

COVID-19 in perspective

Introduction

The world is in the midst of a COVID-19 global pandemic and public health crisis which has resulted in considerable morbidity and mortality and placed significant stress on healthcare resources. The need to dedicate major economic, infrastructural and medical resources to critically ill COVID-19 patients has resulted in a redistribution of the activities of medical disciplines not primarily involved in the management of COVID-19 patients. Given the varying nature of international healthcare systems, conditions differ significantly by region and locality and between state and private practice. Critical decisions concerning the deployment of resources and the management of elective surgical procedures are based on institutional policies and recommendations from local, regional and national authorities, and specialist societies and must consider the availability of finite and essential resources.

The key principles of management are to maintain essential care while minimising risks of COVID-19 to patients and staff and maintaining overall healthcare resources. As the COVID-19 pandemic evolves, surgical procedures will be increased or reduced based on the current level of restriction to healthcare services. Although some consistency across the country is desirable, provincial and regional considerations will of necessity influence how these recommendations are implemented. Healthcare professionals have a responsibility to maximise the use of these resources to provide the best possible care for all patients. Although elective surgical procedures are being postponed and cancelled in many parts of the world during the COVID-19 pandemic, acute procedures will continue and will need to be appropriately managed.

There is currently a paucity of information to delineate the principles of ethics for the management of elective and

emergent surgery lists during the COVID-19 pandemic. Most routine problems are appropriately managed within the context of surgical practice at individual level and/or in the context of a multidisciplinary team; health professionals may also consult their peers for advice or look to existing policies on ethical issues, and follow their professional lead body.

Boundaries of responsibility in relation to who has access to new technological treatments, and who decides when to withhold or withdraw treatment, for example, have challenged long-held paternalistic views about how surgery should be practised. Decision-making gradually ceased to be the responsibility of one individual, the specialist in charge, and has become a shared responsibility, involving patients, their families, and members of the multidisciplinary team. In addition, where complex legal and ethics decisions have to be made, the role played by specially formed ethics committees has received recognition.

All surgical disciplines are involved in the pandemic and most areas are affected. This collection of opinion pieces highlights and addresses COVID-19 relevant issues pertaining to ethical considerations, enhanced recovery after surgery, ENT, breast reconstruction and transplantation. These views are those of the authors and not position statements of national societies or governmental departments. As such we hope they will encourage collegial debate on the subject as we move through the phases of the pandemic.

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Ethics and surgery during the COVID-19 pandemic: principles are no different

Ethics can perhaps falsely give the appearance of being a complex subject, but in clinical terms it is really about forming a judgment based on the available facts of an individual case and assessing the relative risks, burdens and benefits of different courses of action. This task is done by making reference to appropriate ethical and legal frameworks.¹ While additional training may be needed to gain familiarity with these frameworks, it is not necessary for practicing healthcare professionals to be expert in these fields.¹ Surgeons need to be aware of ethical and legal issues that apply to a case as they execute the process of consultation and decision making.

The core principles of surgical ethics still apply during all phases of the COVID-19 pandemic:² respect, "the harm principle", fairness, consistency, least coercive and restrictive

means, working together, reciprocity, proportionality, preservation of resources, flexibility, and procedural justice.

Their application related to principles is shown in brackets: maintaining essential services to all patients (optimal preservation of resources), diminishing adverse surgical outcomes for patients ("the harm principle"), ensuring decisions regarding prioritisation of surgery are made in a consistent manner (procedural justice, accountability, reasonableness), ensuring that decisions are communicated in a transparent and sensitive manner particularly in regard to the elderly (respect and transparency), appropriate surgical use of the overall hospital system capacity (working together, proportionality). Minimising the risk to healthcare workers (reciprocity, care provider safety, and sustainability) and, in particular for COVID-19, maximising preservation of personal protective equipment (preservation of resources)

and maximising compliance with social and healthcare distancing ("the harm principle").

