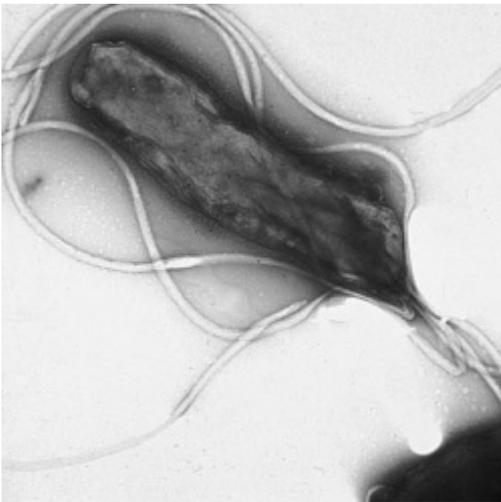


Globally, 12% of Cancers Are Due to Infectious Disease



By Alex Berezow, PhD — January 7, 2020

Infectious diseases, such as influenza and tuberculosis, kill millions every year. But an infectious disease can kill in another way: by causing cancer. The good news is that many of these infections are preventable or treatable.



Credit: Yutaka Tsutsumi/Wikipedia ^[1]

Infectious disease is responsible for a substantial amount of morbidity and mortality around the world. In 2016, the [global top 10 causes of death](#) ^[2] included lower respiratory infections (#4), diarrhea (#9), and tuberculosis (#10).

But an underappreciated danger of infectious disease is the ability of some microbes to cause cancer. Of the estimated [18.1 million new cases of cancer](#) ^[3] in 2018, about 2.2 million were attributable to infection, says a new paper published in *The Lancet Global Health*.

The authors created a table (shown below) depicting cancers and their causative agents. More than 90% of cancers attributable to infectious disease are caused by the bacterium *Helicobacter pylori* and the viruses HPV and Hepatitis B and C. (In the United States, the authors estimated 81,000 total infectious disease-related cancers with 18,000 from *H. pylori*; 35,000 from HPV; 2,100 from Hepatitis B; and 20,000 from Hepatitis C.) This is good news because these infections are largely preventable and/or treatable.

	Men		Women		Total	
	New cases	New cases attributable to infectious pathogens	New cases	New cases attributable to infectious pathogens	New cases	New cases attributable to infectious pathogens
<i>Helicobacter pylori</i>						
Non-cardia gastric cancer	550 000	490 000	300 000	270 000	850 000	760 000
Cardia gastric cancer	130 000	27 000	46 000	8900	180 000	36 000
Non-Hodgkin lymphoma of gastric location	12 000	8700	10 000	7600	22 000	16 000
Human papillomavirus						
Cervix uteri carcinoma*	..	..	570 000	570 000	570 000	570 000
Oropharyngeal carcinoma	110 000	34 000	26 000	8100	140 000	42 000
Oral cavity cancer	190 000	3900	91 000	2000	280 000	5900
Larynx cancer*	150 000	3600	22 000	≤1000	180 000	4100
Anus squamous cell carcinoma	9900	9900	19 000	19 000	29 000	29 000
Penis carcinoma*	34 000	18 000	..	..	34 000	18 000
Vagina carcinoma*	..	..	18 000	14 000	18 000	14 000
Vulva carcinoma*	..	..	44 000	11 000	44 000	11 000
Hepatitis B virus						
Hepatocellular carcinoma	490 000	270 000	170 000	90 000	660 000	360 000
Hepatitis C virus						
Hepatocellular carcinoma	490 000	100 000	170 000	40 000	660 000	140 000
Other non-Hodgkin lymphoma	260 000	8700	210 000	7200	480 000	16 000
Epstein-Barr virus						
Nasopharynx carcinoma*	92 000	76 000	35 000	29 000	130 000	110 000
Hodgkin lymphoma*	46 000	24 000	33 000	17 000	80 000	40 000
Burkitt lymphoma	7800	4100	3800	2500	12 000	6600
Human herpesvirus type 8						
Kaposi sarcoma*	28 000	28 000	14 000	14 000	42 000	42 000
<i>Schistosoma haematobium</i>						
Bladder carcinoma*	420 000	4000	120 000	1900	550 000	6000
Human T-cell lymphotropic virus						
Adult T-cell leukaemia and lymphoma	1900	1900	1700	1700	3600	3600
<i>Opisthorchis viverrini</i> and <i>Clonorchis sinensis</i>						
Cholangiocarcinoma	69 000	2100	56 000	1300	130 000	3500
All cancer types related to infection	..	1 100 000	..	1 100 000	..	2 200 000

