Serological responses to SARS-CoV2 vaccination in people with HIV: The SCAPE-HIV Study

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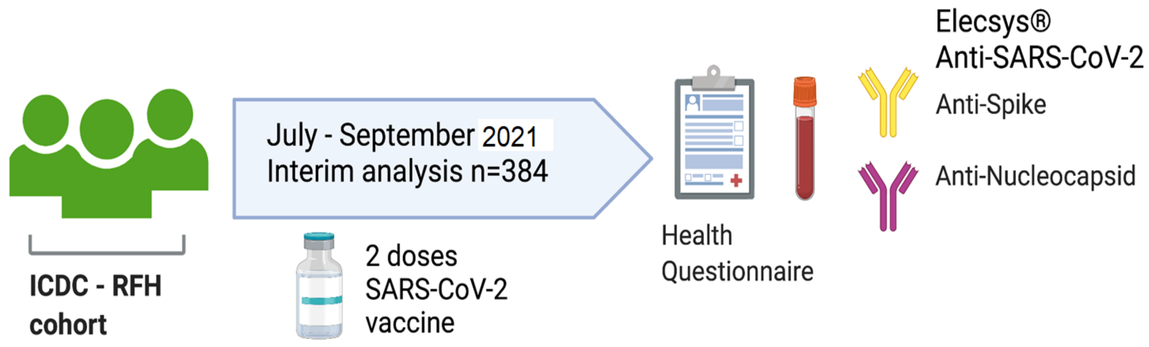
BACKGROUND

- People with HIV (PWH), despite efficient virological suppression on antiretroviral therapy (ART) often display blunted responses to vaccination
- There is a need to establish correlates of vaccine efficacy in PWH to tailor vaccine strategies to maximise protection against disease and new emerging variants
- To address this we set up the SCAPE-HIV Study (SARS-CoV-2 antibody prevalence in an HIV cohort) to determine antibody responses in PWH following SARS-CoV-2 infection and vaccination and evaluate parameters/clinical variables relating to antibody seroconversion/seropositivity

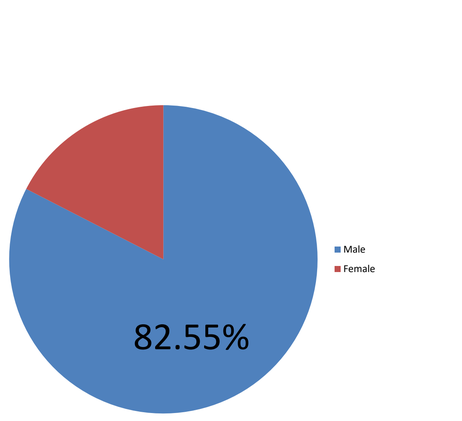
METHODS

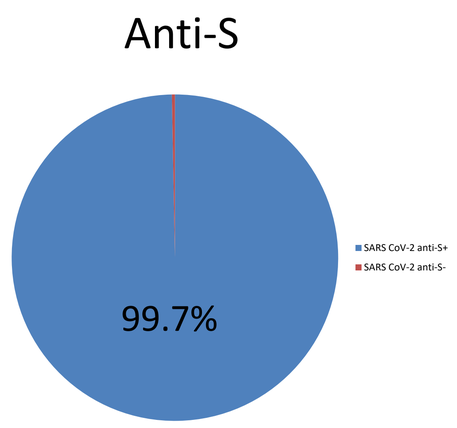
- SCAPE-HIV is an ongoing cross-sectional study in our adult cohort of PWH
- This interim analysis is restricted to 384 participants reporting 2 doses of SARS-CoV-2 vaccines
- Participants completed questionnaires about sociodemographics, medical history, prior COVID-19, and SARS-CoV2 vaccine uptake, including vaccine type received
- Anti SARS-CoV-2 spike and nucleocapsid antibodies were quantified using the commercial Roche assay at least 2 weeks post the last vaccine dose

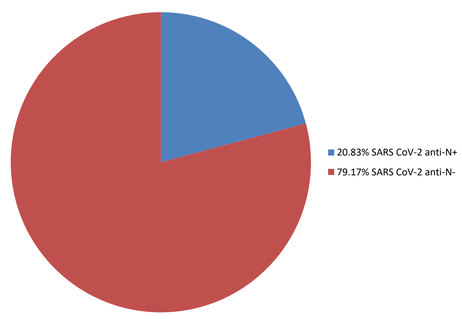


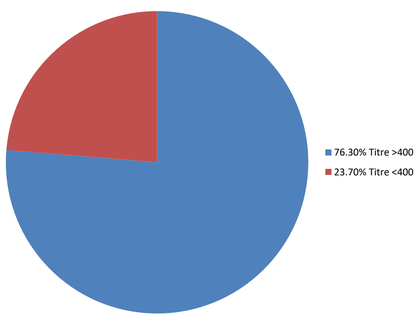
RESULTS

- 73.69% participants were white, 82.55% male, and 96.35% virally suppressed
- Our entire clinic, for comparison, is 36% white and 72% male, with 95% being virally suppressed
- 194/384 (50.5%) received two doses of the Oxford/Astra Zeneca vaccine, 133/384 (34.6%) received two Pfizer doses, 2/384 received other vaccines and the remainder have incomplete data currently
- 382/384 (99.47%) generated SARS-CoV2 anti-spike antibodies
- 2/384 (organ transplant recipients) failed to seroconvert post two vaccines
- Antibodies to nucleocapsid were detected in 80/384 (20.8%) consistent with prior infection
- 91/384 (23.69%) had an anti-Spike titre that fell below the lowest level reported in a health care workers study (<400 after second dose vaccine)
- Low titre was associated with age ≥60y (p=0.018)
- Sub-responders had a median age of 57 [IQR 51-62], median CD4 nadir 208 [79-302], median CD4 602 [423-752] and 88/91 (96.7%) had an undetectable viral load
- No clear associations were observed with current CD4 count or CD4 nadir
- As expected participants with history of SARS-CoV-2 infection had higher anti-spike antibody titres (p<0.001)









CONCLUSIONS

- Seroprevalence studies are a valuable tool to reveal the extent of seroconversion rates post vaccination guiding management of the pandemic
- The SCAPE-HIV Study is ongoing and we are offering resampling to participants who have received 3RD and 4TH vaccine doses
- White men are overrepresented in this sample. It is unclear if this is due to any bias in recruitment, or due to vaccine or research hesitancy in those not from these groups, and this is worthy of further exploration
- This preliminary analysis shows high levels of seroconversion in our study population (the majority of whom are well controlled on ART) and highlights an inverse relationship between age and antibody responses
- It remains to be determined how antibody titres corelate with functional protection against reinfection and cross protection against variants of concern, especially in people with suboptimal serological responses

The SCAPE HIV Study is cofunded by Roche and The Royal Free Charity