

# Effectiveness of the new omicron booster confirmed

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Effectiveness confirmed: The corona booster vaccine from BioNTech adapted to the omicron variant XBB.1.5. Credit: Karin Kaiser/MHH

The pandemic is over, but many people in Germany are still infected with the coronavirus. The current omicron variants in particular are

highly contagious. The new booster vaccines from BioNTech and Moderna are specially adapted to the omicron subline XBB.1.5. However, the effectiveness of the new boosters has not yet been proven.

A study by the Department of Rheumatology and Immunology at Hannover Medical School (MHH) has now closed this gap. In cooperation with the MHH Institute of Immunology and the German Primate Center Göttingen, the researchers have published the world's first paper on the new XBB.1.5-based vaccine from BioNTech.

As part of the "COVID-19 Contact (CoCo)" study at the MHH, 53 MHH employees who received the vaccine were examined. Their immune response was then measured. The result: after vaccination with the new [booster](#), antibodies against omicron variants increased significantly. The work has been [published](#) in *The Lancet Infectious Diseases*.

## **Immune defense strengthened**

"We have not only found a large number of neutralizing antibodies against omicron XBB.1.5, but also against other sub-variants," says senior physician Professor Dr. Alexandra Dopfer-Jablonka, who is leading the immune study together with her clinical colleague Professor Dr. Georg Behrens.

This means that the vaccine not only triggers the [immune defense](#) against the currently dominant coronavirus variant XBB.1.5, but also activates the body's own defenses against the currently spreading variants "Pirola" (BA2.86) and "Eris" (EG1.5).

"The B cells that produce antibodies against omicron increased significantly and the T cells were also strengthened by the vaccination," explains the rheumatologist. "The data show that the new booster vaccination achieves its goal and also induces antibodies against new

SARS-CoV-2 variants."

## **Defense in two directions**

Like the first coronavirus vaccines from BioNTech and Moderna, the new booster is again an mRNA vaccine, i.e., it consists of messenger RNA. The principle: The mRNA contains the genetic information for the blueprint of the so-called spike protein, which is located on the surface of the coronavirus and with the help of which the virus enters the cells. This [genetic information](#) is read in the body's cells and the spike protein is produced. The [immune system](#) recognizes the protein as foreign to the body, triggers a defense reaction and develops immune protection.

Unlike last season's bivalent vaccines, the new vaccines only contain mRNA of the omicron variant. "The new boosters nevertheless activate a backward and a forward defense," says Professor Dopfer-Jablonka. Only the BioNTech vaccine was analyzed in the study. "However, as the Moderna vaccine is also adapted to XBB.1.5, we expect it to be equally effective." The same applies to the booster vaccine from the manufacturer Novavax, which has also been adapted to XBB.1.5 and authorized by the European Commission.

## **Work based on the MHH CoCo study**

"The work is once again a great team success and the result of the CoCo study, which is made possible and supported by MHH employees," says Professor Behrens. The CoCo study started in March 2020 and uses [blood samples](#) to investigate immune reactions against SARS-CoV2 in employees of the MHH and affiliated institutions. "Our data can also make a significant contribution to better understanding the long-term [immune response](#) against SARS-CoV-2 and assessing the success of the

vaccination," says the physician.

According to the Standing Committee on Vaccination (Stiko), a booster vaccination with the new, adapted [vaccine](#) is recommended for everyone aged 60 or over. In addition, all people who are at particular risk of a severe course of the disease due to an underlying illness should be boosted. The Stiko also recommends the booster vaccination for residents of care homes and for employees in the care and health care sector. The booster vaccination should be repeated annually, preferably in autumn.

**More information:** Metodi V Stankov et al, Humoral and cellular immune responses following BNT162b2 XBB.1.5 vaccination, *The Lancet Infectious Diseases* (2023). [DOI: 10.1016/S1473-3099\(23\)00690-4](#)

Provided by Medizinische Hochschule Hannover

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