

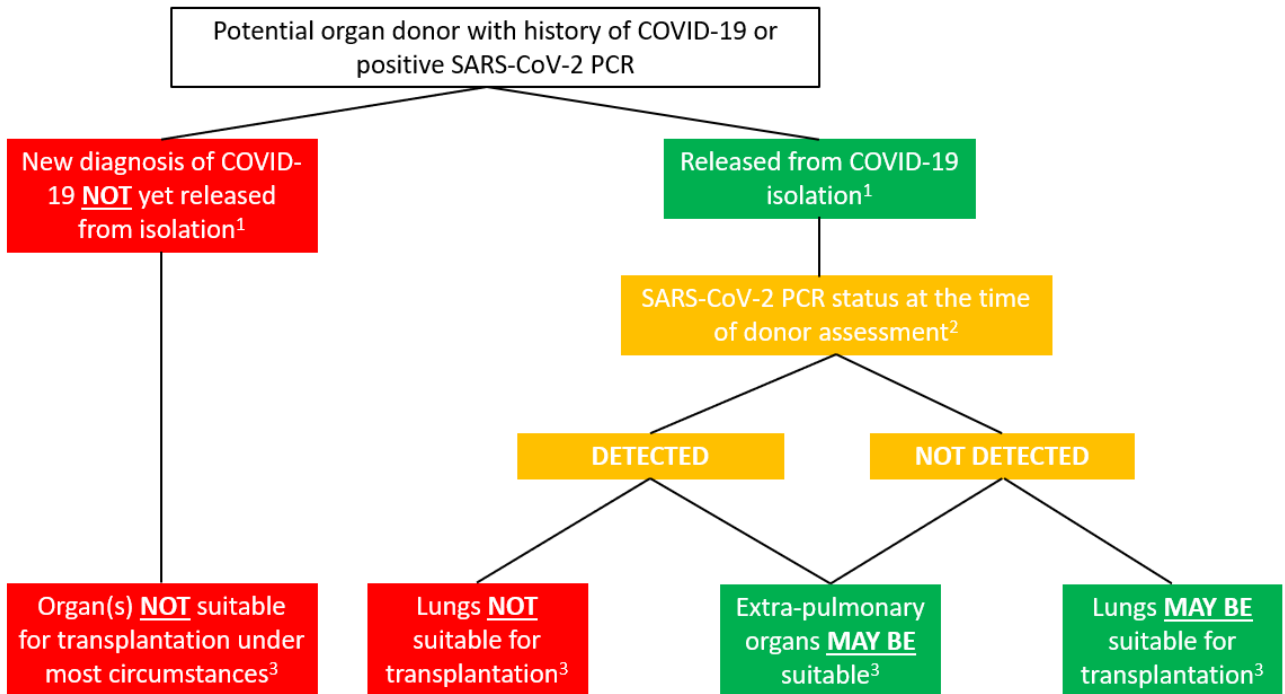
Organ donation and transplantation from donors with a diagnosis of COVID-19

The COVID-19 pandemic has had a significant impact on rates of organ transplantation in Australia and around the world^{1,2}. In Australia and New Zealand, the non-acceptance of organs from potential donors who are infected with SARS-CoV-2 at the time of planned procurement or who have recovered from SARS-CoV-2 infection has not been a major contributing factor to reduced transplant activity to date, due to the comparatively lower incidence of COVID-19. The number of Australian and New Zealanders either currently or previously infected with SARS-CoV-2 has increased recently, due to the ongoing outbreaks of the delta variant. This is anticipated to continue with a change in the over-arching management strategy from elimination to 'living with' COVID-19 as vaccination rates increase. In order to maximise organ utilisation and prevent unnecessary non-acceptance of otherwise suitable organs, donors with a history of COVID-19 should be carefully assessed for suitability of organ donation in terms of both potential SARS-CoV-2 infectivity and COVID-19 related organ damage.

