

Researchers find bacteria tied to esophageal cancer

1 December 2017



Killer T cells surround a cancer cell. Credit: NIH

Researchers at NYU Langone Health's Perlmutter Cancer Center report that at least three kinds of bacteria in the mouths of Americans may heighten or lower their risk of developing esophageal cancer.

Publishing online Dec. 1 in the journal *Cancer Research*, an analysis of data from two national studies involving more than 120,000 patients finds a 21 percent increased cancer risk tied to the presence of *Tannerella forsythia*, bacteria commonly linked to gum disease. By contrast, types of *Streptococcus* and *Neisseria* bacteria were associated with as much as a 24 percent decrease in risk for [esophageal cancer](#). *Neisseria* are known to break down the toxins in tobacco smoke, and smokers are known to have lower amounts of these bacteria in their mouths than nonsmokers.

The mouth's overall bacterial make-up—which can be changed by smoking, heavy drinking, diet, and gum disease or gastric reflux—has long been thought to influence risk of [esophageal adenocarcinoma](#) or squamous cell carcinoma, say

the researchers. But they add that the new study, which monitored healthy patients for as long as 10 years, is the first to identify which among nearly 300 kinds of bacteria commonly found in the mouth are statistically linked to the risk of getting either of the two most common forms of the disease.

"Our study brings us much closer to identifying the underlying causes of these cancers because we now know that at least in some cases disease appears consistently linked to the presence of specific bacteria in the upper digestive tract," says study senior investigator and epidemiologist Jiyoung Ahn, PhD. "Conversely, we have more evidence that the absence or loss of other bacteria in the mouth may lead to these cancers, or to gut diseases that trigger these cancers."

That said, the researchers emphasized that their findings do not demonstrate that the bacteria directly cause or prevent esophageal cancer.

Cancer of the "food pipe" that connects the mouth and stomach is a top-10 cause of cancer death in the United States, killing some 13,000 annually, mostly men.

Study participants were men and women already enrolled in the National Cancer Institute Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial, and the American Cancer Society Cancer Prevention Study II Nutrition Cohort. All were between the ages of 50 and 75, and were considered healthy and cancer free when they enrolled in either study and had the bacteria in their mouths sampled.

Among study participants, 106 developed esophageal cancer. The bacteria in the mouth of each of these patients at the beginning of these studies were compared to those of another study participant of similar age, sex, and race who remained cancer free.

Ahn says the latest findings may lead to guidelines to help physicians in the risk assessment and early detection of esophageal cancers. Ahn is an associate director of population science at Perlmutter and an associate professor in the departments of Population Health and Environmental Medicine at NYU School of Medicine.

"Early diagnosis could really help because esophageal cancers are often diagnosed in the later stages when the disease is harder to treat," says Ahn.

Postdoctoral fellow and study lead investigator Brandilyn Peters, PhD, says the team next plans to study whether use of probiotic pill supplements could be used to alter the oral microbiome and possibly decrease esophageal cancer risk.

She says the team also has plans to analyze the main biological functions of some [bacteria](#) in the mouth to see how these metabolic pathways may influence cancer risk. Further studies are planned to look at fungi and various viruses in the mouth to see if they also may influence who does and does not get esophageal [cancer](#).

Provided by NYU Langone Health

APA citation: Researchers find bacteria tied to esophageal cancer (2017, December 1) retrieved 25 January 2022 from <https://medicalxpress.com/news/2017-11-bacteria-tied-esophageal-cancer.html>

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