

# Waning of SARS-Cov-2 vaccine effectiveness against delta variant in COPD patients

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April 20, 2023

## Abstract

Although, the COVID-19 pandemic is profoundly changing, data on the effect of vaccination and duration of protection can still be advantageous, especially for patients with COPD, who are more vulnerable to respiratory infections. The Hungarian-COVID-19 registry was retrospectively investigated for vaccine effectiveness (VE) and daily risk for infection and hospitalization by time since the last vaccination and vaccine type in adults with COPD diagnosis and an exact-matched control group during the Delta VOC wave in Hungary. For the matching sex, age, major comorbidities, vaccination status, and prior infection was used on August 23, 2021. The study population included 373 962 cases divided into COPD patients (age:  $66.67 \pm 12.66$ ) and a 1:1 matched group (age:  $66.73 \pm 12.67$ ). In both groups, the female/male ratio was 52.2:47.7. There was no significant difference between the groups in daily risks for infection or hospitalization among the unvaccinated. Regarding vaccinated cases, a faster decline of effectiveness was noted for hospitalization prevention in the COPD group regardless of vaccine type. The VE reduction in this group was from 90.1% (mRNA) and 87.8% (other) to 48.8% and 34.1% respectively in 180 days. Based on the time-stratified multivariate Cox analysis of the vaccinated cases, the hazard ratio was 1.09 (95% CI: 1.05-1.14) for infection and 1.87 (95% CI: 1.59-2.19) for hospitalization in the COPD group. Based on our study COPD patients are at higher risk for SARS-Cov2 VE waning and have altogether a higher risk for infection and need for hospitalization emphasizing suggestion for revaccination measures in this patient population.

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