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.

Infectious disease is responsible for a substantial amount of morbidity and mortality around the world. In 2016, the global top 10 causes of death 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 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.

Credit: Yutaka Tsutsumi/Wikipedia
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* 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.


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