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# UK Biobank COVID-19 antibody study: final results

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## Methodology

UK Biobank collected monthly blood samples and data on potential symptoms from over 20,000 UK Biobank participants, their adult children and grandchildren, to determine the extent of past infection with SARS-CoV-2 in different population subgroups across the United Kingdom.

Between 27 May and 4 December 2020, 18,893 individuals (93.5%) provided at least one sample that was successfully assayed at the Target Discovery Institute (University of Oxford).

Participants took a finger-prick blood sample using a kit sent to their home every month for 6 months. All study participants were also invited to complete a symptom survey at the time of blood collection.

## Results

One of the most significant findings of the study is that 99% of participants who had tested positive for previous infection retained antibodies to SARS-CoV-2 for 3 months after being infected, and 88% did for the full 6 months of the study. This discovery provides an early indication that the antibodies produced following natural infection may protect most people against subsequent infection for at least 6 months.

The proportion of the population with antibodies to SARS-CoV-2 ('seroprevalence', which indicates past infection) rose from 6.6% at the start of the study (May/June 2020) to 8.8% by the end of it (November/December 2020).

Across the various population groups included in the study, it was found that:

SARS-CoV-2 seroprevalence was most common in London (12.4%) and least common in Scotland (5.5%)
there was no difference in seroprevalence by gender, but the proportion of participants with detectable antibodies was higher in younger people (13.5% among those under 30) and lowest in the elderly (6.7% among those over 70)
the seroprevalence of SARS-CoV-2 was highest among participants of black ethnicity (16.3%) and lowest among those of white (8.5%) and Chinese ethnicities (7.5%)
The most common symptom associated with having antibodies to SARS-CoV-2 was a loss of sense of taste and smell, which was reported by 43% of sero-positive participants.

About one quarter (24%) of sero-positive participants were completely asymptomatic and 40% did not have one of the 3 'classic' COVID-19 symptoms (fever, persistent dry cough or loss of sense of taste or smell).

## Conclusion

The 6-month results demonstrate the persistence of antibody levels after infection, which may be indicative of long-term protection.

Biobank UK

# UK Biobank study shows that COVID-19 antibodies remain for at least 6 months post-infection for the vast majority of people who have had the virus

February 3rd 2021

**Study found that 8.8% of the UK population had been infected by December 2020, rising as high as 12.4% in London and as low as 5.5% in Scotland.**

**3 February 2021, London** – UK Biobank, the UK's major biomedical database and research resource, today reports the 6-month results of a major government-backed study of SARS-CoV-2 infection. The study measured the levels of previous infection in various population groups across the UK, as well as how long antibodies persisted in those who were infected.

## Key findings

One of the most significant findings of the study is that 99% of participants who had tested positive for previous infection retained antibodies to SARS-CoV-2 for 3 months after being infected, and 88% did so for the full 6 months of the study. This discovery provides an early indication that the antibodies produced following natural infection, and potentially following vaccination, may protect most people against subsequent infection for at least 6 months.

## Additional results

For the 6-month period from the end of May 2020 to the beginning of December 2020, UK Biobank collected monthly blood samples and data on potential symptoms from 20,200 UK Biobank participants and their adult children and grandchildren. The study also found that:

- The proportion of the population with antibodies to SARS-CoV-2[1] ('seroprevalence', which indicates past infection) rose from 6.6% at the start of the study period (May/June 2020) to 8.8% by the end of it (November/December 2020).
- Across the various population groups included in the study, it was found that:
  **->** SARS-CoV-2 seroprevalence was most common in London (12.4%) and least common in Scotland (5.5%).[2]
  **->** There was no difference in seroprevalence by gender, but the proportion of participants with detectable antibodies was higher in younger people (13.5% among those under 30) and lowest in the elderly (6.7% among those over 70).
  **->** The seroprevalence of SARS-CoV-2 was highest among participants of Black ethnicity (16.3%) and lowest among those of White (8.5%) and Chinese ethnicities (7.5%).
  The most common symptom associated with having antibodies to SARS-CoV-2 was a loss of sense of taste and smell, which was reported by 43% of sero-positive participants.
- About one-quarter (24%) of sero-positive participants were completely asymptomatic and 40% did not have one of the three 'classic' COVID-19 symptoms (fever, persistent dry cough or loss of sense of taste or smell).

The data will be added to the UK Biobank database and research resource, enabling scientists globally to conduct further research into how SARS-CoV-2 infection affects health over the longer-term.

