

Editor's Note

Lessons From the Success of COVID-19 Control in Taiwan

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Taiwan, an island nation of about 24 million people, has been extraordinarily successful in containing COVID-19. As of March 2021, there had been only 10 deaths and slightly more than 1000 cases. People live without fear of SARS-CoV-2.¹

Even as the pace of vaccinations accelerates, there was still a 7-day moving average of more than 60 000 new COVID-19 cases and 1000 deaths a day in the US in late March 2021, daily totals that were comparable with those during the summer 2020 peak. What lessons does Taiwan's initial success have for

containing the epidemic? The answer is the need for a combination of case-based interventions (including testing,

contact tracing, and quarantine) and population-based interventions (including physical distancing and facial masking with wide adherence) for control to be successful. Neither type of intervention alone would be sufficient, even in a country with an effective public health system, comprehensive contract tracing program, control of its borders, and wide adherence to physical distancing and the wearing of facial masks.

In this issue of *JAMA Internal Medicine*, Ng and colleagues,² building on an earlier study about the transmission dynamics in Taiwan's first 100 confirmed cases,³ report a modeling study using the country's detailed epidemic data to assess the interventions for control. Control requires the effective reproduction number of COVID-19 (the number of secondary cases generated by 1 primary case) to be less than 1. The analysis focused on local transmission of cases, not on border control, to prevent imported cases.

All modeling studies have inherent limitations, with the results dependent on the assumptions and the underlying data. Nonetheless, the findings are instructive. When the epidemic curve was projected through day 60 with 100 initial cases, the daily number of new cases would rise to 37 631 (95% credible interval [CrI], 29 586-46 285) and 481 (95% CrI 320-736) with case-based and population-based interventions alone, respectively.² In contrast, the combination of both types of interventions contained the epidemic; by day 60, the daily number of new cases would be 1.7 (95% CrI, 0.3-6.7), and by day 84 (95% CrI, 51-137), the daily number would be 0.²

An important reason why population-based interventions are relatively more effective than case-based interventions is the role of presymptomatic transmission; nearly half of transmissions might occur before an individual has symptoms, creating challenges for timely contact tracing and quarantine of high-risk contacts. In contrast, population-based measures, including the wearing of face masks, physical distancing, and the avoidance of crowds, gatherings, and nonessential indoor spaces, can be widely applied irrespective of knowing which individuals are high risk.

Although global vaccination rates for COVID-19 are increasing, in most countries, only a minority of people have been vaccinated. Many nations have yet to start vaccinating, and viral variants are a pressing concern. The promise of vaccination notwithstanding, effective case-based and population-based control of COVID-19 is as urgent as ever.

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