# **Three Doses of COVID-19 Vaccines in People with HIV: Immunogenicity and Effects on HIV Reservoir**

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#### Introduction

Older people with HIV (PWH) have a higher risk of complications from SARS-CoV-2 infection due to immunosenescence and potential immunodeficiency caused by HIV. It is unclear, however, whether COVID-19 vaccines with a booster (3 doses) elicit strong and lasting immunity in this population, or whether these vaccines can destabilize HIV reservoirs.

## **Objective**

To understand whether older PWH can develop strong and lasting immunity across different arms of the immune system in response to COVID-19 vaccines without adverse reactions from HIV reservoirs.

## **Methods**

**Participants:** 68 PWH on cART,  $\geq$  55 y.o. (immune responders, **IR**; immune non-responders, **INR**; low-level viremia, **LLV**; long-term non-progressors, LTNP); 23 HIV<sup>-</sup>  $\geq$  55 y.o.

Analyses: Spike/RBD Abs (serum, saliva); NT50, nAbs; anti-S Tcells; anti-RBD/NTD B cells; HIV reservoir (IPDA, T cells); clinical.

**Figure 1.** Study participants by HIV status (A); age distribution (B); the study timeline (C).



#### **Results**

4000

200 IgG,

20 RBD

0

BAU/mL 1000







## **Conclusions**

- ▶ PWH ≥ 55 y.o. show diminished nAb responses to SARS-CoV-2 with 2 vaccine doses which are 'rescued' after a booster.
- ▶ They have lower than HIV<sup>-</sup> anti-Spike IgA in saliva after vaccination which may affect protection (not shown).
- Enhanced spike-specific T cell immunity in PWH other than INR suggests Th1 imprinting from pre-existing HIV infection.
- COVID-19 vaccines did not destabilize the HIV reservoir in most PWH but were associated with an increased frequency

Figure 4. Changes in frequency of IL-2-secreting anti-Spike T cells at 24 and 48 weeks post-D1 relative to the baseline (ELISpot).

