

# 1

## What is inflammatory bowel disease?

### ➔ Key points

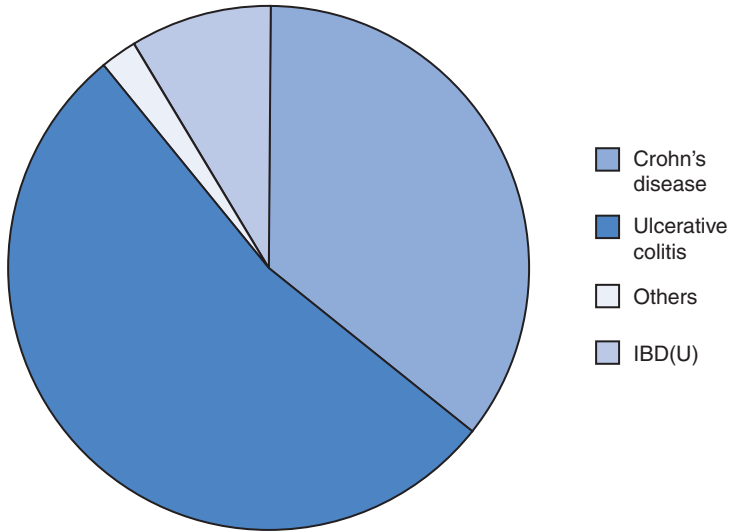
- ◆ Inflammatory bowel disease (IBD) is a group of conditions of which the commonest are ulcerative colitis and Crohn's disease.
- ◆ Others include IBD (unclassified), microscopic colitis, and pouchitis.
- ◆ There are several conditions that can cause similar symptoms to IBD but are not IBD. These include, infections, drug-induced colitis, coeliac disease, and irritable bowel syndrome.

### Introduction

Inflammatory bowel disease (IBD) is exactly what it sounds like; a disease of the bowel that causes it to become inflamed. Specifically, IBD describes a chronic condition that may last for many years on and off, for which the cause is not yet fully understood.

Two main conditions are included under the heading of IBD. These are ulcerative colitis (UC) and Crohn's disease. There are also a number of other rarer conditions that may be classified as IBD (see Fig. 1.1).

There is much overlap between the different conditions both in the way they affect people, what they look like in the bowel, and their association with other conditions. There is also overlap among possible factors that probably contribute to the development of the different sorts of IBD, such as genes (see Chapter 2).



**Figure 1.1** Conditions that make up inflammatory bowel disease.

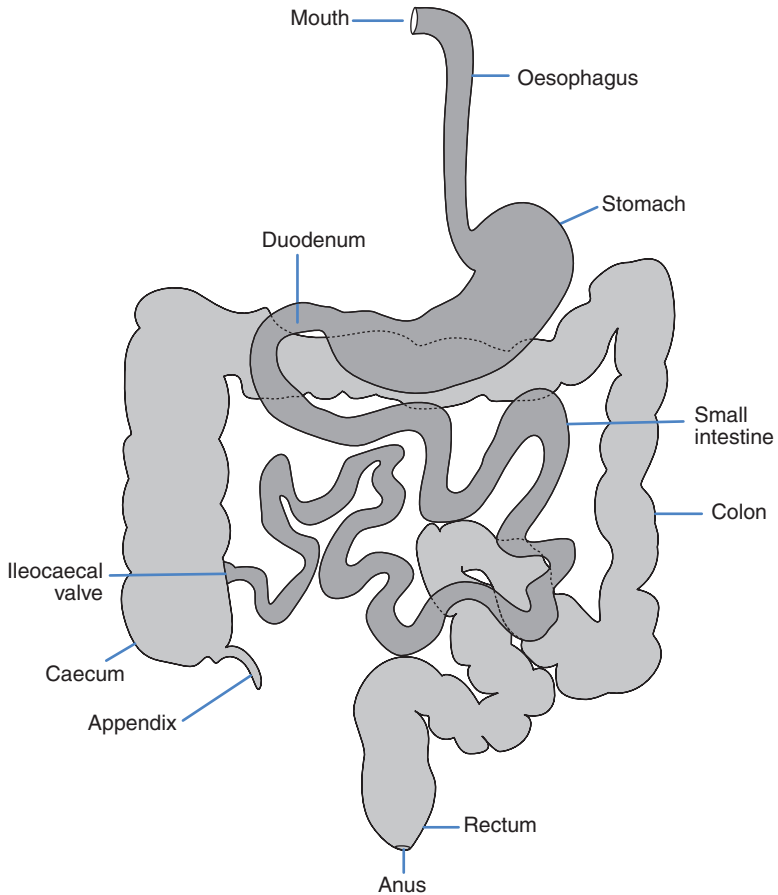
## The normal gut

In order to understand what happens when things go wrong in the gut it is worth spending some time learning about the healthy gut.

