MERCOLA
Take Control of Your Health

Frequent Antibiotic Use Linked to Risk for Crohn's, Colitis

Analysis by Dr. Joseph Mercola Fact Checked | February 10, 2023

STORY AT-A-GLANCE

- A review of over 6 million medical records found exposure to antibiotics may increase your risk of developing Crohn's disease or ulcerative colitis, two main types of inflammatory bowel disease
- The risk rose in a dose-dependent manner and was highest in those taking nitroimidazoles and fluoroquinolones — often used to treat gut infections
- Just one course of antibiotics can negatively affect your gut microbiome for up to 12 months and can increase your risk of heart attack, stroke and colorectal cancer. Unnecessary use of antibiotics increases the risk of antimicrobial resistance, which is rising and experts estimate it will kill 10 million each year by 2050
- Emulsifiers, a common food additive found in mayonnaise, salad dressings, baked goods and ice cream, have been associated with the development of gut inflammation and "robust" colitis in an animal model
- Natural options that may help reduce symptoms include ginger, curcumin, omega-3 fats, probiotics, coconut oil and optimizing vitamin D levels

In January 2023,[1] a study was published in the BMJ journal Gut, in which researchers found that overuse of antibiotics could trigger inflammatory bowel disease (IBD). There are two main subtypes of IBD: Crohn's disease and ulcerative colitis. Both conditions are characterized by harmful inflammation in the bowel.[2,3,4]

The two subtypes differ in how a person is affected. Ulcerative colitis is limited to the lining of the large intestine. Multiple ulcers can form along the intestinal wall and symptoms often develop quickly. People may experience urgency and frequency of bowel movements, incontinence, bloody stool, abdominal pain and cramping. People may also have persistent diarrhea, loss of appetite and unexpected weight loss.

Although it's a chronic condition, the symptoms appear in an unpredictable pattern with months and sometimes years passing between flare-ups. Crohn's disease is another form of IBD that can happen anywhere along the gastrointestinal tract, from the mouth to the anus. It more often appears in the small intestines or at the start of the large intestines.

Crohn's disease can sometimes cause fistulas to form that tunnel through the intestinal wall and connect to another organ, such as the skin or bladder. The disease can cause scarring along the intestinal wall, which narrows the gastrointestinal tract and can lead to possible obstruction, abdominal pain and constipation.

When Crohn's first develops, people may not experience alarming symptoms but as the condition worsens, people typically report persistent diarrhea, abdominal pain, bloody stool and constipation.

Like ulcerative colitis, you may have a loss of appetite, fatigue and unexpected weight loss. The inflammatory response can affect other areas of the body and trigger symptoms that do not appear to be related, including fever, skin rashes, arthritis and eye irritations that cause blurry vision, irritation or redness.

Antibiotic Use Raises Risk of IBD

The rising incidents of IBD caused researchers to suspect there may be environmental factors involved.[5] IBD in earlier generations has been associated with antibiotic use, but the overall influence was uncertain. The researchers used Denmark's nationwide registries of individuals aged 10 years and older from 2000 to 2018 and calculated the incidence rate ratios for IBD after an individual received antibiotics.

There was a total of 6,104,245 individuals in the registry and the researchers found 52,898 new cases of IBD during the study period. The data showed a dose-dependent response in all age groups for ulcerative colitis and Crohn's disease. The highest risk of developing IBD was in the first two years after taking an antibiotic.

This risk was higher in individuals who took nitroimidazoles and fluoroquinolones, both of which are often used to treat gastrointestinal infections.[6] Dr. Adam Faye from New York University's Grossman School of Medicine was the lead researcher on the study. He said the antibiotics indiscriminately target bacteria without a focus on those that cause disease.

This has an adverse effect on the gut microbiome. Faye also noted that the increased risk of IBD following antibiotic exposure was another reason to limit use in people with colds, flu or other viral infections:[7]

> *"We want patients to improve quickly, so we may be more apt to prescribe an antibiotic in some of these settings, but in addition to exacerbating bacterial resistance patterns, this is another reason to practice antibiotic stewardship. In other words, use antibiotics when needed, but be cautious about prescribing them for an infection that will likely be self-limiting or is more likely viral."*

It is important to know the study does not show causation, only that there appears to be an association between using antibiotics and developing inflammatory bowel disease. Overall, the risk was slightly higher for Crohn's disease than for ulcerative colitis. The data showed that individuals between 10 and 40 years were 28% more likely to develop IBD, while those aged 40 to 60 were 48% more likely. In people aged 60 and older, the increased likelihood was 47%.

Additionally, the risk rose with every additional antibiotic exposure. Individuals who took five or more prescriptions had the highest risk. For comparison, people from 10 to 40 years who had taken five or more prescriptions had an increased risk of 69% and the risk doubled for people from 40 to 60 years.

