Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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CDC REPORT

Commentary: Effectiveness of two-dose vaccination with mRNA COVID-19 vaccines against COVID-19-associated hospitalizations among immunocompromised adults—nine states, January–September 2021

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Embi PJ, Levy ME, Naleway AL, et al. Effectiveness of 2-Dose Vaccination with mRNA COVID-19 Vaccines Against COVID-19–Associated Hospitalizations Among Immunocompromised Adults — Nine States, January–September 2021. *MMWR Morb Mortal Wkly Rep* 2021;70:1553–1559. doi:http://dx.doi.org/10.15585/mmwr.mm7044e3external icon.

This month's selection presents the results of a multicenter study led by the Centers for Disease Control and Prevention evaluating the effectiveness of mRNA COVID-19 vaccines in immunosuppressed adults, including solid organ transplant recipients.[1] This study was performed due to several prior reports documenting reduced antibody titers following COVID-19 vaccination in immunosuppressed persons.[2,3]

The linked report evaluated immunocompetent and immunocompromised adults who were hospitalized with COVID-19 infection at 187 hospitals in nine US states between January and September 2021. Of note, the study only evaluated the effectiveness of a two-dose mRNA vaccine regimen; patients who received only 1 mRNA vaccine dose, ≥3 mRNA vaccine doses, or the Janssen (Johnson & Johnson [Ad26.COV2]) vaccine were excluded. Vaccine effectiveness was determined using a test-negative design, comparing the odds of a positive test result for SARS-CoV-2 between fully vaccinated and unvaccinated patients, after adjusting for patient age, geographic region, calendar time, local virus circulation, and weighting for the inverse propensity to be vaccinated or unvaccinated.

The study included 1416 recipients of solid organ or stem cell transplantation, of which 809 (57%) were fully vaccinated with a two-dose mRNA vaccine series. COVID-19-associated hospitalizations were identified among 92 (15%) of the unvaccinated transplant recipients, and 80 (10%) of the fully vaccinated transplant recipients, resulting in an estimated vaccine effectiveness of 59% (95% confidence interval, 38%–73%). The vaccine effectiveness was higher among those who received two Moderna vaccine doses (70%) compared to two Pfizer vaccine doses (45%), although their 95% confidence intervals overlapped, suggesting this difference was not statistically significant. Notably, transplant recipients had the single lowest vaccine effectiveness of all of the immunocompromised patient groups evaluated. The vaccine effectiveness was significantly lower for transplant recipients (compared to immunocompetent individuals) regardless of patient age, mRNA vaccine product, or timing relative to the Delta variant predominance.

There are several important limitations of this study, including (1) solid organ transplant recipients and stem cell transplant recipients were evaluated together as a single group, while vaccine effectiveness may be different in these two patient populations, and (2) transplant recipient status was identified by discharge diagnosis codes, rather than manual medical record review or evaluation of medication data. Importantly, however, the study did include a large cohort of transplant recipients across nine different states, and the authors were able to evaluate the impact of mRNA vaccination on an important clinical outcome (namely, COVID-19-associated hospitalization), rather than solely measuring antibody or T cell responses following vaccination.

In summary, this report suggests that immunocompromised persons, including solid organ transplant recipients, benefit from mRNA COVID-19 vaccination but are less protected from severe COVID-19 outcomes than immunocompetent persons. Transplant recipients, in particular, may be even less protected than other immunocompromised individuals following vaccination. This report underscores the urgent need for further study of the optimal prevention and management of COVID-19 infection focused in the solid organ transplant population.

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