Failure to consider these principles can have serious consequences. In our experience, when adverse surgical outcomes occur, they are more likely to lead to litigation if parties fail to communicate and understand each other's point of view.³ Many patients have access to health information from online search engines; this has a democratising effect, but it can also have negative consequences if information is variable in quality, inaccurate or difficult to interpret.⁴ It is possible that surgeons' decisions are questioned more often because of patients having access to this information. For the surgeon it has become an everyday reality that they not only need knowledge of their speciality but can practically apply the principles of ethics particularly when they conflict.

While it is naive to suppose that an individual surgeon's ethics can transform a public health system, ethics should be integrated into the everyday life of all those working in healthcare. The phrase "surgical ethics is everyone's affair" captures the idea that ethical imperatives do underpin the concept of good clinical governance in healthcare services.⁵ Healthcare workers, healthcare institutions and the South African government need to try and ensure that ethical standards are an integral part of interactions between patients, families, and clinicians.

In the current COVID-19 pandemic, principles are predicated on balancing anticipated benefits and risks for individual patients while also considering societal needs. During the COVID-19 pandemic surgical activity has reduced and produced backlogs. This means that criteria are required to identify groups of patients most likely to benefit from a specific procedure or, conversely, most likely to suffer harm without such a procedure. In circumstances where the treatment effect is small, or evidence uncertain, alternate approaches that place less burden on healthcare

resources may be used. Complex cases are best reviewed by a multidisciplinary committee that includes a specialist ethical advisor.^{2,6} In all these settings, clear, open and transparent decision-making is critical during the pandemic.

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The COVID-19 pandemic: an opportunity to improve perioperative care in Africa

With the rapid surge of the COVID-19 pandemic, Africa has never had a greater need to improve perioperative health outcomes, reduce hospital stay and ICU use. Perioperative healthcare in Africa, as in many parts of the world, lacks standardisation, is seldom evidence based and is surgeon rather than patient centric. Perioperative outcomes in Africa and other low- and middle-income countries (LMIC) is suboptimal when compared to high-income countries (HIC). The results of the International Surgical Outcomes Study (ISOS) demonstrated that patients in LMICs had poorer outcomes despite a lower baseline risk.¹ In the African Surgical Outcomes Study (ASOS) the mortality after surgery is twice the global average despite patients being at lower risk when compared to similar international cohorts. The majority (94%) of these deaths occurred within the first twenty-four hours after surgery, most likely the result of failure to rescue as a consequence of inadequate perioperative care.² The data on maternal and neonatal outcomes after caesarean section demonstrated that perinatal maternal mortality is fifty times higher and neonatal mortality is twice that of HICs.³

The necessary cancellation of elective surgery during the COVID-19 pandemic will add significantly to the huge

unmet surgical need in Africa. The last five years have seen increased global efforts to improve access to safe and affordable surgical and anaesthetic care.⁴ However, there has been little discussion on optimising perioperative care, developing tools to measure and monitor patient outcomes, and on shared solutions to teaching, training and clinically relevant research.

The Enhanced Recovery After Surgery program (ERAS) has been established to improve perioperative care. It is a patient centred, evidenced based, multidisciplinary team approach with tools to measure and monitor patient outcomes, and compliance to the guidelines.⁵ A meta-analysis of randomised control trials has demonstrated a significant reduction in length of stay (20–30%), complications (20–40%) and costs (10–20%).⁶ These results have been achieved in HICs. There are two ERAS centres in Africa with over 700 patients, and the results are comparable to that of HICs (unpublished). If programmes like these can be modified to the contextual challenges of poor access to healthcare, the lack of resources and infrastructure, the high prevalence of malnutrition, obesity, anaemia and HIV in Africa, they could provide an excellent platform to improve perioperative care.

