Kinetics and seroprevalence of SARS-CoV-2 antibodies in children

Roarty, C., Tonry, C., McFetridge, L., Mitchell, H., Watson, C., Waterfield, T., & Covid Warriors research team (2021). Kinetics and seroprevalence of SARS-CoV-2 antibodies in children. *The Lancet Infectious Diseases*, *21*(6), e143. https://doi.org/10.1016/S1473-3099(20)30884-7

Published in:
The Lancet Infectious Diseases

Document Version:
Peer reviewed version

Seroprevalence and kinetics of SARS-CoV-2 antibodies in children - A prospective multicentre cohort study.

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Letter

There have been no longitudinal studies reporting the kinetics of SARS-CV-2 antibody responses in children. Here we report on the results from the second round of antibody testing from the *Seroprevalence of SARS-CoV-2 antibodies in children - A prospective multicentre cohort study* (1,2). This longitudinal prospective cohort study is designed to report the seroprevalence of SARS-CoV-2 antibodies in children from across the UK. The protocol and initial results have been described in detail already (1,2). Recruitment took place between 16th April and 3rd of July 2020 at five UK sites (Belfast, Cardiff, Glasgow, London and Manchester) and included healthy children aged 2-15 years of age.

Follow up clinics at all five UK sites took place between 26th June and 15th August 2020. Of the original 992 participants 849(85·6%) returned. Seroprevalence was measured using the Roche Elecsys® Anti-SARS-CoV-2 Total Antibody and DiaSorin LIAISON® SARS CoV-2 S1/S2 IgG assays. The median time interval between the initial and follow up clinics was 62 days (range 43 to 81 days).There were 65 (7·7%, 95% CI 6·05 to 9·64 N=849) reactive SARS-CoV-2 antibody tests (based on manufacturers suggested cut-offs). This was not significantly different to seroprevalence (6·9% 95% CI 5·4 to 8·6, N=992) reported during recruitment. The median age of participants with reactive antibody tests was 10·25 years (range 2·66 to 15·82 years). As with the baseline results there was a variation in seroprevalence between sites (Table 1).

All of the participants with reactive antibody tests that returned for follow up (n=45) had reactive antibody tests at clinic two. There were mean increases in antibody titres with both the Roche Elecsys® and DiaSorin LIAISON® assays; 31·08(95% CI 13·82 to 48·34, N=45) p=0·0007 and 9·32 (95% CI 0·31 to 27·46, N=45) p=0·0452, respectively.

These initial results indicate that antibody titres in those exposed to SARS-CoV-2 remain at a detectable level for at least 62 days and that in this cohort mean antibody titres increased. This is consistent with available data on antibody titres in adults (3,4).

Declarations

- Registration - https://www.clinicaltrials.gov (trial registration: NCT0434740) on the 15/04/2020.
- Ethical approval was obtained from the London - Chelsea Research Ethics Committee (REC Reference - 20/HRA/1731) and the Belfast Health & Social Care Trust Research Governance (Reference 19147TW-SW).
- Conflicts of interests: None declared.
- Funding: This work was supported by HSC R&D Division, Public Health Agency Ref: COM/5596/20. This funding source had no role in the design of this study and will not have any role during its execution, analyses, interpretation of the data, or decision to submit result.
- Authors contributions: Dr Waterfield is the chief investigator of the study and co-ordinated the running of the study including data management and site training. Dr Dr Watson, Dr Tonry and Dr Roarty were involved with data collection, data management, data analysis, sample processing and antibody testing. Dr McFetridge and Dr Mitchell provided statistical expertise and performed the statistical analysis. All authors contributed to the writing of the manuscript.
- Acknowledgements: We thank all of the children and their families who participated in this study. We also thank all of the sites (Belfast Health and Social Care Trust, The Ulster Independent Clinic, Cardiff and Vale University Health Board, NHS Greater Glasgow and Clyde, Public Health England, London, Manchester University NHS Foundation Trust, NIHR Manchester Clinical Research Facility) and staff who participated in screening and enrolment. Individual thanks to Elizabeth Waxman, Derek Fairley, Gala Roew-Setz, James McKenna, Peter Mallet, Ryan Chrisite, Katherine Christie, Emma McManus, Christian Bennison, Kate Mullan and Aleksandra Metryka, Rebecca Moore, Kathryn Ferris, Alison Watt, Claire McGinn, Steven Foster, Jennifer Evans, Mark D Lyttle, Shazad Ahmad, Shamez Ladhani, Michael Corr, Julie-Ann Maney and Sharon Christie.
- Data Sharing: All of the individual participant data collected during this study will be available (including data dictionaries) on the Queen's University Belfast database within 3 months of completion of the study.

Table 1: Summary of seroprevalence by site. (Number and % unless stated)

SITE	FIRST ROUND (NUMBER REACTIVE)	SECOND ROUND (NUMBER REACTIVE)	FIRST ROUND PERCENTAGE REACTIVE (95% CI)	SECOND ROUND PERCENTAGE REACTIVE (95%CI)
ALL	992(77)	849(65)	7.76(6.26-9.59)	7.66(6.05,9.64)
LONDON	199(26)	135(20)	13.07(9.07,18.46)	14.81(9.8,21.78)
BELFAST	215(6)	200(4)	2.79(1.29,5.95)	2(0.78,5.03)
CARDIFF	178(10)	134(7)	5.613(3.08,10.03)	5.22(2.55, 10.39)
GLASGOW	224(20)	210(19)	8.93(5.85,13.39)	9.05(5.87, 13.7)
MANCHESTER	176(15)	170(15)	8.52(5.23,13.58)	9.82(5.42,14.05)

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