

# Community Pharmacists in Taiwan at the Frontline Against the Novel Coronavirus Pandemic: Gatekeepers for the Rationing of Personal Protective Equipment

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As one of the earliest countries to activate public health measures, Taiwan has felt a more moderate effect of the coronavirus disease 2019 (COVID-19) pandemic than many other countries. It has had relatively few infections: As of 8 April 2020, there were 379 confirmed cases with 5 deaths in Taiwan, compared with 1 371 189 cases with 80 522 deaths globally. Imported COVID-19 cases have constituted most infections in Taiwan (326 imported vs. 53 locally acquired), suggesting that community outbreaks have been less frequent. Other proactive measures undertaken by the Taiwanese government have included strengthening quarantine measures at ports of entry, retrospectively identifying potential COVID-19 cases, and identifying new infection patterns or symptoms and clustered cases to promptly track potential infection sources or paths. The government has also aggressively enforced rules about mask wearing, self-quarantine, and social distancing (1).

During the severe acute respiratory syndrome epidemic in 2003, public demand surged in Taiwan for personal protective equipment, such as surgical masks; these are seen as must-have equipment, and demand for masks reflects people's fear during a public health crisis. In response to a shortage of surgical masks due to the COVID-19 outbreak, in late January 2020 the Taiwanese government imposed a ban on the export of surgical masks and requisitioned all domestically produced masks. In early February 2020, the government implemented a rationing system for distributing surgical masks to prevent panic buying (2). This system uses multilayer logistics to ensure quick and efficient implementation. It integrates the manufacturing sector, National Health Insurance (NHI) system, information and communication technology, and logistics of delivery and distribution to ensure that all citizens receive masks while prioritizing the allocation of sufficient masks to health care personnel. Surgical mask production was quickly scaled up in early April 2020 to 13 million masks a day for Taiwan's population of 23.8 million to allow for an increase in the individual allowance to 10 masks every 2 weeks.

Community pharmacies, which are strategically located and have NHI-integrated information systems, were given the responsibility of distributing and rationing masks directly to the public. A real-time, open tracking system for mask availability was immediately implemented at each pharmacy using website and mobile applications to guide citizens in need of masks. The system included online chatbots and voice assistants that provided information about the supply of masks

and the locations of the 6515 NHI-contracted pharmacies across the nation. Community pharmacists repacked the bulk packages of masks into unit packets containing the rationed amount and completed the NHI online procedures for residents in their communities. Often serving as the first point of contact between individuals and the health care system, community pharmacists offered education and consultation on proper hygiene strategies, disseminated accurate information to counter myths and misinformation, and provided emotional support to alleviate public concerns arising from the COVID-19 crisis. At this time, dispensing services provided in community pharmacies have been particularly crucial in minimizing the potential for a large influx of patients seeking prescriptions from hospital pharmacies.

At the same time, physicians and nurses in community-based primary care clinics have played a critical role in the early identification of potential COVID-19 cases by examining patients with clinical symptoms, obtaining their history of travel or transit in affected countries or areas (which can be accessed from the patients' NHI identification cards), and referring suspected case patients to government-designated hospitals in a timely fashion. Stringent policies have been implemented to control access to Taiwanese hospitals. Unessential visits have been suspended, and persons with any signs or symptoms of COVID-19 are directed to an outdoor quarantine station for evaluation or the emergency department for isolation in negatively pressurized rooms (3). Other measures have included the strict diversion and transport of patients with COVID-19 to different levels of hospitals on the basis of the severity of their symptoms and the segregation of hospital wards to ensure appropriate patient care (4).

During this pandemic, several challenges to community pharmacists have emerged. Small independent pharmacies with limited manpower had difficulty using the rationing system for mask purchases. Taiwan's pharmacy organizations, in collaboration with pharmacy schools, have provided timely support to independent pharmacies by arranging for student volunteers to help repack masks for purchases and prepare and deliver educational materials. Small pharmacies have had difficulty managing the large influx of citizens seeking services, some of whom are extremely anxious. Some village chiefs have assisted neighborhood pharmacies in managing emotional or angry customers.