Transmission of SARS-CoV-2 during solid organ transplantation is a theoretical concern, based on the observations that; low level viremia occurs during respiratory infection³; angiotensin-converting enzyme 2 receptors, required for SARS-CoV-2 binding, are present in various organs throughout the body^{4,5}; and SARS-CoV-2 has been detected in several bodily secretions and multiple tissue types, albeit often without histopathologic evidence of associated viral lesions^{6,7}. Despite biologic plausibility, there have not been any documented cases of transmission of SARS-CoV-2 via extra-pulmonary donated organ or blood products that contain PCR-detectable virus. The use of extra-pulmonary organs from donors with a current positive SARS-CoV-2 PCR test is an area of active research and the decision to transplant these organs needs to be balanced with the risk of morbidity and mortality for waitlisted individuals.

There is mounting evidence that it may be safe to transplant extra-pulmonary organs (liver, kidney, heart) from living and deceased donors with a history of COVID-19, who have a negative nasopharyngeal (NP) swab at the time of organ procurement⁸⁻¹³. In addition, several cases have been reported of transplantation of non-lung organs from deceased donors who tested positive for SARS-CoV-2 on PCR of nasopharyngeal swab at the time of organ procurement without SARS-CoV-2 transmission to recipients with and without evidence of immunity at the time of transplant^{11,13-15}. Given the respiratory tract is the primary site of SARS-CoV-2 inoculation and infection with high levels of virus and viral damage detected post-mortem in patients who die from COVID-19^{16,17}, one would expect higher risk of SARS-CoV-2 transmission to lung recipients. Indeed, donor-derived transmission of SARS-CoV-2 has been reported in lung recipients in instances where upper respiratory tract PCR was negative and lower respiratory tract testing was not undertaken prior to organ procurement, but lower respiratory tract PCR was positive when retrospectively tested after transplantation^{18,19}.

Flow chart – assessment of potential deceased donors



¹ As per [Coronavirus Disease 2019 \(COVID-19\) Communicable Disease Network of Australia \(CDNA\) National guidelines for public health units](#), CDNA-SoNG (latest version available at: <https://www1.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-novel-coronavirus.htm>.) Release from isolation typically occurs between 10-20 days post-onset of symptoms.

² Nasopharyngeal swab (minimum requirement) and lower respiratory tract sample (preferable for all donors and required for lung donors). A tracheal aspirate is generally acceptable, although in potential lung donors presumed recovered from recent COVID-19 infection, a bronchoscopically obtained sample is preferable (e.g., mini- or full broncho-alveolar lavage, bronchial washings). Negative lower respiratory tract SARS-CoV-2 PCR required for lung transplantation.³ Recommend discuss organ suitability with an infectious diseases physician.

Deceased donors with a diagnosis of COVID-19

- See flowchart
 - Those not released from isolation using CDNA SoNG²⁰ criteria are not suitable to donate organs
 - Those released from isolation using CDNA SoNG criteria may be suitable to donate organs
 - Assessment may include severity of donor COVID-19 infection and organ damage, donor recovery from illness, strength of PCR if positive, donor COVID-19 antibody response, urgency of recipient requirement for organ transplant, recipient vaccination status.

Living donors with a diagnosis of COVID-19

- Defer transplant until the donor has resolution of acute COVID-19 symptoms and at least 7 weeks since the onset of COVID-19 symptoms or first positive SARS-CoV-2 PCR if asymptomatic²¹
 - This recommendation is based on the potential risk for the donor undergoing major surgery during an acute infection and risk of nosocomial transmission.
- Earlier donation may be considered under extenuating circumstances where the donor had asymptomatic/mild COVID-19 and the recipient has urgent need for transplantation.

Potential recipients of an organ from a donor with a diagnosis COVID-19

- The potential recipient must give informed consent to accept the organ(s) given the theoretical risk of SARS-CoV-2 transmission
- Given the lack of evidence of transmissible virus in non-pulmonary organs, alteration in recipient immunosuppression and COVID-19 prophylaxis (e.g., remdesivir, COVID-19 monoclonal antibodies) are not routinely recommended.

Further information in relation to organ donation and transplantation and COVID-19 is available on the TSANZ website, including:

- [Routine testing for coronavirus \(SARS-CoV-2\) causing COVID-19: Information for donation and transplant professionals](#)
- [Organ Donation and Transplantation from Patients with COVID-19 Vaccine Induced Thrombosis with Thrombocytopenia Syndrome \(TTS\)](#)

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