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# Crohn's Disease

Crohn's disease is one of the two main forms of inflammatory bowel disease (IBD). The second main form of inflammatory bowel disease is ulcerative colitis. Crohn's disease causes inflammation of the digestive system. Inflammation is the body's reaction to injury or irritation, and can cause redness, swelling and pain. In the case of Crohn's, while it is due to an immune response, unlike the likes of asthma, psoriasis and rheumatoid arthritis, it does not appear to be an autoimmune disease meaning that it is not caused by the immune system being triggered by the body itself. Crohn's disease got its name from an American doctor Burrill Crohn who first reported cases in 1932 in Mount Sinai hospital in New York.

Crohn's is a chronic condition meaning it is persistent and long lasting with many experiencing it as an ongoing and life-long condition often with periods of remission (period when person is well) as well as periods of relapses or flare-ups. There is currently no cure for Crohn's but medication and sometimes surgery can give long periods of relief.

## Causes

The exact cause is not known but researchers and experts think Crohn's is caused by a combination of factors, including:

- Genetic factors
- an abnormal reaction of the digestive system to bacteria in the intestine
- an unknown trigger or perhaps set of triggers that may include viruses, other bacteria, diet, stress, or other environmental factors.

### Difference between Ulcerative colitis and Crohn's Disease

Ulcerative colitis only affects the inner lining of the colon, also known as the large intestine. In Crohn's disease, inflammation can appear anywhere in the digestive tract, from the mouth to the anus. Crohn's generally affects all the layers of the bowel walls, not just the inner lining so tends to have more serious symptoms.

### How does Crohn's disease affect the intestinal tract?

Any part of the intestinal tract can be affected in Crohn's disease. The most common area is the last part of the small intestine (terminal ileum) and the first part of the large intestine (colon), near the appendix. For some only the colon is affected, in a pattern like ulcerative colitis. In others, multiple parts of the intestinal tract are affected. Rarely, the mouth, throat, oesophagus or stomach may be affected. A patch of inflammation may be as small as a few centimetres or extend most of distance along the intestinal tract. As well as affecting the lining of the bowel, Crohn's may also go deeper into the bowel wall. In some cases, the inflammation in the intestinal tract triggers inflammation outside the intestine leading to other inflammatory complaints affecting the likes of joints, eye, skin and endocrine system (series of hormone producing glands such as the pancreas, adrenal gland, ovaries, testes, etc)

## Symptoms

Crohn's disease is a very individual condition ranging from very few symptoms to others with frequent flare-ups or constant disease. The part of the intestinal tract most affected with Crohn's influences the symptoms.

In general, the most common symptoms during a flare-up are:

- Abdominal pain and diarrhoea. Sometimes mucus, pus or blood is mixed with the diarrhoea.
- Tiredness and fatigue. This can be due to the illness itself, from the weight loss associated with flare-ups or surgery, anaemia from blood loss or simply due to a lack of sleep resulting from symptoms likes pain and diarrhoea
- Feeling generally unwell. Some people may have a raised temperature and feel feverish.
- Mouth ulcers
- Loss of appetite and weight loss.
- Anaemia (a reduced level of red blood cells). Crohn's makes anaemia more likely due to blood loss, not eating enough because of symptoms like pain and diarrhoea and because the body is not fully absorbing the nutrients from the food. Anaemia is a major factor in tiredness.

# How common is Crohn's?

It's estimated that Crohn's disease affects one in every 650 people. Crohn's appears to be slightly more common in women than in men. The *Irish Society for Colitis and Crohn's disease* indicated there were 5.9 new cases of Crohn's disease in Ireland per 100,000 population in 2011 and compared to 14.9 new cases of ulcerative colitis per 100,000 the same year. The incidence of Crohn's disease is higher than ulcerative colitis in children. The peak age of incidence of Crohn's is between the ages of 15 and 35. It is also more common in smokers.

