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UPDATED ESTIMATES OF PREVALENCE OF SARS-CoV-2 ANTIBODIES AMONG SOUTH AFRICAN BLOOD DONORS

FOR IMMEDIATE RELEASE

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The South African National Blood Service (SANBS), in partnership with the Western Cape Blood Service (WCBS), and the Department of Science and Innovation/National Research Foundation Centre of Excellence (DSI-NRF COE) in Epidemiological Modelling and Analysis (SACEMA), based at Stellenbosch University, is hereby releasing preliminary results from analysis of new data from a survey of blood donors in eight (8) provinces (with the exceptions of the Western Cape), conducted to determine the prevalence of 'COVID antibodies' (antibodies against SARS-CoV-2, the virus that causes COVID-19 disease) in early November 2021, just before the late 2021 resurgence linked to the emergence of the omicron variant. A 'preprint' of the analysis is available at:

<https://www.researchsquare.com/article/rs-1359658/v1>

This study is a further round in several rounds of surveillance being conducted in South African blood donors. Previous analyses within this project have been published online:

<https://www.researchsquare.com/article/rs-690372/v2>

<https://www.researchsquare.com/article/rs-707813/v2>

Blood donor surveillance is one of the few relatively cost-effective ways of probing the extent of SARS-CoV-2 infection at the population level.

Given the maturation of the epidemic, the interpretation of antibody prevalence is becoming more complex, as increasing numbers of people are experiencing multiple infections (some of which they are not aware of) and various combinations of vaccine and natural infection induced antibody response. These permutations cannot be fully disentangled by our methodology. The assay being used (the Roche Elecsys anti-nucleocapsid) in the present study in particular, only detects antibodies produced by 'natural infection'.

SANBS is providing primary funding for this undertaking. SACEMA, and Vitalant Research Institute (VRI) are contributing self-funded analytical support. Human Research Ethics

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Committee (HREC) approval was obtained from the independently operated SANBS HREC. Donors were enrolled if they agreed to a having the remainder of their routine (hepatitis and HIV) safety screening sample tested for covid antibodies.

As was found in the previously published results,

- seroprevalence does not vary significantly between subgroups defined by age and sex,
- seroprevalence is seen to vary, with both statistical and epidemiological significance, between subgroups defined by province, and by race within provinces. (As noted before, this is consistent with the strong correlation, in South Africa, at the community level, between race and historically entrenched socioeconomic factors like density of settlement, transport, etc), and
- provincial estimates have been weighted by race.

Marion Vermeulen, Principal Investigator of the study at SANBS, comments: "We timed the current round of specimen collections on the anticipation that some sort of resurgence was likely in December. Of course, we knew nothing about an omicron variant at that time, but we hope that these numbers are useful in understanding the ongoing unfolding of the epidemic."

SANBS clinical investigations lead by Dr Karin van den Berg commented: "During the omicron wave, we saw new patterns of illness and transmission, including clear evidence that various forms of pre-existing immunity are not as effective against acquisition of the omicron variant as they would have been against earlier variants such as beta and delta."

SACEMA Research Professor Alex Welte comments: "As the epidemic matures, and more people are vaccinated, it becomes more difficult to interpret these prevalence estimates. A rough extrapolation to account for the omicron wave, which has come and gone since this data was collected, suggests that about 90% of black donors have thus far been infected by SARS-CoV-2, and that the 'attack rate' is about half that among white donors."

Acknowledgements: The core research team comprises (at SANBS) Charl Coleman, Tanya Glatt, Ronel Swanevelder, Wendy Sykes, Cynthia Nyoni, Avril Swarts, Karin van den Berg and Marion Vermeulen; (at WCBS) Russel Cable and Nadia Petersen; (at SACEMA) Laurette Mhlanga and Alex Welte; (at VRI) Eduard Grebe. This research is also made possible by many staff in the blood services who daily run the national blood supply system, including by supporting the many more donors, without whose selfless involvement there would be no blood supply, much less this research.

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Headline estimates of prevalence of anti SARS-CoV-2 antibodies

Province	Point Estimate (%)	95% Confidence Interval Lower bound (%)	95% Confidence Interval Upper bound (%)
Eastern Cape	73.5	66.0	81.0
Free state	74.6	67.5	81.6
Gauteng	67.9	64.9	70.9
Limpopo	65.6	54.6	76.5
Mpumalanga	73.4	67.2	79.6
Northern cape	63.4	48.1	78.7
North West	80.7	69.9	91.5
KwaZulu Natal	72.9	67.5	78.2
8 Province Mean	71.1	68.8	73.5

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