

 COVID-19 

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SARS-CoV-2 antibodies protect from reinfection

At a Glance

- People with SARS-CoV-2 antibodies, a sign of prior infection, were much less likely to test positive for COVID-19 in the following months.
- The findings suggest that commercial antibody tests could be used to help assess COVID-19 risk and inform public health decisions.

After being infected with SARS-CoV-2, the virus that causes COVID-19, most people develop antibodies against the virus. Antibodies are proteins produced by the immune system that can help fight off the virus if it's encountered again. However, the relationship between these antibodies and SARS-CoV-2 reinfection is still unclear. Reports of people contracting COVID-19 for a second time raise questions about antibody protection.

A research team led by Dr. Lynne T. Penberthy of NIH's National Cancer Institute (NCI) studied the likelihood of SARS-CoV-2 reinfection in people carrying antibodies against the virus. NCI researchers gathered data from more than 3.2 million people who had undergone SARS-CoV-2 antibody testing. Results were gathered from commercial labs, electronic medical records, and private insurers. Data was stripped of identifying information to ensure patient privacy.

The large dataset represented half of the commercial SARS-CoV-2 antibody tests conducted in the U.S. from January to August 2020. Findings were published in *JAMA Internal Medicine* on February 24, 2021.

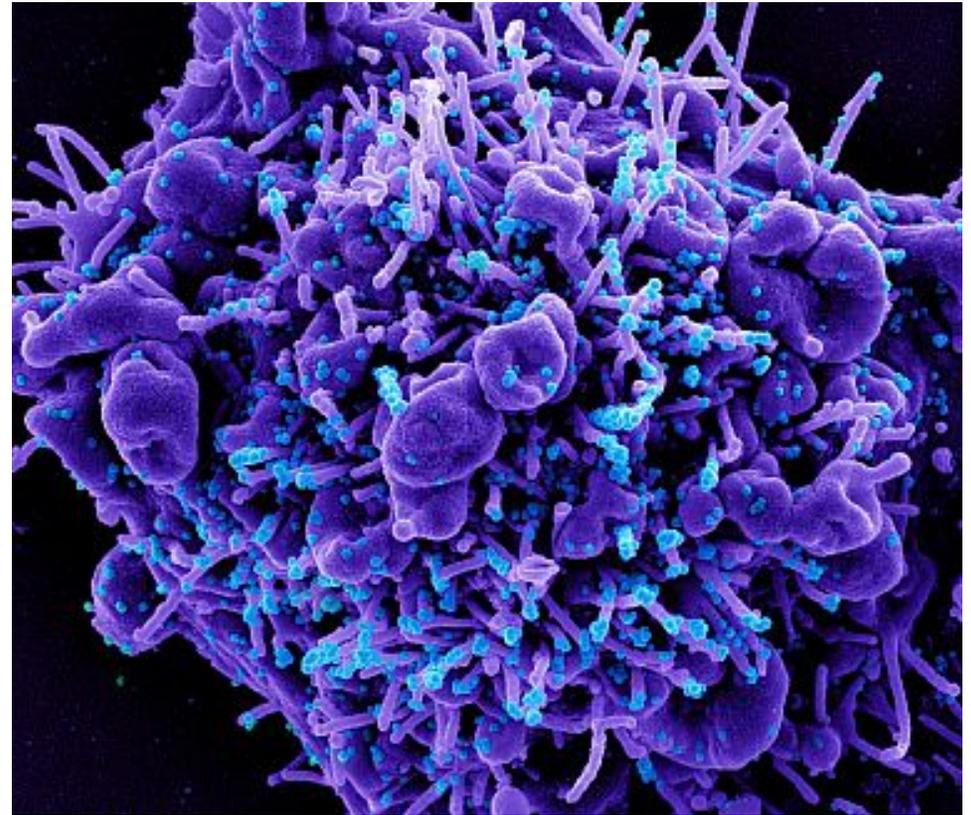
The team found that about 11% of people in the study had SARS-CoV-2 antibodies. More than 88% had a negative antibody test, while less than 1% of tests were inconclusive. The researchers then identified people who were later tested for active SARS-CoV-2 infection. The individuals were diagnosed using a nucleic acid amplification test, or NAAT (sometimes called a PCR or RT-PCR test). The test detects the virus's genetic material in nasal secretions or saliva. About 1 in 10 people in the study sought this testing.

The scientists analyzed test results at several intervals after the initial antibody testing: 0-30 days, 31-60 days, 61-90 days, and more than 90 days. They found a stable infection rate among people without the antibodies: 3% to 4% had a positive NAAT test at each interval. In contrast, those with SARS-CoV-2 antibodies became less likely to test positive for COVID-19 as time went on. At 90 days or more after the antibody test, only 0.3% of the antibody-positive people had a positive NAAT test—a rate 10-fold lower than among the antibody-negative individuals.

Similar to other studies, the researchers found that SARS-CoV-2 antibody levels declined with time. Over the course of the study, 18% of individuals carrying antibodies at the start eventually tested negative. However, other studies have shown that immune cells can also provide protection from the virus over time.

“The data from this study suggest that people who have a positive result from a commercial antibody test appear to have substantial immunity to SARS-CoV-2, which means they may be at lower risk for future infection,” Penberthy says. “Additional research is needed to understand how long this protection lasts, who may have limited protection, and how patient characteristics, such as comorbid conditions, may impact protection. We are nevertheless encouraged by this early finding.”

The antibody protection found in this study is comparable to that seen in reports from coronavirus vaccine clinical trials. These findings could help inform public health decisions, such as the return to physical workplaces, school attendance, and how best to prioritize vaccine distribution.



Colorized scanning electron micrograph of a dying cell (purple) infected with SARS-CoV-2 virus particles (blue), isolated from a patient sample. *NIAID*

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- [Humidity From Masks May Lessen Severity of COVID-19](https://www.nih.gov/news-events/nih-research-matters/humidity-masks-may-lessen-severity-covid-19) (https://www.nih.gov/news-events/nih-research-matters/humidity-masks-may-lessen-severity-covid-19)
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- [Experimental Coronavirus Vaccine Highly Effective](https://www.nih.gov/news-events/nih-research-matters/experimental-coronavirus-vaccine-highly-effective) (https://www.nih.gov/news-events/nih-research-matters/experimental-coronavirus-vaccine-highly-effective)
- [Antibodies and T Cells Protect Against SARS-CoV-2](https://www.nih.gov/news-events/nih-research-matters/antibodies-t-cells-protect-against-sars-cov-2) (https://www.nih.gov/news-events/nih-research-matters/antibodies-t-cells-protect-against-sars-cov-2)
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