# Main types of Crohn's disease

Crohn's is often categorised to which part or parts of the intestinal tract are most affected. The main types are:

**Terminal ileal and ileocaecal**
Crohn's in the ileum (the last part of the small intestine) is known as ileal or sometimes 'terminal ileal' Crohn's because it affects the terminus or end of the ileum. If it affects the beginning of the large bowel it is known as ileocaecal Crohn's. In this type of Crohn's, pain is often experienced in the lower right side of the abdomen, especially after eating. There is often weight loss, and diarrhoea may occur. Because Crohn's in the ileum can make it difficult for the body to absorb bile salts, bile salts can build up leading to irritation the bowel lining; Diarrhoea often occurs and is most likely to be watery. The diarrhoea is unlikely to be bloody, as any blood lost will be digested by the time it reaches the rectum. About four in 10 people with Crohn's have ileal or ileocaecal disease.

**Small bowel**
Abdominal pain and diarrhoea are also common symptoms if Crohn's occurs further up the small bowel. Again, the diarrhoea is unlikely to be blood stained, but weight loss and anaemia may be experienced. Nearly a third of people with Crohn's have it in the small bowel.

**Colonic**
Crohn's disease in the colon (large intestine or large bowel) is known as 'Crohn's colitis'. This is a common form of Crohn's disease. The main symptom tends to be blood stained diarrhoea. Because of the inflammation, the colon cannot hold as

much waste as normal so very frequent bowel movements occur (six or more a day), especially if the rectum is inflamed.

**Gastroduodenal**
Crohn's in the upper intestinal tract (the oesophagus, stomach or duodenum) is much less common. Symptoms that indicate Crohn's in the upper intestinal tract include indigestion-like pain, nausea, loss of appetite, and weight loss.

**Perianal**
Crohn's in the area around the anus can occur on its own or at the same time as inflammation in other parts of the body. It can cause symptoms such as:

- Fissures: tears in the lining of the anal canal which can cause pain and bleeding, especially during bowel movements.
- Skin tags: small fleshy growths around the anus.
- Haemorrhoids: swollen areas in the anal canal.
- Abscesses: collections of pus that can become swollen and painful. Most often found in the area around the anus and can cause a fever or lead to a fistula.
- Fistulas: narrow tunnels or passageways between the intestinal tract and the skin or another organ. In perianal Crohn's, fistulas often run from the anal canal to the skin around the anus. They appear as tiny openings in the skin that leak pus or sometimes faecal matter. They can irritate the skin and are painful, but can usually be treated with medication and/or surgery.

**Oral Crohn's**
Crohn's can occasionally affect the mouth. True oral Crohn's which typically causes swollen lips and mouth fissures, is rare. However, about one in five people with Crohn's tend to develop mouth ulcers.

# Complications

Complications of Crohn's can also be troublesome. Complications may occur in the intestinal tract or other areas of the body. Complications in the intestinal tract may include strictures, perforations and fistulas.

## Complications of Crohn's disease affecting the intestinal tract

**Strictures**
Ongoing inflammation and then healing in the bowel may cause scar tissue to form. This can create a narrow section of the bowel, known as a stricture. A stricture can make it difficult for food to pass leading to a blockage. Symptoms include severe cramping abdominal pain, nausea, vomiting and constipation. The abdomen may become bloated and distended and the intestinal tract may make loud noises. Strictures are usually treated surgically mainly with operation known as a stricturoplasty.

**Perforations**
Very occasionally, a severe blockage caused by a stricture may lead to a perforation or rupture of the bowel, making a hole. The contents of the bowel can leak through the hole and form an abscess. This causes pain and a fever. An abscess may also develop into a fistula.

**Fistulas (Fistulae)**

A fistula can form when inflammation in Crohn's spreads through the whole thickness of the bowel wall and continues to tunnel through the layers of other tissues. These tunnels or passageways can connect the bowel to other loops of bowel, to the surrounding organs, such as the bladder and vagina, or to the outside skin, including the skin around the anus (discussed earlier). Fistulas may be treated medically or with surgery.

## Complications of Crohn's disease affecting other parts of the body

Crohn's disease can also cause problems outside the intestinal tract. Some people with Crohn's develop conditions affecting the joints, eyes or skin. They can develop before any signs of bowel disease or during times of remission.