The World Health Organization Surgical Safety checklist, when used consistently and regularly, has been shown to significantly reduce perioperative morbidity and mortality.⁷ The checklist, although, a simple, relatively easy intervention to implement is still not routinely practice in many parts of Africa. In the ASOS study the checklist was used in just 57% of procedures. As the COVID-19 pandemic increases, asymptomatic patients who are carriers will increasingly enter the healthcare system and pose a further risk of transmission to surgical healthcare workers. Additional elements will need to be added to the checklist, these include strict adherence to hand washing, social distancing, use of personal protective equipment, reduction of staff and adequate decontamination between cases. The establishment of dedicated perioperative teams with skills in implementation and change management may well facilitate a broader uptake of this important tool.

Mobile phone utilisation is high in Africa and internet access continues to improve making this potentially an invaluable tool in healthcare. The number of mobile internet subscribers in sub-Saharan Africa has quadrupled in the last ten years with over 400 million users today. The use of cellular phone and wireless technologies (mHealth) provides Africa with an excellent opportunity to improve surgical patient access to healthcare, enable remote diagnosis, monitoring, and follow-up of patients. It could also improve patient experience, facilitate integration and optimisation of services, and provide a platform for teaching, training and research. Scaling up of these projects has been limited because of a lack of a structured, coherent approach, confidentiality issues, the low levels of adaptability and the rapid changes in technology.⁸ Improved patient outcomes have been achieved in infectious diseases and maternal outcomes.⁸ The adoption of mHealth technology in perioperative care has been limited to date.

The COVID-19 pandemic has created an unprecedented level of collaboration between countries across the African continent. In addition, resources such ventilators and monitoring devices are available at a level that we could not ever have envisaged securing in such a short space of time. Combining this with the ERAS programme, the surgical checklist and mHealth technology could provide a platform for sustainable improvement in perioperative care in Africa, at scale, in a short space of time. It will require all stakeholders to work together and embrace the window of opportunity that this devastating pandemic offers to improve perioperative care on the African continent.

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COVID-19: collateral effects on patients seeking ENT services at Chris Hani Baragwanath Academic Hospital

Since lockdown on 27 March 2020 to prevent COVID-19 infections from overwhelming the hospital systems, public health facilities and most private hospital groups have scaled down on elective surgery and non-emergency outpatient

visits. The Ear, Nose and Throat (ENT) fraternity in SA was no exception and has followed the recommendations of several international ENT groups to cease all elective work.^{1,2} However, it is axiomatic that in some conditions,

particularly cancer, the longer patients wait the worse the prognosis. Other reports have indicated that patients currently experience fear and anxiety of becoming infected with COVID-19 if they attend hospital.³ Hence it is important that this drastic reduction in routine activities be documented so that it can inform health policy to plan for the short and long term effects of the lockdown and phased return to “normality”. The impact of patients’ concerns has already been demonstrated in other specialities.⁴ We report on the effects of the COVID-19 pandemic on ENT services at Chris Hani Baragwanath Academic Hospital (CHBAH) in South Africa and the ethical considerations they pose.

CHBAH is a 3 200-bed hospital affiliated with the University of the Witwatersrand situated on the outskirts of Soweto that provides tertiary ENT services to a huge catchment area, including much of the provinces of Gauteng (11.4 million) and North West (3.7 million).⁵ The ENT and Head and Neck division annually consults with 12 000 outpatients, admits 1 500–1 600, patients and performs 1 200 surgical procedures.

When the lockdown was implemented, the ENT department at CHBAH drew up a protocol to triage and prioritise patients attending our department. This entailed a staff sparing, rotating system to minimise COVID-19 infection risk to our staff and the restriction of attendance to only emergencies and cancer surgery patients.

We aimed to assess the impact of COVID-19 infection on admissions and theatre procedures on our department by reviewing the admission and theatre records for the periods 17 February–26 March 2020 and 27 March–4 May 2020. This included 39 days either side of the lockdown. In the 39 days before the lockdown 143 patients were seen: 109 (76%) were adults and 34 (24%) paediatric. Emergencies in adults accounted for 48 patients (44%), whilst the remaining 61 (56%) were elective patients. Of the paediatric admissions, 14 (41%) were emergencies, and 20 (59%) were elective admissions.