The number of cases has been rounded to two significant digits. *Cancer site for which estimates were available in, and extracted directly from, GLOBOCAN 2018 via the Cancer Today website.

Table 1: Estimated numbers of infection-attributable cancer cases in 2018, by infectious pathogen, cancer subsite, and sex

Let's examine a few of these microbes more closely.

***Helicobacter pylori*.** *H. pylori* gained notoriety when it was shown to be the actual cause of ulcers, not stress and poor diet as was previously believed. (Incidentally, the link between *H. pylori* and ulcers was conclusively demonstrated in one of the [craziest self-experiments](#) [4] ever: Barry Marshall, an Australian doctor, isolated the bacterium from a patient with gastritis and drank it. He then developed gastritis, a precursor to an ulcer.) *H. pylori* is also known to cause stomach cancer. But since it's a bacterium, it's susceptible to several different antibiotics.

HPV (Human Papillomavirus). There are more than [100 types of HPV](#) [5] and most are harmless. Genital warts, which are caused by HPV, may be ugly and embarrassing but are neither painful nor lethal. However, 14 types of HPV are associated with cervical, anal, penile, and oropharyngeal

(head, neck, and throat) cancers. Most people are exposed to HPV at some point in their life, which is why every young person should get vaccinated. It is thought that the vaccine could [prevent nearly 75% of HPV-associated cancers](#) [6].

Hepatitis B. Like HIV, [Hepatitis B](#) [7] is spread through sexual contact or the sharing of contaminated needles. Hepatitis B can cause liver cancer, but the infection is vaccine-preventable.

Hepatitis C. Like B, Hepatitis C is spread via the sharing of contaminated needles. But unlike B, there is no vaccine. Instead, there's an actual cure. Interestingly, the antiviral that cures Hepatitis C [may work against some other viruses, too](#) [8].

If we could eliminate or severely curtail these infections -- a very realistic goal -- then the global cancer incidence rate would fall by roughly 10%. That would certainly constitute a major public health triumph.

Source [9]: Catherine de Martel, Damien Georges, Freddie Bray, Jacques Ferlay, Gary M Clifford. "Global burden of cancer attributable to infections in 2018: a worldwide incidence analysis." *Lancet Global Health*. Published: 17-Dec-2019. doi: 10.1016/S2214-109X(19)30488-7

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Source URL: <https://www.acsh.org/news/2020/01/07/globally-12-cancers-are-due-infectious-disease-14489>

Links

[1] https://en.wikipedia.org/wiki/Helicobacter_pylori#/media/File:EMpylori.jpg

[2] https://www.who.int/gho/mortality_burden_disease/causes_death/top_10/en/

[3] <https://www.uicc.org/news/new-global-cancer-data-globocan-2018>

[4] <https://www.realclearscience.com/blog/2012/10/mad-scientists-of-the-modern-age-barry-marshall.html>

[5] [https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-\(hpv\)-and-cervical-cancer](https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer)

[6] <https://www.acsh.org/news/2019/08/27/vaccine-could-prevent-nearly-75-hpv-associated-cancers-14251>

[7] <https://www.cdc.gov/hepatitis/hbv/index.htm>

[8] <https://www.acsh.org/news/2018/12/19/hep-c-drugs-treat-both-yellow-fever-and-chikungunya-and-it-makes-sense-more-or-less-13674>

[9] [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(19\)30488-7/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(19)30488-7/fulltext)