Supplementary table 2: Univariable and multivariable determinants of recurrent HGAIN 12 months after last vaccination in the intention-to-treat analysis following a worst-case scenario

	Total	No recurrent HGAIN	Recurrent HGAIN	Univariable logistic regression			Multivariable logistic regression		
	N (%)[*]	*n (%)*[*]	*n (%)*[*]	*OR*	*95% CI*	*p-value*	*aOR*	*95% CI*	*p-value*
a. Forced variables									
Vaccination group									
Placebo	62 (49.2%)	24 (38.7%)	38 (61.3%)	REF		0.38	REF		
qHPV	64 (50.8%)	20 (31.3%)	44 (68.8%)	1.39	(0.67–2.90)		1.03	(0.32–3.36)	0.96
qHPV vs. non-academic				0.54	(0.12–2.41)	0.42	0.34	(0.07–1.76)	0.20
qHPV vs. vaccination 6-12 months after HGAIN treatment				1.79	(0.34–9.28)	0.49	1.92	(0.34–10.79)	0.46
qHPV vs. partial remission				1.66	(0.33–8.41)	0.54	3.22	(0.53–19.53)	0.20
b. Socio-demographic characteristics									
Age per 10 years, mean (±SD)	4.9 (±0.9)	5.0 (±0.9)	4.9 (±1.0)	0.94	(0.63–1.38)	0.74			
Age categories, years[@]									
<44 years	40 (31.8%)	11 (27.5%)	29 (72.5%)	REF		0.47			
45-54 years	48 (38.1%)	19 (39.6%)	29 (60.4%)	0.58	(0.23–1.43)				
≥55 years	38 (30.2%)	14 (36.8%)	24 (63.2%)	0.65	(0.25–1.69)				
Smoking status									
Never	52 (41.3%)	17 (32.7%)	35 (67.3%)	REF		0.30			
Current	33 (26.2%)	9 (27.3%)	24 (72.7%)	1.30	(0.50–3.38)				
Previous	41 (32.5%)	18 (43.9%)	23 (56.1%)	0.62	(0.27–1.45)				
c. HIV related characteristics									
Years living with HIV, per 10 years, median [IQR]	12 [6-17]	13 [7.5-19]	11.5 [6-16]	0.97	(0.92–1.02)	0.23			
On cART									
No	2 (1.6%)	1 (50.0%)	1 (50.0%)	REF		0.66			
Yes	124 (98.4%)	43 (34.7%)	81 (65.3%)	1.88	(0.11–30.86)				

Time on cART, per 10 years, median [IQR]	9.5 [4-15]	10 [4-16]	9 [5-15]	1.00	(0.94–1.06)	0.88			
Nadir CD4 count per 100 cells/µl, median [IQR]	2.4 [1.5-3.5]	2.4 [1.7-3.3]	2.4 [1.4-3.5]	1.01	(0.80–1.27)	0.93			
Nadir CD4 count, categories[@,#]									
<181	49 (39.2%)	17 (34.7%)	32 (65.3%)	REF		0.92			
181-310	37 (29.6%)	14 (37.8%)	23 (62.2%)	0.87	(0.36–2.12)				
≥311	39 (31.2%)	13 (33.3%)	26 (66.7%)	1.06	(0.44–2.58)				
Years since nadir CD4 count, years, median [IQR]	9 [4-15]	8.5 [4-15.5]	9 [5-15]	1.00	(0.95–1.06)	0.91			
Current CD4 count per 100 cells/µl, median [IQR]	7 [5.6-8.8]	6.0 [4.9-8.1]	7.6 [6-8.9]	**1.28**	**(1.06–1.56)**	**0.01**	**1.30**	**(1.05–1.61)**	**0.02**
CD4 count, categories[@]									
<601	45 (35.7%)	23 (51.1%)	22 (48.9%)	REF		**0.02**			
601-800	40 (31.8%)	10 (25.0%)	30 (75.0%)	3.14	(1.24–7.90)				
≥801	41 (32.5%)	11 (26.8%)	30 (73.2%)	2.85	(1.15–7.05)				
Plasma HIV-RNA load									
Undetectable (<40 copies/ml)	120 (95.2%)	43 (39.2%)	77 (64.2%)	REF		0.31			
Detectable	6 (4.8%)	1 (16.7%)	5 (83.3%)	2.79	(0.32–24.68)				
d. STI history									
Any STI									
No	8 (6.4%)	2 (25.0%	6 (75.0%)	REF		0.53			
Yes	118 (93.7%)	42 (35.6%	76 (64.4%)	0.60	(0.12–3.12)				
e. Last intra-anal HGAIN treatment									
Cryotherapy	12 (9.5%)	6 (50.0%)	6 (50.0%)	[&]					
Electrocautery	101 (80.2%)	34 (33.7%)	67 (66.3%)						
TCA	4 (3.2%)	1 (25.0%)	3 (75.0%)						
Imiquimod cream	1 (0.8%)	1 (100.0%)	0 (0.0%)						
Other	8 (6.4%)	2 (25.0%)	6 (75.0%)						
f. Genital condylomata[$]									

No	120 (96.8%)	43 (35.8%)	77 (64.2%)	REF		0.65
Yes	4 (3.2%)	1 (25.0%)	3 (75.0%)	1.68	(0.17–16.61)	
g. Anal condylomata						
Any						
No	83 (65.9%)	30 (36.1%)	53 (63.9%)	REF		0.69
Yes	43 (34.1%)	14 (32.6%)	29 (67.4%)	1.17	(0.54–2.56)	
Intra-anal						
No	89 (70.6%)	33 (37.1%)	56 (62.9%)	REF		0.43
Yes	37 (29.4%)	11 (29.7%)	26 (70.3%)	1.39	(0.61–3.18)	
Peri-anal						
No	116 (92.1%)	40 (34.5%)	76 (65.5%)	REF		0.73
Yes	10 (7.9%)	4 (40.0%)	6 (60.0%)	0.79	(0.21–2.96)	
h. LGAIN						
Any						
No	55 (43.7%)	17 (30.9%)	38 (69.1%)	REF		0.40
Yes	71 (56.4%)	27 (38.0%)	44 (62.0%)	0.73	(0.35–1.54)	
Intra-anal						
No	60 (47.6%)	20 (33.3%)	40 (66.7%)	REF		0.72
Yes	66 (52.4%)	24 (36.4%)	42 (63.6%)	0.88	(0.42–1.82)	
Peri-anal						
No	119 (94.4%)	41 (34.5%)	78 (65.6%)	REF		0.65
Yes	7 (5.6%)	3 (42.9%)	4 (57.1%)	0.70	(0.15–3.28)	

Data are n (%), median [IQR], mean (±SD). Abbreviations: AIN, anal intraepithelial neoplasia; aOR, adjusted odds ratio; cART, combination antiretroviral therapy; CI, confidence interval; IQR, interquartile range; LGAIN, low-grade anal intraepithelial neoplasia; HIV, human immunodeficiency virus; HGAIN, high-grade anal intraepithelial neoplasia; ml, mililiter; µl, microliter; OR, odds ratio; REF, reference; SD, standard deviation; STI, sexually transmitted infection; TCA, trichloroacetic acid; qHPV, quadrivalent human papillomavirus vaccine

* Unless otherwise indicated

@ In tertiles

1 missing

$ 2 missing

& Excluded from analysis due to 0 observations in one or multiple categories