

# Behavioral and epidemiological survey on compliance to receive new booster doses of anti-SARS-CoV-2 vaccine in PLWH

G. Del Duca<sup>1</sup>, A. Vergori<sup>1</sup>, I. Sperduti<sup>2</sup>, A. Cozzi Lepri<sup>3</sup>, F. Drobniewski<sup>4</sup>, M. Fusto<sup>1</sup>, M. Plazzi<sup>1</sup>, V. Mazzotta<sup>1</sup>, J. Paulicelli<sup>1</sup>, R. Gagliardini<sup>1</sup>, A. Antinori<sup>1</sup>

<sup>1</sup>Clinical and Research Department, National Institute for Infectious Diseases Lazzaro Spallanzani IRCCS, Rome, Italy; <sup>2</sup>Biostatistics and Bioinformatics Unit-Scientific Direction, IRCCS Regina Elena National Cancer Institute, Rome, Italy; <sup>3</sup>Centre for Clinical Research, Epidemiology, Modelling and Evaluation (CREME), Institute for Global Health, University College London, London, UK; <sup>4</sup>Global Health, Tuberculosis and Microbiology, Infectious Diseases, Imperial College London, London, UK

## Introduction/Summary

- Currently, rejecting new anti-SARS-CoV-2 vaccine booster doses (NVDs) that can qualitatively improve the response by extending it to new variants in immunosuppressed and elderly people might be a concern. Here, we aim to investigate attitudes toward the anti-SARS-CoV-2 vaccine by analyzing the empirical factors associated with compliance to receive late NVDs (4th and 5th) [1,2].

## Material and Methods

- We included participants (pts) of HIV-VAC study (EC approval:91/2022) with a previous complete vaccination schedule and eligible for the NVDs. All pts signed informed consent. Pts were asked to complete an anonymous survey of 13 multiple-choice questions on demographics and vaccination attitude. The association between the categorical variables was analyzed by the Chi-Square test. Receiver Operating Characteristic (ROC) analysis was applied to the continuous variable of age to estimate the most appropriate cut-off values and to divide patients into 2 groups ("compliant" vs. "non-compliant") with different outcome probabilities. A multivariable logistic regression model was used to assess the influences of covariates demographic/behavioral on the endpoint. The p-values < 0.05 were considered significant. All analyses were performed using the statistical software SPSS (v. 29.0, SPSS Inc., Chicago, IL, USA).

## Results

- 316 pts underwent the survey with a median age of 54 years (range 27-76), 79.7% male, 89.2% Caucasian, and 43.4% with 13 years of education. Overall, 240 (75.9%) pts were compliant [168(70%)4th, 72(30%)5th] and 76 (24.1%) not-compliant [63(19.9%)4th, 13(4.1%)5th]. Table 1 shows characteristics and comparisons between the 2 groups. By multivariate analysis, older age (p=0.012) and being informed about the NVDs through non-institutional sources (friends/internet/book/social, p=<0.0001) were associated a higher risk of being non-compliant to vaccination (Table 2). For sources of information, our data show there is no significant difference according to age (p=0.972). As of today, 30.4%(73/240) of compliant pts received the NVDs while 95.2% (4th) and 100% (5th) of non-compliant pts are still refusing to get vaccinated.

**Table 1** Characteristics and survey responses of the study population and comparison between the two outcome groups (compliant vs. not compliant)

