COVID-19 in Singapore: Graduate Medical Education in The Face of a Global Pandemic

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Abstract

The 2019 novel coronavirus disease (COVID-19) spreads outside China rapidly and became a global pandemic. Recognising its severity and with experiences from the Severe Acute Respiratory Syndrome coronavirus (SARS-CoV) outbreak in 2003, the Singapore government promptly and decisively implemented measures to contain the disease. Many of them have direct effects on our healthcare workers (HCW), and our graduate medical education, which is modelled after the US residency training system, has invariably been impacted to a large degree. Strategies aimed at minimising unnecessary contact between HCW, and directives to step up on human resources as healthcare institutions prepare to cope with a disease outbreak called for modifications to residents' training routine. Residents are affected by curtailment of leave and reallocation of manpower to meet the demands at various frontlines and have to cope with significant physical and emotional stress from anxiety and even pessimism as the situation unfolds with unpredictability. Nevertheless, the pandemic also presents a rare opportunity for residents to learn about healthcare in an international and interdisciplinary context, and develop qualities like resilience, adaptability and solidarity in the face of a medical crisis.

Keywords: COVID-19; Singapore; Graduate Medical Education; Impact on Residency Training

Introduction

The World Health Organization declared the 2019 novel coronavirus disease (COVID-19) outbreak a Public Health Emergency of International Concern on 30 January 2020 (Ghebreyesus, 2020). The disease was first detected in December 2019 in Wuhan, Hubei Province, China, and rapidly spread within the country and overseas. The disease has quickly spread worldwide and was declared a pandemic on 11 March 2020 (World Health Organisation, 2020). Having learned lessons from the Severe Acute Respiratory Syndrome coronavirus (SARS-CoV) outbreak in 2003, the Singapore government and its healthcare-related agencies promptly implemented measures in anticipation of another outbreak.
Here, we describe the impact of these measures on the conduct of graduate medical training in Singapore, the challenges faced by our residents, and how they are managed.

**Residency Training in Singapore**

Graduate medical education in Singapore has, since 2010, been revamped to model after the US residency training system with modifications to suit our local healthcare needs. There are three sponsoring institutions (SI) for residency training in Singapore – Singapore Health Services (SHS), National Healthcare Group (NHG) and National University Health System (NUHS). Each SI comprises of a cluster of tertiary teaching hospitals, community hospitals, national specialty centres and polyclinics that serve as training sites of various residency training programmes. Both SIs and individual residency programmes are subject to regular reviews and accreditation by the Accreditation Council for Graduate Medical Education-International (ACGME-I) and overseen by the MOH. Each residency programme has a nationally standardised curriculum framework, core competencies, milestones and assessments that residents must achieve. Residents are also required to fulfil mandatory sub-specialty core rotations in other SIs (cross-cluster rotations) as a funding Key Performance Indicator (KPI) requirement imposed by the MOH. This also increases residents' exposure to cases they may not otherwise encounter in their parent SI. (Huggan et al., 2012) To promote collegiality and peer-to-peer learning, residents also frequently gather for compulsory national specialty training sessions, workshops and preparatory examination courses.

**Effects on Training**

**Cessation of cross-cluster and cross-institutional rotations**

Movement of all healthcare workers between healthcare institutions was immediately curtailed. Residents were prohibited from moving between hospitals within their parent SI, as well as moving across to other SIs for cross-cluster rotations. Affected residents had to consolidate their knowledge and case logs quickly mid-rotation, and some were unable to complete specific competency assessments required for the posting before its truncation. For programmes where residents rotate through multiple subspecialties in several different institutions, individual rotations were painstakingly adjusted with the assumption that the disruption would last several months. This disruption in training momentum is inconvenient, and the uncertainty as to when things can resume generated much frustration. Many that are "stuck" in out-rotations lost not only coverage of continuity clinics in their parent institutions, but also considerable time spent in core training.