On further analysis of the data, the researchers also discovered that people had a 66% increased chance of developing IBD in the first two years and that increase dropped to as little as 13% after four or five years. This data supports a 2020 Swedish study[8] that examined roughly 24,000 new cases of IBD. After adjusting for confounding factors, the researchers found individuals who had prior use of broad-spectrum antibiotics had nearly twice the risk of developing IBD.

Dr. Bethany DeVito, associate chief of ambulatory clinical gastroenterology at Northwell Health in Great Neck, New York, was not involved in the New York study but commented on the importance of the current data, saying:

> *"Any alterations in the microbiome can lead to diseases in, especially, the GI tract with irritable bowel syndrome. There's talk about it being a factor in causing inflammatory bowel disease, because of the inflammation that can come about from altering the microbiome."*

Antibiotics: Risk of Bowel Cancer, Stroke and Heart Attack

Just one course of antibiotics can negatively affect your gut microbiome for up to 12 months.[9] According to CDC estimates,[10] judicious use of antibiotics is warranted. While the drugs are lifesaving, 41% of those prescribed as an outpatient for upper respiratory infections are unnecessary. Exposure to antibiotics when you do not have a bacterial infection exposes you to increased risk and no benefit.

In 2014,[11] researchers linked antibiotic use to a slightly increased risk of developing colorectal cancer. Again, this is possibly because of alterations to the gut microbiome. Past research[12] showed less bacterial diversity in the gastrointestinal tract is more likely to lead to colon cancer.

Separate research[13] showed women who used antibiotics for two months or more had an increased risk of developing colorectal adenoma, which increases the risk of developing colorectal cancer. Women who used antibiotics for at least two months in their 20s and 30s had a 36% increased risk of polyps compared to those who did not.

A 2019 study[14] found women in late adulthood who used antibiotics for two months or longer had a 32% higher likelihood of developing cardiovascular disease than women who did not use the drugs. Middle-aged women from 40 to 59 years who used antibiotics for longer than two months had a 28% increased risk of cardiovascular disease.

The researchers highlighted alterations in gut microbiota that play a detrimental role in adverse effects on the heart. Study author Lu Qi, director of the Tulane University Obesity Research Center in New Orleans, commented on the results of the study in a news release:[15]

> *"Antibiotic use is the most critical factor in altering the balance of microorganisms in the gut. Previous studies have shown a link between alterations in the microbiotic environment of the gut and inflammation and narrowing of the blood vessels, stroke and heart disease."*

Antibiotic Resistant Infections on the Rise

Antibiotics have transformed health care, but as with any pharmaceutical, they carry risks. When absolutely necessary for a treatable infection, the benefits usually outweigh the risks. However, when used unnecessarily, the patient is often exposed to preventable and potentially serious health conditions.

Importantly, overuse of antibiotics leads to antibiotic-resistant infections. Worldwide, antimicrobial resistance killed more people than HIV and AIDS or malaria in 2019.[16] Antibiotic-resistant infections are the leading cause of death for people of all ages worldwide. A systematic analysis[17,18] of the burden of bacterial antimicrobial resistance published in the Lancet showed there were an estimated 4.95 million deaths in 2019 using a predictive statistical model.

Mohsen Naghavi, a health-metrics scientist at the University of Washington in Seattle who was part of the research team, said "AMR [antimicrobial resistance] is truly a global problem that requires urgent action from policymakers and the health community to

avoid preventable deaths. In a world where antibiotic use has become so commonplace, resistant bacteria out-compete those that are killed off by pharmaceuticals."[19]

According to the WHO,[20] at least 700,000 die every year from drug-resistant diseases. Left unchecked, some experts believe that 10 million people will die each year by 2050 from antibiotic-resistant bacteria.

A 2022 report from the CDC[21] looked at antibiotic resistance during the COVID-19 pandemic and found that hospital-acquired, drug-resistant bacterial infections rose by 15% from 2019 to 2020. The report suggests that surges in antibiotic use contributed to the rise in antibiotic resistance.

The CDC[22] calls antimicrobial resistance “an urgent global public health threat, killing at least 1.27 million people worldwide and associated with nearly 5 million deaths in 2019.” According to the CDC, there are 2.8 million antimicrobial-resistant infections in the U.S. each year and an important driver of antimicrobial resistance is antibiotic and antifungal use.

A 2018 study[23] revealed 69,464 children each year end up in the emergency room as a result of immediate adverse reactions related to antibiotics. While this number sounds high, it may only be the tip of the iceberg[24] since the study only included children who went to the ER and not those who were treated in an urgent care, doctor's office or at home.

Common Food Additives Linked to Crohn’s and Colitis

Many of the chemicals added to processed foods have been linked to several health conditions, including inflammatory conditions in the gut like Crohn's disease and ulcerative colitis. One of those additives is emulsifiers, which are ubiquitous and processed foods like margarine, baked goods, ice cream and mayonnaise.

