

**SARS-CoV-2-specific antibody detection in healthcare workers in a UK maternity
Hospital: Correlation with SARS-CoV-2 RT-PCR results**

Asma Khalil^{1,2}, Robert Hill^{3,4}, Alison Wright^{3,5}, Shamez Ladhani^{6,7}, Pat O'Brien^{8,9}

¹Fetal Medicine Unit, St George's Hospital, St George's University of London, Cranmer Terrace, London SW17 0RE, UK

²Vascular Biology Research Centre, Molecular and Clinical Sciences Research Institute, St George's University of London, Cranmer Terrace, London SW17 0RE, UK

³The Portland Hospital for Women and Children, 205-209 Great Portland St, London W1W 5AH, UK

⁴Great Ormond Street Hospital, Great Ormond Street, London WC1N 3JH, UK

⁵Royal free Hospital, London NW3 2QG, UK

⁶Immunisation and Countermeasures Division, Public Health England, London, 61 Colindale Avenue London NW9 5EQ, UK

⁷Paediatric Infectious Diseases Research Group, St. George's University of London, UK

⁸The Royal College of Obstetricians and Gynaecologists, London, 10-18, Union St, London SE1 1SZ, UK

⁹University College London Hospitals NHS Foundation Trust, London, 235 Euston Rd, Bloomsbury, London NW1 2BU, UK

Corresponding author:

Professor Asma Khalil MRCOG MD MSc (Epi) DFRS Dip (GUM)

Address:

Fetal Medicine Unit

Department of Obstetrics and Gynaecology

St. George's University Hospitals NHS Foundation Trust

Blackshaw Road

London SW17 0QT

United Kingdom.

Email address: akhalil@sgul.ac.uk

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Dear Editor,

During the ongoing COVID-19 pandemic, staff shortages due to illness, self-isolation and redeployment have been a major challenge. Universal healthcare worker (HCW) testing is potentially useful in ameliorating workforce depletion and reducing asymptomatic spread of SARS-CoV-2. Nasopharyngeal swab polymerase chain reaction (RT-PCR) can diagnose only current or recent infection; testing for antibody responses against SARS-CoV-2 could enhance the ability to expedite reinstatement of services, while ensuring patient and staff safety. Tests are now available for immunoglobulin (Ig) G against the SARS-CoV-2 nucleocapsid protein; the Abbott SARS-CoV-2 IgG ELISA is reported to have high specificity (99.9%) and sensitivity (96.9%).¹ In London, England, HCW at the Portland Hospital for Women and Children are routinely swabbed for SARS-CoV-2 as part of hospital surveillance policy and asked to self-isolate if infected. Between May 15-28, 2020, 190 HCW who had previously had a nasopharyngeal swab for SARS-CoV-2, were screened for SARS-CoV-2 IgG antibodies. Informed consent included acknowledgement that a positive result should not be considered an 'immunity certificate'.

SARS-CoV-2 IgG antibodies were detected in 41 (22%) HCWs, including all 25 [19 (76%) symptomatic, 6 (24%) asymptomatic] previously testing positive for SARS-CoV-2 on nasopharyngeal swab RT-PCR. At the same time, 16/165 (10%) HCWs who tested negative for SARS-CoV-2 on nasopharyngeal swab, of whom 2 (12.5%) had reported COVID-19-like symptoms, were positive for SARS-CoV-2 IgG. Of those positive for IgG, 39% had previously tested negative on nasopharyngeal swab (Figure). Risk factors associated with an increased risk of severe COVID-19 are included in the Figure.

We previously reported that 32% of HCW testing positive for SARS-CoV-2 on nasopharyngeal swab were asymptomatic at the time.² Symptomatic and asymptomatic SARS-CoV-2 positive adults have similar viral loads and infectious virus isolation.³ Our finding that both of these groups developed SARS-CoV-2 IgG antibodies is reassuring.

