Key Points

- Knowledge of the causes or risk factors for Crohn’s disease and ulcerative colitis is limited.
- Many genes have been shown to be associated with the development of IBD. Research is continuing and the evidence is not clear about which genes are most important.
- Studies with identical twins show that even though they share the same genes, in at most half the pairs do both twins have IBD. This indicates that in addition to genetic factors there must be factors in the environment that trigger the development of IBD.
- It is believed that something in the environment triggers the bowel to mount an abnormal immune response and lead to development of IBD. Many factors have been studied including the diet, earlier health and treatments, specific medicines, and factors such as stress. We do not yet known what the environmental triggers of IBD might be.
- Since immune system functioning is important in the development of IBD, there has been research on factors that influence the development of the immune system. Exposure to common microbes (bacteria, viruses, fungi, or protozoa) in childhood is important in the development of the immune system.
- The hygiene hypothesis suggests that immune mediated conditions such as asthma, allergies, and IBD are more common now because of less exposure to microbes (especially during childhood) in the modern, more hygienic world. An alternate hygiene hypothesis explanation is that in the modern world factors that could lead to loss of protective microbes (such as excessive antibiotic use) could lead to IBD. More research is necessary to understand the influence of these factors in IBD.
- There are more microbe cells in our body than human cells. These microbes are essential in functions such as digestion of food and our defenses against harmful microbes. One theory about IBD is that there is a change in the balance of healthy and unhealthy microbes in the gut that triggers abnormal inflammation. This is an area of much research interest but there is not yet enough information to draw clear conclusions.
- Finding the trigger or triggers for IBD is challenging, as it may be factors acting early in life that lead to IBD much later in life.
- **Smoking.** Persons with Crohn’s disease are more likely to be smokers. Smokers with Crohn’s disease have a more aggressive disease course than nonsmokers. Quitting smoking may improve the disease course.
Genetics

- IBD runs in families. A person with IBD has a 30% (3 in 10) chance of having any relative with IBD and a 10% (1 in 10) chance of having a first degree relative (parent, child or sibling) with IBD.
- When a person with Crohn’s disease has a relative with IBD, that relative is most likely to have Crohn’s disease, although there is also an increased rate of ulcerative colitis compared to people without IBD. This suggests that the risk for developing Crohn’s disease and ulcerative colitis is shared.
- In pairs of identical twins, if one twin has Crohn’s disease there is about a 50% or 5 in 10 chance that the other twin has IBD. If one twin has ulcerative colitis there is a 10% or 1 in 10 chance the other twin has IBD. Since identical twins have identical genes, this suggests that there are both genetic and environmental factors in the development of IBD. The genetic factor is stronger in Crohn’s disease.
- Research to this point has identified over 163 gene mutations associated with IBD. Some are shared between Crohn’s disease and ulcerative colitis and some are unique. As there are many thousand human genes, future research will likely identify even more genes associated with IBD. Some of the genes increase the risk for IBD while others decrease the risk and it is likely that different genes or groups of genes are influential in different people with IBD. A person with IBD may have one or several mutations in these identified genes. On the other hand, there may be no mutation in any of these genes.
- In the long run, understanding the genes associated with IBD and the proteins they produce may help us understand the development of IBD and what treatments might be most helpful. Having a gene mutation that is related to IBD is not sufficient to cause IBD.
- While genetic tests are available for some diseases, no practical genetic test exists for IBD at this point. It is likely that tests that provide helpful information for some forms of IBD will become available in the future.

Diet

- Since bowel symptoms are prominent in IBD, it is reasonable that diet would be considered as a factor in the development of IBD. As IBD is more common in North America and more developed countries and is increasing in developing countries, there has been concern that the diet in developed countries may be a factor in development in IBD.
- Greater consumption of some foods is associated with the risk for developing IBD. This includes greater consumption of meat and fats, particularly polyunsaturated fatty acids (PUFAs) and omega-6 (n-6) fatty acids. There is lower risk among people with diets high in fiber, fruits, and vegetables. There has been limited research on these aspects of diet when IBD is present.
• There are dietary measures that can help enhance the health of persons with IBD. These are covered in the fact sheet “Nutrition and inflammatory bowel disease (IBD)”.

**Microbes in the gastrointestinal (GI) tract**

• There are more microbe cells (bacteria, viruses, fungi, or protozoa) in our body than human cells. These microbes are essential in functions such as digestion of food and our defenses against harmful microbes. One theory about IBD is that there is a change in the balance of healthy and unhealthy microbes in the gut that triggers abnormal inflammation.
• The types of microbes in our GI system are also influenced by our diet.
• This is a strong area of research interest but there is not enough information yet to decide how changes in the GI microbes impact on IBD.
• This research is challenging because there is a tremendous number of species (or kinds) of microbes in our body and the functions of the various species are not well understood. The mix of the types of microbes differs at different points in the GI tract. It is only recently that there have been methods available to study this system.

**Medications**

• **Antibiotics.** Antibiotics have been clearly associated with developing IBD. Children with IBD are more likely to have received antibiotics in the years before the development of IBD than children without IBD. This is also true for adults. It has not been shown that any specific class of antibiotics is at issue. One possibility is that the use of antibiotics has an influence on the microbes in the gut.
• **Using antibiotics when necessary.** Even though antibiotic use is a risk factor for developing IBD, it is important to continue to use them when recommended by your doctor, as the benefits should outweigh the risks. However, unnecessary use should be avoided.
• **Nonsteroid anti-inflammatory drugs (NSAIDs) including** common pain medicines such as ibuprofen and naproxen (Advil, Motrin, Aleve, Naprosyn) as well as acetylsalicylic acid (ASA, Aspirin) were thought to be associated with worsening IBD symptoms at one time. More recent studies have found no evidence that the use of these drugs can cause IBD. Whether NSAIDs can worsen IBD still remains a matter of debate. When some people without IBD use these medicines regularly they can cause stomach irritation and even ulcers in the stomach or bowel. So use of these drugs that is more than occasional should be discussed with your doctor.
• **Isotretinoin (Accutane).** There are lawsuits in North America alleging that this drug, used to treat acne, has caused IBD. Large community studies have NOT shown any association between use of isotretinoin and the development of IBD.
Factsheet - Risk factors for inflammatory bowel disease (IBD)

**Vaccines**

- Some people have been concerned that giving their children vaccines could cause a variety of diseases including IBD. There is no evidence that this is true.
- One study published in the 1990s suggested a link between vaccination and IBD. This research was later found to be fraudulent. Recently a study from Manitoba, Canada found no association between childhood vaccination and the development of IBD.
- Recommended vaccines are highly beneficial in reducing serious diseases. Negative effects are rare. Following vaccine schedules is important to maintain the health of children and adults.

**Stress**

- People with IBD often report that their symptoms increase during periods of high stress. There is no evidence that stress causes IBD. Feeling highly stressed is associated with increased symptoms in persons with IBD, but there is no evidence that high stress is associated with active inflammation in the bowel.
- Feeling very ill is a significant stress for most people.
- There is some interesting evidence that persons with IBD are more likely to have had diagnoses of depression long before their diagnosis of IBD. This raises the question whether having depression can predispose to IBD or whether it simply shares a similar trigger with IBD.

**References**


Disclaimer: This information is provided for educational purposes only. Always consult a qualified health care professional for your specific care.

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