

HPV-Related Cancers in Males

Cancer Facts & Stats -March 2023

Alissa Moore, MSc. Student -Division of Cancer Epidemiology, McGill University

Background

Human papillomavirus (HPV) is a group of viruses that infect the genital tract, and less frequently, the mouth and oropharynx.¹⁻³ HPV types 6 & 11 can cause genital warts, HPV16 & HPV18 can cause most HPV-related cancers,^{1,4} while many types do not cause health problems.^{1,5} HPV, passed through intimate sexual contact including genital-oral contact,^{6,7} is very common; most adults have one or more infections over the course of their lives.^{1,5} Most are cleared by the immune system within a year or two.^{1,5} However, some oncogenic infections persist which can lead to precancerous changes in the infected cells, and, eventually, to cancer.^{1,3} Globally, 83% of HPV-related cancer cases are cervical cancers.⁴

Both oral,^{2,9} and genital,^{2,8,9} HPV infections are more common in males than in females. Rates of new genital HPV infections peak in early adulthood for females and then decline with age, but stay steady with age for males.^{2,9,10} There are sex differences in immune response to HPV infections, males are less likely than females to develop protective antibodies after a genital HPV infection.^{2,11} HPV infection is more common in men who have sex with men than in heterosexual men.⁸

Did you know? In Canada...



about 1 out of every 3 HPV-related cancers occurs in a male!¹



about 2 out of every 3 HPV-related cancers are not cervical cancers¹



about 1 out of every 3 HPV-related cancers are oropharyngeal cancers.¹²



HPV-related cancers in males in Canada

Cancer site	Estimated number of new cases in Canada in 2020 according to the International Agency for Research on Cancer's Global Cancer Observatory. ¹³	Estimated % attributable to HPV as calculated by Volesky et al. (2019). ¹²
Anus	228	87.6% (males)
Larynx	836	12.7 %
Lip, oral cavity	2 087	8.2% (oral cavity)
Oropharynx	1 015	60.2%
Penis	226	39.3 %



Global burden of HPV-related cancers in males

- There are large differences in rates of HPV-related cancers in different parts of the world.⁴
- 0.8% of all cancer cases in males are HPV-related: about 60,000 cases.⁹
 - 13,000 cases of penile cancer and 17,000 cases of anal cancer in males caused by HPV each year.^{4,9}
- Rates of anal cancer are highest in HIV+ men who have sex with men.^{14,15}
- About half of the HPV-related cancers in males (30,000 cases) are head and neck cancers, mostly occurring in males in Western developed countries.⁹

Trends in HPV-related oropharyngeal cancer



- Rates of HPV+ oropharyngeal cancer have risen, especially in Northern Europe and North America,^{9,11,16} including in Canada.¹⁰
- As rates of cervical cancer decline and rates of HPV+ oropharyngeal cancer increase, in some Western countries, HPV+ oropharyngeal cancer in males may become more common than cervical cancer.¹¹

Epidemiology of HPV-related oropharyngeal cancer

- Estimated time from oral HPV infection to oropharyngeal cancer is up to several decades.^{9,11,16}
- Having a higher total number of oral sexual partners over one's life is a risk factor for oropharyngeal cancer.¹⁶
- HPV+ oropharyngeal cancer tends to occur at an earlier age and have better prognosis than HPV- oropharyngeal cancer.¹¹
- HPV+ oropharyngeal cancer is much more common in males than females.⁴
- Protective effects of female hormones (estrogens), epigenetic and/or immune differences between males and females,¹⁷ and differences in genital to oral HPV transmission rates may be reasons for higher rates of HPV-related oropharyngeal cancer in males.²

How to reduce your risk of HPV infection and HPV-related cancers

- There is no method of screening for HPV-related cancers other than cervical cancer.^{9,11}
- **Use condoms:** Although condoms do not provide complete protection against HPV, they can reduce transmission.^{1,18,19}
- **Get vaccinated:** In Canada, the HPV vaccine, Gardasil 9 is approved for males between the ages of 9 and 26, and in some cases can be given to males over the age of 26.⁵ Gardasil 9 protects against HPV types 6, 11, 16, 18, 31, 33, 45, 52 & 58.⁵



The World Health Organization on HPV vaccination of males

- In 2019, due to vaccine supply issues, the WHO recommended pausing HPV vaccination of males (and older females) for the time being, in order to concentrate on vaccinating girls under the age of 15.²⁰
- According to the most recent position paper (2022) from the WHO, vaccinating males is now acceptable when doing so will not get in the way of vaccinating girls under 15 and/or screening for cervical cancer.²¹