**Joints**
Inflammation of the joints (arthritis) affects up to one in three people with IBD. In people with Crohn's, arthritis is more commonly associated with Crohn's colitis (Crohn's disease in the colon). The inflammation usually affects the large joints of the arms and legs, including the elbows, wrists, knees and ankles. Fluid collects in the joint space causing painful swelling, although there can be pain without obvious swelling. Symptoms generally improve with treatment for intestinal symptoms and there is mainly no lasting joint damage. A small percentage develop swelling and pain in the smaller joints of the hands or feet. This may be longer lasting and persist while the inflammatory bowel disease is in remission. Medication and physiotherapy can be helpful in treating arthritic symptoms.

**Skin**
Crohn's can cause skin problems. The most common skin problem is erythema nodosum, which affects about one in seven people with Crohn's. Painful red swellings appear, usually on the legs, and then fade leaving a bruise-like mark. This condition tends to occur during flare-ups and generally improves with treatment for the Crohn's. More rarely, a skin condition called pyoderma gangrenosum affects people with Crohn's disease. This starts as small tender blisters, which become painful, deep ulcers. These can occur anywhere on the skin, but most commonly appear on the shins or near stomas. It is usually treated with steroids or immune-suppressants but may need biological therapy (more on treatments later).

**Eyes**
Eye problems affect approximately one in 20 people with Crohn's. The most common condition is episcleritis, which affects the layer of tissue covering the sclera (the white outer coating of the eye) making it red, sore and inflamed. Two other eye conditions associated with Crohn's are scleritis (inflammation of the sclera itself) and uveitis (inflammation of the iris). These conditions can usually be treated with local steroid drops, although uveitis and scleritis may need treatment with stronger immune-suppressants or biologic drugs. Patients with Crohn's should be aware to mention any eye condition promptly to their doctor.

**Bones**
Crohn's increases risk of bone thinning; this is mainly due to poor absorption of calcium needed for bone formation. Sometimes low calcium levels is because the diet does not contain enough dairy foods or the use of steroid medication. Calcium supplementation and for some specialist osteoporosis drug treatment with the likes of alendronates is needed.

**Liver**
About one in four people with Crohn's develops gallstones. These are small 'stones' made of cholesterol which can get trapped in the gallbladder (just under the liver) and can be painful. Several factors linked with Crohn's can make gallstones more likely including poor absorption of bile salts often caused by inflammation. Bile salts help to digest fats during digestion. Some of the drugs used to treat Crohn's such as azathioprine and methotrexate may increase liver problems.

A rare condition called Primary Sclerosing Cholangitis (PSC) affects up to one in 25 people with Crohn's, usually those with the disease in the colon. PSC causes inflammation of the bile ducts and can eventually damage the liver. Symptoms include fatigue, pain, itching, jaundice, and weight loss. Treatment is usually with ursodeoxycholic acid.

**Blood circulation**
Crohn's disease doubles the risk of blood clots in the veins, including DVT (deep vein thrombosis) in the legs. Risk is highest during a flare-up or if confined to bed.. Warning symptoms you need to be aware of include pain, swelling and tenderness in the leg, or chest pains and shortness of breath.

**Anaemia**
Anaemia means fewer red blood cells than normal and/or lower levels of haemoglobin in the blood. Haemoglobin is a protein found in red blood cells to help carry oxygen around the body. There are several different types of anaemia. People with inflammatory bowel disease are most likely to develop iron deficiency anaemia. This is caused by a lack of iron in the diet or poor absorption of iron from food and can be made worse by ongoing intestinal blood loss due to inflammation. Another type of anaemia is vitamin deficiency anaemia, caused by a low intake or poor absorption of certain vitamins, such as vitamin B12 or folic acid. This particularly affects people with Crohn's who have had sections of the small intestine removed. Some of the drugs used for Crohn's such as sulphasalazine and azathioprine can also cause anaemia. Symptoms of anaemia include tiredness and fatigue and if not treated can lead to shortness of breath, headaches and general weakness. Depending on the cause of anaemia, iron, B12 or folic acid supplements are the most common treatments.

