

Antibody Response to SARS-CoV-2 Vaccination in US Veterans living with HIV

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Background

COVID-19 (C-19) vaccines have demonstrated effectiveness in reducing SARS-CoV-2 related morbidity/mortality.

The duration of protection in the general population is showing a waning immunity over time.

Variable antibody responses to C-19 vaccines have been shown in persons living with HIV.

We followed the anti-SARS-CoV-2 receptor binding domain (RBD) antibody titers, after 2 and 3 (booster) C-19 vaccinations, in US Veterans living with HIV (USVLH)

Methods

Retrospective chart review of USVLH who had received C-19 vaccinations at Northport VAMC.

Testing was done with the © Beckman Coulter enzyme immunoassay measuring total IgG antibody to the RBD, a critical target of neutralizing antibodies within the spike protein encoded in the mRNA vaccines.

Titers were drawn after the 2nd and 3rd doses C-19 vaccines in variable timing.

Secondary data reviewed:

- Demographics
- CD4⁺ T cell counts nadir and current
- HIV viral load
- Comorbid conditions

Tables

COVID-19 VACCINATED IN US VETERANS LIVING WITH HIV N=50	
Median Age: 65 years (36-75)	
49 men, 1 woman	
Caucasian 40%, Black 50%, Hispanic 10%	
Risk factor for HIV: Heterosexual 52%, IVDU 18%, MSM 26%, needle stick 2%, transfusion 2%	
Medical Conditions:	
Diabetes	30%
HTN	60%
COPD	8%
HLD	66%
ESRD	4%
Hep C	14%
Smokers	18%
COVID-19 VACCINES GIVEN:	
JANSSEN:	3
MOD-2:	4
MOD-3	5
PFZ-2	6
PFZ-3	32
ON HAART: 100%	
Bictegravir based: 30, Raltegravir 1, Elvitegravir 6, Dolutegravir 8, Efavirenz 2, Rilpivirine 2, Darunavir 1	
Titers checked after 2nd dose: median days 120 (11-392)	
Median titer 4.63 S/CO (0.17- 53.66)	
Titers checked after 3rd dose: median days 91 (5-181)	
Median titers 16.22 S/CO (1.15- 7392)	
MOD vs. PFZ after two doses: median titer 25.7 vs. 4.63 P: 0.039	
MOD vs. PFZ after three doses: median titer: 33.89 vs. 15.5 P: 0.117	

Results

We analyzed the SARS CoV-2 RBD IgG titers in 50 vaccinated USVLH.

- Median CD4 nadir was 200/μL (5- 600)
- Median current CD4 656 (174-1529).
- All USVLH were on HAART, 92% on INSTI-based therapy
- 45 had undetectable HIV viral load (<20), 5 had viremia from 22 to 563 copies

Six USV had C-19 prior to vaccination, and six had C-19 after vaccination with median 102 days (90-148) from last vaccine dose.

Vaccines given: Janssen, Moderna, Pfizer

IgG titers decrease with time after 2nd vaccine dose and increase after booster dose.

- Titers checked after 2nd dose (median days 120), median IgG 4.63
- Titers checked after 3rd dose (median days 91), median IgG 16.22
- Titers were higher in Moderna 2 vs. Pfizer 2, median 25.7 vs. 4.63, P: 0.039
- Titers were also higher in Moderna 3 vs. Pfizer 3, median 33.89 vs. 15.5, P: 0.117

