

Commentary

Turning the Tide Against COVID-19: Adaptations of a Urology Department in a Public Hospital in Singapore

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Singapore reported its first case of COVID-19 in a traveller from China on 23 January 2020.¹ Since then, the outbreak has grown globally, and was formally termed a pandemic on 12 March 2020 by the World Health Organization (WHO). There have been more than 7.27 million cases reported worldwide, together with 413,000 deaths. Singapore has 39,387 diagnosed cases, being the highest in South East Asia, and 25 mortalities. The United States has the highest numbers of COVID-19 positive patients in the world with 2 million cases and 115,000 mortalities at the time of writing this article.²

The authors represent urologists from a 1000-bedded public healthcare institution (PHI), comprising 6 board-certified urologists. While some members of the team have had clinical experience during the SARS epidemic of 2003,³ COVID-19 presents a unique clinical challenge relating to a higher transmissibility, albeit a less severe clinical course in general⁴ combined with a varying nature of symptomatology.⁵

The Ministry of Health elevated the Disease Outbreak Response System Condition (DORSCON) status to Orange on 7 February 2020. The DORSCON alert system is a colour-coded national framework that takes into consideration the prevalence of the disease globally, its risk of human transmissibility and the disease impact on the public.⁶ A DORSCON Orange alert level indicates severe disease that is easily transmissible between individuals, but is being contained and has not spread widely within the country.

While the disease was well controlled initially, the Republic witnessed a second wave of patients from April 2020, largely related to infections amongst the migrant worker population housed in dormitories. This led to sustained and elevated daily caseloads, prompting a nationwide closure of most workplaces from 7 April 2020, and shifting of all educational activities away from school- to home-based learning,

which was termed the circuit breaker. This circuit breaker was lifted on 1 June 2020 with Singapore re-opening planned to be in 3 stages.⁶

We describe here the strategies we implemented during the circuit breaker period, in an effort to preserve medical manpower, provide continuity of urological care, while adapting to manpower diversions, limited operative resources and an infective threat. At the same time, other urological diseases continue to require attention including advanced malignancies, obstructive uropathy and life-threatening haemorrhagic conditions.

Minimising Infectious Threats to the Departmental Structure

To ensure continuity of clinical service during DORSCON Orange, the department was segregated into 2 separate teams with no cross-over. This limited the potential fallout to medical staffing in the event of personnel quarantine from case contacts. Each team rotated weekly between an inpatient roster and an outpatient roster. The inpatient team consisted of 3 urologists, 3 medical officers and 1 urology resident, while the outpatient team consisted of 3 urologists. In essence, the inpatient team focused on elective surgical procedures and emergency admissions, while the outpatient team was responsible for providing outpatient care and performing office procedures such as cystoscopies.

The physical segregation was enforced beyond working hours and the workplace, to ensure integrity of separation. If there was a need for physical meet-ups, safe distancing between individuals and donning of face masks were strictly required. There was also a restriction on inter-hospital movement of physicians or staff.

The continuity of patient care during the transit between teams was maintained with online hand-overs, which are detailed below.

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Elective Surgical Case Tiering to Build Surge Capacity

The SARS epidemic in 2003 provided precedent experience that there could be a limitation of anaesthesia support with rising critical care needs owing to increasing COVID-19 patient numbers, a reduction in elective operating room resources, and a reduction in the supplies of consumables, especially personal protection equipment (PPE). A tier-based system was created by the department in-house to facilitate elective case stratification, thus ensuring efficient utilisation of limited elective surgical operating theatres. The tiering was guided by clinical urgency for intervention, rather than anticipated operative time or length of stay. For example, a patient with a pelvi-ureteric stone causing septicaemia would be classified as Tier 1, while a patient with a PIRADS 5 lesion requiring a transperineal targeted prostate biopsy would be categorised as Tier 2 (Table 1).

This methodology can help the clinician plan case listing and surgical dates, and, when necessary, the deferment of patients when operative space is reduced. The other advantages include implementation of tiering with minimal administrative burden and a reduction in the rates of routine case cancellations.