A 2015 animal study[25] demonstrated agents that disrupt mucus structures lining the intestinal surface and protecting epithelial cells from gut bacteria have the potential to promote gut inflammation. The study showed that emulsifiers impacted the microbiota

and induced low-grade inflammation and metabolic syndrome. It also promoted "robust" colitis in mice predisposed to the disorder.

Researchers concluded that emulsifying agents may contribute to an increased incidence of "obesity/metabolic syndrome and other chronic inflammatory diseases." Emulsifiers are used to keep oils and fats from separating, improve texture and add shelf life to foods like non-dairy milk, vegetable burgers and hamburger patties.

In mice with an abnormal immune system, the emulsifiers cause chronic colitis and in those with a healthy immune function, the animals experience mild intestinal inflammation and metabolic dysfunction that led to obesity and insulin resistance.

While these additives are approved by the FDA, a 2013 study[26] found that nearly 80% of the food additives approved lacked testing information to help the agency estimate the amount that people can safely consume before suffering health consequences.

Natural Options Help IBD

With every passing year, it becomes clearer that the microbes in your body play a vital role in your health. The goal of most treatment protocols for IBD focuses on suppressing the inflammation leading to damage and eliminating exposure to environmental pollutants, which include smoking, a diet high in sugar, fried foods, synthetic trans fats, stress, vitamin D deficiency and inadequate exercise.

If you must take antibiotics, it is crucial to add **traditionally fermented and cultured foods** to your diet to optimize your gut flora and consider the use of spore-based probiotics, or sporebiotics, which are part of a group of derivatives of the microbe called Bacillus, has been shown to dramatically improve your immune tolerance.

I also recommend taking the beneficial yeast Saccharomyces boulardii after you've finished your antibiotics to prevent secondary complications of antibiotic treatment, such as diarrhea. IBD can be challenging to treat, so work with a knowledgeable natural health care practitioner who can develop a comprehensive treatment protocol. The following natural options may also provide some relief:

Ginger — May significantly reduce malondialdehyde (MDA), a biomarker of oxidative stress, in patients with ulcerative colitis after six and 12 weeks. Ginger also led to reductions in severity of disease activity and increased patients' quality of life after 12 weeks.[27]

Probiotics — People with inflammatory conditions such as ulcerative colitis who took the probiotic bacteria Bifidobacterium infantis for eight weeks had lower levels of inflammation than those taking a placebo.[28]

Curcumin — This may help to induce and maintain remission in ulcerative colitis patients without serious side effects.[29]

Omega-3 fats — The animal-based omega-3 fats in krill oil, EPA and DHA, have immune-boosting qualities along with anti-inflammatory properties proven to benefit disorders of the gut, including ulcerative colitis.[30]

Optimizing vitamin D levels — Multiple studies have demonstrated vitamin D helps modulate IBD.[31,32,33]

Coconut oil — An animal study showed the type of fat eaten impacts gut bacteria and coconut oil produced less severe gut inflammation in mice with Crohn's-like disease.[34]

Medical cannabis — Researchers identified[35] the pathway through which cannabis affects IBD finding it protects the epithelial layer of the gut and prevents neutrophils from entering the gut.

Sources and References

- [1, 5] BMJ Gut, 2023, doi: 10.1136/gutjnl-2022-327845
- [2] UCLA Health, Inflammatory Bowel Disease
- [3] UCLA Health, Overview of Crohn's disease
- [4] UCLA Health, What Is Ulcerative Colitis

- [6, 7] Drugs.com, January 13, 2023
- [8] Pharmacy Times, August 21, 2020
- [9] MBio, 2015 6(6)
- [10] CIDRAP, June 8, 2018
- [11] Live Science, June 3, 2014
- [12] Journal of the National Cancer Institute, 2013;105(24)
- [13] Gut, 2018;67(4)
- [14] European Heart Journal, 2019;40(47)
- [15] Tulane University, April 26, 2019
- [16, 17, 19] Nature, January 31, 2022
- [18] The Lancet, 2022; 399(10325)
- [20] World Health Organization, April 29, 2019
- [21] CDC, 2022 Special Report, page 3
- [22] CDC, November 29, 2021
- [23] Journal of the Pediatric Infectious Diseases Society, 2019; 8(5)
- [24] Outbreak News, August 23, 2018
- [25] Nature, 2015;519(7541)
- [26] Reproductive Toxicology, 2013:42
- [27] Complementary Therapies in Medicine, 2019;43
- [28] EurekAlert! October 31, 2011
- [29] Acta Medica Indonesia, 2017;49(4)
- [30] Journal of the American College of Nutrition, 2002;21(6)
- [31] Nutrients, 2022;14(2)
- [32] The Journal of Steroid Biochemistry and Molecular Biology, 2020;200(105663)
- [33] International Journal of Molecular Science, 2020;22(1)
- [34] Science Daily, June 22, 2017
- [35] The Journal of Clinical Investigation, August 13, 2018