

Statement on COVID-19 Vaccination in Solid Organ Transplant Recipients (Updated June 2, 2021)

Recently, multiple studies have been published examining the response to SARS-CoV-2 mRNA-based vaccines in solid organ transplant (SOT) recipients.(1-14) Overall, these have demonstrated reduced antibody responses to vaccine when compared with reports involving the general public.

The low antibody response rate is concerning but not unexpected, as SOT recipients have lower rates of immune responses to other vaccines as well.(15) Subsequent data have shown that B- and T-cell responses after SARS-CoV-2 vaccination may be discordant in transplant recipients. Patients may develop T-cell response in the absence of antibody. (3,6,9,10) The correlates of SARS-CoV-2 protection are still undefined. Although breakthrough COVID-19 cases of varying severity in fully vaccinated SOT recipients have been reported, it is important to recognize that vaccination may still prevent many infections or reduce the severity of infection.(16-19) Further data are needed to assess vaccine effectiveness, particularly its protection against severe COVID-19. Previous experience with influenza vaccination in transplant patients has demonstrated reduced influenza-related lower respiratory tract disease and hospitalization despite low antibody response. (20, 21) Thus, we strongly caution against concluding that low antibody response rate to SARS-CoV-2 vaccination will lead to reduced clinical effectiveness until more information is available. These results should not prompt or encourage vaccine hesitancy in SOT recipients.

Immunosuppressed patients are known to have prolonged viral shedding of actively replicating virus which may promote the development of viral variants.(22) Additionally, there are data to suggest worse outcomes in SOT recipients with COVID-19 compared to the general population.(23) The effect of immunization on duration of viral shedding and clinical outcomes remains unknown for this population. Optimal strategies to improve vaccine responses have not been defined but are currently under investigation.

Until more complete data are available, we urge:

- **Pre-transplant vaccination of all SOT candidates as a priority whenever feasible.**
- **Continued SARS-CoV-2 vaccination in SOT recipients and priority for vaccination of their household members and caregivers to reduce exposure risk for these vulnerable patients.**
- **Continuation of a stable immunosuppression regimen at the time of vaccination to avoid the risk of organ rejection until more comprehensive data are available.**
- **Continued adherence of all transplant recipients to protective measures including masking and social distancing regardless of vaccination status.**



AMERICAN SOCIETY OF
TRANSPLANTATION



THE INTERNATIONAL SOCIETY FOR
HEART AND LUNG TRANSPLANTATION

A Society that Includes Basic Science, the Failing Heart and Advanced Lung Disease.



AMERICAN ASSOCIATION FOR
THE STUDY OF LIVER DISEASES



American Society of Transplant Surgeons



International
Transplant Nurses
Society



The Transplantation Society



The Organization for Donation and Transplant Professionals



LEADING THE WAY
IN ORGAN
TRANSPLANTATION

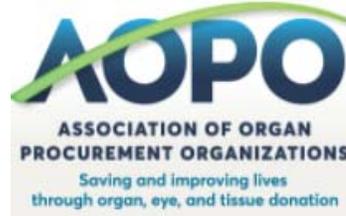


Canadian Society of Transplantation
Société canadienne de transplantation

LEADERSHIP IN CANADIAN TRANSPLANTATION | LEADERSHIP EN TRANSPLANTATION AU CANADA



PEDIATRIC
INFECTIOUS
DISEASES
SOCIETY



ASSOCIATION OF ORGAN
PROCUREMENT ORGANIZATIONS
Saving and improving lives
through organ, eye, and tissue donation



AMERICAN SOCIETY FOR
HISTOCOMPATIBILITY &
IMMUNOGENETICS
www.ashi-hla.org



INTERNATIONAL LIVER TRANSPLANTATION SOCIETY
The knowledge network for liver transplantation



A Section of The Transplantation Society



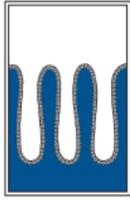
International Pediatric
Transplant Association

A Section of The Transplantation Society



INTERNATIONAL SOCIETY OF VASCULARIZED
COMPOSITE ALLOTRANSPLANTATION

A Section of The Transplantation Society



Intestinal Rehabilitation & Transplant
ASSOCIATION

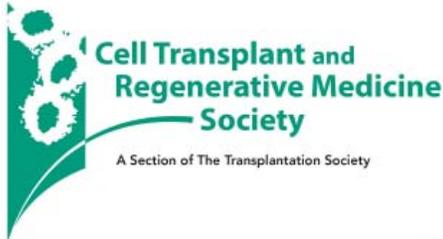
A Section of The Transplantation Society



A Section of The Transplantation Society



A Section of The Transplantation Society



A Section of The Transplantation Society



A Section of The Transplantation Society



Society of Pediatric Liver Transplantation

A Section of The Transplantation Society

References:

