COVID-19: An Australian Centre’s Perspective

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Abstract

SARS CoV-2 (COVID 19) is having a deep and lasting impact around the world. We review the effect it has had on our Cardiothoracic Surgery practice in Australia, and give insights into our contingency planning, restructuring, practice changes and the effect on our patients in this evolving pandemic.

A pandemic is not unique to our times. However, a global pandemic on the scale of SARS CoV-2, or COVID-19, has only occurred once in the lifetimes of most of us, and hopefully only the once. How we respond is a sum of medical records from the viral threats of our ancestors, such as the Spanish Flu, smaller-scale control strategies from less virulent threats and epidemics, and newer innovations borne from immediate necessity and not a small amount of fear.

The deep and lasting impact of this disease has spared no one, from the death and illness of loved ones, to loss of jobs and failing businesses, to the drastic changes in our everyday lives including lockdowns and compulsory face masks. After 6 months of the pandemic, almost 16.5 million cases have been diagnosed worldwide, with over 650 000 deaths. Australia is now experiencing a deadly second wave of infections.

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2020, and included 1,276 cases which were predominantly overseas travellers and their contacts. The second wave (Phase 2) began on 12 April 2020 and is ongoing, and is characterised by increasing community transmission. Phase 2 numbers are climbing every day, but already account for over two-thirds of the outbreak total. There have been almost 15,000 cases in Australia, with 167 deaths. Only days ago, the state of Victoria in which we practice reached a record high of 532 new daily cases (1).

Cardiothoracic surgery is not the front-line of medical professionals treating COVID-19. But the changes to our unit, our day-to-day care of patients, the division of resources and interacting with the panic of the general community have all had a deep and likely lasting effect on the way we practice medicine. In this article, we will outline the Australian experience of the COVID-19 pandemic from the perspective of our Cardiothoracic surgery unit, and the specific issues and challenges that have been pertinent to our craft group. We describe our experiences and practices at our centre, the Austin Hospital, in Melbourne, Victoria. Other cardiothoracic centres in Australia very likely went through, or are still going through, a similar experience.

While the situation is still evolving and unpredictable, contingency planning has continued to advance. Our priorities in running the unit include: keeping our staff and patients safe from COVID-19 and exposure risk; continuing to provide a Cardiothoracic surgical service to our referral centres and community catchment area; and avoiding morbidities and mortalities that would otherwise be preventable if not for COVID-19.

**Risk Management**

From the outset, we had to assume that exposure of a member of our team to COVID-19 was an inevitability. One of the most catastrophic consequences of that scenario would be if that staff member had been in contact with multiple other team members, and so forth. We would then be in a situation where the critical majority of surgeons, training and junior doctors, nursing and secretarial staff would be either in strict isolation or suffering from COVID-19. One day has the potential to decimate the unit’s work force. External and internal risks to the continued viability of the Cardiac Surgery service were identified. External risks include: ICU unavailability, quarantined ICU Pods, shortage of Anaesthesia, shortage of Perfusionists if 1 or more ECMO case. Internal risks include sick leave or quarantine for surgeons, registrars and nurse coordinators, and on call rostering issues.

Contingency planning to avoid this devastating scenario included the core strategy of splitting into teams. Our hospital is fortunate to have a private hospital across the road with cardiothoracic surgery facilities: Warringal Hospital. The Australian Government has partnered with the private health sector to secure those resources, including 300,000 beds and 105,000 nurses and staff, to help with public health work during the COVID-19 pandemic. This greatly expanded the health network capacity, reducing the risk of inundating public ICU beds and wards with COVID-19 patients, blocking access to care for other patients. Government funding of public cases to be performed at private hospitals, as well as the complete ward aftercare of patients was the key factor enabling our unit to function at approximately 75% capacity. 3 of our 6 surgeons, and 2 of our 7 junior doctors made the transition to Warringal hospital, and interaction with the public team was strictly discouraged.

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Multiple other strategies to protect the unit’s staff from exposure were also implemented. Working from home at least several days per week was possible for the secretarial staff and liaison nursing staff. Junior doctors took turns staying at home if the work was quiet. Surgeons were encouraged not to come to the office or ward if they were not operating that day. Our postoperative clinics were successfully transitioned to teleclinics, unless a wound review was required, or another strong reason for seeing a patient in person. Official unit communication was mostly through Microsoft Teams, as face-to-face discussions were rarely possible, and discouraged.

