people through behavioural change. When implemented simultaneously with self-quarantine of travellers from high-risk areas (according to the constantly updated list maintained by the National Institute for Communicable Diseases) and their contacts, and self-isolation of anybody with cough and fever, these measures are likely to reduce transmissions. While certainly

disruptive, they need to be considered urgently, as the earlier they are implemented, the more effective – to a dramatic extent – they would be. It would be an error of judgement to wait until the first cases of community transmission are detected, at which stage the proverbial horse is already likely to have bolted. Taking into account SA's large size and very variable access to quality healthcare, early implementation of social distancing measures would have a huge impact in reducing the rate of epidemic spread and the burden of COVID-19 cases in SA. A slower rate of spread could help in maintaining health services to patients in need of care, for COVID-19 and also for other unrelated conditions. Although early social distancing interventions may have an initial disruptive impact, they are likely to lessen the overall detrimental effects of COVID-19 on the economy and the health sector. Moreover, flattening the epidemic curve could buy valuable time by slowing transmission. Slowing transmission would have several benefits, including that it would initially reduce the overall number of infected cases and thereby protect many vulnerable patients, and, as research into therapies for COVID-19 is progressing fast, it could provide the opportunity to obtain access to evidence-based treatments, once they are available, for those patients who may need it the most.

This letter was submitted to the SAMJ on 13 March 2020.

Wolfgang Preiser

Division of Medical Virology, Department of Pathology, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa; and National Health Laboratory Service, Tygerberg Hospital, Cape Town, South Africa
preiser@sun.ac.za

Gert van Zyl

Division of Medical Virology, Department of Pathology, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa; and National Health Laboratory Service, Tygerberg Hospital, Cape Town, South Africa

Angela Dramowski

Division of Paediatric Infectious Diseases, Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa

1. Wang CJ, Ng CY, Brook RH. Response to COVID-19 in Taiwan. *JAMA* 2020 (epub 3 March 2020). <https://doi.org/10.1001/jama.2020.3151>
2. The Guardian. Mass testing, alerts and big fines: the strategies used in Asia to slow coronavirus. *World news*. <https://www.theguardian.com/world/2020/mar/11/mass-testing-alerts-and-big-fines-the-strategies-used-in-asia-to-slow-coronavirus> (accessed 13 March 2020).
3. World Economic Forum. This is how China moved to contain COVID-19. <https://www.weforum.org/agenda/2020/03/chinas-response-shows-how-bold-decision-making-can-contain-coronavirus/> (accessed 13 March 2020).
4. Hu Z, Song C, Xu C, et al. Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China. *Sci China Life Sci* 2020;1-6. <https://doi.org/10.1007/s11427-020-1661-4>
5. Hellewell J, Abbott S, Gimma A, et al. Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts. *Lancet Glob Health* 2020 (epub 28 February 2020). [https://doi.org/10.1016/S2214-109X\(20\)30074-7](https://doi.org/10.1016/S2214-109X(20)30074-7)
6. Mizumoto K, Kagaya K, Zarebski A, Chowell G. Estimating the asymptomatic ratio of 2019 novel coronavirus onboard the Princess Cruises ship. 2020. medRxiv March 2020;2020.02.20.20025866. <https://doi.org/10.1101/2020.02.20.20025866>
7. Gostic K, Gomez ACR, Mumah RO, Kucharski AJ, Lloyd-Smith JO. Estimated effectiveness of symptom and risk screening to prevent the spread of COVID-19. *eLife* 2020;9:e55570. <https://doi.org/10.7554/eLife.55570>
8. Wilder-Smith A, Chiew CJ, Lee VJ. Can we contain the COVID-19 outbreak with the same measures as for SARS? *Lancet Infect Dis* 2020 (epub 5 March 2020). [https://doi.org/10.1016/S1473-3099\(20\)30129-8](https://doi.org/10.1016/S1473-3099(20)30129-8)
9. New York Times. 'It's just everywhere already': How delays in testing set back the U.S. coronavirus response. 10 March 2020. <https://www.nytimes.com/2020/03/10/us/coronavirus-testing-delays.html> (accessed 13 March 2020).