1. Boyarsky BJ, Werbel WA, Avery RA, Tobian AAR, Massie AB, Segev DL, Garonzik-Wang JM: Antibody Response to 2-Dose SARS-CoV-2 mRNA Vaccine Series in Solid Organ Transplant Recipients. JAMA 2021.
2. Benotmane I, Gautier-Vargas G, Cognard N, et al.: Weak anti-SARS-CoV-2 antibody response after the first injection of an mRNA COVID-19 vaccine in kidney transplant recipients. Kidney Int 2021.
3. Sattler A SE, Weber U, Potekhin A, Bachmann F, Budde K, Storz E, Proß V, Bergmann Y, Thole L, Tizian C, Hölsken O, Diefenbach A, Schrezenmeier H, Jahrsdörfer B, Zemojtel T, Jechow K, Conrad C, Lukassen S, Stauch D, Lachmann N, Choi M, Halleck F, Kotsch K. MedRxiv. doi: <https://doi.org/10.1101/2021.04.06.21254963>. Accessed 4/19/2021: Impaired Humoral and Cellular Immunity after SARS-CoV2 BNT162b2 (Tozinameran) Prime-Boost Vaccination in Kidney Transplant Recipients.
4. Yi SG, Knight RJ, Graviss EA, et al.: Kidney Transplant Recipients Rarely Show an Early Antibody Response Following the First COVID-19 Vaccine Administration. Transplantation 2021.
5. Peled Y RE, Lavee J, Sternik L, Segev A, Wieder-Finesod A, Mandelboim M, Indenbaum V, Levy I, Raanani E, Lustig Y, Rahav G: BNT162b2 vaccination in heart transplant recipients: clinical experience and antibody response. J Heart Lung Transplant 2021.
6. Havlin J SM, Dvorackova E et al. . Immunogenicity of BNT162b2 mRNA COVID19 Vaccine and SARS-CoV-2 Infection in Lung Transplant Recipients. . Journal of Heart and Lung Transplantation 2021.
7. Narasimhan M ML, Clark AE, Usmani A, Cao J, Raj E, Torres F, Sarode R, Kaza V, Lacelle C, Muthukumar A: Serological Response in Lung Transplant Recipients after Two Doses of SARS-CoV-2 mRNA Vaccines. medRxiv 2021.
8. Shostak Y SN, Heching M, Rosengarten D, Shtraichman O, Shitenberg D, Amor SM, Yahav D, Zvi HB, Pertzov B, Kramer MR: Early humoral response among lung transplant recipients vaccinated with BNT162b2 vaccine. The Lancet Resp Med 2021.
9. Miele M, Busa R, Russelli G, Sorrentino MC, Di Bella M, Timoneri F et al. Impaired anti-SARS-CoV-2 Humoral and Cellular Immune Response induced by Pfizer-BioNTech BNT162b2 mRNA Vaccine in Solid Organ Transplanted Patients. Am J Transplant 2021.

10. Cucchiari D, Egri N, Bodro M, Herrera S, Del Risco-Zevallos J, Casals-Urquiza J et al. Cellular and humoral response after mRNA-1273 SARS-CoV-2 vaccine in kidney transplant recipients. *Am J Transplant* 2021.
11. Rozen-Zvi B, Yahav D, Agur T, Zingerman B, Ben-Zvi H, Atamna A et al. Antibody response to SARS-CoV-2 mRNA vaccine among kidney transplant recipients: a prospective cohort study. *Clin Microbiol Infect* 2021.
12. Rabinowich L, Grupper A, Baruch R, Ben-Yehoyada M, Halperin T, Turner D et al. Low immunogenicity to SARS-CoV-2 vaccination among liver transplant recipients. *J Hepatol* 2021.
13. Grupper A, Rabinowich L, Schwartz D, Schwartz IF, Ben-Yehoyada M, Shashar M et al. Reduced humoral response to mRNA SARS-Cov-2 BNT162b2 vaccine in kidney transplant recipients without prior exposure to the virus. *Am J Transplant* 2021.
14. Itzhaki Ben Zadok O, Shaul AA, Ben-Avraham B, Yaari V, Ben Zvi H, Shostak Y et al. Immunogenicity of the BNT162b2 mRNA vaccine in heart transplant recipients - a prospective cohort study. *Eur J Heart Fail* 2021.
15. Eckerle I, Rosenberger KD, Zwahlen M, Junghanss T: Serologic vaccination response after solid organ transplantation: a systematic review. *PLoS One* 2013;8:e56974.
16. Basic-Jukic N, Jelacic I. SARS-CoV-2 infection after two doses of mRNA vaccine in renal transplant recipients. *Transpl Infect Dis* 2021:e13628.
17. Tsalouchos A, Rossolini GM, Magg L, Mazzoni A, Annunziato F, Dattolo PC. COVID-19 in a kidney transplant recipient after mRNA-based SARS-CoV-2 vaccination. *Transpl Infect Dis* 2021:e13649.
18. Tau N, Yahav D, Schneider S, Rozen-Zvi B, Abu Sneineh M, Rahamimov R. Severe consequences of COVID-19 infection among vaccinated kidney transplant recipients. *Am J Transplant* 2021.
19. Wadei HM GT, Leoni JC, Shah SZ, Aslam N, Speicher LL., COVID-19 infection in Solid Organ Transplant Recipients after SARS-CoV-2 vaccination. *Am J Transplant* 2021
20. Kumar D, Ferreira VH, Blumberg E, et al.: A 5-Year Prospective Multicenter Evaluation of Influenza Infection in Transplant Recipients. *Clin Infect Dis* 2018;67:1322-9.
21. Pinana JL, Perez A, Montoro J, et al.: Clinical Effectiveness of Influenza Vaccination After Allogeneic Hematopoietic Stem Cell Transplantation: A Cross-sectional, Prospective, Observational Study. *Clin Infect Dis* 2019;68:1894-903.
22. Aydillo T, Gonzalez-Reiche AS, Aslam S, et al.: Shedding of Viable SARS-CoV-2 after Immunosuppressive Therapy for Cancer. *N Engl J Med* 2020;383:2586-8.
23. Nair V, Jandovitz N, Hirsch JS, et al.: An early experience on the effect of solid organ transplant status on hospitalized COVID-19 patients. *Am J Transplant* 2020.