Some have suggested that professional organizations and health authorities should invest in ensuring that pharmacists have the essential skills needed to re-

spond to future public health emergencies (5). The provision of COVID-19-related services, which gives little to no monetary compensation, can interfere with routine pharmacy practices, and an optimal business model for pharmacies during this period (including minimizing promotional activities and encouraging electronic payments) has been recommended (6). Large crowds seeking prevention and control strategies or products in pharmacies may create risk for virus transmission (6). In Taiwan, an online service platform for purchasing surgical masks from governmental websites has been developed to relieve overcrowding in pharmacies and reduce virus transmission. On the other hand, some Taiwanese hospitals have encouraged patients to return for prescription refills at their outpatient pharmacies, potentially increasing risk for exposure to the infection. The government and pharmacy associations have responded by urging the public to maximize their use of services provided by community pharmacists during this crisis. Finally, drug shortages are a potential problem due to the recent supply chain disruptions caused by the lockdown of manufacturers in areas affected by COVID-19. Identifying alternative drugs and minimizing requests for no substitution are potential solutions to mitigate this problem (6).

In this unprecedented global public health emergency, a reliable network of health care professionals in communities near where people live is vital for providing services and products for self-care and reducing anxiety and panic. This COVID-19 crisis is the moment for community health care workers to step up to the plate and show their value in public health.

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**Acknowledgment:** The authors thank Swu-Jane Lin and Shih-chen Kuo for their help in preparing and drafting the manuscript.

**Disclosures:** Authors have disclosed no conflicts of interest. Forms can be viewed at [www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M20-1404](http://www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M20-1404).

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*Ann Intern Med.* doi:10.7326/M20-1404

## References

1. Taiwan Centers for Disease Control. Press releases. Accessed at [www.cdc.gov.tw/En/Bulletin/List/7tUXjTBf6paRvrhEl-mrPg](http://www.cdc.gov.tw/En/Bulletin/List/7tUXjTBf6paRvrhEl-mrPg) on 8 April 2020.
2. Taiwan Centers for Disease Control. Name-based rationing system for purchases of masks to be launched on February 6; public to buy masks with their (NHI) cards. 4 February 2020. Accessed at [www.cdc.gov.tw/En/Bulletin/Detail/ZIJrlunqRjM49LIBn8p6eA?typeid=158](http://www.cdc.gov.tw/En/Bulletin/Detail/ZIJrlunqRjM49LIBn8p6eA?typeid=158) on 8 April 2020.
3. Lee IK, Wang CC, Lin MC, et al. Effective strategies to prevent coronavirus disease-2019 (COVID-19) outbreak in hospital [Letter]. *J Hosp Infect.* 2020. [PMID: 32142886] doi:10.1016/j.jhin.2020.02.022
4. Taiwan Centers for Disease Control. CECC maintains six strategies to prevent COVID-19 spread in hospitals. 7 April 2020. Accessed at [www.cdc.gov.tw/En/Bulletin/Detail/pOahsDWblKw6KMVDsPed9Q?typeid=158](http://www.cdc.gov.tw/En/Bulletin/Detail/pOahsDWblKw6KMVDsPed9Q?typeid=158) on 8 April 2020.
5. Wiedenmayer K, Summers RS, Mackie CA, et al. Developing pharmacy practice: a focus on patient care: handbook. No. WHO/PSM/PAR/2006.5. World Health Organization; 2006.
6. International Pharmaceutical Federation. SARS-CoV-2 infection: expert consensus on guidance and prevention and control strategies for retail pharmacy workforce (1st edition). 2020. Accessed at [www.fip.org/files/content/priority-areas/coronavirus/English\\_SARS-CoV-2\\_Infection\\_Expert\\_Consensus\\_on\\_Guidance\\_and\\_Prevention\\_and\\_Control\\_Strategies\\_for\\_Retail\\_Pharmacy\\_Workforce.pdf](http://www.fip.org/files/content/priority-areas/coronavirus/English_SARS-CoV-2_Infection_Expert_Consensus_on_Guidance_and_Prevention_and_Control_Strategies_for_Retail_Pharmacy_Workforce.pdf) on 8 April 2020.

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