**Reduced elective work**

The state government of Victoria has suspended non-urgent elective surgery and procedures. This is in order to preserve resources and beds for a potential influx of COVID-19 patients, or shortage of healthcare workers. There has also been a need to restrict the number of cases requiring the ICU (intensive care unit), especially if a longer stay is predicted. ICU input is obtained prior to booking procedures requiring ICU post operatively. Current ICU capacity remains preserved across Victoria, but the units are strictly keeping a number of beds reserved in case of a surge of admissions.

A Decision Tree (3) for considering cardiology procedures was implemented in our hospital, and closely matched the triaging for Cardiothoracic patients.

**FIGURE 1**

Most cardiothoracic surgery cases are urgent, and cannot wait for the pandemic to be over, but we have noticed our number of new referrals has reduced due to cardiologists and respiratory physicians performing less diagnostic procedures. Our surgical workload has been targeted at 60% normal capacity, with a greater proportion of urgent inpatient or emergency surgeries. There is a concern that patients are choosing not to seek out medical attention for their cardiorespiratory symptoms until in extremis, for fear of being exposed to COVID-19 in the hospital setting. There has been a significant decrease in the number of emergency department presentations with myocardial infarction, chest pain and stroke both locally and internationally (4, 5). It is our fear that out of hospital arrests and deaths in the community from cardiac causes or dissections, that may otherwise have been prevented with timely treatment in hospital, are the uncounted victims and mortalities of COVID-19.

In the last 6 months, our unit has had 2 deaths of patients on the waiting list. The first patient was a man awaiting CABG (coronary artery bypass grafting) who’s surgery was delayed for a non-COVID related medical comorbidity. The other patient was in hospital awaiting surgery but tested positive for COVID-19 and the heart team consensus was to await recovery from this, and a negative test, before proceeding. Unfortunately, she died in hospital under care of the COVID medical team.

**Preoperative Screening**

During Phase 1, the only screening tool used was a brief questionnaire regarding a recent travel history, contact with someone recently returned from overseas, other epidemiological risk factors or a history of fevers. In fact, if a patient did not tick yes for any of these factors, it was almost impossible to get approval from the Infectious Diseases team to perform a COVID-19 swab, as testing kits were in short supply. If a

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patient’s screening questionnaire was positive, they had their elective procedure deferred until testing had been performed, or they had completed a 14 day quarantine period.

During Phase 2, Australia has been abundantly more liberal with testing. Now it is a mandate from the state government of Victoria that all patients with planned elective surgery get preoperative COVID-19 testing. The swabs are performed 3-5 days before the planned surgical date, and the patients must isolate until their surgery.

All urgent inpatients requiring surgery are also tested. If a patient requires emergency surgery that cannot be safely deferred until the COVID-19 test result are back, we proceed with the surgery with full COVID-19 precautions and PPE. If a patient tests positive, they are transferred to the COVID ward and their management plan reassessed. Post operatively, if a patient has a fever, a COVID-19 swab is immediately performed, and the patient’s care is directly under the COVID medical team, until a negative result is returned.

**Hand Hygiene and Shortage of PPE (Personal Protective Equipment)**

All staff were retrained in the usage of PPE, but where and when to use which equipment was at times a daily evolving recommendation. As we currently stand, it is compulsory to wear face masks in all areas of the hospital, and face shields in all clinical environments with patient contact. If a patient is suspected COVID-19, a checklist of aerosol and droplet precaution PPE required includes: shoe covers, first gown, PP2 mask, hat, face shield, gloves, sterile gown and second gloves. Hand hygiene should be used before and after contact with patients and touching any devices and surfaces. One challenge which arose early was shortages of PPE: initially it was due to dishonesty and theft, particularly of the bottles of alcoholic hand rub which were readily available at every corner. As the pandemic stretched on, shortages were driven by supply-demand mismatch, with shortages and delays in restocking orders, and a much higher usage of masks and gloves within the clinical setting. During the worst of the shortage, there were some efforts at collecting used masks for resterilisation and reuse, but fortunately that did not become necessary before restocking by an alternate supplier.

