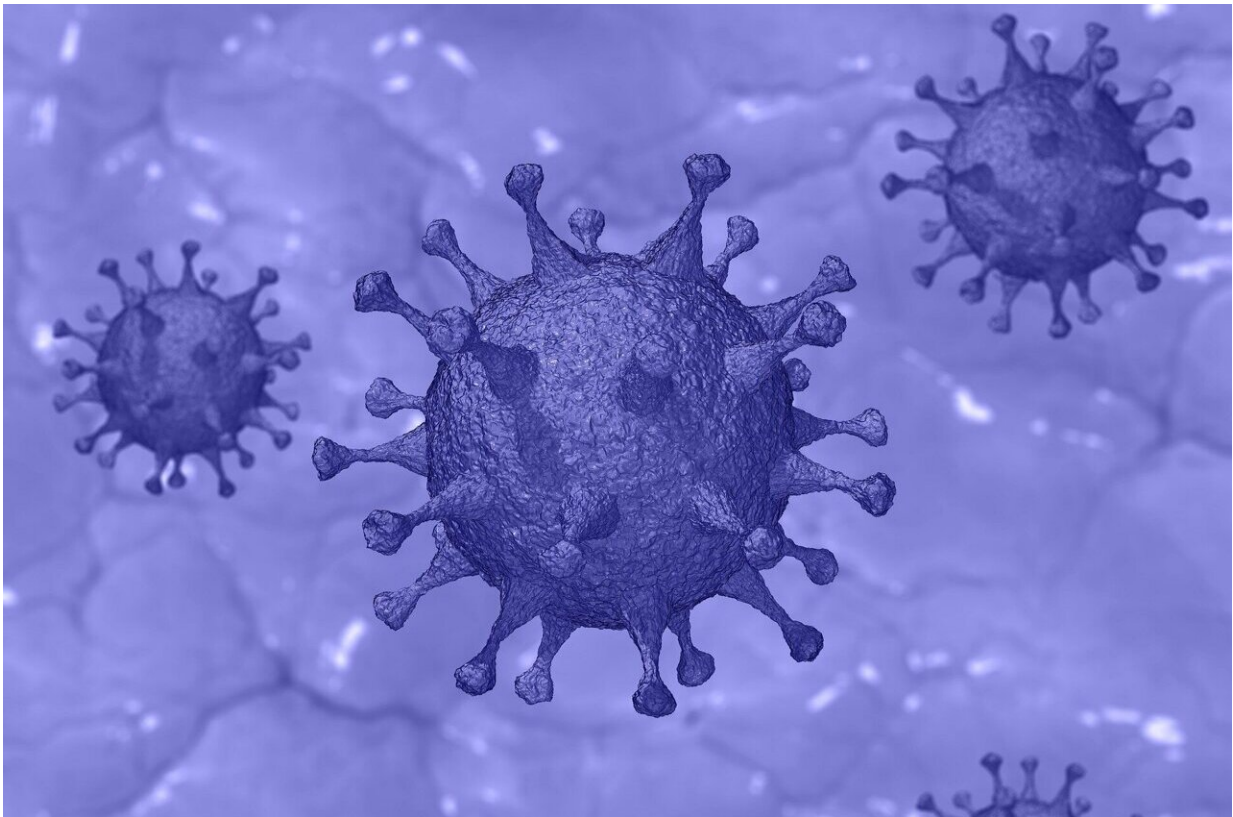


# Vaccine monitoring is crucial as SARS-CoV-2 variants continue to evolve, says study

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Researchers at the Francis Crick Institute and the National Institute for Health and Care Research Biomedical Research Centre at UCLH have highlighted the importance of continued surveillance of emerging SARS-CoV-2 variants and vaccine performance as the virus continues to evolve.

Published today as a [research letter](#) in *The Lancet*, their study compared the newer monovalent COVID [vaccine](#), which specifically targets the XBB [variant](#) of omicron (as recommended by the World Health Organization), with older bivalent vaccines containing a mix of an omicron variant and the original strain of COVID-19, which the UK deployed in autumn 2023 before turning to monovalent vaccines.

The researchers found that both vaccines generated neutralizing antibodies against the most recent strain of omicron, BA.2.86. However, the new monovalent vaccine generated higher levels of antibodies against a range of other omicron variants.

The team collected blood and nasal mucosal samples both before and after a fifth dose vaccination from 71 participants of the Legacy study, a research collaboration between the Crick and the NIHR University College London Hospitals Biomedical Research Centre. They compared the antibody levels before and after vaccination.

All 36 participants who received the bivalent vaccine and 17 who received the monovalent vaccine had boosted levels of antibodies against all variants tested, including the newest strain BA.2.86, which caused a wave of infection this winter. But those with the newer monovalent vaccine had 3.5x higher levels of antibodies against the XBB and BQ.1.1 strains after their booster vaccination.

Since the omicron virus is highly transmissible and the virus replicates in the nose and throat, the researchers tested the levels of antibodies in the participants' nasal cavity.

They found that the monovalent vaccine increased their ability to produce mucosal antibodies against most of the tested variants, whereas the bivalent vaccine didn't provide a significant boost.

Neither vaccine increased neutralizing antibody levels in the nasal cavity against the newest variant, BA.2.86, suggesting that current vaccines may be less likely to stop transmission or prevent asymptomatic or mild illness, while still protecting against [severe disease](#).

This highlights the importance of careful vaccine updates and continuing to complement a vaccination program with the development of antibody drugs that work against all variants, as some more vulnerable people don't respond well to vaccines.

Emma Wall, Senior Clinical Research Fellow at the Crick and Consultant in Infectious Diseases at UCLH, said, "The UK's strategy to deploy stocks of older vaccines paid off last year, as both vaccines provided equal protection against the newest strain. However, ongoing monitoring is needed, as the virus is continuing to evolve, so vaccine-induced antibodies might not work so well in the future. In the long run, vaccines that are effective against all new variants and can block COVID-19 being transmitted from person to person are needed."

David LV Bauer, Group Leader of the RNA Virus Replication Laboratory at the Crick, said, "The situation this winter could have been different if the newly emerged BA.2.86 and JN.1 variants were substantially distinct from older [omicron](#) variants, but fortunately this wasn't the case.

"Most new variants arise quicker than most clinical trials can produce data. But laboratory analysis can provide a detailed picture very quickly. Continued surveillance will help us stay on top of viral evolution."

**More information:** Shawe-Taylor, M and Greenwood, D. et al, Divergent performance of vaccines in the UK autumn 2023 COVID booster campaign, *The Lancet* (2024). [DOI: 10.1016/S0140-6736\(24\)00316-7](https://doi.org/10.1016/S0140-6736(24)00316-7). [www.thelancet.com/journals/lan ...](http://www.thelancet.com/journals/lan...)  
[... \(24\)00316-7/fulltext](http://www.thelancet.com/journals/lan...)

Provided by The Francis Crick Institute

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