

# Some vaccinated losing more than 80% of their COVID-19 immunity six months after Pfizer shot: study

2 September 2021



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A new, multi-institutional study led by Case Western Reserve University—in partnership with Brown University—found that COVID-19 antibodies produced by the Pfizer vaccine decreased sharply in senior nursing home residents and their caregivers six months after receiving their second shots.

David Canaday, professor at the School of Medicine, and the research team studied blood samples of 120 Ohio nursing home residents and 92 health care workers. In particular, they looked at humoral immunity—also called antibody-mediated immunity—to measure the body's defenses against the coronavirus.

The researchers, including a lab team at Harvard University, found that individuals' antibody levels decreased more than 80% after six months; the results were the same in seniors (median age 76) and caregivers (median age 48) and old alike, according to the study.

After presenting their unpublished results directly to the senior staff at the Centers for Disease Control and Prevention (CDC), researchers were urged to get the data out in the public domain as soon as possible "so we could enter conversation and the decision-making process for booster vaccine recommendations," Canaday said. As a result, the researchers published the findings on *medRxiv*, an online preprint server for health sciences studies co-founded by Cold Spring Harbor Laboratory (CSHL), Yale University and the BMJ, a global healthcare knowledge provider, while the study is under review at a traditional peer-reviewed journal.

The sharp decline is particularly problematic for the seniors, because earlier research by Canaday and his colleagues found that within two weeks of receiving the second dose of vaccine and being considered "fully vaccinated," seniors who had not previously contracted COVID-19 already showed a reduced response in antibodies that was substantially lower than the younger caregivers experienced. By six months after vaccination, the blood of 70% of these nursing home residents had "very poor ability to neutralize the coronavirus infection in laboratory experiments," Canaday said.

The new research is part of a \$2.3 million grant from the National Institutes of Health to CWRU and Brown University. That work led to another \$4.9 million grant awarded in early August, from the CDC to Canaday and two other principal investigators—Stefan Gravenstein and Elizabeth White, at Brown University—to examine how long immunity lasts in nursing home residents and to research booster vaccines.

The results, Canaday said, support the CDC's recommendation for booster shots—especially for the elderly—due to fading immunity. And that boosters are even more important as the Delta

variant spreads nationwide.

Early in the pandemic, higher COVID-19 mortality among nursing home residents led to making them a priority for vaccination. Most nursing home residents received the Pfizer vaccine under the emergency use authorizations because it was the first available vaccine on the market.

**More information:** David H. Canaday et al, Significant reduction in humoral immunity among healthcare workers and nursing home residents 6 months after COVID-19 BNT162b2 mRNA vaccination, *medRxiv* (2021). DOI: [10.1101/2021.08.15.21262067](https://doi.org/10.1101/2021.08.15.21262067)

Provided by Case Western Reserve University  
APA citation: Some vaccinated losing more than 80% of their COVID-19 immunity six months after Pfizer shot: study (2021, September 2) retrieved 3 December 2021 from <https://medicalxpress.com/news/2021-09-vaccinated-covid-immunity-months-pfizer.html>

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