**Crohn's disease link to cancer**
Severe or extensive Crohn's disease affecting all or most of the colon for many years can mean a slightly increased risk than normal of developing colon cancer

# Diagnosis

Diarrhoea, abdominal pain, and weight loss lasting for several weeks or longer indicate Crohn's is a possibility especially if a family history of inflammatory bowel disease. Tests and physical examinations can confirm a diagnosis. These include:

## Blood Tests and Stool Tests
Simple blood tests can show inflammation and anaemia; both of which are indicators of Crohn's. Stools can also be tested for signs of bleeding or inflammation, and to check whether diarrhoea is caused by an infection.

## Endoscopy
There are several types of endoscopy which have different names based on the type of scope used and part of the intestinal tract being examined. For example:

- **An upper GI endoscopy**: a thin flexible tube with a camera in its tip is inserted through the mouth to examine the oesophagus, stomach and duodenum.
- **A sigmoidoscopy or colonoscopy:** for symptoms in ileum or colon a sigmoidoscope (a short endoscope) or a colonoscope (a longer and more flexible endoscope) will be inserted through the anus to examine the rectum and colon.

Endoscopies should not be painful but may be uncomfortable so the patient may be given a sedative to help relax. Biopsies (small samples of tissue) are often taken during the endoscopy. These can then be examined under a microscope to confirm the diagnosis.

### Barium X-ray Tests

Barium sulphate is a harmless white chalky substance that coats the lining of the intestinal tract and so give a clearer outline in an x-ray. It can be given as a drink to help show up problems in the stomach or small intestine, or in an enema to show up inflammation in the colon.

### MRI and CT Scans

MRI (Magnetic Resonance Imaging) and CT (Computerised Tomography) scans can determine the extent of the inflammation. MRI scans use magnets and radio waves, and CT scans use a special kind of x-ray to build up a '3D' image of the body. Ultrasound is sometimes also used to aid diagnosis.

## Could symptoms be IBS (Irritable Bowel Syndrome)

People with Crohn's can get bowel symptoms when the disease is not active. This might be due to Irritable Bowel Syndrome (IBS), which tends to be more common in people with Crohn's than in the general population. There is no blood loss in IBS, but it can cause abdominal pain, bloating and a varying bowel habit with diarrhoea and/or constipation. If you are having symptoms like these, and tests do not show active inflammation or an infection, then it may be IBS. Treatment varies from changing diet to over the counter products from pharmacies like peppermint oil and mebeverine.

## Treatment

Treatment for Crohn's may be medical, surgical or a combination of both. For mild Crohn's, no drug treatment may be needed. Dietary therapy may be another option for some. Treatment will depend on the type of Crohn's.

### Medication used treat Crohn's disease

Drug treatment for Crohn's aims to reduce symptoms and control flare-ups, and then to prevent a relapse once the disease is under control. This can mean taking medication on an on-going basis, sometimes for many years.

#### Anti-inflammatory drugs

Help to reduce inflammation and include:

- Aminosalicylates such as mesalazine (brand names include Asacol®, Pentasa® and Salafalk®) and sulphasalazine (Salazopyrin®)

- Corticosteroids, often just called steroids, such as prednisolone, hydrocortisone and budesonide (Entocort®)
- Immuno-suppressants such as azathioprine (Imuran®), methotrexate and tacrolimus
- Biological or 'anti-TNF' drugs such as infliximab (Remicade®) and adalimumab (Humira®).

Biological therapies are generally reserved for people in poor general health with severe symptoms of Crohn's disease, especially if corticosteroids and immuno-suppressants are unsuitable or ineffective. Biological treatment usually lasts at least 12 months, unless these drugs stop being effective sooner or the patient cannot tolerate.