No death due to COVID 19 was seen

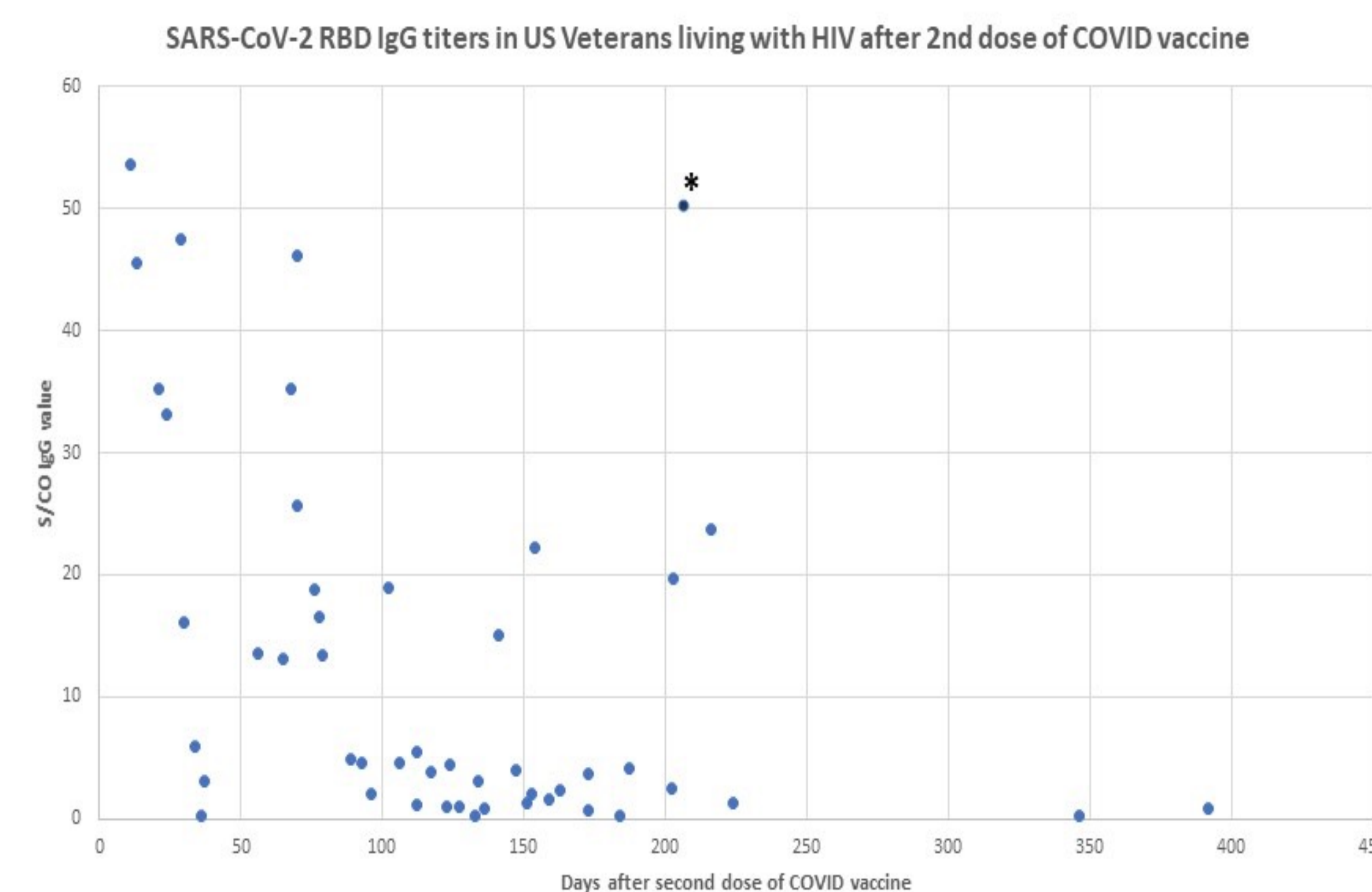
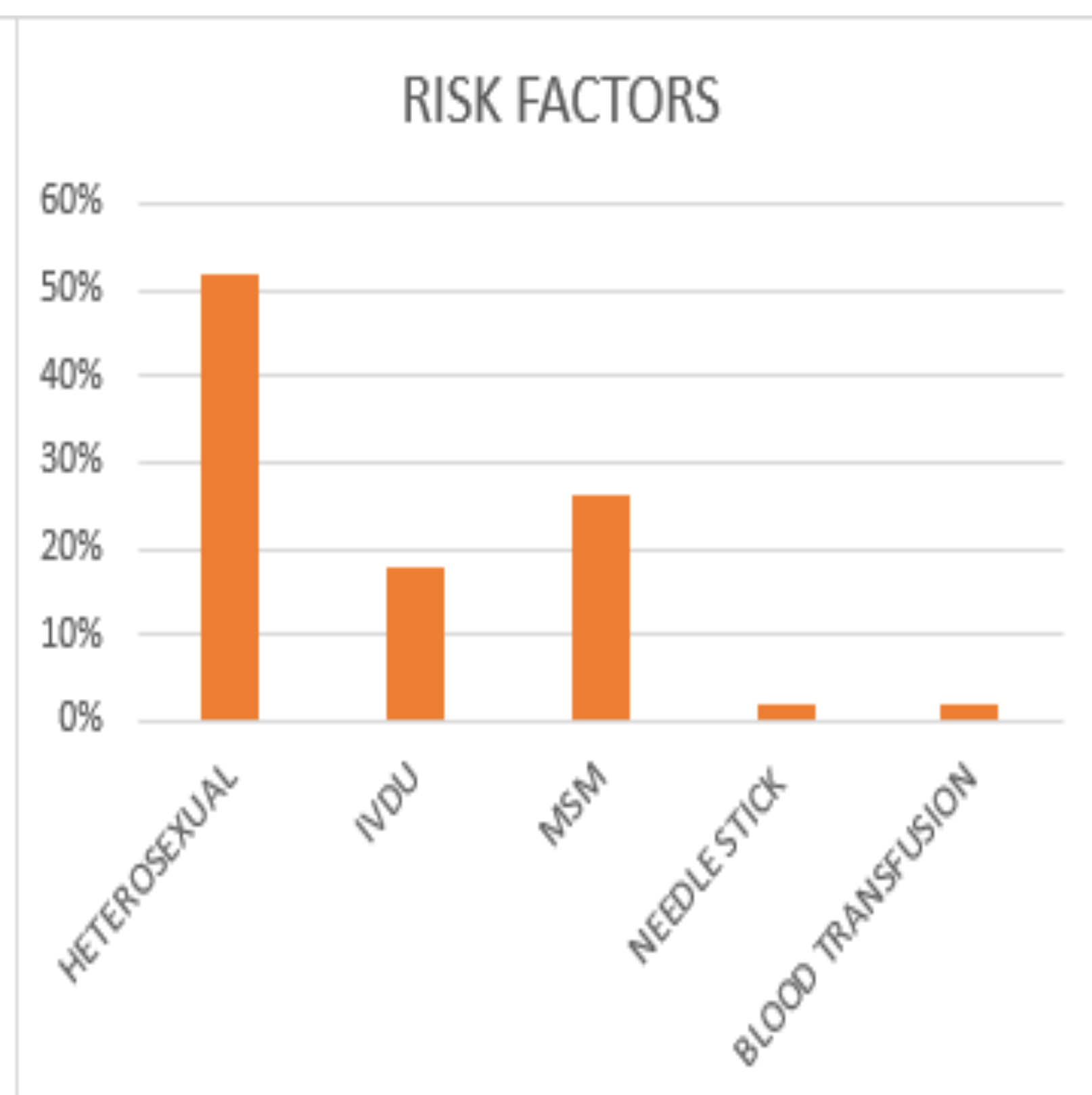
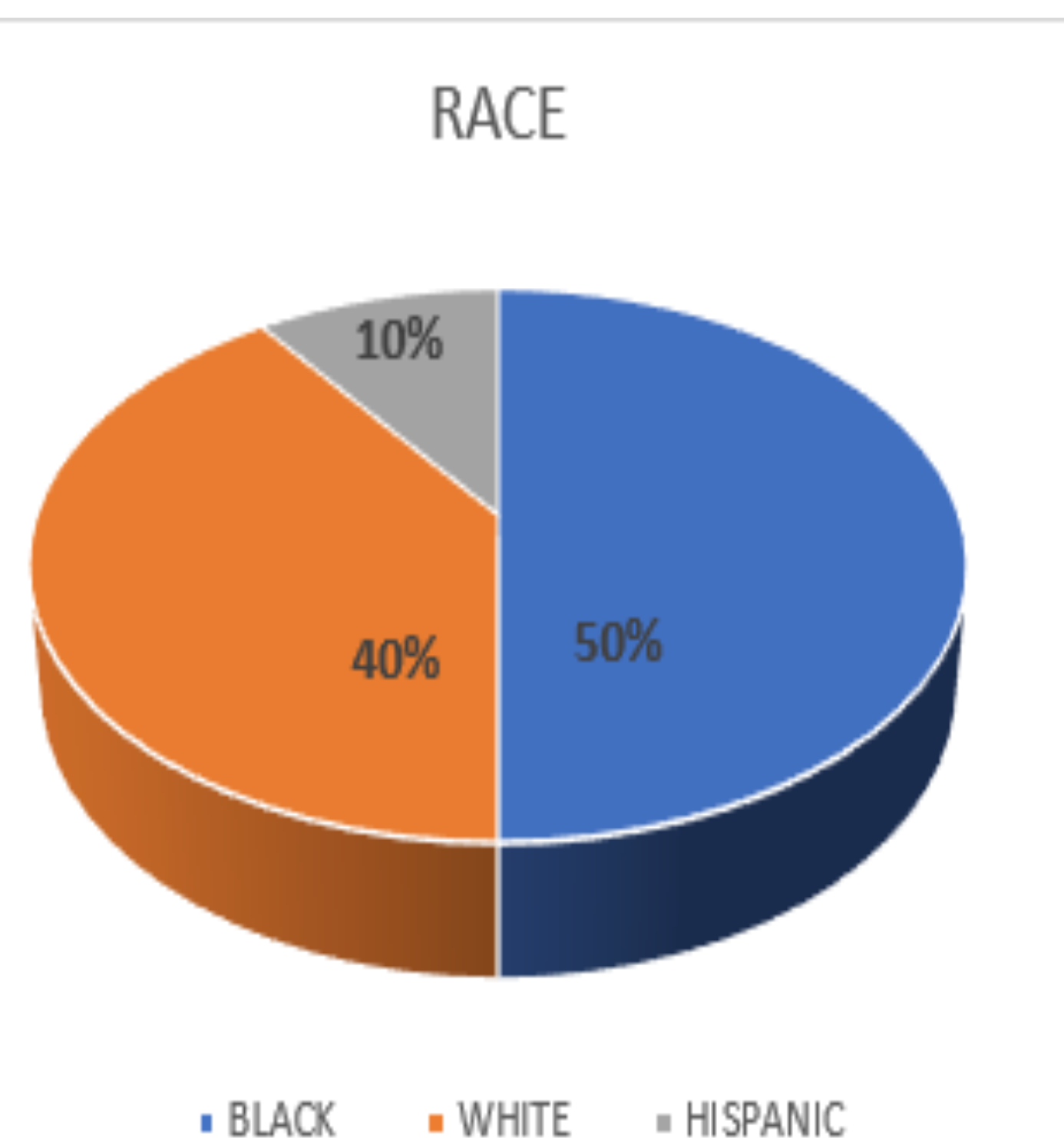
Conclusion

In a cohort of USVLH, well controlled on HAART, C-19 vaccinations produced a serologic response that decayed over time and increased after booster dose.

MOD vaccine may have achieved higher titers than PFZ

References

1. Spinelli M. SARS-CoV-2 Vaccination in people with HIV. *Lancet HIV* 2021;8:e455-456
2. Hassold N. Impaired antibody response to COVID-19 vaccination in advanced HIV infection. *AIDS* 2022; 36: F1-F5
3. Portillo V. Impact on HIV-1 RNA levels and antibody responses following SARS-CoV-2 vaccination in HIV-infected individuals. *Front Immunol.* 2022; doi: 10.3389/fimmu.2021.820126
4. Lombardi A. Anti-spike antibodies and neutralizing antibody activity in people living with HIV vaccinated with COVID-19 mRNA-1273: a prospective single-centre cohort study. *Lancet* 2022;13:100287



* Patient had COVID six weeks prior to blood draw

