Longevity of mucosal and systemic SARS-CoV-2 antibodies in South-African vs Dutch children with respiratory tract infections

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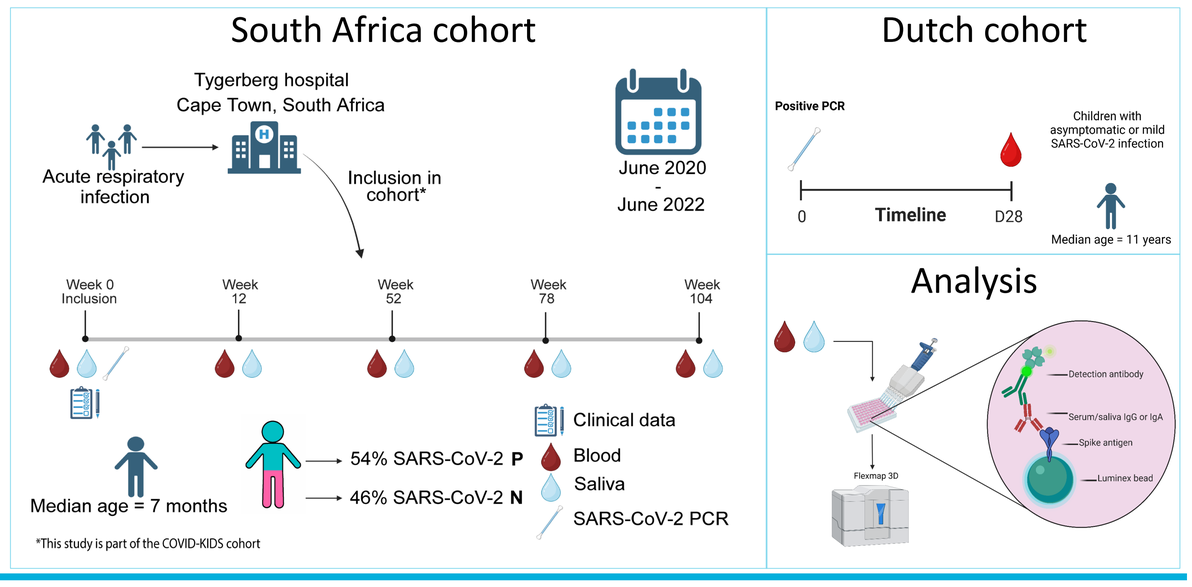
Introduction

- Children from low- and middle-income countries (**LMICs**) are disproportionally affected by **SARS-CoV-2**
- Several possible explanations exist for this observation, including lower antibody levels in **LMIC** children
- To provide a better understanding of antibody dynamics, we analyzed longitudinal **mucosal (saliva) and systemic (serum)** samples of a **paediatric** cohort from South Africa
- We compared antibody levels of the South Africa cohort with a **paediatric Dutch SARS-CoV-2** cohort

Material & Methods



Results

Antibody levels remain stable over time

No difference between COVID negative and positive group after W52

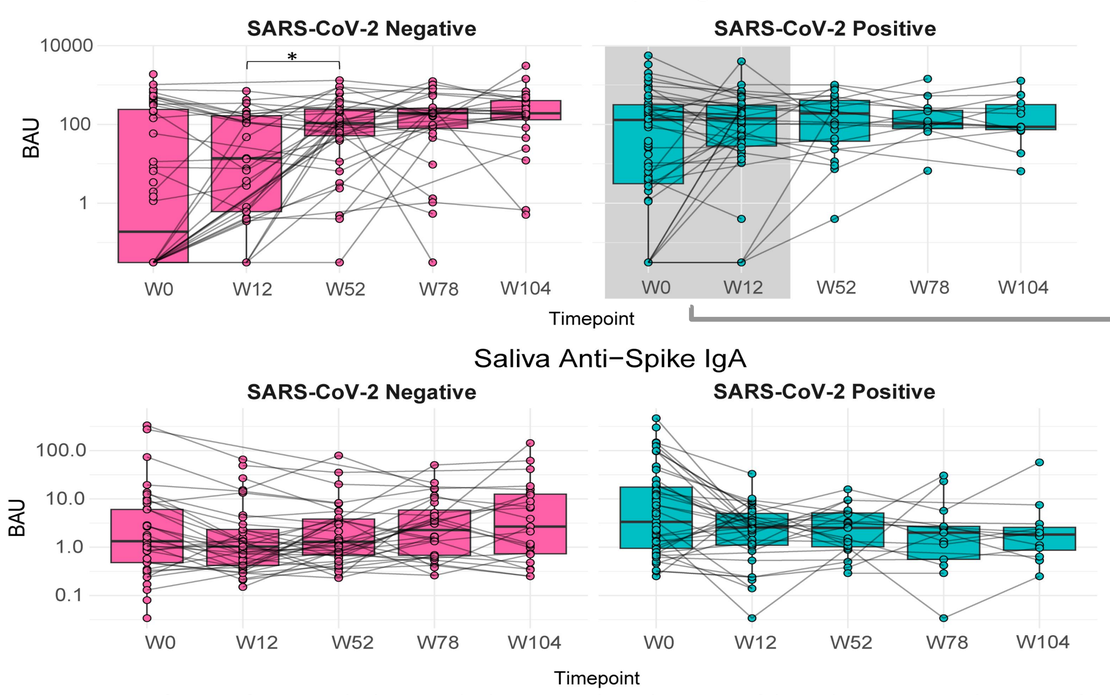


Figure 1. Quantification of serum and salivary antibodies against the Spike protein of the Wuhan strain over the course of the study. Grouping of patients was on a positive SARS-CoV-2 PCR diagnosis upon presentation in the hospital. Sampling was performed immediately after presentation. Significance was calculated with Wilcoxon signed-rank test with p<0.05*