After the lockdown, admissions were 38% of the pre-lockdown period under study. Of these patients, 36 (67%) were adults and 18 (33%) were paediatric. Emergencies in paediatric patients accounted for 11 patients (61%), and in adults 34 (94%) of patients. Elective admissions among the paediatric population totalled only 7 patients (39%). Adults had 2 elective admissions (6%). In total, emergencies accounted for 43% of admissions pre-lockdown, and 83% of admissions during the lockdown. One patient had his surgery cancelled on the day lockdown was implemented.

Emergency non-surgical paediatric admissions were the same pre- and post-lockdown: 9 and 10 respectively, and were predominantly related to infective conditions that required monitoring. This was in contrast to elective paediatric non-surgical admissions which were nil in both situations. In adults the emergency non-surgical admissions pre- and post-lockdown were 39 and 17 and were largely due to severe tonsillitis and other infections. Elective non-surgical admissions were under 10 in both settings and were largely due to advanced stage cancers. Paediatric emergency surgery admissions were again due to advanced infections or foreign bodies and numbered 2 and 5 pre- and post-lockdown. Paediatric elective surgery was severely curtailed from 34 to 5 pre- and post-lockdown respectively with approximately 66% being tonsillectomies pre-lockdown compared to none post-lockdown. Adult emergency surgery

doubled from 4 pre-lockdown to 8 cases post-lockdown for a variety of conditions. Adult elective surgery was reduced from 56 to 22 cases. Staging panendoscopy for cancer accounted for over a third of cases pre-lockdown with only half that number post-lockdown.

The ethical implications of lack of access to healthcare for conditions not related to COVID-19 are of concern during this pandemic, particularly for patients who attend CHBAH and similar tertiary state institutions. These patients are already marginalised and vulnerable because of their socioeconomic status and the COVID-19 pandemic has increased this vulnerability.⁶

The results show the sharp contrast between elective surgery and admissions pre- and during lockdown. This 63% reduction is not surprising considering *inter alia* the triage and priority setting policy adopted by the department. Even when considering emergency admissions, there was a notable decline in actual numbers after the lockdown was instituted. In addition, it is of concern that the number of patients presenting with cancer also declined even though seeking medical help was a specific exclusion when the government issued orders encouraging everyone to stay at home. It is probable when the lockdown is lifted, that a flood of elective cases and patients presenting with advanced cancer will present to our service. It is hoped that this will not overwhelm the system as was expected with COVID-19 cases.

The reasons for patients not accessing healthcare are multifactorial. Instructions given were probably not clear enough as most patients stayed away, including those who had cancer as evidenced by our study. Moreover, even if patients wanted to go to hospital, they might have been fearful of contracting the coronavirus infection in the hospital. In addition, a vast majority of our patients rely on minibus taxis for transport. Initially, these were not allowed to operate at all, and later were severely restricted. Policies passed by the government during this period definitely impeded access to essential healthcare. Policies limiting access to healthcare during pandemics must be cognizant of the unintended consequences of such restrictions. Furthermore, it would be difficult to defend such limitations as reasonable and justifiable even if section 36 of the Bill of Rights of the Constitution were to be applied.⁷ While preparing for the surge, it is submitted that patients were denied necessary treatments, and in some cases, patients waiting for their elective treatments following the lockdown, developed into emergencies with resultant associated morbidity.

It is also possible that patients, of their own volition, felt that they did not want to overwhelm the system. Furthermore, anecdotal evidence from social media and radio is that many people express anxiety about attending any public place, including schools and hospitals. It is possible that, in seeking to avoid contracting COVID-19, they forego treatment for other diseases such as cancer. Garcia et al. reported in their study that patients with heart conditions delayed seeking medical help during the COVID-19 pandemic. They saw a significant drop in the number of patients presenting for primary percutaneous coronary intervention.³ They partially attribute this decrease in presentation to the US hospital system and to possible patient-based anxiety.

