

The SIREN study was established early in the pandemic with participants undergoing regular testing for up to 2 years. Analysis of these testing samples helps the UK to evaluate the immune response to COVID-19, build understanding of the protection offered by vaccines and provide insight into COVID-19 reinfections.

Healthcare workers are enrolled in the study via the hospital site they work at. A total of 135 sites have participated in the study involving almost 45,000 participants, making SIREN the largest study of its kind globally. The SIREN study is UK-wide, running in partnership with the Public Health Agency Northern Ireland, Public Health Scotland and Public Health Wales.

The SIREN study is registered with [ISRCTN](https://www.isrctn.com/ISRCTN11041050) (<https://www.isrctn.com/ISRCTN11041050>).

Our story:

[The SIREN Study: Our story - YouTube](https://www.youtube.com/watch?v=omYdsKR5EPw) (<https://www.youtube.com/watch?v=omYdsKR5EPw>)

Hear from SIREN study research teams:

[The SIREN Study: Hear from our research teams - YouTube](https://www.youtube.com/watch?v=b3hy2ZG8LWI) (<https://www.youtube.com/watch?v=b3hy2ZG8LWI>)

Hear from SIREN study participants:

[The SIREN Study: Hear from our participants - YouTube](https://www.youtube.com/watch?v=7eKaX4LFjYc) (<https://www.youtube.com/watch?v=7eKaX4LFjYc>)

Locations

One-hundred-and-thirty-five sites across the UK contributed to the first year of the SIREN study, with 87 sites contributing to the second-year extension – see [locations list here](#).

Findings

The SIREN study has provided valuable evidence on immunity following SARS-CoV-2 infection and COVID-19 vaccination and provided surveillance data on infection and emerging variants. This evidence has played a critical role in informing the national COVID-19 response.

In January 2021 the SIREN study published its first analysis of protection following SARS-CoV-2 infection. Crucially the analysis showed that reinfection was possible and could occur, but that there was an over 80% reduction in infection among people who had previously contracted COVID-19 compared to those who had not.

In spring 2021 when the Alpha variant was dominant in the UK the SIREN study published its first analysis on the effectiveness of COVID-19 vaccines, focusing

primarily on the Pfizer vaccine. The analysis showed that short-term vaccine effectiveness against infection 21 days after the first dose was 70% in the study population of healthcare workers and rose to 85%, 7 days after the second dose was received.

In February 2022 a later publication by the SIREN study looked at protection against SARS-CoV-2 infection following both previous infection and vaccination. It found that in previously uninfected individuals, 2 doses of the Pfizer vaccine were associated with high short-term protection against SARS-CoV-2 infection but that this protection reduced considerably after 6 months. Among those with a previous infection vaccination appeared to boost their immunity, providing strong and longer lasting protection. This provided important insights for COVID-19 vaccination programmes.

The SIREN study has published several articles to share its findings.

Examples include:

- The New England Journal of Medicine (February 2022): [Protection against SARS-CoV-2 after COVID-19 vaccination and previous infection](https://www.nejm.org/doi/full/10.1056/NEJMoa2118691) (<https://www.nejm.org/doi/full/10.1056/NEJMoa2118691>)
- The Lancet (April 2021): [COVID-19 vaccine coverage in health-care workers in England](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00790-X/fulltext) ([https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)00790-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00790-X/fulltext)) and effectiveness of BNT162b2 mRNA vaccine against infection (SIREN): a prospective, multicentre, cohort study
- The Lancet (April 2021): [SARS-CoV-2 infection rates of antibody-positive compared with antibody-negative health-care workers in England](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00675-9/fulltext): ([https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)00675-9/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00675-9/fulltext)) a large, multicentre, prospective cohort study (SIREN)
- medRxiv (April 2022): [Determinants of SARS-CoV-2 anti-spike antibody 2 levels](https://www.medrxiv.org/content/10.1101/2022.04.21.22274025v1) (<https://www.medrxiv.org/content/10.1101/2022.04.21.22274025v1>) following BNT162b2 vaccination: cross sectional analysis of 6,000 SIREN study participants
- Journal of Infection (February 2022): [Serological profile of first SARS-CoV-2 reinfection cases](https://pubmed.ncbi.nlm.nih.gov/34600935/) (<https://pubmed.ncbi.nlm.nih.gov/34600935/>) detected within the SIREN study
- The British Medical Journal (July 2022): [Burden of SARS-CoV-2 infection in healthcare workers during second wave in England and impact of vaccines](https://doi.org/10.1136/bmj-2022-070379) (<https://doi.org/10.1136/bmj-2022-070379>): prospective multicentre cohort study (SIREN) and mathematical model

Partners

The UK Health Security Agency (UKHSA) runs the SIREN study in partnership with NHS sites, the Public Health Agency Northern Ireland, Public Health Scotland and Public Health Wales.