

Why the incidence of inflammatory bowel disease is increasing



Last month, the investment world was rocked by the disclosure that Gerald Cotten, CEO of one of the world's largest crypto-currency exchanges, had died suddenly at the age of 30. Lost with him were passwords and recovery keys that made \$145 million in crypto assets unrecoverable. His cause of death was reported as "complications of Crohn's Disease."

The story highlights the devastation that can result from this disease, even when the young millionaire likely had access to the most advanced medical treatments.

Inflammatory bowel disease (IBD)—comprising ulcerative colitis and Crohn's Disease—is rapidly increasing in prevalence, despite the advent of new drugs. According to the *Lancet*:

"The prevalence of inflammatory bowel disease has increased over two to three generations in high-income countries, but in only one generation (the past 25 years) in much of the newly industrialised and 'developing' world. In China, for example, these conditions have changed from being rare to common and now account for the use of as much as a quarter of gastroenterological and colorectal surgical hospital beds."

In Sweden, ulcerative colitis incidence has risen fivefold and prevalence tenfold since the mid-1960s; This pattern is being replicated in the US and Canada. There are currently 1.6 million Americans with UC or CD; That's 1 in 200 people. 70,000 new cases of IBD are diagnosed every year. The cost to the US economy is \$7 billion.

So, clearly, something about our Western way of life is contributing to an epidemic of IBD. And modern medical advances are not stemming the tide.

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Of course, heredity plays a role. Certain families and ethnic groups have a higher prevalence of IBD. Detailed genetic analysis is beginning to reveal certain gene variations that predispose to Crohn's Disease or ulcerative colitis. Accurate predictive screening may soon become commercially available. But, prior to modern times, even our genetically-susceptible ancestors rarely came down with IBD.

The Western diet is clearly part of the picture. It's been conclusively demonstrated that indigenous cultures who maintain a traditional hunter-gather lifestyle are

remarkably free of this scourge.

Modern diets in industrialized countries are replete with refined carbohydrates and sugars; texturizers, emulsifiers and binders like maltodextrin, carboxymethyl cellulose, **microbial transglutaminase**, carrageenan, and polysorbate 80; refined plant-derived oils; chemical flavorings, colorings and preservatives; and pesticides and herbicides. We consume too little prebiotic fiber. Gluten and cow's milk dairy are recent and unnatural accoutrements to the Western plate. There is a paucity of anti-inflammatory Omega 3 fatty acids. GMO food products—or the herbicides like glyphosate whose use they facilitate—may damage intestinal integrity. BPA from can liners and wrappers is said to be an IBD trigger. Lately diet sodas sweetened with sucralose have been implicated with Crohn's Disease.

Much research now points to the microbiome as a protective factor—or instigator—in IBD. The Hygiene Hypothesis posits that early exposure to pathogens “tunes up” our immune systems and populates our guts with beneficial microbes. Studies show that children given frequent antibiotics—especially before the age of one—are especially prone to development of IBD. Even if we try to avoid taking antibiotics, many of our meat, egg and dairy products are laced with residues due to widespread antibiotic use in animal husbandry.

Lack of breast-feeding has been shown to increase risk. Prebiotics and immunoregulatory compounds found in mothers' milk are protective.

Additionally, vaccines, while conferring resistance against many dread diseases, may not allow the immune system to be naturally programmed to curtail inappropriate autoimmune responses—such as those that attack the gut wall.

Another hallmark of the recent decades in which the rate of IBD has soared is our increasing reliance on medications. NSAIDs like ibuprofen not only cause ulcers, but damage the intestinal wall; Accutane, used for acne, has been shown to increase the likelihood of IBD; new anti-psoriasis drugs like Otezla and Taltz carry warnings for ulcerative colitis; some studies have linked use of oral contraceptives and SSRI antidepressants to IBD risk; new monoclonal antibodies being pioneered in the treatment of certain cancers have caused colitis flares.

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But by far the most likely culprits are antibiotics, which routinely prompt recurrences even in my patients in remission, and of course, acid-blocking medications. These PPIs, as they're called, have been shown to worsen IBD in those already diagnosed, and increase kids' risk of coming down with IBD.

What are some other risk factors for IBD? There are some weird ones:

- **Latitude:** Epidemiological surveys link the prevalence of IBD to northern and southern latitudes. While this may reflect the relative industrialization of countries far from the tropics, it doesn't explain why **US women in southern tier states had a lower rate of IBD than their matched counterparts in northern states**. This has given rise to the theory that vitamin D, a byproduct of sun exposure, plays a protective role against IBD, which subsequent research has confirmed.
- **Appendectomy:** In the modern era, doctors have surmised that the appendix is a “vestigial organ,” a throwback to our primitive past which serves no role in health preservation—consequently, the justification for its surgical removal at the slightest instigation. But new research highlights its role in regulating the microbiome. Indeed, studies show that, while ulcerative colitis risk

decreases, the risk of Crohn's disease increases immediately after appendectomy and remains higher for 20 years.

- **Toothpaste:** One theory about the causation of Crohn's Disease holds that microscopic abrasive particles are absorbed by the intestinal lymphoid tissue and trigger chronic inflammation. These microparticles, like titanium dioxide and aluminum silicates, are not restricted to toothpaste—they're often ingested in processed foods and medications—even some supplements.
- **Stress:** "You're eating my guts out!" There may be some truth to the expression, as stress has been shown to be a precipitant of IBD attacks. The connection is biologically plausible, as chronic stress causes immune system alterations and even modifies intestinal bacteria, setting the stage for "leaky gut" and mucosal inflammation.
- **Smoking Cessation:** Smoking is bad in almost every possible way. But a curious fact, first recognized by Dr. Daniel Present in the 1980s, is that many ulcerative colitis sufferers report that their disease began soon after they stopped smoking. I've also observed this again and again. It's not clear why, but some suspect that nicotine may exert a protective effect, leading to the proposal that UC sufferers—especially former smokers—apply nicotine patches or chew Nicorette gum.

With all these known precipitants, can the day be too far off when we screen individuals early in life for genetic susceptibility to IBD—and undertake preventive strategies based on all these acknowledged risk factors? It's time to stem the tide!