Diverticula of the colon are common in older people. They commonly cause no symptoms, and in most cases no treatment is needed. However, a high-fibre diet is usually advised to help prevent complications. In some cases, diverticula cause pain and other symptoms. Sometimes a diverticulum may bleed and cause a sudden, painless bleed from the back passage (anus), which can be heavy. In some cases, one or more diverticula become infected to cause diverticulitis. This can cause severe tummy (abdominal) pain and high temperature (fever). A course of medicines called antibiotics may be required. Complications caused by diverticulitis, such as a collection of pus (abscess) or a perforated bowel, are uncommon, but are serious.

What are diverticula?

A diverticulum is a small pouch with a narrow neck that sticks out from (protrudes from) the wall of the gut (intestine). Diverticula means more than one diverticulum. They can develop on any part of the gut, but usually occur in the colon (sometimes called the large bowel or large intestine). They most commonly develop in the section of the colon leading towards the back passage (rectum). This is where the stools (faeces) are becoming more solid. This is on the left-hand side of the tummy (abdomen). Several diverticula may develop over time. Some people eventually develop many diverticula.

Who gets diverticula?

Diverticula are common. They become more common with increasing age. About half of all people in the UK have diverticula by the time they are 50 years old. Nearly 7 in 10 have diverticula by the time they are 80 years old.
What causes diverticula?

The reason why diverticula develop is probably related to not eating enough fibre. Fibre is the part of food that is not digested.

Your gut (intestine) moves stools (faeces) along with gentle squeezes of its muscular wall. The stools tend to be drier, smaller, and more difficult to move along if you don't eat much fibre. Your gut muscles have to work harder if there is too little fibre in your gut. High pressure may develop in parts of your gut when it squeezes hard stools. The increased pressure may push the inner lining of a small area of your gut through the muscle wall to form a small diverticulum.

What are the symptoms and problems caused by diverticula?

It is common for no symptoms to develop - called diverticulosis

In about 3 in 4 people who develop diverticula, the diverticula cause no harm or symptoms. The term diverticulosis means that diverticula are present, but do not cause any symptoms or problems. In most cases, the condition will not be known about as there are no symptoms. Sometimes diverticula are discovered as an incidental finding if you are having tests such as colonoscopy or barium enema for other reasons.

Diverticulosis

This term is used when diverticula cause intermittent, lower tummy (abdominal) pain or bloating (without swelling (inflammation) or infection - discussed later). The pain is usually crampy and tends to come and go. The pain is most commonly in the lower left part of the tummy (abdomen). You may get ease from pain and bloating by going to the toilet to pass stools (faeces). Some people develop diarrhoea or constipation, and some people pass mucus with their stools. It is not clear how diverticula cause these symptoms.

Symptoms of diverticular disease can be similar to those that occur with a condition called irritable bowel syndrome (IBS). However, IBS usually affects younger adults. So, symptoms that first develop in a younger adult are more likely to be due to IBS and symptoms that first develop in older people are more likely to be due to diverticular disease. However, in some cases it is difficult to tell if symptoms are due to diverticular disease or to IBS.

A diagnosis of diverticular disease is usually made by confirming the presence of diverticula and by ruling out other causes of the symptoms. Note: the symptoms of diverticular disease, especially if they start in an older person, can also be similar to those of early bowel cancer. Therefore, tell a doctor if you develop these symptoms, as some tests may need to be arranged. For example, a test called colonoscopy may be advised. To carry out this test, a doctor uses a special flexible telescope to look into the bowel. This can confirm the presence of diverticula, and rule out bowel cancer.

Diverticulitis (infection)

Diverticulitis is a condition where one or more of the diverticula become inflamed and infected. This may occur if some faeces get trapped and stagnate in a diverticulum. Germs (bacteria) in the trapped faeces may then multiply and cause infection. About 1 in 5 people with diverticula develop a bout of diverticulitis at some stage. Some people have recurring bouts of diverticulitis. Symptoms of diverticulitis include:

- A constant pain in the abdomen. It is most commonly in the lower left side of the abdomen, but can occur in any part of the abdomen.
- High temperature (fever).
- Constipation or diarrhoea.
- Some blood mixed with your stools.
- Feeling sick (nauseated) or being sick (vomiting).

