

What is diarrhoea?

People say they have diarrhoea when their bowel movements are more frequent or looser, sloppier or more watery than usual. There is a considerable range in frequency and consistency of bowel movements. But, for people on a western diet, diarrhoea usually means passing more than three soft or sloppy stools per day (type 4-7 on the Bristol Stool Chart, see page 2).

When diarrhoea is a feature of IBS, it is associated with crampy abdominal pain and/or bloating and may alternate with constipation. Severe diarrhoea can result in urgency or even faecal incontinence.

We all have diarrhoea from time to time. It is part of life and can occur if we are anxious or upset, or if we have eaten or drunk anything that has upset us. It can often occur on holiday – commonly known as travelers' diarrhoea, when it may be the result of gastroenteritis or food poisoning.

For most people, diarrhoea is a short-lived inconvenience. But, for people with diarrhoea predominant IBS (known as IBS-D), diarrhoea occurs frequently, often without any warning and may continue for years and cause people to feel very anxious and embarrassed.

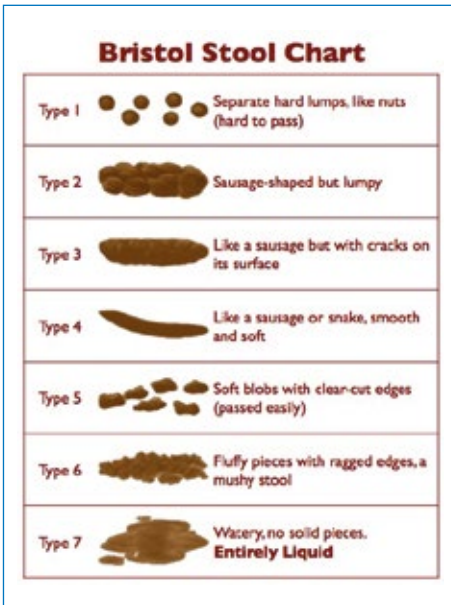
What actually happens

The physiology of diarrhoea

Diarrhoea occurs as a result of a disruption in the balance of absorption and secretion of fluid in the gut. We tend to take in about 1 to 2 litres of fluid a day as part of our diet. To this is added another 8 litres of digestive juices, from saliva, gastric juice, pancreatic secretions, bile and the secretions of the small intestine.

Most of this fluid is absorbed along with nutrients in the small intestine leaving about 1 litre of a thick yellow slurry containing undigested remains of food to enter the colon each day. The colon salvages nutrients from this slurry, converting unabsorbed sugars, starches and proteins into short-chain fatty acids which can be absorbed through the colon wall along with salt and water. This leaves a solid plug of about 150g of bacteria and indigestible fibre, which is evacuated.

Diarrhoea occurs when this process gets out of balance. This can be caused by excessive secretion into the gut, impaired absorption, accelerated propulsion, and a failure of colonic salvage. All these processes can occur together. For example, during food poisoning, bacteria or viruses stimulate excessive secretion of fluid into the small intestine along with strong propulsive contractions. This allows insufficient time for nutrients to be completely absorbed and overwhelms the capacity for colonic salvage. In this way the gut clears the infection by flushing it out.



Medical causes of diarrhoea

- **Gastroenteritis.** Bacterial and viral infections of the bowel tend to cause an attack of vomiting and diarrhoea and cramping abdominal pain that rarely lasts longer than three days. In some people, however, the symptoms can last much longer even though any evidence of infection has disappeared. This is known as post infectious diarrhoea. Some parasitic infections such as amoebiasis and giardiasis can cause diarrhoea that may last several months.
- **Inflammatory Bowel Disease.** Ulcerative Colitis, Crohn's Disease, Microscopic Colitis and Diverticulitis cause inflammation which irritates the lining of the bowel causing secretion and propulsion, often associated with blood and mucus in the stool.
- **Post-infectious IBS.** About 10% of people develop long lasting symptoms of abdominal pain and diarrhoea after an attack of gastroenteritis. There is no sign of infection but the bowel is mildly inflamed and more sensitive to stress and food. Post infectious IBS is more likely to occur if a person is anxious or depressed at the time of the gastroenteritis.
- **Post-traumatic IBS.** Many cases of IBS are instigated by a particularly upsetting life event or a period of life stress with which has not been properly dealt. Anything that reminds you of what happened can rekindle the symptoms that were going on at the time.
- **Small Intestinal Bacterial Overgrowth (SIBO).** Administration of acid blockers to treat symptoms of peptic ulceration or gastro-oesophageal reflux disease, (GERD), may lead to colonization of the small intestine by bacteria. These may degrade fat and ferment protein and carbohydrate, reducing their absorption and result in symptoms of diarrhoea and IBS. Slow small bowel transit and ingestion of probiotics might also predispose to bacterial overgrowth. SIBO is thought to be responsible for about 30% of cases of IBS. This is almost certainly an overestimate due to misinterpretation of breath tests.
- **Food intolerance.** Most people with IBS report some intolerance to food. Food intolerance is not the same as allergy. Any food can be taken in small amounts, but people with sensitive guts tolerate less than otherwise healthy people. It depends on portion size. The following are a list of foods which may cause diarrhoea if taken in amounts that exceed personal tolerance.
 - beans and lentils
 - onions
 - cauliflower
 - beetroot