**Cancellation of teaching sessions and training activities**

Many specialty programmes conduct weekly or monthly national teaching programmes that involve residents from all 3 SIs. National training activities had to be suspended initially due to movement restrictions, and residents had to re-organise tutorials within each hospital, share slides through internet platforms like e-learning, and utilise technology in the form of video conferencing and webcasts to conduct web-based tutorials. However, these do not match the active learning environment and engagement that actual interactive sessions provide and may compromise on the experience that can be gained from hands-on Objective Structured Clinical Examination (OSCE) practice or practical skills sessions.

With the cancellation of large group meetings, conferences and interactive face-to-face tutorials, this pandemic has also challenged the usual education roles and created innovative teaching opportunities (Kee, Archuleta and Dan, 2020). While less time is dedicated to formal didactic teaching, residents, in turn, learn from positive role modelling
provided by their seniors and teaching faculties, as they grapple with the mysterious nature of this infectious disease and continuously adapt to new discoveries and reflect on each step taken thus far on a day-to-day basis.

Examinations

Every year between March to June, The Division of Graduate Medical Studies (DGMS) – the local examining board – conducts intermediate specialist examinations. Passing these examinations is compulsory for junior residents to progress to senior residency in July, and residents typically spend many months preparing for them. The Exit Examination is also conducted in this period in order for senior residents to receive specialist accreditation after completion of their residency training and be promoted to Associate Consultants. Though essential, the Joint Committee in Specialist Training (JCST) and MOH recognised the challenge in conducting these examinations amid the pandemic, with a need to abide by safe distancing guidelines and infection control measures. As the pandemic worsened and lockdown restriction began to be imposed both locally and around the world, all locally conducted as well as locally recognised international examinations were postponed. Many residents were consequently confronted by the disconcerting possibility of being held back in their residency training.

To reduce the impact of this on training progression, the JCST and MOH initially considered allowing, on a case-by-case basis, a one fixed off-cycle promotion month in October for residents who were unable to progress to senior residency due to postponed examinations. However, they also acknowledged that the vast majority of these junior residents had completed the requisites for graduation from junior residency. A decision was eventually made to allow these residents to be provisionally promoted to senior residents, on the condition that they must have been assessed by their respective Programme Directors and Clinical Competency Committees to be clinically competent to take on the role of a senior resident, and that they attempt and pass the next earliest intermediate examination when lockdown restrictions are eased.

Unfortunately, postponement of the exit examination meant that senior residents in their final year of training were unable to receive specialist accreditation. Having fulfilled all other requirements for the completion of their senior residency, they have therefore transited into a phase of Service Registrar-ship. Some programmes have only recently held their exit examinations with modifications to their conduct, including the use of digital tools such as video conferencing in place of face-to-face interview or structured viva-voce examinations in order to observe social distancing.

Reduction in inpatient and outpatient Business-As-Usual (BAU) work, with the reallocation of human resources

All hospitals were required to scale down elective surgical work. Non-urgent surgeries were postponed, and non-essential outpatient clinic visits cancelled. Compounded by restricted cross-cluster rotations and cross-institutional duties, many residents found much difficulty in achieving their target number of case logs.

Furthermore, many residents from both medical and surgical programmes were removed from their usual clinical duties and redeployed to screening centres to meet the operational demands. At the height of the pandemic in March and April, emergency departments in Singapore were faced with a sudden surge in patients with respiratory symptoms. Screening centres were set up island-wide at various tertiary hospitals, most notably at the National Center for Infectious Diseases (NCID) which saw an enormous increase in caseload. Many residents were needed to meet the operational demands in these locations. Together with other doctors, nurses and healthcare workers, they were the true heroes manning the frontlines of this pandemic, but this was at the expense of quality training time away from their specialty. Fortunately, the duration of this frontline work was carefully limited and managed by various institutions and programme directors to ensure that residents were not withdrawn from core residency
training for prolonged periods.

**Effects on Day-to-Day Life**

### Annual leave and conference leave

With the heightened state of vigilance, hospital-wide manpower protocols were set in motion to restrict all overseas travel in order to step up on human resources and ensure that residents were available for mobilisation at short notice. As such, all overseas leave and local leave exceeding a stipulated period were curtailed, putting long-awaited holidays and much-needed breaks on hold.