Terminology in the human gut can be confusing because there is often more than one word used for the same part. In order to understand how IBD affects the gut it is worth getting to know the anatomy of the human gut (what goes where and how it all joins up) and the function (what each bit is supposed to do). That way it is easier to appreciate how disease of different parts can cause quite different problems and symptoms.

## Anatomy

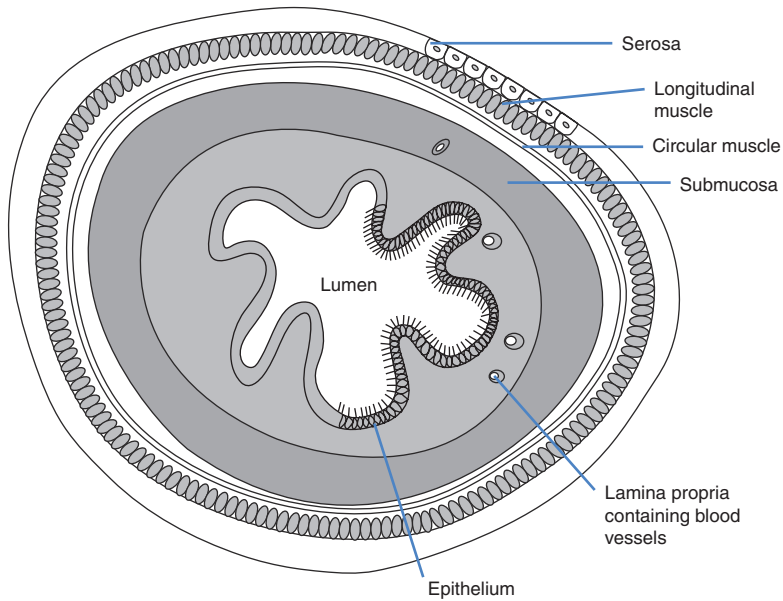
The human gut is a long tube that starts at the mouth. Next comes the oesophagus, then the stomach, the small intestine, the large intestine, and, finally, the anus. The small intestine is made up of the duodenum, jejunum, and ileum. The large intestine is made up of the colon and rectum, which attaches to the anus. The gut is attached to various other organs along its course such as the liver and pancreas, which are important in allowing the gut to function normally.



**Figure 1.2** (a) The alimentary canal.

## Function

The overall function of the gut is to get food into the body, to convert it into useful fuel to be delivered to the organs, and to dispose of the waste products. In other words, the gut functions rather like a power station; crude fuel is shovelled in at the top and is then refined into useful energy sources. The energy is fed down pipes to the bits that need it and the leftovers continue on to be jettisoned. However, the gut cannot do this alone. Other



**Figure 1.2** (b) The alimentary canal in cross-section.

organs are needed as part of the conversion of food to fuel (digestion). These are the:

- ◆ salivary glands
- ◆ pancreas
- ◆ liver
- ◆ gall bladder.

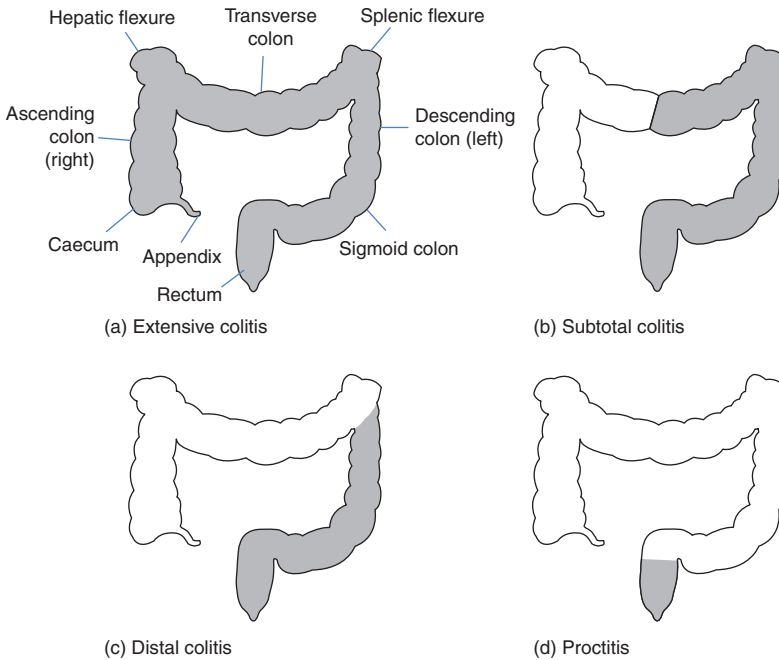
Once the food is processed and broken down, the products of digestion (sugars, amino acids, and fats) are absorbed through the gut lining into blood vessels surrounding the gut. They are then carried in the blood to other organs. What remains in the small intestine at the end of this process passes into the colon through the ileocaecal valve. At this point, the bowel content is liquid. However, as it passes along the colon, most of the water is reabsorbed through the bowel wall into the blood vessels. By the time the stool reaches the rectum it is, therefore, solid not liquid.

