

ONLINE FIRST PUBLICATION

Online first papers have undergone full scientific review and copyediting, but have not been typeset or proofread. To cite this article, use the DOIs number provided. Mandatory typesetting and proofreading will commence with regular print and online publication of the online first papers of the *SMJ*.

100 days on: the primary care response to COVID-19 in Singapore

Yiyang Liow^{1,2}, MBBS, MMed, Victor Weng Keong Loh², MMed, MHPE,
Doris Young², MBBS, MD

¹National University Polyclinics, National University Health System, ²Department of Family Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Correspondence: Dr Liow Yiyang, Family Physician, Queenstown Polyclinic, National University Polyclinics, 580 Stirling Road, Singapore 148958. yiyang_liow@nuhs.edu.sg

Singapore Med J 2020, 1–8

<https://doi.org/10.11622/smedj.2020162>

Published ahead of print: 30 November 2020

Online version can be found at
<http://www.smj.org.sg/online-first>

INTRODUCTION

In November 2019, general practitioners in Northern Italy noticed that a ‘strange pneumonia’ had appeared in their community.⁽¹⁾ They were one of the first providers to encounter coronavirus disease 2019 (COVID-19), which is unsurprising since primary care is often the first point of contact for patients within health systems. Since then, COVID-19 has spread and primary care physicians worldwide have been at the frontlines facing this once-in-a-century pandemic. By May 2020, there were almost 3.7 million cases globally with more than a quarter million deaths in 215 countries and territories.⁽²⁾ 100 days after confirming its first patient, Singapore recorded more than 17,000 cases and 17 deaths. This commentary describes Singapore’s primary care response and discusses the challenges faced.

PRIMARY CARE RESPONSE IN SINGAPORE

A prepared community

Public Health Preparedness Clinics (PHPCs), formerly known as Pandemic Preparedness Clinics, are a network of clinics in Singapore that consolidate the primary care response to public health emergencies. The PHPC national scheme had been helpful in managing the seasonal haze and the 2009 H1N1 influenza pandemic.⁽³⁾ When local transmission of COVID-19 first occurred in early February 2020, the authorities activated more than 900 primary care clinics and polyclinics from this network.⁽⁴⁾ Patients with acute respiratory symptoms received subsidised treatments at participating clinics, which increased accessibility to care and resulted in more than 70% of confirmed cases visiting a clinic within two days of symptom onset.⁽⁵⁾ Those who met suspect case criteria were tested under the Swab and Send Home (SASH) programme. SASH facilitated outpatient management, increased testing capacity and reduced the burden on tertiary centres. The network also served an epidemiological role by collecting data on community transmission, including performing sentinel surveillance swabs. Clinics

were supplied with personal protective equipment (PPE) from national stockpiles, which ensured that providers were adequately protected. Should one become available, a vaccine could also be administered at PHPCs. As COVID-19 appears to be here for the long haul, the accessible and coordinated primary care delivered by the PHPCs will continue to be an important part of national efforts.

Migrant worker dormitory clusters

Hailing mostly from India, Bangladesh and China, about 323,000 migrant workers in Singapore reside in close proximity to one another in 43 purpose-built dormitories. Rapid spread of COVID-19 within these dormitories accounted for the majority of the cases in the country. Outposts were erected in dormitories to screen workers and meet their medical needs. Facilities islandwide, including hotels and exhibition centres, were converted into isolation centres to house those affected. Primary care physicians, who are trained to provide care across multiple settings in the community, were mobilised to these sites to provide medical consultation and swab testing expertise. Many from the public and private sectors, as well as locum and retired practitioners, volunteered their efforts. Some brought essential experience, having previously cared for migrant workers as designated workplace doctors or having practised in industrial areas and non-profit clinics catered to these workers.⁽⁶⁾ New cases from the dormitories are still being recorded daily and with the authorities' plans to test every worker, primary care physicians will continue playing an important role in caring for this group.

Adding to a growing body of knowledge

We have seen an intense level of communication and collaboration among researchers that has enabled research on COVID-19 to progress faster than during any previous outbreak.⁽⁷⁾ Researchers from Singapore contributed significantly to the understanding of presymptomatic

transmission,⁽⁸⁾ community transmission⁽⁹⁾ and serological testing for contact tracing.⁽¹⁰⁾ Primary care physicians highlighted cases of ‘covert’ COVID-19 that masqueraded as false-positive dengue in the *Lancet Infectious Diseases* journal.⁽¹¹⁾ As dengue and COVID-19 share clinical and laboratory features, their findings informed practitioners in dengue-endemic areas including Singapore, where the incidence of dengue was at a four-year high as the novel coronavirus emerged.⁽¹²⁾ Much has yet to be discovered about COVID-19 and its impact on patients and health systems. Being on the front line, primary care researchers are well positioned to advance knowledge in this field.

