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Covid-19: Antibodies protect against reinfection for at least six months, study finds

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The presence of SARS-CoV-2 antibodies confers subsequent immunity in most people for at least six months, a study of healthcare workers in Oxford, UK, has found.

Writing in the *New England Journal of Medicine*,[1] Sheila Lumley and members of the Oxford University Hospitals Staff Testing Group noted that reports of SARS-CoV-2 reinfection had been rare, suggesting that initial infection confers protective immunity, and that small scale studies suggest that this immunity is antibody mediated rather than cell mediated.

To determine the correlates and period of protection they followed 12 364 healthcare workers with a median age of 38 for a maximum of 31 weeks, which included the two peaks of infection in the UK in March-April and October-November 2020. After initial assessment of antibody status the researchers tracked the presence of viral RNA using polymerase chain reaction (PCR) over time.

They found that 1177 workers (9.4%) were antibody positive for the SARS-CoV-2 spike protein. In subsequent tests—conducted beyond a 60 day window period, to exclude the presence of the original viral RNA—88 workers who were initially seronegative seroconverted, taking the total of those who were positive to 1265.

"Substantially lower risk"

The results showed that positive antibody test results were associated with a lower rate of subsequent PCR positivity, suggesting a protective effect of the immune response to the original infection.

Among the 11 364 healthcare workers with negative antibody tests, 223 tested positive during the follow-up period, 100 during asymptomatic screening, and 123 while symptomatic. This equates to 1.09 PCR positive tests per 10 000 days at risk.

Among the 1265 workers with positive antibody tests, only two had subsequent positive PCR tests when they were followed up after 60 days to allow clearance of the original infection (0.13 per 10 000 days at risk). Both of those workers were asymptomatic, and none of the originally SARS-CoV-2 seropositive workers reported symptomatic infection.

Parallel testing for antibodies against another SARS-CoV-2 antigen, the nucleocapsid protein, revealed similar results.

Lumley and colleagues concluded that, among a predominantly healthy population aged 65 or younger, there was "a substantially lower risk of reinfection with SARS-CoV-2 in the short term among health care workers with anti-spike antibodies . . . than among those who were seronegative."

However, they said that "further studies are needed to assess post-infection immunity in other populations, including children, older adults, and persons with coexisting conditions, including immunosuppression."

1 Lumley SF, O'Donnell D, Stoesser NE, etalOxford University Hospitals Staff Testing Group. Antibody status and incidence of SARS-CoV-2 infection in health care workers. *N Engl J Med* 2020. doi: 10.1056/NEJMoa2034545. pmid: 33369366

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