## Malfunction

When any part of the gut becomes diseased this complicated process can go wrong in a variety of ways causing illness. This may result in symptoms in the affected organ, for example a stomach ulcer causing pain, or it may cause failure of energy production, for example, weight loss due to the malfunctioning of digestion. Symptoms of IBD will be discussed in more detail in Chapter 3.

## Ulcerative colitis

UC is a condition in which part or all of the lining of the rectum and colon becomes inflamed and ulcerated. Although inflammation and ulceration of the bowel can occur for a variety of reasons, such as dysentery or as a side effect of radiotherapy, by definition, the cause in UC is not known (see Chapter 2).



**Figure 1.3** The extent of colitis.



## What happens to ulcerative colitis over time?

The disease can affect anyone at any time. It is a chronic condition, that is to say long lasting. The inflammation may wax and wane either with or without treatment so that a typical pattern of flare up or relapse occurs between periods of calm or remission.

## How much of the bowel is affected in ulcerative colitis

The pattern of UC in the bowel is very typical. It (nearly) always affects the rectum and then extends up the colon to a differing degree in each individual. For most patients what you start with is what you end up with. In other words if you have left-sided colitis at diagnosis it is not very likely to become more extensive as time goes on or with subsequent flare ups. However, in some people, the disease can become more extensive over time. It is still unclear how often this happens. It is thought that about 1 in 10 patients with proctitis develop subtotal colitis within 10 years of diagnosis.

### Disease extent in ulcerative colitis

Proctitis = rectum only inflamed

Distal colitis = left-sided colitis: rectum, sigmoid and descending colon inflamed

Subtotal colitis = rectum, sigmoid, descending and transverse colon inflamed

Extensive colitis = pan colitis, total colitis: entire colon and rectum inflamed

## Crohn's disease

Crohn's disease is less easy to classify than UC because it is more variable in what it affects and how. It was first described by and named after Burrill Crohn, an American gastroenterologist, in 1932. The disease is now recognized to cover a wide variety of presentations and patterns of gut inflammation. The typical features of Crohn's disease may occur separately or together.

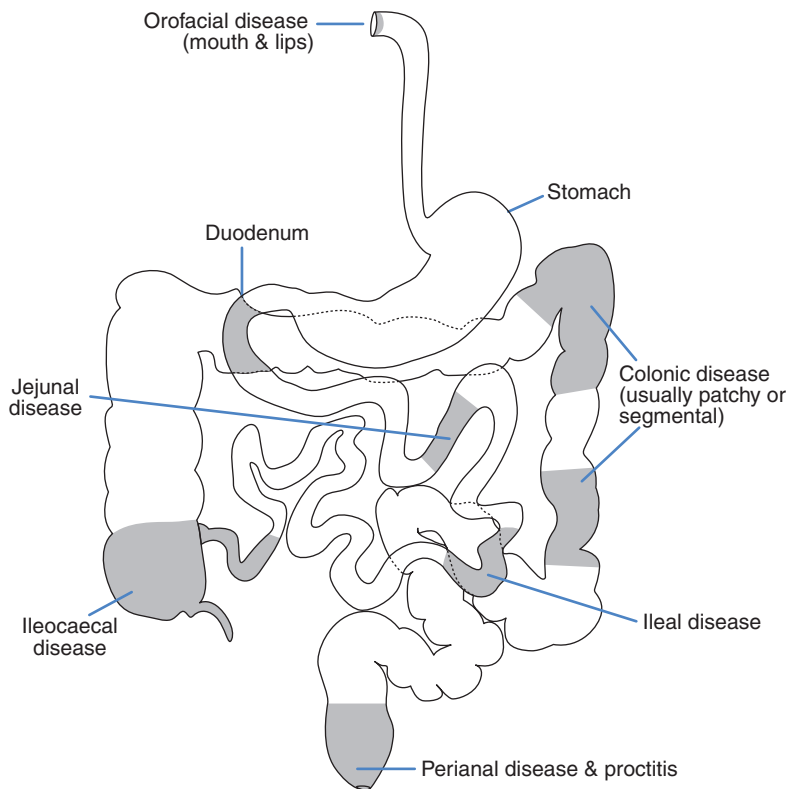
Crohn's disease can cause problems in any part of the gut from ulcers in the mouth to abscesses around the anus. It is classically patchy so that there are areas of inflammation interspersed with normal gut. However, in about half of