CHALLENGES FACED

Initial difficulties

The abrupt onset of the pandemic mandated urgent changes to usual primary care practice. Stepping up infection control was a top priority, including creating segregation protocols and well-ventilated isolation areas. These were operational challenges, particularly for smaller clinics with limited resources. A global shortage of PPE meant that clinics had to carefully ration supplies and at times ‘re-don’ used PPE, which risked self-contamination. Keeping abreast of new advisories and workflows was another challenge. For instance, SASH was initially restricted to patients with clinical or radiological features of community-acquired pneumonia. However, as evidence emerged of presymptomatic transmission and mild disease in the early stages, the criteria were expanded accordingly. Primary care physicians also encountered patients who had visited other clinics and had not improved. More than 20% of the first 160 confirmed cases had visited more than one clinic.⁽¹³⁾ Such ‘doctor hopping’ disrupted continuity of care and risked cross-contamination between clinics. Proper messaging through mainstream and social media channels has anecdotally helped to reduce such behaviour. On a professional development front, keeping up with continuing medical education

(CME) was challenging amid the flurry of emerging COVID-19 cases. Furthermore, in-person CME events were stopped in view of safe distancing measures, and primary care physicians have kept themselves updated through online webinars, distance learning and self study.

Continuing care

Fewer patients have presented to emergency rooms with common conditions such as acute coronary syndrome and stroke.^(14,15) This has raised concerns that patients may be afraid of seeking help for fear of contracting COVID-19 at healthcare institutions. Primary care physicians have also seen fewer in-person visits and could subsequently face an epidemic of poorly controlled chronic conditions, among others. We must be mindful of the needs of our non-COVID-19 patients.⁽¹⁶⁾ An increasing number have requested for remote consultations, which could present a solution for continuing care in these times. There is evidence that telemedicine is effective in the management of chronic diseases and behavioural health⁽¹⁷⁾ but has drawbacks, including the lack of physical examination and difficulty of adoption by the less technologically savvy. In recent years, local authorities have issued guidelines and created a regulatory sandbox to facilitate the growth of telemedicine. Yet, there is a sense that it has yet to take full flight in Singapore. COVID-19 may provide impetus for the transformative development of this field. The *BMJ* has published a guide for primary care physicians on conducting remote assessments for patients with COVID-19 symptoms.⁽¹⁸⁾ The American Academy of Family Physicians has provided useful communication tips for phone consultations.⁽¹⁹⁾ Although these are useful resources, more research needs to be conducted to shed light on the precise effects of telemedicine and how best to deliver it in the local setting.

Mental health

A recent local news report highlighted the increasing number of calls from new clients to mental health hotlines in Singapore, echoing a global trend.⁽²⁰⁾ Public health emergencies can affect the health, safety and well-being of both individuals and communities. Insecurity, stigma, emotional isolation, economic loss, work and school closures, and deficient distribution of necessities are some widely felt effects.⁽²¹⁾ Such experiences may translate into psychopathology such as anxiety, depression and intimate partner violence. Primary care physicians must be attuned to the rising threat of mental health disorders during the COVID-19 pandemic and have a high index of suspicion for silent sufferers among patient ranks. Asking patients how they are coping with the pandemic is a simple way into the conversation. The mental health of healthcare personnel must also be looked after. A study on the psychological impact of COVID-19 on healthcare workers in Singapore revealed that non-medical staff are at the highest risk of psychological distress.⁽²²⁾ Initiatives such as virtual psychology clinics and 24-hour hotlines have been implemented to support the mental wellness of staff.

LOOKING AHEAD

From the perspective of our patients, the pandemic could make a difference in the way they seek help. Those with minor, self-limiting problems may become more able to self-manage, creating an opportunity to refocus primary care towards those with the greatest needs when the dust settles.⁽²³⁾ The novel coronavirus has brought much change to our usual practice and few could have imagined a pandemic of such scale months ago. Primary care physicians must continue adapting to the new normal. Perhaps a silver lining to COVID-19 is that we have been reminded of our calling as healers. Many of us have been given a renewed sense of purpose, relatedness and altruism.⁽²⁴⁾ May we carry these with us into the fight of our generation.

ACKNOWLEDGEMENTS

We would like to thank Monica Ashwini Lazarus, Research Associate at the Department of Family Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore for her assistance in formatting this commentary.

