



BC Centre for Disease Control  
Provincial Health Services Authority

# Incidence rates for oral cavity and oropharyngeal cancers among HIV-positive and HIV-negative individuals in British Columbia: a retrospective cohort study

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- The incidence of HPV-associated oropharyngeal and oral cavity cancers is increasing in Canada.
- Oropharyngeal and oral cavity cancers approximate one-third of all HPV cancers in Canada.<sup>1</sup>
- Despite this, little is known about the epidemiology of these cancers as it relates to HIV status, sex, and sexual behaviour.

<sup>1</sup> Canadian Cancer Society's Advisory Committee on Cancer Statistics. *Canadian Cancer Statistics 2016*. Toronto, ON: Canadian Cancer Society; 2016.

- We used data from the Integrated Data and Evaluative Analytics (IDEAs) Cohort.
  - The Cohort includes ~1.7 million individuals who have tested or been case-reported for HIV and other infectious diseases in British Columbia.
- We classified squamous cell carcinomas of the oropharynx using ICD-O-3 codes with *sufficient evidence* for HPV-associated malignancy per the IARC monograph.
- We created a sub-cohort of HIV-negative and HIV-positive individuals aged  $\geq 16$  years with  $\geq 6$  months of follow-up time:
  - Oropharynx/oral cavity cancer diagnoses were ascertained from the BC Cancer Registry (1990-2015).
  - Follow-up began at first HIV detection (HIV-positive stratum), date of 16<sup>th</sup> birthday, or 01/01/1990, whichever occurred last.
  - Follow-up ended at first oropharynx/oral cavity cancer diagnosis, HIV diagnosis (HIV-negative stratum), death, or 31/12/2015, whichever occurred first.
- **Objective:** To calculate crude incidence rates of oropharynx/oral cavity cancer, stratified by HIV status, sex, and, among males, whether they were men who have sex with men (MSM).

**Table 1: Oropharyngeal cancer incidence by HIV-status, sex, and MSM status**

Variable	HIV Positive MSM (n = 5,423)	HIV Positive non-MSM (n = 4,013)	HIV Positive Female* (n = 2,517)	HIV Negative MSM (n = 79,530)	HIV Negative non-MSM (n = 438,908)	HIV Negative Female (n = 761,321)
Oropharyngeal cancer cases	8	9	-	52	465	128
Total of follow-up time, person-years	64,324.96	42,395.44	-	1,654,455.58	9,483,394.21	15,622,692.00
Median follow-up time, person-years (IQR)	12.05 (6.04-17.15)	10.10 (5.05-15.82)	-	24.67 (16.16-26.00)	26.00 (17.75-26.00)	25.25 (16.00-26.00)
Incidence per 100,000 person-years (95%CI)	12.44 (6.22-24.88)	21.23 (11.05-40.80)	-	3.14 (2.39-4.12)	4.90 (4.47-5.37)	0.82 (0.69-0.98)

**Table 2: Oral cavity cancer incidence by HIV-status, sex, and MSM status**

Variable	HIV Positive MSM (n = 5,420)	HIV Positive non-MSM (n = 4,012)	HIV Positive Female (n = 2,447)	HIV Negative MSM (n = 79,528)	HIV Negative non-MSM (n = 438,904)	HIV Negative Female (n = 761,306)
Oral cavity cancer cases	8	3	0	34	292	174
Total of follow-up time, person-years	64,222.80	42,396.04	26,388.08	1,654,579.22	9,484,386.85	15,622,020.67
Median follow-up time, person-years (IQR)	12.00 (6.02-17.16)	10.09 (5.05-15.82)	9.87 (5.03-15.55)	24.67 (16.16-26.00)	26.00 (17.75-26.00)	23.25 (16.00-26.00)
Incidence per 100,000 person-years (95%CI)	12.46 (6.23-24.92)	7.08 (2.28-21.95)	-	2.05 (1.46-2.87)	3.08 (2.75-3.45)	1.11 (0.96-1.29)

\*Data for HIV positive females is not shown due to a low case count.

- From 1990-2015, there were 663 incident cases of oropharyngeal cancers and 511 incident oral cavity cancers.
- Overall, the crude incidence rates of oropharyngeal and oral cavity cancers were highest among HIV-positive individuals, compared to HIV-negative individuals.
- Oropharyngeal cancer incidence rates were highest among HIV-positive non-MSM males and lowest among HIV-negative females.
- Oral cavity cancer incidence rates were highest among HIV-positive MSM and lowest among HIV-negative females.
- Considering the paucity of oral cancer screening programs in Canada, these results highlight the importance of HPV prevention initiatives, particularly among men living with HIV.