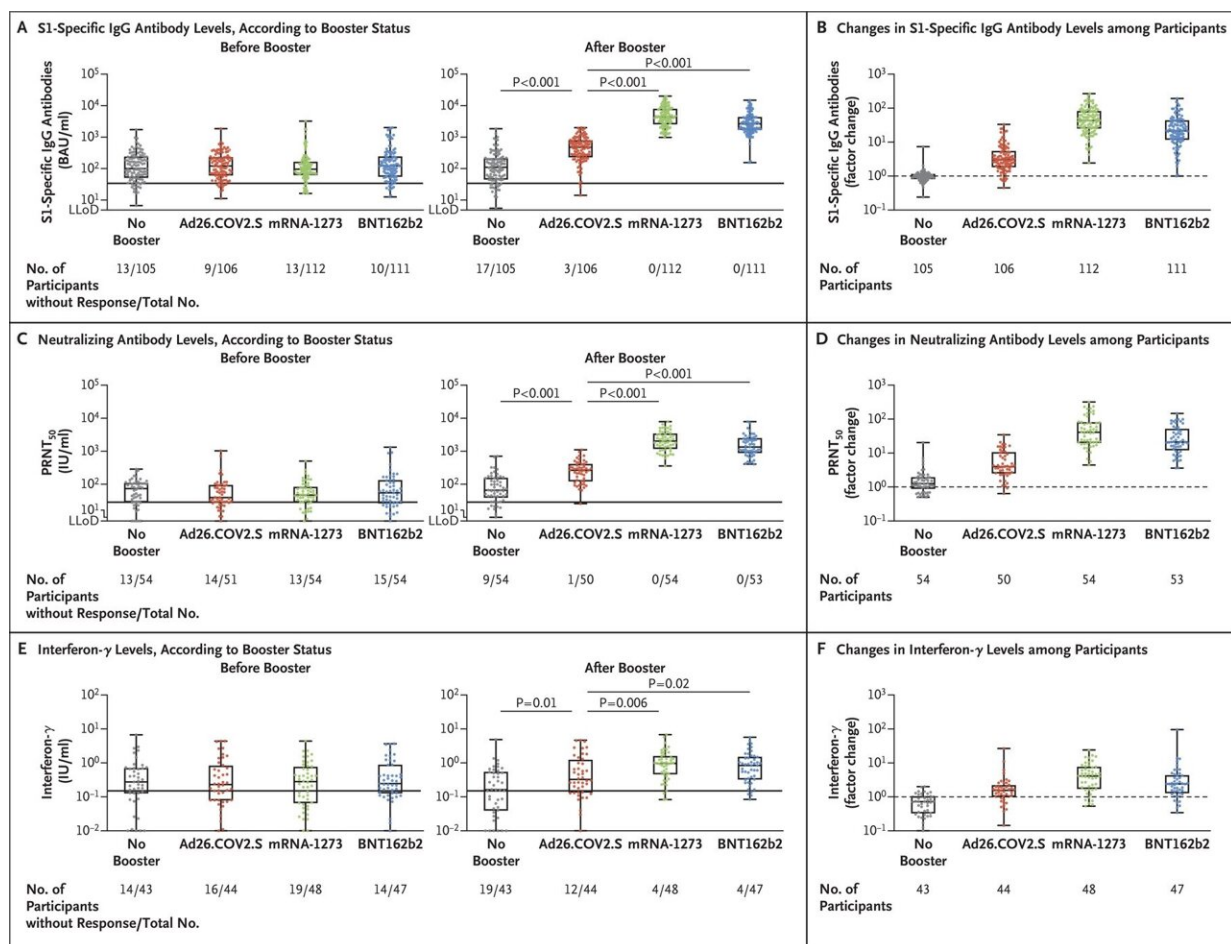


# Best way to boost the immune system after a single Janssen vaccination is with mRNA booster

January 24 2022



SARS-CoV-2 S-Specific Immune Responses. Credit: DOI: 10.1056/NEJMoa2116747

A coronavirus booster shot provides a better immune response against COVID-19 than a single vaccine dose. mRNA boosters are the most effective upon receiving Janssen. These are the results of a collaborative study between several organizations, including the Leiden University Medical Center (LUMC). The findings have been published in the *New England Journal of Medicine*.

With new coronavirus variants circulating and immunity decreasing, the best way to boost the [immune system](#) after a single Janssen vaccination is with the Pfizer and Moderna mRNA vaccines. This is compared with a second Janssen dose or no [booster](#) at all. Researchers expect an increased effectiveness against [virus infection](#) and transmission based on observations made in the SWITCH study—a multicentre study coordinated by Erasmus MC and including the LUMC, UMC Groningen and Amsterdam UMC.

Healthcare workers from various academic hospitals who had received a single dose of the Janssen [vaccine](#) in spring of 2021 were invited to take part of the study. The participants were randomly assigned a Janssen, Moderna or Pfizer booster or no booster. The study looked at the effects on the immune system response of a booster shot with different vaccines

## Clearing away coronavirus

The researchers looked at the effects of booster vaccines in two particular areas of the immune system: antibodies and immune cells. Antibodies are important in preventing a coronavirus infection and immune cells ensure coronavirus is cleared away as soon as it enters the body. An increase in both was observed upon receiving a booster shot with Janssen, Moderna or Pfizer. However, the increase was greater with Moderna and Pfizer than with the Janssen vaccine.

## Antibody levels

Janssen was the only shot approved for single dose administration and protected 85.4% of vaccinated subjects against severe COVID-19 after 28 days. Although this level of protection was acceptable, antibody levels after one dose of Janssen were lower than after two doses of an mRNA vaccine. "With the emergence of coronavirus variants, it is important that it is now clear that an additional vaccine works well after one shot of Janssen," says Leo Visser, Professor of Infectious Diseases and coordinator of the SWITCH study at LUMC. Not only is 'mixing' with Janssen more effective than 'matching,' but it is also well tolerated.

Future research will demonstrate the added value of boosters against severe disease. The researchers note that discussions about the need for booster shots should take into account the target group, the circulation of variants and the global inequality in access to vaccines. A booster with an available vaccine is better than no booster at all.

## Basis for policy

The SWITCH study was a randomized, controlled trial that included 461 [healthcare workers](#) who had received the Janssen vaccine in May or June 2021. In Leiden, 80 LUMC staff members participated. The study has served as a basis for policy by the Health Council and the national Outbreak Management Team. SWITCH was made possible thanks to funding from ZonMw.

**More information:** Roos S.G. Sablerolles et al, Immunogenicity and Reactogenicity of Vaccine Boosters after Ad26.COV2.S Priming, *New England Journal of Medicine* (2022). [DOI: 10.1056/NEJMoa2116747](https://doi.org/10.1056/NEJMoa2116747)

Provided by Leiden University

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