

Fourth dose of COVID vaccine found to boost protection in patients with rheumatic disease

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Patients with autoimmune rheumatic diseases, which include rheumatoid arthritis and other chronic disorders that cause inflammation, are at increased risk of SARS-CoV-2 infection, as well as death due to severe

COVID-19. Many patients receive disease-modifying antirheumatic drugs (DMARDs) to treat these conditions, but this treatment has been associated with a blunted response to COVID-19 vaccines.

The U.S. Centers for Disease Control and Prevention recommends that patients receiving DMARDs receive a fourth dose of the mRNA vaccine in addition to the three-dose primary series to protect against COVID-19. A new study led by Mass General Brigham researchers suggests that this recommendation saved lives and reduced hospitalizations among patients in this high-risk group. Results are published in *The Lancet Rheumatology*.

To conduct their study, the researchers used [observational data](#) from the Mass General Brigham health care system to compare rheumatic patients taking DMARDs who received a fourth dose of the mRNA vaccine to those who did not. The study included data from 4,305 patients. They found that patients who received the fourth dose had a 41 percent reduction in risk for infection and 65 percent reduction for admission/death compared to those who did not.

"A fourth dose of COVID-19 mRNA vaccine provides considerable protection against any SARS-CoV-2 infection and severe COVID-19 among patients with systemic autoimmune rheumatic diseases using DMARDs," said co-corresponding author Zachary Wallace, MD, MSc, of the Division of Rheumatology, Immunology and Allergy at Massachusetts General Hospital (MGH), a founding member of the Mass General Brigham health care system.

"These patients should be encouraged to stay up-to-date with COVID-19 mRNA vaccines, including boosters after the primary vaccination series."

Since the beginning of the pandemic, researchers from across Brigham

and Women's Hospital (BWH) and MGH have been working together to give special attention to this group of patients to find insights that could help inform their treatment as well as the care of broader patient populations.

"At the very beginning of the pandemic, we joined forces to identify every rheumatic disease patient with COVID seen at our institutions so that we could follow their clinical course and collect survey and blood data," said co-corresponding author Jeffrey Sparks, MD, MMSc, of the Division of Rheumatology, Inflammation, and Immunity at BWH.

"Working together, we are finding important clues that could help better protect patients from infection and severe disease."

More information: Effectiveness of a fourth dose of COVID-19 mRNA vaccine in patients with systemic autoimmune rheumatic diseases using disease-modifying antirheumatic drugs: an emulated target trial, *The Lancet Rheumatology* (2023). [DOI: 10.1016/S2665-9913](https://doi.org/10.1016/S2665-9913)

Provided by Mass General Brigham

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