

# Risk factors for HGAIN among HIV-positive MSM in Amsterdam, the Netherlands

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## Background

High-grade anal intra-epithelial neoplasia (HGAIN) is common among HIV-positive men who have sex with men (MSM). High resolution anoscopy (HRA), the gold standard for screening for HGAIN, is time-consuming, expensive and burdensome for the patient. Therefore, risk factors for HGAIN among HIV-positive MSM could help identify those at risk for HGAIN. Previous studies showed inconsistent results on risk factors for HGAIN. Currently no universally usable risk factors for HGAIN have been identified.

## Aim

- The aim of this study was to study risk factors for HGAIN in a large cohort of HIV-positive MSM screened by high resolution anoscopy (HRA).

## Conclusions

- In this large group of HIV-infected MSM, an increasing number of years living with an undetectable viral load was negatively associated with the presence of HGAIN

## Results

In total 1581 HIV-positive MSM were screened for HGAIN at three different HIV clinics: 595 at clinic A; 686 at clinic B; 298 at clinic C.

**Table 1: Characteristics of the study population of the AIN cohort study, Amsterdam, the Netherlands**

	N (1581)	%
Mean age in years (SD)	49	(9.5)
Smoking status (at first HRA)		
Never smoked	577	40%
Ever smoked / quit smoking	348	24%
Currently smoking	531	36%
Number of sex partners in the preceding 6 months		
0 - 1	604	49%
2-5	316	25%
≥ 6	322	26%
Median nadir CD4 cell count (cells/μl) [IQR]	220	[130-320]
Median duration on cART in years [IQR]	7.6	[3.7-13.2]
CD4 cell count at HRA (cells/μl) [IQR]	630	[470-810]
Median years with undetectable viral load	3.4	[2.5-3.9]
HGAIN	487	31%

In univariable logistic regression age, the number of sex partners in the preceding 6 months and years living with an undetectable viral load were associated with HGAIN.

In multivariable logistic regression analysis we found that with an increase in the number of years living with an undetectable HIV viral load the odds of HGAIN decrease significantly.

**Table 2: Risk factors for HGAIN among HIV-positive MSM of the AIN cohort study (N=1581)**

	OR	95%CI	aOR	95%CI	P-value
Age per 10 years *	0.8	<b>0.8-0.9</b>			
Number of sex partners (6 months)					0.958
0-1	REF		REF		
2-5	1.2	0.9-1.6	1.0	0.7-1.5	
≥ 6	1.4	<b>1.0-1.9</b>	1.1	0.7-1.5	
Smoking behavior					0.386
Never smoked	REF		REF		
Ever smoked / quit smoking	0.9	0.7-1.2	1.0	0.7-1.5	
Current smoking	1.1	0.9-1.4	0.8	0.6-1.1	
Number of STIs (6 months)					0.566
0	REF		REF		
1	1.5	0.9-2.3	1.1	0.6-2.1	
≥ 2	2.3	0.6-9.3	2.7	0.4-17.2	
Nadir CD4 count (per 100 cells)	1.1	1.0-1.2	1.1	1.0-1.2	0.088
Years with undetectable viral load					<b>&lt;0.001</b>
≤1 year	REF		REF		
1-3 years	0.9	0.6-1.5	0.9	0.5-1.5	
3.01-5 years	0.6	<b>0.4-1.0</b>	0.5	<b>0.3-0.9</b>	
>5 years	0.5	<b>0.3-0.8</b>	0.3	<b>0.1-0.5</b>	
Time on cART per extra year	0.9	0.97-1.00	1.01	0.98-1.04	0.440

\* Age was excluded from the multivariable logistic regression model because of multicollinearity with time on cART and years with an undetectable viral load.

## Methods

- MSM screened by HRA at three HIV clinics in Amsterdam, the Netherlands, were included in the AIN cohort study.
- HRA results of the first screening visit were analyzed.
- Included parameters: CD4 count, nadir CD4, most recent plasma viral load (VL), time undetectable, cART use, duration of cART use, smoking behavior and number of sexual partners in preceding 6 months.
- Uni- and multivariable logistic regression were used.

## Discussion

Previously found risk factors of HGAIN, like smoking behavior, age, number of sexual partners, nadir CD4 count and cART use, were not found to be associated with HGAIN in our study. This difference may be due to population differences between studies. The strength of this study is the large sample size in which patients of multiple hospitals were included. A limitation of this study is the use of patient records, limiting usable parameters.