REFERENCES

1. Liu Z. Coronavirus: 'strange pneumonia' seen in Lombardy in November, leading Italian doctor says. South China Morning Post 2020 Mar 22. Available at: <https://www.scmp.com/news/china/society/article/3076334/coronavirus-strange-pneumonia-seen-lombardy-november-leading>. Accessed May 11, 2020.
2. World Health Organization. Coronavirus disease (COVID-19) pandemic. Available at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>. Accessed May 11, 2020.
3. Agency for Integrated Care. Public Health Preparedness Clinic (PHPC). In: Primary Care Pages [online]. Available at: [https://www.primarycarepages.sg/practice-management/moh-national-schemes/public-health-preparedness-clinic-\(phpc\)](https://www.primarycarepages.sg/practice-management/moh-national-schemes/public-health-preparedness-clinic-(phpc)). Accessed May 11, 2020.
4. Ministry of Health, Singapore. Comprehensive medical strategy for COVID-19 - 28 April 2020. Available at: <https://www.moh.gov.sg/news-highlights/details/comprehensive-medical-strategy-for-covid-19>. Accessed May 11, 2020.
5. Lam LTM, Chua YX, Tan DHY. Roles and challenges of primary care physicians facing a dual outbreak of COVID-19 and dengue in Singapore. *Fam Pract* 2020; 37:578-9.
6. HealthServe. Available at: <https://www.healthserve.org.sg/>. Accessed May 11, 2020.
7. Kupferschmidt K. 'A completely new culture of doing research.' Coronavirus outbreak

- changes how scientists communicate. *Science* 2020 Feb 26. <https://doi.org/10.1126/science.abb4761>.
8. Wei WE, Li Z, Chiew CJ, et al. Presymptomatic transmission of SARS-CoV-2 – Singapore, January 23–March 16, 2020. *MMWR Morb Mortal Wkly Rep* 2020; 69:411-5.
 9. Pung R, Chiew CJ, Young BE, et al. Investigation of three clusters of COVID-19 in Singapore: implications for surveillance and response measures. *Lancet* 2020; 395:1039-46.
 10. Yong SEF, Anderson DE, Wei WE, et al. Connecting clusters of COVID-19: an epidemiological and serological investigation. *Lancet Infect Dis* 2020; 20:809-15.
 11. Yan G, Lee CK, Lam LTM, et al. Covert COVID-19 and false-positive dengue serology in Singapore. *Lancet Infect Dis* 2020; 20:536.
 12. Ng JS. Dengue cases at four-year high. *Today* 2020 Feb 11. Available at: <https://www.todayonline.com/singapore/dengue-cases-four-year-high>. Accessed May 25, 2020.
 13. Government of Singapore. COVID-19 spread caused by socially irresponsible behaviour. Available at: <https://www.gov.sg/article/covid-19-spread-caused-by-socially-irresponsible-behaviour>. Accessed May 25, 2020.
 14. Roth S. American College of Cardiology urges heart attack, stroke patients to seek medical help. In: American College of Cardiology [online]. Available at: <https://www.acc.org/about-acc/press-releases/2020/04/14/10/17/american-college-of-cardiology-urges-heart-attack-stroke-patients-to-seek-medical-help>. Accessed May 11, 2020.
 15. Garcia S, Albaghdadi MS, Meraj PM, et al. Reduction in ST-segment elevation cardiac catheterization laboratory activations in the United States during COVID-19 pandemic.

- J Am Coll Cardiol 2020; 75:2871-2.
16. Rosenbaum L. The untold toll – the pandemic’s effects on patients without Covid-19. *N Engl J Med* 2020; 382:2368-71.
 17. Totten AM, Womack DM, Eden KB, et al. Telehealth: mapping the evidence for patient outcomes from systematic reviews [Internet]. Report No.: 16-EHC034-EF. Rockville, MD: Agency for Healthcare Research and Quality (US), 2016.
 18. Greenhalgh T, Koh GCH, Car J. Covid-19: a remote assessment in primary care. *BMJ* 2020; 368:m1182.
 19. Martinez L, Sattler A, Sherman M, Wootten M. 10 communication tips for physician phone visits during COVID-19. In: American Academy of Family Physicians [online]. Available at: https://www.aafp.org/journals/fpm/blogs/inpractice/entry/telephone_visit_tips_2.html. Accessed May 11, 2020.
 20. Phua R, Ang HM. COVID-19: worries about pandemic see more calls to mental health helplines. In: Channel NewsAsia [online]. Available at: <https://www.channelnewsasia.com/news/singapore/covid-19-fear-toll-mental-health-hotline-anxiety-singapore-12631710>. Accessed May 11, 2020.
 21. Pfefferbaum B, North CS. Mental health and the Covid-19 pandemic. *N Engl J Med* 2020; 383:510-2.
 22. Tan BYQ, Chew NWS, Lee GKH, et al. Psychological impact of the COVID-19 pandemic on health care workers in Singapore. *Ann Intern Med* 2020; 173:317-20.
 23. Thornton J. Covid-19: how coronavirus will change the face of general practice forever. *BMJ* 2020; 368:m1279.
 24. Hartzband P, Groopman J. Physician burnout, interrupted. *N Engl J Med* 2020; 382:2485-7.