**Training**

The Board of Cardiothoracic Surgery, part of RACS (Royal Australasian College of Surgeons), is aware that there has been a significant impact on training. No new candidates were accepted onto training for 2021, meaning potentially reduced numbers of trainees next year, as well as a higher number of applicants with more competition for training positions. For the 28 Australian and 8 New Zealand trainees, there has been a case load reduction across all units, adversely affecting logbook numbers, operative experience and ability to fulfil DOPS (Direct Observation of Procedural Skills) requirements. The Mid-SET exam, CSSP, and the following Anatomy exam, had both sittings cancelled this year. The May Fellowship exam was cancelled, but the September exam will proceed, with limited numbers and online virtual scenarios. Our trainees would normally have rotations across all of Australia and New Zealand, and state and international border closures will impact on trainees pursuing fellowships, and on planning rotations for 2021.
**ECMO** – to our knowledge, ECMO has not been required in Australia for respiratory support in COVID-19 patients. In our unit, one surgeon was designated for that responsibility, as well as performing surgical tracheostomies. A team of specialised staff have participated in practice simulation sessions, so an ECMO service can readily be provided should the need arise.

**Future Directions and Conclusions**

Six months into the COVID-19 pandemic, life as we used to know it couldn’t feel farther away. With no signs of a vaccine available for mass production in the imminent future, and perhaps not until 2021, we consider what the future will look like: *a virtual reality.*

Telehealth clinics have been such a success in our hospital, that there are already discussions that this will become a permanent change for outpatient interactions. Unit, multidisciplinary meetings and conferences are the next likely to follow into a permanently virtual modality. A web-based format is more convenient and would attract a larger audience, at the detriment of losing networking, experience of difference healthcare systems, and the chance for Industry to showcase their products. Online meetings would certainly be cheaper, negating the costs of venue hire and travel and accommodation for invited speakers, not to mention the delegates own personal expenses – and as we know, reduced cost is repeatedly the driving force behind change.

We also consider what the future looks like without a vaccine. A seemingly interminable period of isolation and confinement, with the only means of escape through our online platforms. That is, at least until a sufficient level of herd immunity is gained at the expense of millions of lives, record levels of unemployment, the downfall of our economy, and rising rates of domestic abuse and mental health crises.

Amongst this chaos, how do we as health professionals and cardiothoracic surgeons continue to provide an objective and thorough service for our patient population? With hospital resources taxed, and less turnover and revenue from elective surgeries, will our current model and contingency strategies be enough to cope? Will the public sector finally be inundated with Covid-19 patients and the vulnerable elderly from quarantined aged care homes? Or so in-debt and resource-poor that everything except the most emergent surgeries are cancelled? Will that drive the desperate to seek their healthcare in the private sector, spending precious savings to access life-saving or life-changing care? And how will our politicians and governments maintain responses to a long-term pandemic? Perhaps they will get alarm fatigue and put Covid-19 in the “too hard” basket, instead scrambling to save a fading economy. Is the natural history of the Covid-19 pandemic something that any of us are ready to live through? Even if a vaccine materialises, will humanity learn from this and be better prepared for the next and potentially more lethal pandemic?

These are complex problems and questions with no answers, a set of circumstances unfamiliar and distasteful to a cardiothoracic surgeon. However, as leaders of our craft and medical specialty, we must remember that we have an obligation firstly to our patients. We must maintain a calm, strong, united front and always be ready to open our doors to whoever needs our help – albeit, while wearing a mask.

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REF


2. COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at John Hopkins University. https://github.com/CSSEGISandData/COVID-19


Figure

FIGURE 1: A Decision Tree for considering cardiology procedures and cardiothoracic interventions at The Austin Hospital during the COVID-19 pandemic.

Is this a life threatening emergency?

- No
  - If intervention is postponed for three months, will it impact significantly on their survival?
    - No (Delay Intervention)
    - Yes (Intervention)

- Yes (Intervention)

If this procedure is postponed for three months will it significantly impact on their quality of life?

- No (Delay Intervention)
  - Are there viable alternatives?
    - No (Delay Intervention)
    - Yes (Intervention)

- Yes (Intervention)

Do colleagues support the decision to proceed (supported at MDM)?

- No (Delay Intervention)
  - Yes (Intervention)
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