**Symptomatic drugs**

Help control and reduce common symptoms such as pain, diarrhoea and constipation. They include

- Anti-diarrhoeal such as loperamide (Imodium®) and cholestyramine (Questran®)
- Bulking agents such as ispaghula husk (Fybogel®)
- Painkillers such as paracetamol and aspirin.

## Surgical treatment for Crohn's

Over the last 20 years, advances such as the development of biological drugs have produced better results for Crohn's disease meaning surgery is less often needed. There have also been changes in the way surgery for Crohn's is now managed. For example, extensive re-sections (removal of diseased sections of the intestine) are now less common. However, surgery remains an important treatment option, often in combination with medical therapies. It is estimated that about seven out of 10 people with Crohn's will still need surgery at some point in their lives. Surgery may sometimes be the only option when other treatments cannot sufficiently control their symptoms. Occasionally, an urgent operation is required, for example a severe blockage in the intestines or a hole or tear in the bowel.

## Dietary treatment for Crohn's disease

Enteral nutrition (also known as dietary treatment or nutritional therapy) involves a liquid diet replacement usually for a few weeks. These feeds contain all the essential nutrients in a simple form that the body can absorb with little or no digestion. They come in a range of flavours. An alternative may be to take the feed overnight through a naso-gastric tube (a fine tube passed through the nose down into the stomach).

Enteral nutrition is widely used for children with Crohn's disease, because it helps their growth and avoids the use of steroids. There is less evidence for the effectiveness of enteral nutrition in adults, particularly for active Crohn's disease. Research has shown it to be less effective than steroids. However, enteral nutrition may be recommended for adults who prefer not to use drug therapy, and it can be useful as a supplement for people who need extra nutrition.

## Does a change in diet help?

No clear evidence indicates that any food or food additive directly causes or improves Crohn's. Generally, the most important thing is to try to eat a nutritious and

balanced diet to help maintain weight and strength, and to drink sufficient fluids to prevent dehydration. Some people with Crohn's find that certain foods trigger symptoms or make them worse and that reducing or adjusting the amount of fibre or cutting out wheat or dairy products may help. To ensure the diet remains healthy and well balanced, it is important the patient gets advice from a doctor or from a dietitian or nutritionist before making significant changes. If the patient has a stricture, avoiding 'hard to digest' or 'lumpy' foods that might cause a blockage is advised. Such foods might include nuts and seeds, fruit and vegetable skins, and tough meat or gristle. It may also help to have small, frequent meals or snacks, and to chew food thoroughly.

If the bowel is not absorbing nutrients properly, perhaps because of extensive inflammation or a shortened bowel after surgery, some people find a low-fat diet reduces diarrhoea. Avoiding carbonated drinks or other foods containing benzoates or cinnamon can help prevent symptoms. Many with Crohn's lack certain vitamins and minerals, such as iron, calcium, vitamin D or vitamin B12, especially if they have a poor appetite or active diarrhoea or blood loss. Some of the drugs used for Crohn's can also lead to deficiencies, for example sulphasalazine can affect the body's ability to absorb folates, and steroids can cause calcium loss.

In these cases, a supplement may be useful, but should be discussed with the doctor, pharmacist, dietitian or nutritionist. If tests show a serious deficiency, a course of supplements or enteral nutrition may be advised.

## Are complementary and alternative approaches helpful?

Some people with Crohn's disease have found complementary and alternative medicines helpful for controlling symptoms such as such as abdominal pain and bloating. However, there are few reliable scientific studies to show the effectiveness of such therapies and it is possible that their symptoms may have gone into remission coincidentally, given the unpredictable course of Crohn's or there may be a placebo effect. One area where there has been some scientific research is the use of omega 3 fish oils. However, a recent review concluded that fish oils were probably not effective at keeping people with Crohn's in remission, as although some studies found symptoms improved, two larger studies showed no benefit. A small study on acupuncture for active Crohn's also showed very slight improvement, but not enough to be significant. Other research has suggested the herbal medicine wormwood may help with steroid reduction, but more research is needed in this area. There is ongoing research into the use of probiotics for inflammatory bowel disease, but so far they have not been found helpful for Crohn's.

# References


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