- stone fruits
 - apples and pears
 - hot spices, such as chilli, pepper and ginger
 - high fibre foods
 - alcohol
 - coffee.
- **Lactose intolerance.** After weaning, about 20% of people living in the UK lose the lactase enzyme that digests milk sugar. This is not necessarily a problem because the colon normally has the capacity to salvage lactose by fermentation. However, if you have a combination of lactase deficiency and a sensitive bowel, drinking more than half a pint of milk is likely to cause diarrhoea.

What can your doctor do?

You should see your doctor if your diarrhoea has been going on for more than a few weeks for no obvious reason. This is especially important if you have lost weight, felt generally unwell or have been losing blood in your motions.

Doctors will usually take a detailed history of your illness, particularly noting any links between the pattern of your symptoms and your diet, stressful life events, trips abroad and changes in medication. They may examine you and carry out specific tests of your blood to screen for Coeliac Disease and inflammatory bowel disease. They may also ask you to collect a sample of stool, which may be useful to identify the presence of parasites such as amoeba or giardia, as well as to test for inflammation in the bowel. If the latter is positive or borderline, your doctor may refer you to hospital for a colonoscopy or barium enema to look for colonic inflammation or cancer. Cancer of the bowel must always be

thought of in somebody over 50 who has experienced a recent alteration in bowel habit for no obvious reason, especially if they have lost weight and been passing blood in their motions.

If blood tests for Coeliac Disease are positive, it is usually necessary to obtain a biopsy of the lining of the small intestine via a gastroscope and perhaps also to carry out tests of pancreatic function. Coeliac Disease and pancreatic disease can then be treated with diets.

- **Cancer of the bowel.** If you are over the age of 50 and experience any persistent change in bowel habit coming on for no obvious reason, it is important that tests are carried out to exclude cancer.
- **Coeliac Disease.** Coeliac Disease occurs in 4% of people diagnosed with IBS. It is caused by an allergy to gluten, which destroys the cells lining the small intestine and results in impaired absorption of nutrients and very loose motions, and in severe cases, weight loss, anaemia and fragile bones.
- **Chronic Pancreatitis.** Lack of pancreatic enzymes impairs digestion, especially of fat, which is converted to irritant hydroxy fatty acids in the colon.
- **Some hormone conditions.** These include overactive thyroid, hyperparathyroidism and diabetes.
- **Surgery.** Removal of segments of small intestine or colon, cholecystectomy (removal of the gall bladder), and gastric by-pass may all result in diarrhoea.
- **Some drugs.** Many medications cause diarrhoea. These include antibiotics, antacids containing magnesium, some antidepressants and drugs that lower blood pressure or reduce cholesterol levels. Read the product leaflets to find out.

Some herbal preparations for the gut may contain senna or cascara, which are strong laxatives.

- **Antibiotic associated diarrhoea.** Courses of broad spectrum antibiotics, used to treat severe infections elsewhere, can deplete the normal colonic bacterial flora (colonic microbiome), impairing bacterial salvage by fermentation of unabsorbed carbohydrate and protein. In some cases, this bacterial depletion can lead to an overgrowth of harmful species such as *Clostridium difficile*, which can cause a serious colonic inflammation.
- **Food allergy.** Food allergy is thought to affect no more than 2% of adults and about 6% of children. Common allergens include peanuts, strawberries and shellfish. Blood tests for antibodies for common foods, (Yorktest), suggest that the gut wall is leaky to food proteins and therefore has the capability to develop an allergic reaction to them. However, the evidence is controversial and such tests are not available on the NHS.

Diarrhoea predominant IBS

In diarrhoea associated with IBS, the bowel is often excessively sensitive to stress and the presence of food, stimulating secretion and propagating contractions which propel food through the intestine too rapidly to be completely absorbed. This may overwhelm the salvage capacity of the colon, resulting in diarrhoea. In particular, unabsorbed fats may be converted in the colon to hydroxyl-fatty acids which irritate the colon. Research has indicated that a specific transmitter substance, called serotonin, released from cells lining the intestine, plays a key role in mediating this extreme sensitivity.