It is correct that the government allocates resources to the pandemic, but this should not be at the expense of patients that require necessary medical care and who are not infected


with the virus. These patients have basic needs and rights that are enshrined in the Constitution.⁷ The Constitutional promise of fair allocation of resources applies even during pandemics. It would also be prudent of government, the media, NGOs, and healthcare workers to ensure that people have sufficient and relevant information to make decisions regarding their health in the face of the pandemic. The manner in which a pandemic is addressed must take into consideration not only possible collateral harms, but also plans for addressing these during lockdown and post-lockdown periods. As the lockdown eases it is advisable that hospitals adopt a pragmatic approach and put into motion processes to deal with the realistic expectation of a surge of patients whose treatments have been put on hold.

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Considerations for breast reconstructive surgery in South Africa during the COVID-19 pandemic

The coronavirus disease 2019 (COVID-19) pandemic has added a layer of complexity to surgical decision making particularly for complex reconstructive oncological surgery.¹ In the absence of data on which to base validated strategies for breast reconstruction in the South African context, this article discusses the current trends in management and potential approaches which could be employed.

Breast cancer and COVID-19

Breast cancer is the most common malignancy in women worldwide, with over 2 million new cases diagnosed per year.² Surgery remains the foundation of treatment for breast cancer worldwide, and current trends in surgical care include mastectomy, breast conservation surgery, and mastectomy with reconstruction.³ Breast conservation surgery has gained momentum following the results of large clinical trials which demonstrated equivalent long-term survival compared to mastectomy, despite a higher local recurrence.⁴

Patients with cancer are generally at an elevated risk of contracting COVID-19, having a more severe infection, developing complications during surgery and a higher mortality rate.⁵ The exact extrapolation quantification of this risk to breast cancer patients is not known. Breast reconstruction is integral to the holistic management of breast cancer and

associated with significantly improved quality of life and mental health after mastectomy.⁶ There are four main classes of breast reconstructive surgery: implant- and expander-based, flap-based breast reconstruction, a combination of both, and fat grafting (autologous lipoaspirate).⁷ The most common method used is mastectomy with immediate breast reconstruction using implants, which has the advantage of improved body image, improved health-related quality of life and higher patient satisfaction when compared to those who opt for delayed reconstruction.⁸ In patients with mastectomy who require radiation therapy post-surgery, delayed autologous microvascular breast reconstruction is a safer option.⁹

Breast reconstruction considerations intra-COVID-19

The onset of the COVID-19 pandemic has changed the paradigm of post-ablative breast reconstruction globally. Outpatient clinic availability and operating lists have been significantly decreased with many healthcare professionals reassigned to the “frontline”.^{1,10,11} In addition, all surgical specialties have been advised to undertake emergency surgery or unavoidable procedures only with shortest possible operating times, minimal numbers of staff and

leaving ventilators available for COVID-19 patients.^{1,10,11} This has essentially suspended time-intensive and complex autologous tissue reconstruction (free or pedicled flap).^{9,12}

During the COVID-19 pandemic, in line with South African government directives, the author's institution has limited elective surgery to oncologic procedures, and reconstruction is still considered an integral part of the treatment.¹³ At our institution, patients are evaluated case by case by a multidisciplinary team composed of a breast surgeon, oncologist, pathologist, radiologist and plastic surgeon to provide treatment that does not compromise oncological safety and offers the best possible aesthetic outcome while minimising the risk of COVID-19 co-infection. In these conditions, it is prudent that when therapy recommendations are made, both the decision process and decision are well documented.¹¹ As with other disciplines, consideration must be given to minimising operating times and hospital stay for day case surgery.^{11,12} In addition, consideration must be given to the current availability of local healthcare system resources. Outpatient visits should be minimised and provision must be made for the designation of COVID-19 "light" areas in the hospital to mitigate the risk of exposure to SARS-CoV-2 for both the patient and healthcare professionals.^{1,11}

Given these contingencies, what reconstructive surgery should be delayed until the local healthcare system has capacity for "safe" elective surgery? Risk-reducing prophylactic mastectomies for hereditary breast cancer predispositions should be delayed until after the COVID-19 pandemic. Secondary revision procedures, such as fat grafting and delayed post-ablative reconstruction, are also in this category.

