

Patients with lupus benefit from COVID-19 vaccine booster

July 12 2022



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People with systemic lupus erythematosus (SLE) who received a "booster" dose of SARS-CoV-2 vaccine after full vaccination are roughly half as likely to have a subsequent "breakthrough" COVID-19

infection, a new study shows.

The finding, researchers say, should offer reassurance to the more than 200,000 Americans who have SLE, a condition in which the body's immune system mistakenly attacks its own healthy tissues, especially joints and skin. Immune-suppressing drugs such as steroids, needed to control symptoms of the disease, place them at increased risk of infections, including SARS-CoV-2.

Led by researchers at NYU Grossman School of Medicine, the new study tracked the health of 163 fully vaccinated men and women being treated for SLE at its affiliated hospitals in New York City. The researchers' goal was to see who became infected with the virus over at least six months, given that more than half were taking at least one immune-suppressing medication for their SLE. All had received some combination of the vaccines manufactured by Pfizer, Moderna, or Johnson & Johnson prior to June 2021, but only 125 had received a third or booster dose of vaccine.

Publishing in the journal *The Lancet Rheumatology* online July 12, the study showed that at the end of the monitoring period (April 24, 2022), 44 vaccinated SLE [patients](#) had had breakthrough infections, with two needing hospitalization (but both surviving their infection).

Among those with breakthrough infections, 28 of 125, or 22%, had received a booster, while 16 of 38, or 42%, had not. Notably, according to investigators, the majority of breakthrough infections (42 of 44) occurred after Dec. 2, 2021, when the city detected its first case of the highly contagious Omicron variant.

Another key study finding was among 57 of the study participants who agreed to have their blood antibody levels checked, once after full vaccination and again after receiving their booster.

Researchers found that even those on [immunosuppression](#) who had not responded to the initial round of vaccination had an immediate rise in antibody levels after the administration of a [booster](#) shot. Previous research had shown that these antibody levels were lower among many initially vaccinated patients with rheumatic diseases, including SLE, who were taking immune-suppressing drugs, sparking fears of waning immunity to COVID-19 over time.

However, study results showed those with higher levels of antibodies, needed to block the SARS-CoV-2 "spike" protein and prevent the virus from infecting human cells, were no more protected from breakthrough infection than those with lower spike protein-antibody levels.

Still, researchers say their previous work showed elevated [antibody levels](#) in fully vaccinated lupus patients strengthened key measures of long-term immunity, which may help explain the lack of severe disease in those with breakthrough infections.

"Our study results offer people living with systemic lupus erythematosus clinical confirmation that vaccines are highly effective at guarding against severe COVID-19, despite their increased risk of catching the disease," says study co-lead investigator and rheumatologist Amit Saxena, MD, MS.

"COVID-19 vaccine boosters, or third shots, offered an added, doubled layer of protection from breakthrough infection," says Saxena, an assistant professor in the Department of Medicine at NYU Langone Health. "Even in cases of SARS-CoV-2 infection, cases were overwhelmingly mild among SLE patients who were fully vaccinated."

"Our research also shows that most people with systemic [lupus](#) erythematosus who are fully vaccinated and boosted mounted good responses despite being on immune suppression," says study co-senior

investigator and rheumatologist Peter Izmirly, MD. Izmirly is an associate professor in the Department of Medicine at NYU Langone Health.

However, researchers caution that further monitoring of patients is needed to determine if there is any antibody "cutoff" level below which SLE patients become more vulnerable to SARS-CoV-2 infection.

During the initial wave of the pandemic in spring 2020, NYU Langone hospitalization rates for its SLE patients were more than double those of its patients without the condition, the researchers note, although death rates were the same.

More information: COVID-19 Breakthrough Infections, Morbidity, and Seroreactivity in SLE Patients Following Initial SARS-CoV-2 Vaccination Series and Additional Dose through the Omicron BA.1 Wave in New York City, *The Lancet Rheumatology* (2022).

Provided by NYU Langone Health

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