Bile acid malabsorption (BAM)

Normally secreted into the small intestine in response to the arrival of food, bile acids assist the absorption of fat and are then reabsorbed from the last foot of small intestine, (the terminal ileum), to return to the gallbladder. If propulsion through the small intestine is particularly rapid, it may prevent the reabsorption of bile acids, so more of them enter the colon where they are converted by bacteria to compounds that are intensely irritant. Studies have shown that about 30% of people with IBS Diarrhoea have impaired absorption of bile acids. There is some evidence that bile acid malabsorption (BAM) is also caused by a genetic defect in the protein responsible for transporting bile acids.

What you can do

If all the tests have failed to reveal an obvious cause for your diarrhoea, then you may be told that you have Irritable Bowel Syndrome. This does not mean you have to suffer in silence. There is a lot you can do yourself. Look at our website for advice.

Coping with food intolerance

The gut in IBS, especially in people with diarrhoea, is particularly sensitive and this can vary according to how tense you feel. Foods that normally stimulate the intestine are particularly likely to generate diarrhoea in a sensitive gut. These include onions and pulses, some fruits and fruit juices, hot spices, milk, (in people who are lactose deficient), wheat (in some people), and alcoholic drinks, especially beer and red wine. Food intolerance is not like food allergy. Most people can tolerate some of the above foods. It depends on portion size. Moreover, food

intolerance can come and go according to how you feel. So a pragmatic solution might be to reduce the intake of those foods that are likely to cause problems. Then, after your symptoms have abated, you can try to increase the amount again. If you get into difficulties, then ask for a referral to a specialist FODMAP trained Dietitian. Don't let food intolerance rule your life.

Dealing with stress

We all know that stress can affect the bowels. Situations that irritate and frighten you or just feeling overwhelmed by work and responsibility may cause diarrhoea. If those feelings are suppressed and you just soldier on, then the diarrhoea may persist. Ask yourself whether anything might be keeping the diarrhoea going and try to get your life in balance and deal with whatever is happening, or has happened. The trigger may be something seemingly innocuous that reminds you of a much more serious event in the past. If you think that the tension induced by unresolved life situations might be responsible for your symptoms, consider talking to a friend or a professional counsellor or therapist. Alternatively, try to find space in your life by doing something that relaxes you and gives you the peace of mind to get things into perspective. You might like to consider complementary therapies; any of them can help to give you confidence and support. Touch therapies such as reflexology, acupuncture, Reiki therapy and therapeutic massage, can be particularly effective. Bowel directed hypnotherapy is particularly effective in slowing the bowel down in patients with functional diarrhoea.

Medications

Most of the drugs that are used to treat diarrhoea can be purchased over the counter from your local pharmacist.

Loperamide Hydrochloride (*Imodium*), acts on the gut to suppress secretion and colonic propulsion. It is the most powerful antidiarrhoeal drug available over the counter.

Codeine Phosphate acts in a similar manner but also behaves as a mild tranquilliser, but may cause drowsiness.

Cholestyramine (*Questran*) is a resin that acts within the gut to mop up bile acids. It needs to be taken about half an hour before meals so it is around before the bile acids are secreted. You will need to measure and balance the dose with the size of the meal and the response of your symptoms in order to find the regimen that is right for you. Questran is not absorbed into the body and can be taken together with other anti-diarrhoeal drugs. It can only be obtained on prescription from your doctor. Bile acid sequestrants are also available in tablet form, but are less easy to balance. They include Colesevelam (Welchol).

If your diarrhoea is very severe and you are losing a lot of fluid, your doctor may advise you to take oral rehydration solutions such as Dioralyte. These will not necessarily improve the diarrhoea but they will prevent you from getting dangerously dehydrated.

Further Reading

Hammer, HF. *Chronic Diarrhea, An Issue of Gastroenterology Clinics*, 1st Edition. Elsevier, 2012.

International Federation for Functional Gastrointestinal Disorders. *Managing Diarrhoea*. <http://iffgd.org/lower-gi-disorders/diarrhea/managing-diarrhea.html>

Ransley JK and Read NW. *Cooking for The Sensitive Gut*, London, Pavilion Books, 2016.

About this factsheet

This Factsheet was written by Professor Nick Read, M.A., M.D, F.R.C.P Medical Adviser to The IBS Network, July 2016.

It is published by The IBS Network, the national charity supporting people living with Irritable Bowel Syndrome, as a service to those with IBS, and healthcare professionals.