"We are incredibly grateful to all the UK Biobank participants, and their children and grandchildren, who provided us with their blood samples for 6 months. This important study has revealed that the vast majority of people retain detectable antibodies for at least 6 months after infection with the coronavirus. Although we cannot be certain how this relates to immunity, the results suggest that people may be protected against subsequent infection for at least 6 months following natural infection and, potentially, vaccination. More prolonged follow-up will allow us to determine how long such protection is likely to last."

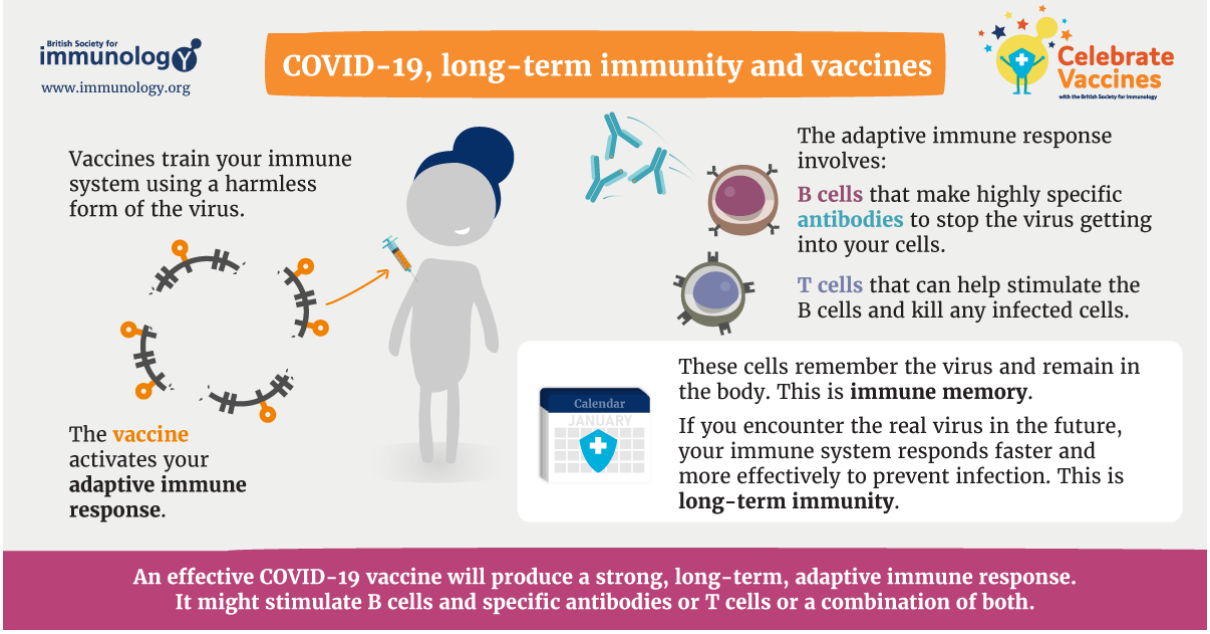
**Professor Naomi Allen, UK Biobank Chief Scientist**
"This government-backed study provides further valuable insight into antibodies and increases our understanding of the virus, and I want to thank all of the talented researchers and everyone who volunteered to take part. While the findings offer some promise, now is not the time for complacency. We still do not fully understand how long protection from antibodies may last, and we know people with antibodies may still be able to pass the virus on to others. Right now, it remains vital for everyone to stay at home, even if you have had COVID-19 in the past, so we can stop the spread of the virus, protect the NHS and save lives."

**Lord Bethell, Health Minister**
"These latest results provide useful confirmation of the maintenance of antibodies to SARS-CoV-2 over six months. Having the results of the study available within UK Biobank's rich resource will allow further understanding of the disease impact over time."

British Society of Immunology

## COVID-19 vaccine Q&A

https://www.immunology.org/coronavirus/connect-coronavirus-public-engagement-resources/covid-19-vaccine-qa




"On this page, you will find video question and answer sessions about vaccines for COVID-19. We took vaccine questions and concerns from the public on our Instagram channel and put them to our BSI members and expert immunology scientists, Dr Megan MacLeod, Prof Sheena Cruickshank and Dr Nigel Francis. In the videos, Megan, Sheena and Nigel answer your questions and explore the details of how the vaccines work, who will receive the vaccines, how long immunity might last to a vaccine, how herd immunity can protect us, the importance of receiving two doses and lots more."

https://www.youtube.com/watch?v=y7gwzOgDsew

#TheFacilitiesManager