

Infections and Cancer – What is the Link?

Karena Volesky PhD(c)

Division of Cancer Epidemiology, McGill University

More than twenty years ago, researchers started quantifying the percentage of global cancer cases attributable to infections.¹ Recently, it was estimated that about 2.2 million (13%) of cancers diagnosed in 2018 were due to nine different infections.² In other words, if those nine infections were eliminated, about 2.2 million of the world's cancer cases could have been avoided in 2018.³ The percentage of cancers attributable to infections varies across regions, from less than 5% in many highly developed countries like Canada, France, and the United States, to 50% in Gambia, Malawi, and Mozambique.³ The prevalence of infections and availability of treatment for those infections are two major factors explaining the variability across regions. Along with lifestyle and environmental factors, infections are a major modifiable risk factor for cancer. According to the International Agency for Research on Cancer, 11 infections (7 viruses, 1 bacterium, and 3 parasites) can cause cancer in more than 20 different body sites.⁴ For example:

- *Helicobacter pylori* (*H. pylori*) is the most important cause of stomach cancer.
- Human papillomavirus (HPV) causes nearly all cervical cancers and 7 other cancers.
- Hepatitis B and C viruses are a major cause of liver cancer.
- Epstein-Barr virus can lead to Hodgkin and non-Hodgkin lymphomas.
- *Schistosoma haematobium* causes more than one-third of bladder cancers in parts of Africa.
- Human immunodeficiency virus (HIV) amplifies the carcinogenic effects of the hepatitis viruses, Epstein-Barr virus, and HPV, leading to more infection-associated cancers in this group.

Globally, *H. pylori* causes more cancers than any other infection, but in Canada HPV causes more cancers than other infections.^{2,5} Both these infections can be prevented or treated before cancer develops.

- *H. pylori* can be avoided through improved sanitation and treated with antibiotics.
- HPV can be prevented through vaccination and pre-cancerous cervical lesions can be removed.

Together, the prevention or treatment of *H. pylori* and HPV prior to cancer development would have prevented 1.5 million cancers in 2018. The impact of these two infections on cancer, coupled with their preventability and treatability, make them key targets for cancer prevention efforts.

References

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