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persisted until the time of last follow-up, IgG antibodies became negative at 1-week follow-up post-transplant.

In conclusion, this case study suggests that it may be reasonable to proceed with solid organ transplant in waitlist candidates if they have recovered completely from COVID-19 with no evidence of active infection, after confirming 2 consecutively negative PCR tests, and with positive SARS-CoV-2 antibody levels. The role of SARS-CoV-2 antibodies in providing protection is unclear, and levels may fall off rapidly post-transplant probably due to immunosuppression. Patients must be advised to continue to take safety precautions post-transplant.

1. Instructions for Use CoV2T. Available at: <https://www.fda.gov/media/136967/download>. Accessed August 7, 2020.
2. Xiao AT, Tong YX, Zhang S. False-negative of RT-PCR and prolonged nucleic acid conversion in COVID-19: rather than recurrence. *J Med Virol*. 2020;92:1755–1756.
3. Tahamtan A, Ardebili A. Real-time RT-PCR in COVID-19 detection: issues affecting the results. *Expert Rev Mol Diagn*. 2020;20:453–454.
4. Zhang J-F, Yan K, Ye H-H, et al. SARS-CoV-2 turned positive in a discharged patient with COVID-19 arouses concern regarding the present standards for discharge. *Int J Infect Dis*. 2020;97:212–214.
5. Lan L, Xu D, Ye G, et al. Positive RT-PCR test results in patients recovered from COVID-19. *JAMA*. 2020;323:1502–1503.
6. Randall RE, Griffin DE. Within host RNA virus persistence: mechanisms and consequences. *Curr Opin Virol*. 2017;23:35–42.
7. Wang B, Wang L, Kong X, et al. Long-term coexistence of SARS-CoV-2 with antibody response in COVID-19 patients. *J Med Virol*. 2020;92:1684–1689.
8. Zhang W, Du RH, Li B, et al. Molecular and serological investigation of 2019-nCoV infected patients: implication of multiple shedding routes. *Emerg Microbes Infect*. 2020;9:386–389.
9. Robbiani DF, Gaebler C, Muecksch F, et al. Convergent antibody responses to SARS-CoV-2 infection in convalescent individuals. *bioRxiv*. <https://doi.org/10.1101/2020.05.13.092619>. Accessed August 26, 2020.
10. Pereira MR, Mohan S, Cohen DJ, et al. COVID-19 in solid organ transplant recipients: initial report from the US epicenter. *Am J Transplant*. 2020;20:1800–1808.
11. Fishman JA. Infection in organ transplantation. *Am J Transplant*. 2017;17:856–879.

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Significant impact of COVID-19 on organ donation and transplantation in a low-prevalence country: Australia



To the editor: The incidence and impact of coronavirus disease 2019 (COVID-19) has varied enormously across the

globe. The pandemic has negatively impacted organ donation and transplantation in countries that have experienced high rates of infection, including the United States, France, and the United Kingdom, all reporting >50% reductions in transplant activity.^{1,2} Australia has experienced a significantly lower incidence of COVID-19 (Table 1). Despite this, the impact on organ transplantation has been significant.

Cases of COVID-19 were first detected in Australia in late January 2020 and from March 18 the incidence had exceeded 100 cases per day. Given data from China and Europe revealing exponential increases, overwhelming demand for intensive care unit beds and ventilators and rapidly rising cumulative mortality from COVID-19, Australia anticipated similar outcomes.

Australia's National Incident Room was engaged, and public health policies to support case detection, contact tracing, quarantine, social distancing, and hand hygiene were implemented nationally. Health care facilities prepared for a surge of hospital admissions to manage severe cases of COVID-19.

The Australian Organ and Tissue Authority and the Transplantation Society of Australia and New Zealand formed the National Transplantation and Donation Rapid Response Taskforce—COVID-19 (Taskforce), including experts in transplantation, organ donation, infectious diseases, and data analytics. The Taskforce was charged with devising and coordinating a national approach to transplantation and donation during the pandemic. Concerned that early post-transplant acquisition of COVID-19 may produce severe disease and mortality, and that growing case numbers in hospitals may limit capacity and compromise safety of donation and transplantation, during March, the Taskforce recommended suspension of all adult kidney transplantation. Urgent heart, lung, liver, and pediatric transplantation continued, following case-by-case assessment of risks and benefits.³ Early communication between donation and transplant clinicians was recommended to minimize futile donor work-ups. All recommendations were implemented nationally.

By mid-April, incident cases had fallen below 20 per day and intensive care unit capacity was uncompromised. The Taskforce recommended resumption of usual donation and transplantation activity on April 24, subject to precautions including donor and recipient screening for COVID-19, which was approved by all government Chief Medical Officers and implemented by all state-based health jurisdictions.