people with Crohn's disease, the area affected is limited to the last bit of the small bowel and some, or all of the large bowel. When Crohn's disease affects the large bowel only (Crohn's colitis), it can sometimes be difficult to distinguish it from UC (see below).

Crohn's disease may affect only the internal lining (mucosa) of the gut (like UC) or the inflammation can go deeper into the bowel wall causing a perforation or fistula to form. This can allow bowel contents to leak outside the gut causing collections of infection (abscesses) to develop.

A fistula is an abnormal channel causing a connection between two surfaces that are not normally linked, e.g. between the gut lumen and the skin. These occur in approximately one-third of patients with Crohn's disease at



**Figure 1.4** Common sites affected by Crohn's disease. One or more site may be affected in any individual.



## Inflammatory bowel disease · the facts

some point in their lives. The commonest place to develop fistulas is around the anus.

Another complication of Crohn's disease occurs when the bowel lumen becomes narrowed causing blockages. These narrowings are called strictures. They develop as a result of healing and scarring in the bowel wall after inflammation resolves.

See Figure 3.1 in Chapter 3.

Some people are more prone to inflammatory type Crohn's causing ulceration and bleeding of the gut mucosa, whereas some are more prone to 'penetrating' disease that causes abscesses, perforations, and fistula formation. Others seem to be more likely to have stricturing disease. Some people have more than one type of Crohn's disease at the same time and some will change from one type to another over time.

## Indeterminate colitis/inflammatory bowel disease unclassified

When the inflammation in IBD is confined to the colon it could be due to either UC or Crohn's disease. Although these conditions are distinct in several ways, as described in this and the next chapter, there are times when it can be very difficult to make a firm diagnosis of either. This can be especially true when the condition is newly diagnosed and in its early stages. Sometimes, despite several tests and repeated sets of biopsies, your specialist may tell you that they are not sure whether you have UC or Crohn's colitis. This is known as IBD (unclassified), although it is sometimes called indeterminate

**Table 1.1** Types of Crohn's disease and frequency

Site	Patients (%)
Ileocolonic	45
Colonic only	25
Terminal ileum only	20
Extensive small bowel	5
Perianal only	3
Other (oral, gastroduodenal only)	2



colitis. Usually, over the next year or two, the diagnosis becomes clearer. For example, the disease pattern might change to be more like Crohn's by affecting another part of the gut or the perianal region. Alternatively, a complication seen more commonly in UC may appear (e.g. primary sclerosing cholangitis see Chapter 12).

Although not knowing the exact diagnosis can be frustrating, as long as the disease is under control, there are no drawbacks to it being unclassified.

However, if the disease cannot be controlled with drugs and surgery is required, a problem can arise. This is because the long-term surgical options depend on whether the underlying diagnosis is UC or Crohn's disease. If the diagnosis is unclear and you require surgery, your surgeon and gastroenterologist will recommend you have a subtotal colectomy (see Chapter 9). This leaves you with the future option of either a pouch or an ileorectal anastomosis. After surgery the colon is examined carefully by the pathologist. With such a large specimen it is often possible to make a firm diagnosis. However, occasionally even after the whole colon has been examined under the microscope, it is still not possible to make a diagnosis one way or the other. In this case the disease is labelled indeterminate colitis. Experience tells us that people with this condition tend to have a higher incidence of pouchitis and problems after reconstructive surgery than people with UC. This is because a proportion actually have Crohn's disease, which normally recurs in pouches (see Chapter 9).