References

1. Canadian Cancer Society. Human papillomavirus. *Canadian Cancer Society* <https://cancer.ca/en/cancer-information/reduce-your-risk/get-vaccinated/human-papillomavirus-hpv> (2022).
2. Giuliano, A. R. *et al.* EUROGIN 2014 roadmap: differences in human papillomavirus infection natural history, transmission and human papillomavirus-related cancer incidence by gender and anatomic site of infection. *Int. J. Cancer* **136**, 2752–2760 (2015).
3. International Agency for Research on Cancer. *Human Papillomaviruses*. <https://publications.iarc.fr/Book-And-Report-Series/Iarc-Monographs-On-The-Identification-Of-Carcinogenic-Hazards-To-Humans/Human-Papillomaviruses-2007> (2007).
4. de Martel, C., Plummer, M., Vignat, J. & Franceschi, S. Worldwide burden of cancer attributable to HPV by site, country and HPV type. *Int. J. Cancer* **141**, 664–670 (2017).
5. Public Health Agency of Canada. Human Papillomavirus Vaccine: Canadian Immunization Guide. <https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-9-human-papillomavirus-vaccine.html> (2021).
6. Giuliani, E., Rollo, F., Donà, M. G. & Garbuglia, A. R. Human papillomavirus oral infection: review of methodological aspects and epidemiology. *Pathog. Basel Switz.* **10**, 1411 (2021).
7. Wierzbicka, M., San Giorgi, M. R. M. & Dikkers, F. G. Transmission and clearance of human papillomavirus infection in the oral cavity and its role in oropharyngeal carcinoma – a review. *Rev. Med. Virol.* **n/a**, e2337 (2022).
8. Bruni, L. *et al.* *Human Papillomavirus and Related Diseases in the World. Summary Report 22 October 2021*. <https://hpvcentre.net/statistics/reports/XWX.pdf> (2021).
9. Serrano, B., Brotons, M., Bosch, F. X. & Bruni, L. Epidemiology and burden of HPV-related disease. *Best Pract. Res. Clin. Obstet. Gynaecol.* **47**, 14–26 (2018).
10. Derstenfeld, A., Cullingham, K., Ran, Z. C. & Litvinov, I. V. Review of evidence and recommendation for human papillomavirus (HPV) vaccination of Canadian males over the age of 26 years. *J. Cutan. Med. Surg.* **24**, 285–291 (2020).
11. Näsman, A., Du, J. & Dalianis, T. A global epidemic increase of an HPV-induced tonsil and tongue base cancer - potential benefit from a pan-gender use of HPV vaccine. *J. Intern. Med.* **287**, 134–152 (2020).
12. Volesky, K. D. *et al.* Cancers attributable to infections in Canada. *Prev. Med.* **122**, 109–117 (2019).
13. International Agency for Research on Cancer. Global Cancer Observatory: Cancer Today. <https://gco.iarc.fr/today>.
14. Silverberg, M. J. *et al.* Risk of anal cancer in HIV-infected and HIV-uninfected individuals in North America. *Clin. Infect. Dis. Off. Publ. Infect. Dis. Soc. Am.* **54**, 1026–1034 (2012).
15. Clifford, G. M. *et al.* A meta-analysis of anal cancer incidence by risk group: Toward a unified anal cancer risk scale. *Int. J. Cancer* **148**, 38–47 (2021).
16. Gillison, M. L., Chaturvedi, A. K., Anderson, W. F. & Fakhry, C. Epidemiology of human papillomavirus-positive head and neck squamous cell carcinoma. *J. Clin. Oncol. Off. J. Am. Soc. Clin. Oncol.* **33**, 3235–3242 (2015).
17. Sabatini, M. E. & Chiocca, S. Human papillomavirus as a driver of head and neck cancers. *Br. J. Cancer* **122**, 306–314 (2020).
18. Vardas, E. *et al.* External genital human papillomavirus prevalence and associated factors among heterosexual men on 5 continents. *J. Infect. Dis.* **203**, 58–65 (2011).
19. Public Health Agency of Canada. Human Papillomavirus (HPV) and Men: Questions and Answers. <https://www.canada.ca/en/public-health/services/infectious-diseases/sexual-health-sexually-transmitted-infections/hpv-men-questions-answers.html> (2012).
20. World Health Organization. Meeting of the strategic advisory group of experts on immunization, October 2019: conclusions and recommendations. *Wkly. Epidemiol. Rec.* **94**, 541–560 (2019).
21. World Health Organization. Human papillomavirus vaccines: WHO position paper, December 2022. *Wkly. Epidemiol. Rec.* **50**, 645–672 (2022).