Following suppression of the initial outbreak in March and April 2020, a second wave occurred, primarily in Victoria (Figure 1). A jurisdictional response occurred, primarily addressed by public health measures including case detection, contact tracing, and containment via “lock down” border closures and strict travel restrictions. Donation and transplantation services continued but remain impacted by logistical barriers to transportation of organs, medical teams, and patients. Further isolated “outbreaks” are expected for the foreseeable future.

Table 1 | Country-specific epidemiology of coronavirus disease 2019 as of September 23, 2020

Country	Population (in millions)	Cases	Deaths	Fatality rate per 1000 cases	Incidence rate per 100,000 population	Mortality rate per 100,000 population
United States	328,240	6,361,265	190,859	30	1938	58
Spain	46,755	525,549	29,516	56	1124	63
France	67,064	383,718	30,805	80	572	46
United Kingdom	66,797	354,292	41,683	118	530	62
Canada	37,742	134,295	9196	68	356	24
Australia	25,522	26,524	788	30	104	3

Consequent to COVID-19, kidney transplantation activity is down 27% compared with in 2019, with lesser reductions in liver (8%) and lung (12%). Heart (26%) and pancreas (32%) transplant activity have increased, as seen elsewhere.² COVID-19 infections have been reported in 19 kidney transplant recipients in Australia, yielding an incidence of 0.15%, similar to the 0.103% seen among the general population, and 1 death in a multimorbid 70-year-old recipient. Ten dialysis patients have contracted COVID-19, 6 of whom died as a result. COVID has been rare among recipients of nonrenal organs. A further impact has been the fear and uncertainty experienced by transplant recipients, those

waiting for transplantation, and their carers, both through news of COVID-19 and also resulting from the temporary suspension of transplantation.⁴

Taken within a global context, the demonstrable negative impact of COVID-19 on donation and transplantation in Australia has been less than that reported for countries with higher caseloads.^{1,2} However, the pattern of impact has been similar² and remains significant to patients and health systems alike. Despite a lesser impact to date, answers to the same questions posed by more heavily impacted countries are required here too: Is it safer to be transplanted or to remain on dialysis? Can COVID-19 be transmitted by organ