Obstruction, abscess, fistula, and peritonitis

An infected diverticulum (diverticulitis) sometimes gets worse and causes complications. Possible complications include:

- A blockage (obstruction) of the colon.
- A collection of pus (abscess) that may form in the abdomen.
• A channel (fistula) that may form to other organs such as the bladder.
• A hole (perforation) in the wall of the bowel that can lead to infection inside the abdomen (peritonitis).

Surgery is usually needed to treat these serious but uncommon complications.

**Bleeding**
A diverticulum may occasionally bleed and you may pass some blood via your back passage (anus). The bleeding is usually abrupt and painless. The bleeding is due to a burst blood vessel that sometimes occurs in the wall of a diverticulum and so the amount of blood loss can be heavy. A very large bleed requiring an emergency blood transfusion occurs in some cases. However, the bleeding stops on its own in about 3 in 4 cases. Sometimes an operation is needed to stop the bleeding. Sometimes just a slight bleed occurs.

**Note:** always report bleeding from the bowel (via your anus) to a doctor. You should not assume bleeding is from a diverticulum. Other more serious conditions such as bowel cancer need to be ruled out.

**What is the treatment for diverticulosis?**
As diverticulosis means diverticula with no symptoms, there is no need for any treatment.

However, a high-fibre diet is usually advised. A high-fibre diet is generally considered a good thing for everyone anyway - whether you have diverticula or not. Adults should aim to eat between 18 and 30 grams of fibre per day. Fibre helps to make larger and softer stools (faeces) and helps to prevent constipation. Also, a high-fibre diet may prevent further diverticula from forming. This may reduce the risk of developing problems in the future with diverticula, such as diverticulitis. See the next section for more details of a high-fibre diet.

**What is the treatment for diverticular disease?**

**High-fibre diet, and possibly fibre supplements**
A high-fibre diet is usually advised as it helps to keep stools (faeces) soft and bulky and reduces pressure on the colon. It can ease pain, bloating, constipation and diarrhoea and prevents hard stools becoming lodged within the pouches. It can also help to prevent the formation of further diverticula, which may reduce the risk of the condition getting any worse.

We need about 18 g of fibre each day, which should come from a variety of high-fibre foods. You may have symptoms of wind and bloating if you suddenly increase the amount of fibre you eat. Any increase should be gradual to prevent this, and to allow your gut (intestine) to become used to the extra fibre. A useful guide is to make one change every few days. For example, start by swapping white bread for wholemeal bread. Introduce something new every few days, such as adding beans or extra vegetables to a casserole or bolognese, or having a piece of fruit for pudding.

**High-fibre foods to include:**

- Whole grains, fruit and vegetables.
- Wholemeal or wholewheat bread and flour (for baking).
- Wholegrain breakfast cereals such as All-Bran®, Weetabix®, muesli, etc.
- Brown rice and wholewheat pasta.
- Wheat bran.
- Beans, pulses and legumes.

Meeting the government recommendation of eating at least five fruit and vegetable portions each day will make sure that you are well on your way to getting plenty of fibre. A portion is about 80 g or what roughly fits in the palm of your hand. Apples, pears, oranges, blueberries, strawberries, broccoli, asparagus and dried figs are all excellent fibre sources.

Fibre supplements may be advised if a high-fibre diet does not ease symptoms. Several types are available at pharmacies, health food shops, or on prescription. A pharmacist will advise you. Although the effects of fibre supplements to ease symptoms may be seen in a few days, it may take as long as four weeks.
Note: some people have a different response to fibre than others. So it is very much trial and error as to what is most suitable for you. Some people report that a high-fibre diet or certain fibre supplements cause some persistent mild symptoms such as mild pain and bloating. This may be due to the type of fibre being consumed. Insoluble fibre, found in cereals, wheat bran and nuts, may cause more wind and bloating. Eating a lot of bran-based foods or taking bran supplements can particularly aggravate symptoms in some people. Therefore, it may be helpful to have more soluble fibre (the type of fibre that can be dissolved in water), found mostly in fruit and vegetables. However, many foods contain both types of fibre, so when introducing a new high-fibre food, monitor your symptoms and adjust your diet accordingly.

- Dietary sources of soluble fibre include oats, ispaghula (psyllium), nuts, flax seeds, lentils, beans, fruit and vegetables. A fibre supplement called ispaghula powder is also available from pharmacies and health food shops.
- Insoluble fibre is chiefly found in corn (maize) bran, wheat bran, nuts and some fruit and vegetables.

A separate leaflet called Fibre and Fibre Supplements gives more details on a high-fibre diet.