Maintaining Dependable Communication Channels and Continual Medication Education

In the era of social media, the norm is for information exchange across multiple platforms occurring rapidly. At the same time, a rapidly evolving pandemic situation also requires frequent clinical updates. The ability to broadcast validated information in a timely manner, while preventing unauthorised transmission

of erroneous information, is critical for optimal clinical efficacy, especially in a segregated department. The use of secure applications such as TigerConnect (TigerConnect Inc, Los Angeles, USA) allows for exchange of short and succinct updates, such as updates on daily caseloads, while official email channels allow dissemination of lengthy documents such as operational instructions.

Clinical handovers between the 2 teams were implemented using a password protected teleconferencing software (Zoom Video Communications Inc, San Jose, USA) facilitated with electronic medical records which allowed accurate and rapid review of clinical charts and investigations. At the same time, clinical teaching sessions and multi-disciplinary sessions also continued via this platform. This arrangement allowed for compliance with physical segregation and infection control, mitigated the impact of COVID-19 on residency education, and allowed cross-institution multi-disciplinary care to persist in a surrogate manner. For the junior doctors on the inpatient team, educational activities remained a priority for us and we leveraged on teleconferencing medium to host an array of activities as is shown in our department weekly virtual educational program (Table 2). This ensured they were suitably exposed to educational outpatient cases and helped mitigate their physical separation.

Ensuring Sustainability and Preparing for the Long Term

The COVID-19 pandemic has continued unabated over the last 3 months (as at the time of writing), and with more hotspots emerging worldwide.² Issues of

Table 1. Tier-based Urological Operative Listing

Tier 1	<ul style="list-style-type: none"> - Bleeding cases - Obstructive uropathy (including BPH with urine retention) - Urological cancer surgery
Tier 2	<ul style="list-style-type: none"> - Stones with existing diversion/stents - Diagnostic procedures for suspected cancers (Transperineal prostate biopsies, Diagnostic ureteroscopy) - Elective reconstruction procedures (Pyeloplasty, Urethroplasty) - Phimosis with complications
Tier 3	<ul style="list-style-type: none"> - Vasectomy - Elective Circumcision - Uncomplicated hernias - Uncomplicated scrotal conditions (hydrocele, varicocele) - Transurethral resection of prostate (TURP) for failure of medical therapy

Table 2. Department “Virtual” Medical Education Program

Monday	Handover rounds between inpatient and outpatient teams
Tuesday	Genito-Urinary tumour board meeting (attended by urologists, medical oncologists, radiation oncologists)
Wednesday	Resident and medical officer journal club
Thursday	Uro-radiology conference (attended by urologists and radiologists)
Friday	Mortality and morbidity meeting, grand ward rounds

doctor burnout⁷ and rationing of resources are being encountered in many of these hotspots.⁸

With Singapore emerging from the circuit breaker and stabilising of daily new cases, hospitals have started to re-open their clinical elective services. However, the ever-present need for manpower deployment for COVID-19 testing of large volumes of migrant workers remains a priority and challenge in manpower organisation.⁹

Although the department split remains post-circuit breaker, enhanced time-off measures have been implemented to minimise doctor fatigue. Junior doctors are given leave of 1 day for every 3 consecutive days of work. Specialists within each team deconflict their schedules and take 1 weekday off per 5-day work week. Weekend clinical duties are purely helmed by the inpatient team specialists, allowing the specialists alternate weekends off.

Elective case tiering has served us well through the circuit breaker period, and has minimised any significant back-log of cases at the time of writing this article. With increased operating theatre availability in the weeks to come, we anticipate sufficient resources to manage our Tier 2 and Tier 3 cases that were postponed from earlier on.

Educational activities have actually been enhanced as we adopted teleconferencing fully, with a more convenient platform and a wider reach, where junior doctors may even participate from the convenience of their homes. Teleconferencing has enabled us to conduct inter-hospital educational activities including webinars and oral examination practice for our residents with relative ease without the hassle of travelling.

Conclusion

The current COVID-19 pandemic presents many new clinical challenges for urologists in the months to come. There are sustainable strategies that will allow us to provide necessary care to our patients, while protecting our staff, and carefully training our residents.

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