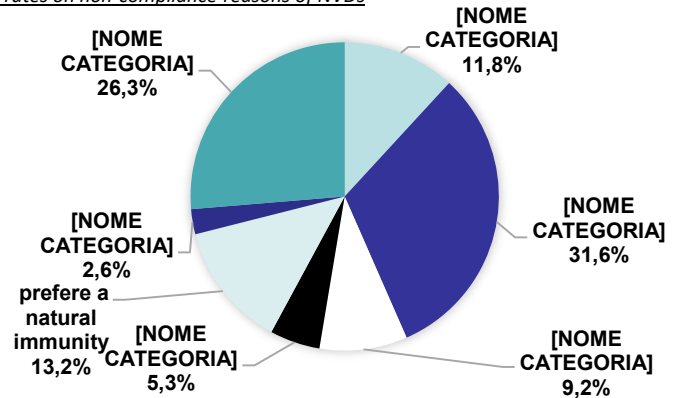
Variables	N	Not-compliant (76)	Compliant (240)	p value
		N (%)	N (%)	
Age	<=50	13 (14.3%)	78 (85.7%)	0.003
	>50	61 (31%)	136 (69%)	
Gender	male	58 (23%)	194 (77.0%)	0.32
	female	18 (29%)	44 (71%)	
Ethnicity*	caucasian	75 (26.6%)	207 (73.4%)	0.002
	other	0	27 (100%)	
Education	primary school	4 (20%)	16 (80%)	0.51
	secondary school	22 (31.9%)	47 (68.1%)	
	high school	32 (23.4%)	105 (76.6%)	
	degree specialization	13 (26%)	37 (74%)	
Employment	employee	4 (16%)	21 (84%)	0.94
	merchant	26 (26.2%)	45 (73.8%)	
	dependent	0	4 (100%)	
	worker	10 (33.3%)	20 (66.7%)	
	freelancer	6 (23.1%)	20 (76.9%)	
	retired	40 (25%)	30 (75%)	
	manager	65 (24.6%)	49 (75.4%)	
	student	10 (20%)	8 (80%)	
	unemployed	6 (16.7%)	5 (83.3%)	
	other	36 (27.8%)	26 (72.2%)	
Previous covid19 positivity	yes	4 (19%)	17 (81%)	0.99
	no	111 (27.9%)	80 (72.1%)	
Covid19 type	asymptomatic	11 (25%)	33 (75%)	0.62
	paucisymptomatic	5 (20%)	4 (80%)	
	severe	38 (27.5%)	100 (72.5%)	
Previous flu vaccine	yes	38 (22.5%)	131 (77.5%)	0.31
	no	169		
Previous mpox vaccine	yes	6 (17.6%)	28 (82.4%)	0.22
	no	67 (27.5%)	177 (72.5%)	
Source of information	Family doctor	34 (30.4%)	78 (69.6%)	<0.0001
	Vaccination center operators	5 (7.4%)	63 (92.6%)	
	Friends/internet/book/social	23 (46%)	27 (54%)	
	Institutional website	4 (40%)	6 (60%)	
	Other	8 (16.3%)	41 (83.7%)	

**Table 2** Multivariate analysis by logistic regression model

Variables	AOR (CI95%)	P value
Gender Female vs Male	2,191 (0,944-5,085)	0,068
Covid19 positivity Yes vs No	1,197 (0,617-2,321)	0,595
Fluvaccine Yes vs No	1,515 (0,779-2,945)	0,221
Mpoxvaccine Yes vs No	1,009 (0,340-2,997)	0,988
Age (yrs) >49 vs <=49	2,768 (1,252-6,116)	0,012
Education Primary school vs degree/specialization	-	0,099
Secondary school vs degree/specialization	1,675 (0,389-7,205)	0,488
High school vs degree/specialization	3,367 (1,260-9,002)	0,016
Information Family doctor vs Friends/internet/Book/Social	0,515 (0,229-1,159)	<0,0001
Vaccination center operators vs Friends/internet/Book/Social	0,071 (0,020-0,253)	<0,0001
Websites of public instit/other vs Friends/internet/Book/Social	0,218 (0,082-0,580)	0,002

- In addition, most of the compliant pts trusted that the vaccine would protect them (62.5%); in contrast, the non-compliant aged 50 or older were mostly worried about potential side effects justifying their decision to refuse vaccination with the interference with their usual activities (34.4%) [Figure 1].

**Figure 1.** Response rates on non-compliance reasons of NVDs



## Conclusion

- Our data suggest that use of non-official sources to get information regarding benefit/risks of vaccination is associated with higher rate of non-compliance to NVDs. In PLWH aged >50 concerns about side-effects and interference with usual activities seem to be a barrier for vaccination. In contrast, most compliant pts reported that they accepted the vaccination offer to protect themselves from infection. However, these responses do not always correspond with future behavior. This information could be a useful tool at the public health level to identify strategies to encourage using official information sources to increase uptake.

## References

- 1) Yang X, Sun J, Patel RC, Zhang J, Guo S, Zheng Q, Olex AL, Olatosi B, Weissman SB, Islam JY, Chute CG, Haendel M, Kirk GD, Li X; National COVID Cohort Collaborative Consortium. Associations between HIV infection and clinical spectrum of COVID-19: a population level analysis based on US National COVID Cohort Collaborative (N3C) data. *Lancet HIV*. 2021 Nov;8(11):e690-e700. doi: 10.1016/S2352-3018(21)00239-3. Epub 2021 Oct 13. PMID: 34655550; PMCID: PMC8514200.
- 2) MacDonald, NE. (2015). Vaccine hesitancy: definition, scope and determinants. *Vaccine* 33:4161-64. DOI: 10.1016/j.vaccine.2015.04.036