Fluids

You should have lots to drink when you have a high-fibre diet or fibre supplements. Aim to drink at least two litres (about 8-10 cups) per day. Try to obtain your fluid intake mainly from water, but tea, coffee and herbal teas all contribute. Fizzy drinks and juice drinks contain a lot of sugar so try to limit these. If you want to include fruit juice, one 150 ml glass each day only counts as a portion of fruit. Choose varieties that are 100% fruit juice and do not contain added sugar.

Paracetamol

Paracetamol can ease pain if a high-fibre diet or fibre supplements do not help so much to ease pain. Other types of painkiller are not usually used for diverticular disease.

What is the treatment for diverticulitis?

Diet for acute diverticulitis

During a flare-up, it is likely that your appetite will be poor. To prevent further irritation and to limit poorly digested materials passing through the colon, a bland, low-fibre diet may be most suitable. This should only be short-term. Once your symptoms have eased, gradually reintroduce normal, high-fibre foods into your diet. It can be helpful to introduce one food at a time and monitor symptoms to see what foods make symptoms worse.

High-fibre foods to avoid during flare-ups:

- Fruit and vegetable skins.
- Nuts and seeds.
- Wholegrain products such as wholemeal bread, wholewheat pasta and brown rice, wholegrain cereals and oats.
- Beans, lentils and legumes.
- Raw vegetables or raw/dried fruits such as apricots, raisins, dates, figs and berries.

Low-fibre foods to include:

- White grains such as bread, pasta, rice and noodles.
- Plain cakes/crackers.
- Potatoes with skins removed.
- Milk and dairy products such as cheese and yoghurts.
- Soft, ground/tender meats and fish (avoid gristly meats/bones).
- Eggs.
- Tofu.
- Well-cooked/canned fruit and vegetables with seeds and skins removed.
- Low-fibre cereals such as Rice Krispies® and corn flakes.
- Fats and oils - eg, olive oil, rapeseed oil, and butter.
If symptoms are severe, your doctor may advise a clear liquid diet for about two days to allow the colon to rest. Suitable clear liquids include:

- Water.
- Clear juices without pulp, such as apple, cranberry or grape juice.
- Broths and clear soups.
- Herbal teas, tea and coffee without milk.
- Ice lollies.
- Jelly.

As symptoms improve, introduce solid foods back into the diet. It may be best to introduce low-fibre foods initially, before gradually re-introducing a normal, high-fibre diet once symptoms have gone.

**When symptoms are not too severe**
If you develop diverticulitis you will normally need a course of antibiotic medicine and be encouraged to drink plenty of clear fluids. You may be advised not to eat anything until symptoms settle. You may need some strong painkillers for a while. If the infection is not too severe then symptoms may well settle with this treatment. Once symptoms go, you can resume a normal diet. However, a high-fibre diet (as described above) is usually best.

**If symptoms are severe or prolonged**
If symptoms are severe then you may need to be admitted to hospital. You may be given antibiotics and fluids directly into a vein via a drip. You may need to have painkilling injections. You may also be admitted to hospital if the symptoms are not too severe but do not settle after 48 hours or so with antibiotic tablets.

**If complications develop**
As mentioned earlier, some people with diverticulitis develop complications such as:

- Bowel blockage (obstruction).
- A collection of pus (an abscess).
- A channel (fistula) that may form to other organs.
- A tummy (abdominal) infection (peritonitis).

Surgery is usually needed to treat these serious but uncommon complications. For example, surgery is sometimes needed to drain an abscess or to remove a badly infected part of the colon.

**Treatment of bleeding diverticula**
As mentioned earlier, a large bleed requiring an emergency blood transfusion sometimes occurs in people with diverticula. However, the bleeding stops on its own in about 3 in 4 cases. Sometimes an operation is needed to stop the bleeding.

**A final note**
See a doctor if you have a change in the pattern of your toilet habit. For example, a sudden change from your normal bowel habit to persisting constipation or diarrhoea, passing blood or mucus, or new pains. Even if you are known to have diverticula, a change of symptoms may indicate a new and different gut (intestinal) problem. Call an ambulance urgently if you have a large amount of bleeding from the bowel.

EMIS would like to acknowledge the contribution of Alexa Evans to the ‘Treatment of acute diverticulitis’ section.

**Further reading & references**
- **Diverticular Disease**: World Gastroenterology Organisation Practice Guidelines, 2007
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