## Others

### Microscopic colitis: collagenous colitis, lymphocytic colitis

Microscopic colitis is a condition that causes watery diarrhoea without bleeding. There are two main sorts of microscopic colitis; collagenous colitis and lymphocytic colitis. The cause is not known but some drugs (e.g. diclofenac) have been implicated. The lining of the bowel looks normal during colonoscopy but biopsy samples show a typical pattern of inflammation under the microscope. In collagenous colitis, this consists of an increase in the thickness of the layer of collagen found in the bowel wall. In lymphocytic colitis, increased numbers of lymphocytes are found in the bowel wall.

Unlike UC and Crohn's disease, microscopic colitis tends to occur in late middle age and is more common in women. Sometimes the condition gets better spontaneously, although treatment may be required. It is a rarer condition than IBD.

## Diversion colitis

Diversion colitis is inflammation in a section of the bowel that no longer has faeces flowing through it, i.e. the faeces have been diverted. For example, if the colon has been removed with formation of an ileostomy, the rectum is often left in place but is simply closed off at its upper end (see Chapter 9). Therefore, no faeces flow through the rectum. Commonly the lining of the rectum becomes mildly inflamed. Sometimes, however, it can be severely inflamed causing passage of blood and mucus through the anus. This kind of colitis disappears if the bowel is rejoined and the stream of faeces restored.

Diversion colitis can occur in any individual having surgery for any condition (i.e. it is not specific for people with IBD and may occur if you have colonic surgery for cancer or another reason). This suggests that something in the faeces is needed to keep the bowel healthy and that diversion colitis is not part of the IBD spectrum.

## Pouchitis

Pouchitis is inflammation that occurs in the pouch after pouch surgery (see Chapter 9). This condition usually occurs in people who have had a colectomy for IBD but not those who have had it for polyps or other reasons. This suggests that it is part of the spectrum of IBD.

## What is not inflammatory bowel disease?

### Infection

Infections with bacteria, viruses, or parasites can lead to inflammation of the gut that may look very similar to IBD. The distinction is that in the case of infection, the gut returns to normal once the bug has been eradicated by the immune system or by treatment. The condition does not recur unless another infection is caught. For example, *Campylobacter* is a bacterium that can cause a colitis in healthy people. If treated appropriately they recover completely with no lasting damage to the gut. Of course, people with IBD can catch infections too and, in fact, up to 1 in 5 of flare ups of UC may be provoked by infections.

### Drug-induced gut inflammation

Some medications can cause inflammation in the gut that can look similar to IBD, e.g. non-steroidal anti-inflammatory drugs (e.g. ibuprofen, naproxen) and some potassium supplement tablets can cause ulceration and bleeding

in the gut. Once the drug is stopped, the inflammation improves, which helps to distinguish drug-induced inflammation from IBD. Non-steroidal anti-inflammatory drugs, like Crohn's disease, can cause strictures in the gut.

Of course, many drugs, such as antibiotics, can cause disturbance in gut function leading to symptoms, such as bloating and diarrhoea but only rarely do they cause actual inflammation.

## Coeliac disease

This condition is caused by a specific immune reaction to gluten, which is a protein found in wheat. When affected patients eat wheat the immune system reacts against it and causes inflammation in the small intestine. This leads to malabsorption of nutrients. The inflammation can be cured by avoiding gluten in the diet.

## Irritable bowel syndrome and functional gut disorders

These conditions are characterized by a variety of gut-related symptoms such as diarrhoea, bloating, constipation, and abdominal pain. Other symptoms, such as tiredness, are also commonly found in people with irritable bowel syndrome (IBS) or functional gut disorders. However, unlike in IBD, in IBS there is no obvious bowel inflammation or pathological abnormality of the gut. IBS is very common, affecting up to 1 in 5 people during their lifetime. Normally, the condition is mild and self-limiting, but it can cause severe symptoms in some people.

IBS and functional gut disorders do not cause ulceration or bleeding or affect absorption of nutrients across the gut wall. Therefore they do not usually cause weight loss or anaemia.

Many patients with UC or Crohn's disease will also suffer with IBS at some time or other (see Chapter 4). Indeed, the crossover of symptoms makes it difficult to distinguish between the two (IBD and IBS) at times.

## Conclusions

IBD is a spectrum of conditions of unknown cause that result in inflammation in the bowel. The commonest forms of IBD are Crohn's disease and UC.