Overseas travel and conference leave applications were also suspended indefinitely. Residents who had registered their attendance or had posters accepted for presentation, which could then be used to fulfil their residency requirements for research work, were met with tremendous disappointment. They miss opportunities to meet renowned leaders in various fields, get updates on the latest practices and advancements and receive feedback on their presented work. Fortunately, a system was quickly put in place for residents to be able to get refunds from airlines, travel agencies and conference organisers. Should they be unable to get a satisfactory refund from the relevant companies, they could then claim the expenses their Institutions or the MOH.

### Psychological well-being

Through it, training bodies must continue to uphold the core values of the programme and abide by all guidelines set forth by ACGME-I. Residents' safety and well-being remain as top priorities, maintained by good quality supervision and the non-violation of duty hour limits.

For the residents deployed to the frontlines, and those who consequently take on additional responsibilities like extra night calls for their colleagues, stress from long hours could easily lead to resident burnout. The disruption of previously made plans and now the inability to plan more than a few weeks ahead have caused some residents to feel uncertain about their foreseeable future. Many residents also expressed the anxiety of catching the virus at work, even considering not returning home after their shifts for fear of infecting their family members, especially young children and elderly parents. In response, residency committees had looked at arranging on-campus accommodation for these residents should they feel the need to isolate themselves from their families during this period.

Hospital support helplines were also readily available, and information on how and where to access support was widely publicised via emails and posters. The programme directors and welfare officers actively reached out and checked in with the residents, especially those deployed to the frontlines, to boost morale and ensure their well-being in this extraordinary period. Words of encouragement and appreciation sponsored hot meals and treats and goodie-bags from the hospital management and the public also boost morale amongst the residents.

### Infection prevention and safety

Training for residents to mitigate transmission risks were rapidly implemented to ensure that safety was their top priority. Residents underwent refresher courses on infection prevention and control protocols and procedures adopted by various institutions, including the appropriate use of Personal Protective Equipment (PPE) during patient interactions and the proper donning and doffing of the Powered Air-Purifying Respirator (PAPR). They were then assessed using competency checklists and in-situ simulations and could refer to presentation slides and instructional videos on the institutions’ intranet as and when needed. They also familiarised themselves with the workflow specific
"Real" Medicine

Amidst the gloom and doom, the emergence of COVID-19 has proven to be a valuable chance for residents to learn about healthcare in an international and interdisciplinary context. As we battle this unfamiliar disease alongside many other countries, we look to them and reflect on our own capabilities in medical resource management, the effectiveness of our healthcare policies and our ability to respond and adapt to a continually evolving situation. Working in uncomfortable PPE for long periods and taking on responsibilities outside one's usual job scope pushed residents outside their comfort zones and built physical and mental resilience. In sharing their experiences and realising that "we are all in this together", residents looked out for one another and built solidarity. In times of overwhelming pessimism and despondency, residents confided and sought comfort in one another and built camaraderie. Real medicine is learned on the ground, and this pandemic will undoubtedly help our residents nurture qualities that will take them a long way.

Summary

Graduate medical training in Singapore has, in multiple ways, been impacted by the implementation of various measures in the government's timely and decisive response to the COVID-19 pandemic. Movement restrictions for healthcare workers, changes to rotations, exam re-scheduling and shuffling of human resources had, in many ways, changed the way residents move, learn and accomplish their goals as they paddle towards the next stage of their training. These changes also created anxiety and frustrations and even threatened to disrupt the traditionally structured residency training programme. However, they also revealed that the system could be very flexible and indeed very supportive of residents when they are faced with challenges beyond their control. As the situation unfolds with unpredictability, it is perhaps also a rare opportunity for residents to grow and mature into more resilient doctors and individuals. There is no better time than now for residents to band together and focus on getting one another through their daily work, encourage and comfort each other through uncertainties, share knowledge and experiences, and survive this pandemic safely.

Take Home Messages

- COVID-19 has significantly impacted the graduate medical training in Singapore
- It affected the training, day-to-day life as well as well-being of residents
- It is a unique learning opportunity for both teaching faculty and residents
- The training programme proved to be flexible when faced with challenges

Notes On Contributors

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Bibliography/References


Appendices

None.

Declarations

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