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**Press release**  
**For immediate publication**

**New Med Uni Graz study on the COVID-19 vaccine**  
**New evidence for the effectiveness of the vaccine**

Graz, 12 December 2023: Sneezing on the bus, coughing in the tram, a cold at work—a record number of absences due to sickness and wastewater analysis indicate an unprecedented viral load throughout Austria: Winter and the new COVID-19 wave have hit. The virus that has kept us on our toes since the start of 2020 is spreading through the country once again, even if its progress is slower thanks to vaccines and precautionary measures. A new Med Uni Graz study in cooperation with the Austrian Agency for Health and Food Safety (AGES) is concerned with the effect of the COVID-19 vaccine: What were the benefits of a fourth dose of the vaccine? Stefan Pilz of the Med Uni Graz Division of Endocrinology and Diabetology got to the bottom of this question.

**The vaccine as a milestone in the fight against the pandemic**

After the pandemic started in spring 2020, the first doses of the vaccine arrived in Austria in December of the same year. For the first time, another option was available to protect oneself from the virus besides reduced (social) contact and increased hygiene (such as masks and handwashing), and the first step was taken on the road to normality. The safety and effectiveness of the vaccines have been confirmed in extensive studies conducted in Austria as well as internationally. They have saved many human lives and protected many more from severe consequences such as long COVID. In the meantime, the fourth and fifth doses with adapted vaccines have been administered. Together with AGES, Med Uni Graz researchers have investigated how effective the fourth vaccine was in people who also had a history of SARS-CoV-2 infection.

**Four million Austrians analyzed**

This retrospective study used data from the AGES Epidemiological Reporting System (EMS) and the COVID-19 vaccine register, which was evaluated in the period at the end of 2022 and in the first half of 2023. It was possible to analyze the data of nearly four million people who had all been infected with SARS-CoV-2. The data was examined with regard to COVID-19 deaths as well as (new) infections with the virus and how the risk for people changed over time following vaccination. "How effective was the fourth vaccine in people who had previously been infected with SARS-CoV-2?" asks Stefan Pilz, indicating the main question of the study.

## The vaccine in a new phase of the pandemic

"We were able to show that people with a fourth vaccine had significant protection against infection with SARS-CoV-2, but this decreased over time (within about three months)," explain Alena Chalupka and Lukas Richter from AGES. No significant effect on COVID-19 mortality was found, possibly because COVID-19 mortality was generally at a very low level. Aspects such as a reduction in hospital stays, the general weakening of symptoms or the prevention of long COVID disease were not part of the study.

Vaccination has made a major contribution to ushering in the endemic phase of the pandemic. As before, the SARS-CoV-2 vaccine will continue to be assessed with regard to effectiveness (e.g., prevention of deaths, severe cases and new infections).

### Many questions are still open

While the study was able to provide many answers, it also raised several questions. These include how to interpret the data on the unvaccinated, who tend(ed) to get tested less frequently and which factors (vaccine, natural immunity, treatment options, mutations of the virus) have led to a reduction in mortality over time. Further studies and analysis must answer these questions.

### Further information and contact:

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### Profile: Stefan Pilz

Stefan Pilz is an associate professor and the head of the endocrinology outpatient clinic at the Medical University of Graz. His research concentrates on COVID-19 as well as clinical epidemiological research in the fields of types of hormone-induced hypertension and of vitamin D and calcium metabolism. Many of his publications have appeared in high-impact scientific journals as part of a variety of international cooperations. He is one of the most cited researchers at the Medical University of Graz.

### To the publication:

*Effectiveness of a fourth SARS-CoV-2 vaccine dose in previously infected individuals from Austria*

<https://onlinelibrary.wiley.com/doi/10.1111/eci.14136>