



Taiwan's experience in pandemic control: Drawing the right lessons from SARS outbreak

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Taiwan takes credit for its effective response to coronavirus disease 2019 (COVID-19). As of May 9th, the laboratory-confirmed cases were 440 in number, with low mortality rate (6 cases, 1.4%).¹ Nearly 80% of all cases were imported. The management of the pandemic crisis is widely believed to be a blueprint for many other countries. Taiwan's success did not come out of sheer luck. Instead, Taiwan has taken a series of actions after the 2003 severe acute respiratory syndrome (SARS) outbreak in governmental reorganization, medical care system preparedness, and public engagement.^{2,3}

Ever since its withdrawal from the United Nations and peripheral organizations in 1971, Taiwan has been relying on itself to overcome problems in frequent natural disasters and serious epidemics for nearly 50 years. As a result, its government has learned to devise a more effective organization for epidemic prevention with more efficient mobilization of medical personnel. Especially after the SARS outbreak in 2003, the functions of Centers for Disease Control of the Ministry of Health have been greatly enhanced by strengthening its efficiency, expanding medical workforce for disease prevention, and elevating competence of information technology and skills of disease investigation and emergency operation.⁴ In January 2020, when news of "new and unknown respiratory disease emerging in China" was first disclosed, an inter-ministerial Central Epidemic Command Center was consequently activated, which provided a series of key measures for blocking transmission and effectively stemmed the spread.^{2,5,6}

In terms of preparation made by the medical care system, drills have been held periodically across Taiwan since the SARS epidemic, in addition to the regular review for infection control. All these auditing must be completed under the supervision of infection control experts. Every 4 years, all hospitals are required to be officially accredited by the Joint Commission of Taiwan, a non-for-profit professional accrediting organization, to ensure that all necessary infection control personnel, equipment, and reserve stock are in position. Therefore, when the government made the announcement in January, the hospitals were able to activate immediate measures such as triage,

quick isolation, strictly controlled crowd flow, medical task force, and epidemic prevention materials to maintain the normal operation of the medical care system.⁷ So far, similar disintegration in the medical care system that happened to other nations has never occurred in Taiwan. In contrast, Taiwan's medical system helps successfully in treating serious cases of COVID-19 and the death rate goes much lower than those of the nations with advanced medical technology and universal healthcare coverage.

More importantly, the success of the epidemic control has resulted from the post-SARS self-alert and self-discipline of the residents, who voluntarily put on face masks, wash hands properly, and practice social distancing. Another contribution from the public is the wide application of big data analysis and advanced information and communication technology (ICT).^{2,3,8} Advocated by the government as well as on social networking, ICT has been applied broadly to various prevention measures. For example, from the National Health Insurance card, physicians can check out patients' overseas travel history and whether they are still required to stay home for quarantine or isolation.^{2,3} In addition, residents are able to search on their mobile phones, which pharmacies in the neighborhood to go to for the purchase of surgical masks and at what appointed time to pick up the masks in the given quota.⁹ Recently, convenience has extended to online shopping from home and at convenience stores to shorten time for queuing up for the purchase. In Taipei, residents can even buy masks from vending machines. With the joint efforts of all the residents, Taiwan is one of the few countries in the world that have not imposed lockdown on any cities; residents are able to go to work, study, and perform daily economic activities as usual. Taiwan is also the first country where the professional baseball league resumed play.

Although it has been days without any confirmed indigenous case in Taiwan, the condition in the neighboring countries has been closely watched by Taiwan as any negligence might trigger another outbreak. To prevent the second wave of infection either caused by imported or by indigenous cases, the government and health providers continue to be on guard. While residents are resuming their normal life and regular economic activities, the government and medical experts request all residents to shun from crowded places, to keep social distancing, and to maintain strict control over port-of-entry inspection. More importantly, Taiwan needs to collaborate with research institutes in other nations to develop vaccines and new drugs as part of the preemptive strategies against the next wave of the epidemic.

Taiwan has drawn the right lessons since SARS outbreak. It has proven itself to be not only self-reliant but also capable of helping other countries, in alignment with international healthcare organizations to fight against COVID-19.

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REFERENCES

1. Johns Hopkins Coronavirus Resource Center. Coronavirus COVID-19 global cases by the center for systems science and engineering (CSSE) at Johns Hopkins University. Available at <https://coronavirus.jhu.edu/map.html>. Accessed May 10, 2020.
2. Lin C, Braund WE, Auerbach J, Chou JH, Teng JH, Tu P, et al. Policy decisions and use of information technology to fight 2019 novel coronavirus disease, Taiwan. *Emerg Infect Dis* 2020;26. Doi:10.3201/eid2607.200574.
3. Wang CJ, Ng CY, Brook RH. Response to COVID-19 in Taiwan: big data analytics, new technology, and proactive testing. *JAMA* 2020. Doi:10.1001/jama.2020.3151.
4. Cheng HY, Jian SW, Liu DP, Ng TC, Huang WT, Lin HH, et al. Contact tracing assessment of COVID-19 transmission dynamics in Taiwan and risk at different exposure periods before and after symptom onset. *JAMA Intern Med* 2020. Doi:10.1001/jamainternmed.2020.2020.
5. Cheng HY, Li SY, Yang CH. Initial rapid and proactive response for the COVID-19 outbreak—Taiwan's experience. *J Formos Med Assoc* 2020;119:771–3.
6. Chen CM, Jyan HW, Chien SC, Jen HH, Hsu CY, Lee PC, et al. Containing COVID-19 among 627,386 persons in contact with the Diamond Princess cruise ship passengers who disembarked in Taiwan: big data analytics. *J Med Internet Res* 2020;22:e19540.
7. Liu YA, Hsu YC, Lin MH, Chang HT, Chen TJ, Chou LF, et al. Hospital visiting policies in the time of COVID-19: a nationwide website survey in Taiwan. *J Chin Med Assoc* 2020;83:566–70.
8. Chen FM, Feng MC, Chen TC, Hsieh MH, Kuo SH, Chang HL, et al. Big data integration and analytics to prevent a potential hospital outbreak of COVID-19 in Taiwan. *J Microbiol Immunol Infect* 2020. pii:S1684-1182(20)30104-3. Doi:10.1016/j.jmii.2020.04.010.
9. Yuan EJ, Hsu CA, Lee WC, Chen TJ, Chou LF, Hwang SJ. Where to buy face masks? Survey of applications using Taiwan's open data in the time of COVID-19. *J Chin Med Assoc* 2020;83:557–60.