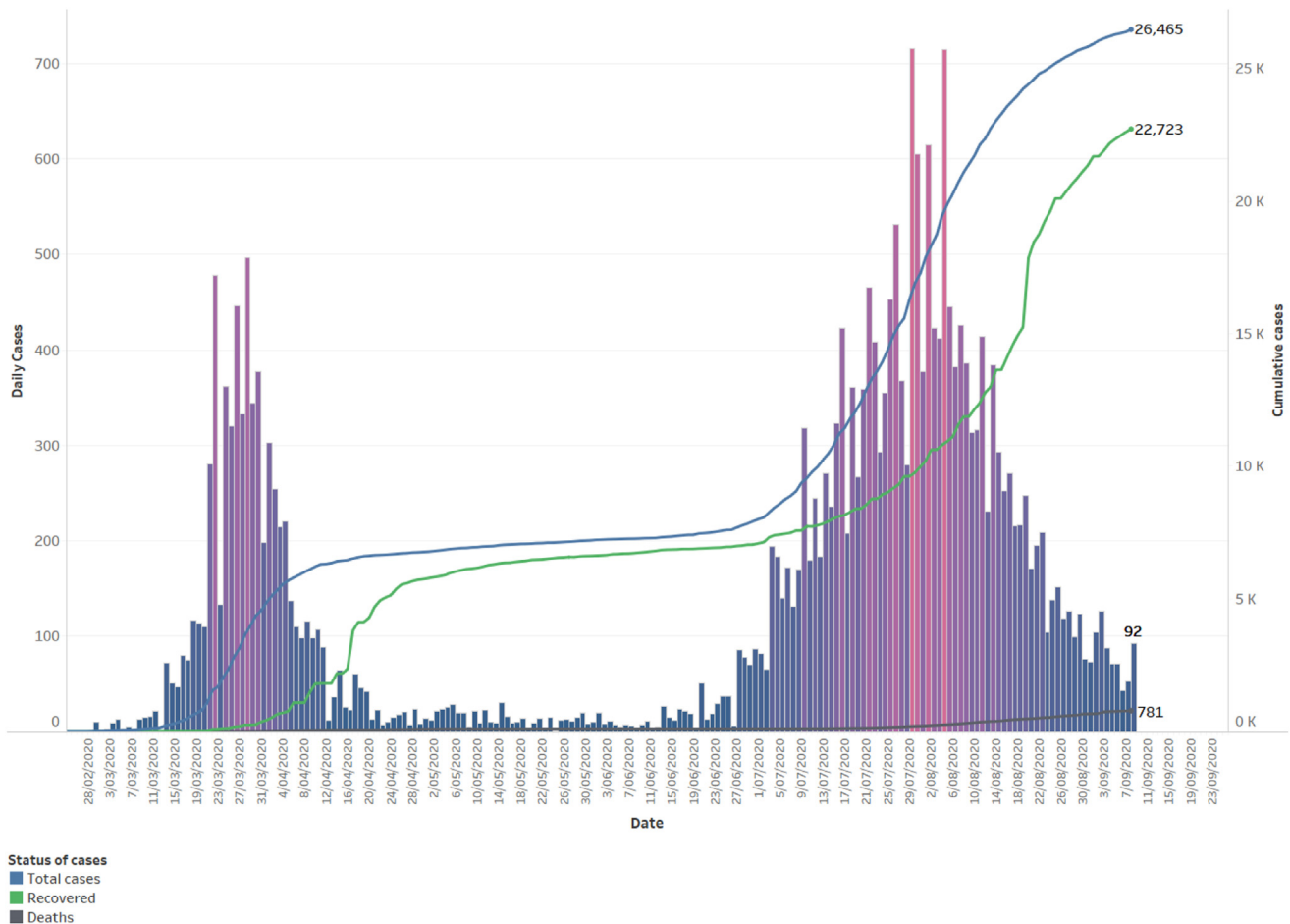


Figure 1 | Daily count and total coronavirus disease 2019 cases since February 20, 2020, by date and status: Australia.

transplantation? What treatments are effective, and what are the outcomes of COVID-19 in immunosuppressed patients? Can immunity to COVID-19 be acquired through infection or vaccination, will it be protective, is it durable, and does any of this apply to immunosuppressed populations? Despite differences in global COVID-19 epidemiology, for the organ donation and transplant communities, the questions are essentially the same.

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1. Loupy A, Aubert O, Reese P, et al. Organ procurement and transplantation during the COVID-19 pandemic. *Lancet*. 2020;395:e95–e96.
2. Manara A, Mumford L, Callaghan CJ, et al. Donation and transplantation activity in the UK during the COVID-19 lockdown. *Lancet*. 2020;396:465–466.
3. Stock PG, Wall A, Gardner J, et al. for the TTS Ethics Committee. Ethical issues in the COVID era: doing the right thing depends on location, resources, and disease burden. *Transplantation*. 2020;104:1316–1320.
4. Guha C, Tong A, Baumgart A, et al. Suspension and resumption of kidney transplantation programmes during the COVID-19 pandemic: perspectives from patients, caregivers and potential living donors—a qualitative study. *Transpl Int*. 2020;33:1481–1490.

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Registry reports in COVID-19 patients: juggling with big data, poor data, and no data



To the editor: We read with great interest the recent paper by Caillard *et al.*,¹ which is an interesting addition to the burgeoning coronavirus disease 2019 (COVID-19) literature.² However, we noted a discrepancy between the 426 kidney transplant recipients reported to the registry and the 279 cases presented, which corresponds to one-third of all patients. These available but unreported cases may have significantly impacted the results, but the authors neither explain this omission nor acknowledge it as a limitation. In addition, the authors' choice of the term "severe" to collectively describe a

broad group of patients requiring admission to the intensive care unit, patients requiring mechanical ventilation, as well as deceased patients would be considered a methodological error by intensivists. It would have been more appropriate to stratify the patients according to more detailed, objective criteria.³ These flaws likely stem from the limitations of registries, which are often based on voluntary contributions and frequently lack auditing procedures and links to governmental, automatic databases.

Although patient registries are essential instruments for medical community, their value during challenging times may be questionable as data are rapidly evolving, and individuals tasked with collecting and reporting data are overwhelmed by their daily clinical duties. In these rapidly shifting times, we urge the editors to weigh the temptation of registry studies against their relevance, completeness, and quality. Smaller single-center or multicenter studies with targeted data collection may be better suited to answer a specific research question and should not be undervalued because of their lower statistical power.

1. Caillard S, Anglicheau D, Matignon M, et al. An initial report from the French SOT COVID Registry suggests high mortality due to COVID-19 in recipients of kidney transplants. *Kidney Int*. 2020;98:1549–1558.
2. Oltean M, Søfteland JM, Bagge J, et al. Covid-19 in kidney transplant recipients: a systematic review of the case series available three months into the pandemic. *Infect Dis (Lond)*. 2020;52:830–837.
3. National Institutes of Health. Clinical presentation of people with SARS-CoV-2 Infection. Available at: <https://www.covid19treatmentguidelines.nih.gov/overview/management-of-covid-19/>. Accessed September 8, 2020.

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The authors reply: We thank Søfteland *et al.*¹ for their interest in our registry based-study focusing on coronavirus disease 2019 (COVID-19) in kidney transplant recipients.² They lament that a discrepancy exists between the number of patients reported in the introductory section ($n = 426$) and those included in the final analysis ($n = 279$). However, the 147 excluded patients had <30 days of follow-up at the time of the report (April 2020), and their data were incomplete. Their inclusion would

