

In brief

Renal dialysis and COVID-19 vaccination

13 December 2021

Summary

- Studies have shown that SARS-CoV-2 vaccinations are safe and effective in renal dialysis patients.
- While there is a substantial humoral response for most patients after two consecutive vaccine doses, the humoral response rate may be lower than in the general population and may justify changes to the vaccination schedule.
- Kidney Health Australia recommends SARS-CoV-2 vaccination for people with kidney disease. This includes people on dialysis because the benefits of vaccination outweigh the risks of COVID-19 infection.
- SARS-CoV-2 vaccines are not contraindicated in kidney disease patients.
- Physical distancing measures should be implemented where unvaccinated dialysis patients are in the same space, including dialysis treatment rooms.

Background

- Renal dialysis patients are at increased risk of mortality from COVID-19.^{1, 2}
- A reduced immune response to infection and vaccination has previously been reported in this cohort.²⁻⁵
- Dialysis patients were generally excluded from initial SARS-CoV-2 vaccine trials and it has been suggested that the restricted immune response of dialysis patients may impact the efficacy of the vaccine.⁵⁻⁷

Evidence

- Generally, studies have shown:
 - SARS-CoV-2 vaccinations are safe and effective in renal dialysis patients.^{3, 8-12}
 - There is a substantial humoral response for most patients after two consecutive vaccine doses.^{1, 3, 6, 7, 10, 12-23} However, the humoral response rate may be lower than in the general population and may justify changes to the vaccination schedule.^{1, 3, 5-8, 14, 16, 18-20, 22-24}
 - The effect of a single vaccine dose is less clear. Two studies reported effective protection against infection after the first vaccine dose in patients with, and without, prior COVID-19 infection.^{4, 9} Other studies have reported suboptimal or no demonstrated response following the first dose.^{18, 25, 26}
 - Some studies have reported a small percentage of patients with suboptimal humoral response rates or no demonstrated response.²⁴
 - Renal dialysis patients with prior COVID-19 infection have shown a stronger vaccine response than patients with no prior infection.^{2, 4, 6, 14}

- Mild adverse reactions have been reported in a small percentage of patients.^{3, 4, 8-10, 24, 27}
- Some treatments have been associated with weaker vaccine response or adverse outcomes including:
 - One study reported a significant association between adverse event occurrence and therapy with angiotensin 2 antagonists.³
 - Lower response to vaccination was associated with treatment with gamma globulin and ischaemic/rhythmic cardiac disease.¹³
 - Immunosuppressive therapy has been reported as a predictor of a weaker response compared to non-immunosuppressed patients.¹⁵⁻¹⁷
 - One study found corticosteroids, immunosuppressants and age were not independently associated with a lower response to vaccination.¹³ Other studies reported that age was an important factor in humoral response, particularly that older age is associated with lower response.^{3, 4, 6, 13, 15, 16, 18, 20}
- One study reported a link between the humoral response to SARS-CoV-2 vaccination and previous response to hepatitis B vaccination.¹⁶ A separate study found no correlation.⁵

Grey literature

- Kidney Health Australia recommends SARS-CoV-2 vaccination for people with kidney disease, including those on dialysis, as the benefits of vaccination outweigh the risks of COVID-19 infection.²⁸
- The National Kidney Foundation, American Society of Nephrology and American Society of Transplantation all recommend the COVID-19 vaccine for people living with kidney disease or who have had a kidney transplant.²⁹
- The United States Centers for Disease Control and Prevention offers guidance for vaccinating dialysis patients as they are at high risk for serious illness and death related to COVID-19.³⁰
- The Centers for Disease Control and Prevention recommends that unvaccinated patients be seated at least six feet apart in situations where they may be in the same space, including dialysis treatment rooms.³¹
- According to the British Columbia Centre for Disease Control, there are no specific contraindications or exceptions to COVID-19 vaccines for people with kidney disease and vaccination should be encouraged in this cohort.³²

To inform this brief, PubMed and Google searches were conducted using terms related to "renal dialysis" OR dialysis OR hemodialysis OR haemodialysis AND COVID-19 AND vaccination on 21 October 2021. Abstract only, narrative reviews, case reports, correspondence and research letters, commentary, pre-prints, and studies with n < 20 were excluded.

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