Strong correlation serum and saliva IgG while IgA correlated moderately

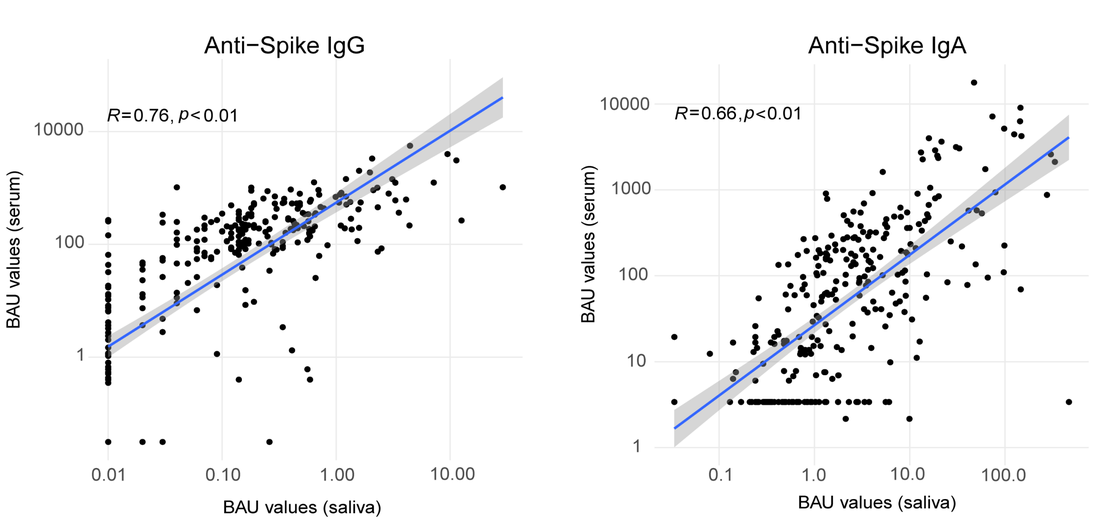


Figure 2. Correlation between serum and saliva anti-Spike IgA and IgG. Correlations were calculated with Spearman rank coefficient.

Higher serum antibody response in Dutch cohort despite lower disease burden

However, significant age difference between cohorts

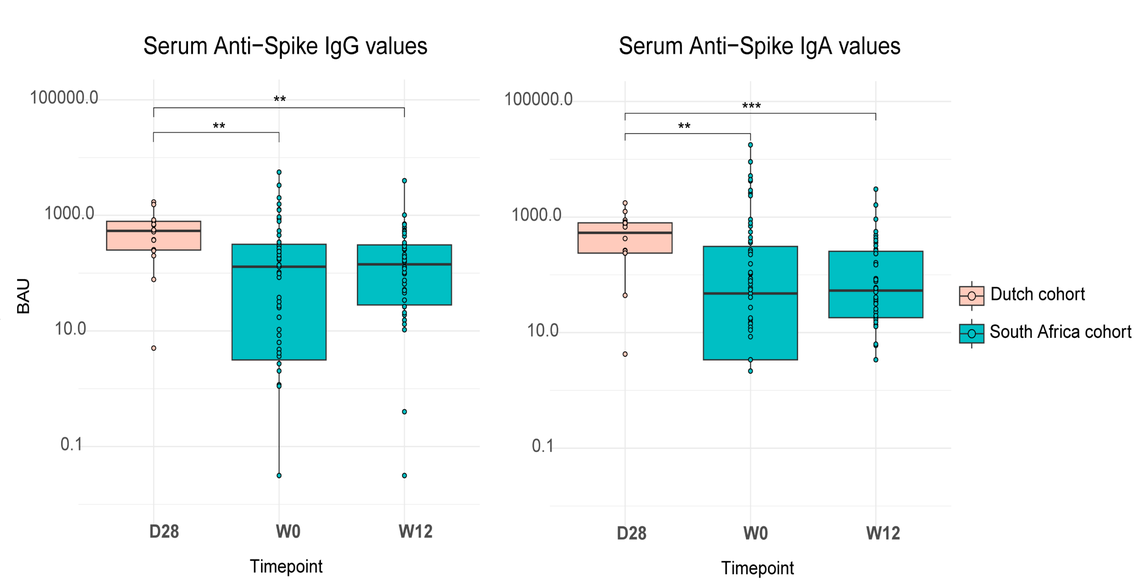


Figure 3. Comparison of anti-Spike IgA/IgG levels between Dutch and SA cohort 28 days (D28) and 12 weeks after positive test respectively. Significance was calculated with Wilcoxon signed-rank test with p<0.005**, p<0.0005***

Conclusion & Future plans

- Antibody levels peaked shortly after or at presentation and remained stable over the course of the study. The SARS-CoV-2 negative group showed similar antibody dynamics, pointing to widespread circulation
- Lower correlation of IgA between serum and saliva suggests possible local mucosal production of IgA antibodies
- Lower antibody levels in South Africa cohort could explain higher vulnerability of LMIC children to SARS-CoV-2
- Expand comparison by adding samples of hospitalised age-matched Dutch infants with SARS-CoV-2

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