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IMMUNOGENICITY OF HOMOLOGOUS VS. HETEROLOGOUS PRIME-BOOST VACCINATION REGIMENS AGAINST SARS-CoV-2 IN PEOPLE LIVING WITH HIV IN ARGENTINA: A PILOT STUDY

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Background

Vaccination campaign against SARS-CoV-2 began in Argentina in late December 2020. It included vaccines from different platforms: mainly viral vector (Sputnik V, AstraZeneca), and inactivated virus (Sinopharm) followed by mRNA (Moderna, Pfizer), which were used as homologous or heterologous schemes. People living with HIV (PLHIV) are vulnerable to COVID-19 complications and their immunization should be warranted. However, data regarding humoral response to those regimens in this population are scarce.[1-4] We aim to assess such outcome in PLHIV in Buenos Aires, Argentina.

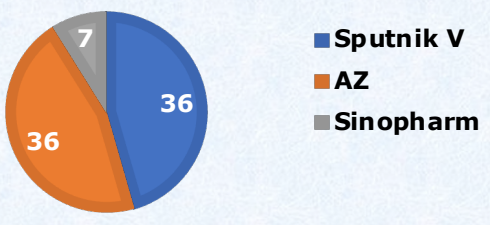
Materials and methods

- Prospective study in PLHIV assisted in an HIV ambulatory care center in Buenos Aires, Argentina. Period: August - December 2021
- Individuals who received two doses of SARS-CoV-2 vaccination and signed an informed consent form
- Detection of S1-RBD IgG antibodies was performed between days 28-60 after the second dose using the ADVIA Centaur® SARS-CoV-2 IgG chemiluminescent immunoassay, which provides a semiquantitative result (Siemens Inc., reference value: positive ≥1 U/mL) [5]
- Demographic, immunovirological status, history of COVID-19, seroconversion, and median antibody (Ab) titers were assessed and compared according to the regimen received (homologous vs. heterologous prime-boost). For statistical analysis, T-test, ANOVA, Chi^2 or Fisher exact tests were used as appropriate. The differences were established as significant with a *p value < 0.05*.

Results

- 100 individuals were enrolled
- Median time between the second dose and Ab measurement: 37 days
- **Overall, 97% of the individuals seroconverted;** median titer: 40 U/mL (11-150). Higher Ab titers correlated with higher CD4+ T-cell counts (p=0.007).[6]

79 subjects received homologous vaccination regimens



21 subjects received heterologous vaccination regimens

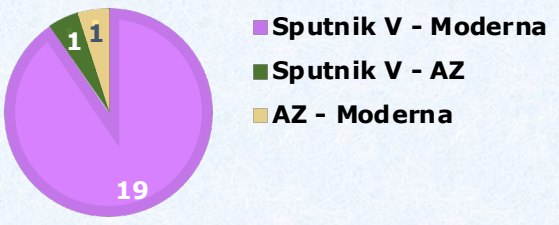


Table 1. Comparison according to the vaccination regimen received against SARS-CoV-2 (homologous vs. heterologous prime-boost)

Variable	Total (n = 100)	Homologous (n = 79)	Heterologous (n = 21)	*p*
Median Age, years (IQR)	**48** (39 – 54)	**47** (37 - 53)	**54** (51 - 59)	***0.019***
Sex, n (%) Female Male	 32 (32) 68 (68)	 25 (32) 54 (68)	 7 (33) 14 (67)	*0.155*
Median CD4+ T-cell count, cells./mm^3 (IQR)	622 (459-800)	620 (447 - 791)	620 (571 - 815)	*0.171*
Plasma HIV-RNA < 20 copies/mL, n (%)	96 (96)	75 (95)	21 (100)	*0.176*
History of COVID-19, n (%) No Yes	 90 (90) 10 (10)	 70 (89) 9 (11)	 20 (95) 1 (5)	*0.907*
Median time between the second dose and Ab measurement, days (IQR)	37 (32 – 50)	37 (32 - 50)	40 (36 - 50)	*0.381*
Ab titers ≥1 U/mL (POSITIVE), n (%)	97 (97)	76 (96)	21 (100)	*0.590*
Median Ab titers, U/mL (IQR)	**40** (11-150)	**30,7** (9 - 100)	**150** (78 - 150)	***0.005***

Conclusions

- **Most PLHIV developed an adequate immune humoral response regardless of the regimen received**
- **Our pilot study indicates that heterologous prime-boosted regimens, mostly including Moderna mRNA vaccine, provide stronger antibody response in PLHIV**
- **These findings agree with those observed in general population and supports the recommendation of heterologous vaccination use.**
- **Whether higher Ab titers have any clinical impact remains to be assessed in real life effectiveness studies.**

References

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