Of those testing positive for SARS-CoV-2 IgG, 39% had an earlier negative nasopharyngeal swab. Possible explanations are that either infection occurred at an interval before or after the swab test, or the swab RT-PCR gave a false negative result (due to poor swabbing technique, suboptimal storage conditions, delay in testing, or poor sensitivity of nasopharyngeal swabs, reported to be as low as 70%).⁴

The overall prevalence of SARS-CoV-2 IgG (22%) among HCW was higher than in the general population in London (17%) or across the UK (5%).⁵ Both symptomatic and asymptomatic infections were associated with SARS-COV-2 IgG antibodies, as were 10% of

HCW with negative nasopharyngeal swabs, despite the majority remaining asymptomatic. These findings are important for modelling SARS-CoV-2 transmission among HCW. Further studies are needed to establish whether these antibodies protect against re-infection and the duration of protection.

Potential Conflicts of Interest

R.H. reports personal fees as Medical Director from The Portland Hospital, outside the submitted work.

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Figure 1

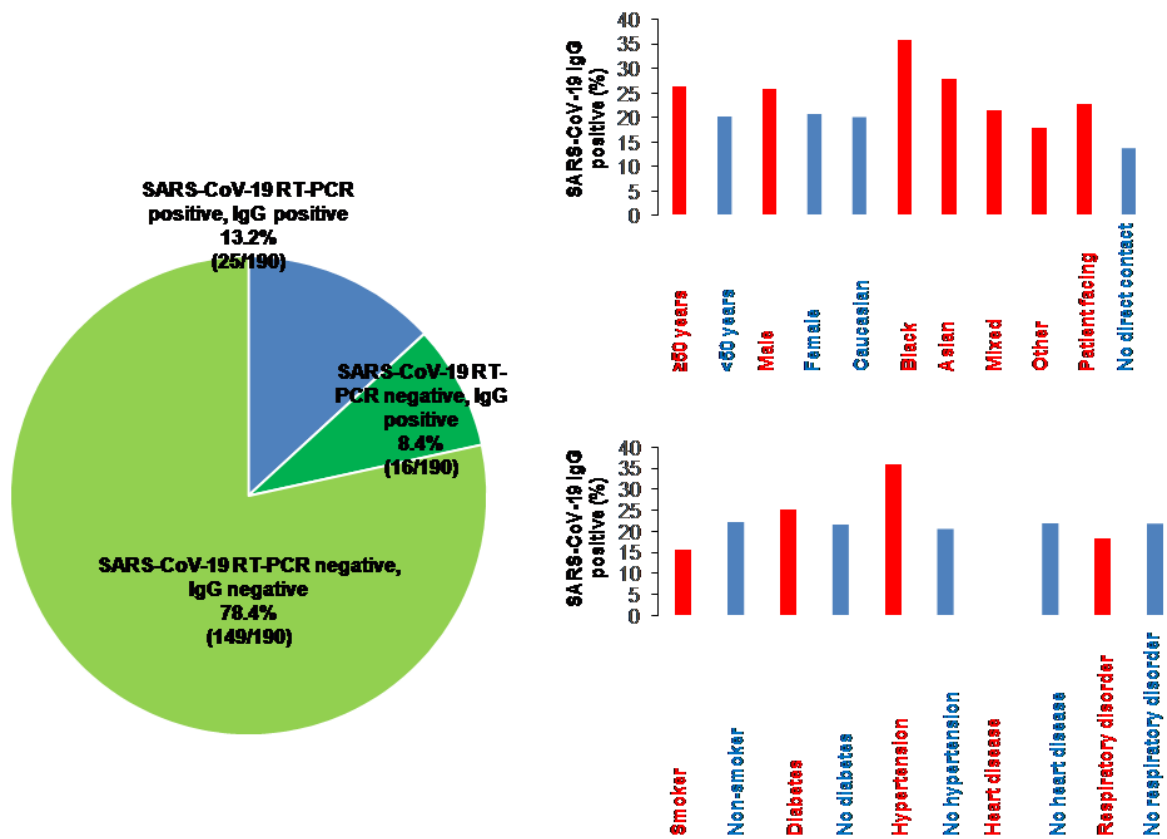


Figure . SARS-CoV-19 RT-PCR and IgG test results among 190 healthcare workers and their characteristics

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