Anal cancer incidence among privately insured people with and without HIV in South Africa

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BACKGROUND

- People with HIV (PWH) have higher anal cancer incidence rates than people in the general population.
- Data about the association of HIV and anal cancer in sub-Saharan Africa, where most PWH live, are scarce.

METHODS

Database and definitions

- Reimbursement claims data from a medical insurance scheme in South Africa for 2011 to 2020.
- Claims data coded using the International Classification of Diseases (ICD)-10 and the Anatomical Therapeutic Chemical (ATC) Classification System.
- PWH identified based on HIV-related ICD-10 diagnoses, laboratory tests, ATC codes for antiretroviral therapy, or registration in HIV disease management program.
- Anal cancer diagnosis: at least 2 claims with C21 ICD-10 codes.

Table: Adjusted hazard ratios (aHR) and 95% confidence intervals (CI) for factors potentially associated with incident anal cancer diagnosis.

	Men and women	Women only
	aHR (95% CI)	**aHR (95% CI)**
PWH vs. people without HIV	4.43 (2.44-8.04)	4.03 (1.81-9.00)
Female vs. male	0.97 (0.68-1.38)	-
Age group* [years]		
18-34	0.17 (0.06-0.46)	0.30 (0.10-0.88)
35-44	0.60 (0.31-1.19)	0.76 (0.32-1.80)
45-54	1	1
55-64	1.82 (1.02-3.25)	1.87 (0.83-4.22)
≥65	5.01 (2.94-8.53)	4.53 (2.17-9.46)
Calendar year*		
2011-2013	1	1
2014-2016	1.47 (0.82-2.62)	1.59 (0.78-3.21)
2017-2020	1.75 (1.00-3.06)	1.29 (0.65-2.56)
Genital warts, yes vs. no*	7.56 (2.28-25.07)	4.01 (0.81-19.82)
Other STIs, yes vs. no*	1.46 (0.44-4.80)	0.93 (0.12-7.04)
Cervical pre-cancer, yes vs. no*	-	5.70 (1.75-18.58)

*Time-updated variables.
STIs: sexually transmitted infections
The adjusted models control for the risk factors listed in the table and for population group.

In South Africa, **men** and **women** with **HIV**, **older** individuals, those with a history of **genital warts**, and women with a history of **cervical pre-cancer** may benefit from prioritized access to **anal cancer screening**.

Statistical analyses

- We used flexible parametric survival models to estimate adjusted hazard ratios (aHR) for the association between HIV and incident anal cancer.
- We estimated anal cancer rates as a function of age and calendar year by HIV status.

LIMITATIONS

- Medical claims data are prone to misclassification. We required two C21 codes to increase the specificity of our anal cancer definition.
- Our insured study population may not be representative of the general population in South Africa.

RESULTS

Study population

- 1,068,915 people aged ≥18 years with 3,933,145 person-years included; 7% PWH; 52% female.
- Median age at start of time-at-risk: 36.7 years (interquartile range: 26.7-49.6).

Incidence rates and risk factors

- 122 incident anal cancer diagnoses; 18 anal cancer diagnoses among PWH.
- Crude anal cancer rate: 3.1/100,000 person-years (95% confidence interval [CI]: 2.6-3.7).
- PWH had a 4-fold higher risk of developing anal cancer than people without HIV, but anal cancer risk was similar in men and women; see Table.
- Women with a prior cervical pre-cancer diagnosis had a substantially higher risk of developing anal cancer than those without a history of cervical pre-cancer (aHR: 5.70; 95% CI 1.75-18.58).

- Anal cancer diagnosis rates were higher among PWH than people without HIV at any age (Figure Panel A).
- Over calendar time, the anal cancer diagnosis rates tended to increase among PWH but remained stable among people without HIV (Figure Panel B).

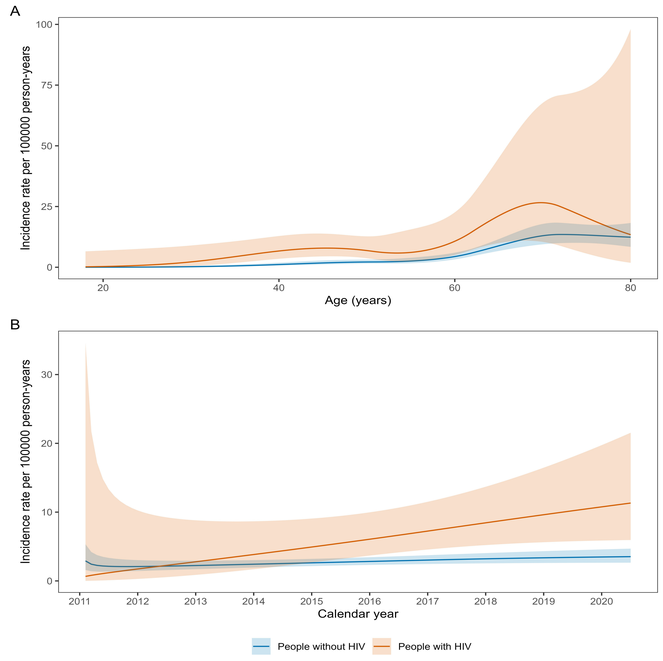


Figure: Anal cancer rates as a function of age (A) and calendar year (B) by HIV status.

CONCLUSIONS

- Men and women with HIV in South Africa have higher anal cancer rates than those without HIV.
- Older individuals, people with a history of genital warts, and women with a prior cervical pre-cancer are at increased risk of developing anal cancer in South Africa.
- These groups may benefit from risk-targeted anal cancer screening, as recommended by the International Anal Neoplasia Society's consensus guidelines for anal cancer screening.

ACKNOWLEDGEMENTS
Research reported was supported by the U.S. National Institutes of Health under Award Number U01AI069924 and the Swiss National Science Foundation (grants 189498 and 193381). The content is solely the responsibility of the authors and does not necessarily represent the official views of the funders.

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