Recommended procedures for breast reconstruction during COVID-19 pandemic

Simple oncoplastic procedures such as mammoplasty and the integration of perforator flaps for volume replacement can be performed.¹² In fact 'oncoplastic' techniques to avoid the need for mastectomy should be encouraged to enhance less invasive surgery. Palliative and salvage mastectomy procedures that expose the thoracic wall should be reconstructed immediately with local pivot flaps.^{12,14} Immediate breast reconstruction after mastectomy using pre-pectoral implants or tissue expanders can continue in appropriately selected patients. In those not deemed appropriate for immediate reconstruction, but still candidates for delayed reconstruction, skin preservation, ensuring healthy flaps, mastectomy scar placement and correct drain placement to avoid vascular damage should be part of the planning.⁹ Delayed reconstructive breast surgery post COVID-19 pandemic hypothetically offers the safest approach.⁹

Conclusion

Surgical decision making, an important aspect of care, will take on an added layer of complexity in the face of the COVID-19 pandemic.^{1,11} Post-ablative breast reconstruction is best kept straightforward and trouble-free during the COVID-19 pandemic. The pandemic is at different stages of the curve worldwide and recommendations from local, national and international authorities should be both fluid and prudent according to specific situations with regard to post-resection breast reconstruction.^{1,11}


During the COVID-19 pandemic reconstructive breast options will be limited. Reconstructive breast surgeons should consider addressing only the cancer side with immediate breast reconstruction confined to pre-pectoral implants or simple oncoplastic procedures that will only slightly extend surgical times. Breast conserving surgery should be considered when possible. Autologous microvascular breast reconstruction, complex oncoplastic procedures and all revisional breast reconstruction procedures should be postponed until it is considered safe to perform. The recommendations considered in this article remain to be validated in future studies.

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Impact of COVID-19 pandemic on transplantation

End-stage organ failure is estimated to affect more than six million people worldwide.¹ More than one and a half million people live with a transplanted organ worldwide.¹ In 2018, transplant systems across the world enabled around 150 000 patients to benefit from a kidney, heart, lung, liver, or other solid organs.¹ In South Africa, over 500 patients receive a transplant every year, but 4 300 patients remain on waiting lists.² Only 0.2% of the population are registered organ donors and there are high death rates while on the waiting list for transplantation.² This vast discrepancy between need and provision is compounded by the fact that elective transplant programs were paused at the onset of the COVID-19 pandemic. Healthcare providers, institutions and patients are concerned about the potential effect the pandemic will have on organ donation and transplantation.³ The evolving epidemic has led to reduced activities in organ donation and transplantation across South Africa. Similarly, transplantation programmes have been suspended in other countries because of scarce resources (especially ICU beds) and concerns regarding immunosuppressive induction regimens.⁴ In the USA, 71.8% of surveyed physicians reported full suspension of live donation kidney transplant programmes, and 80.2% of deceased donor kidney transplant programmes were operating with restrictions.⁴

Transplant programs, like other surgical services, face a scarcity of critical care resources, healthcare personnel and the challenge of preventing in and out of hospital post-transplant COVID-19 infection.⁵ The already-complex risk and benefit assessment for each donor and transplant recipient is clouded by a paucity of data on the effects of contracting COVID-19 during the transplantation event or during follow-up. Transplant patients are among the highest risk groups for developing severe COVID-19 infection, due to comorbidities and immune suppression.^{3,6}

In our view, the following considerations should be born in mind as the transplant community adapts to the current situation and to the increased transplantation activity as lockdown eases.

