

Research shows a third COVID vaccine is essential for individuals with an insufficient immune response

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In a new study conducted by the Deutsches Zentrum Immuntherapie and led by Department of Medicine 3-Rheumatology and Immunology at

Universitätsklinikum Erlangen, patients who had no protection against an infection after failing to develop an immune response to COVID-19 after two vaccinations (primary vaccine failure) were given a third vaccination.

The results indicated that the vast majority of these individuals tended to develop a very good level of protection after receiving the third vaccine.

"In an earlier study, we had already demonstrated that patients with autoimmune diseases much more frequently fail to develop sufficient protection against coronavirus after two doses of the vaccine than healthy people," explains principal investigator Dr. David Simon from Department of Medicine 3. The investigations indicated that one in ten patients with an autoimmune disease did not develop a sufficient response to the COVID vaccination, compared to one in a hundred healthy people after two doses of the vaccine.

Accordingly, patients with autoimmune diseases are particularly at risk of breakthrough infections.

"By consistently conducting tests to determine the antibody response after the vaccine, by spring 2021 we were able to identify all patients from the study who had failed to develop a sufficient immune response to the COVID vaccination," explains Dr. Koray Tascilar from Department of Medicine 3. They were predominantly individuals with autoimmune diseases such as arthritis. The people in question were informed of the situation and were among the very first to receive their booster vaccination in summer 2021. Most of these patients who had experienced primary vaccine failure developed a robust immune response to COVID-19 after the third vaccination.

The study confirms the importance of the third vaccine. Not all people are indeed "fully vaccinated" after receiving two doses of the vaccine.

As primary vaccine failure is not uncommon after two doses of a vaccine in patients with autoimmune diseases, it would make sense to check the immune status of these individuals after vaccination in order to identify any instances of primary vaccine failure promptly and prevent subsequent [breakthrough infections](#).

It is indeed possible to fall ill in spite of receiving a vaccine, either as a result of primary [vaccine](#) failure or as a result of the immune response waning after a certain period of time. People with autoimmune diseases are more at risk of both. Research conducted at Friedrich–Alexander University Erlangen–Nürnberg (FAU) shows that risk groups such as patients with [autoimmune diseases](#) would benefit from a third vaccination given after a short period of time.

More information: David Simon et al, Efficacy and safety of SARS-CoV-2 revaccination in non-responders with immune-mediated inflammatory disease, *Annals of the Rheumatic Diseases* (2021). [DOI: 10.1136/annrheumdis-2021-221554](#)

David Simon et al, SARS-CoV-2 vaccination responses in untreated, conventionally treated and anticytokine-treated patients with immune-mediated inflammatory diseases, *Annals of the Rheumatic Diseases* (2021). [DOI: 10.1136/annrheumdis-2021-220461](#)

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