Firstly, existing transplant patients should be cared for to the best of our ability. It is encouraging that reports suggest that transplant patients may not be at higher risk of contracting COVID-19 if proper social distancing and preventive measures are employed.⁶ A recent report of 87 heart transplant recipients in Wuhan, China, noted that social distancing coupled with other preventive measures led to a COVID-19 infection rate no higher than that of the general population.^{6,7} Isolation and social distancing, however, may be problematic in certain low resourced, densely populated communities in South Africa.

Distance from a transplant centre has been associated with increased mortality, and prolonged lockdown will further

hinder access to care, and amplify existing inequalities in the transplantation process.⁸ The increasing presence of COVID-19 in communities requires sustained efforts from transplant programmes to encourage ongoing post-transplant protective self-isolation. Transplant telehealth programmes may reduce costs, shorten time to initial evaluation and waitlist placement, improve quality of life, and decrease re-admissions following transplantation.⁸ As with any change in care delivery, virtual telemedicine services must not create or promote disparities for the most vulnerable populations.⁸

Secondly, there is limited information on if or how immunosuppression should be altered if the recipient becomes infected with COVID.^{3,6,9-11} In the event of COVID-19, most clinicians would continue calcineurin inhibitors (CNI) and glucocorticoids but stop the antiproliferative drugs, while balancing the risk of rejection. However, in newly transplanted patients, or a graft rejection, this may not be possible. In-vitro studies show non-immunosuppressive derivatives of cyclosporine A inhibits the N-protein of human coronavirus 229E, preventing viral replication.⁹ Consequently, cyclosporin may be the preferred CNI during the COVID-19 pandemic. No data are available on whether tacrolimus derivatives or metabolites exhibit similar in-vitro activity. However, the lymphopenia as well as T-lymphocyte dysfunction caused by CNIs may potentially enable viral invasion and proliferation. Similarly, due to their lymphocyte depletion effect, avoidance of anti-thymoglobulin or alemtuzumab induction regimens is prudent. Many patients with severe COVID-19 develop lymphopenia, which is a poor prognostic factor. Should transplant recipients develop severe COVID-19 requiring mechanical ventilation, CNIs and antiproliferative drugs should be immediately withdrawn and glucocorticoid doses should be increased.¹⁰

Significant efforts have been made by the health systems, industry and government, to strengthen the overall ICU capacity at national level to cope with severely ill COVID-19 patients.⁵ Despite this, access to critical care resources for non-COVID-19 cases remains based on local policy and resources. Transplantation and other disciplines may need to make the argument for access to the limited number of ICU beds (approximately 7 195 across the country) particularly for non-renal transplant patients who cannot be sustained on options such as dialysis.⁵ The lack of ICU resources will exacerbate the inability to accommodate brain dead potential donors, which will further reduce the donor pool. Assessment of potential donors would require a rapid and accurate test for the presence of COVID-19, with low false negatives. It is unclear with the varying waiting times for results in the state sector how this could be facilitated. Other detrimental factors are the logistic challenges for

donor organ procurement and transplant surgery, due to containment measures, travel restrictions, and transplant healthcare professionals being engaged with the treatment of COVID-19 patients.

During the COVID-19 outbreak, transplant programmes should cautiously weigh up the value, sensitivity and costs of additional screening tests, the potential risk of postoperative complications and the unpredictability of outcomes, against the potential benefits of optimal organ utilisation, especially for high priority liver and heart recipients. At this time, supportive care is all we have to combat this virus in solid organ transplant recipients.^{3,6,10,11} Every effort should be undertaken to ensure that all transplant candidates and recipients may safely access healthcare systems and their resources in the current pandemic scenario. The pandemic will have ongoing effects in the long term such as increasing waiting lists, resulting in increased mortality and worse preoperative conditions.¹² It is therefore of great importance to identify the right time to re-open and re-establish transplant programmes. The considerations discussed in this article remain to be validated in future studies.

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