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Patient education: Diverticular disease (Beyond the Basics)

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DIVERTICULAR DISEASE OVERVIEW — A diverticulum is a pouch-like structure that can form through points of weakness in the muscular wall of the colon (ie, at points where blood vessels pass through the wall) ([figure 1](#)).

Diverticulosis affects men and women equally. The risk of diverticular disease increases with age. It occurs throughout the world but is seen more commonly in developed countries.

WHAT IS DIVERTICULAR DISEASE?

Diverticulosis — Diverticulosis merely describes the presence of diverticula. Diverticulosis is often found during a test done for other reasons, such as flexible sigmoidoscopy, colonoscopy, or [barium enema](#). Most people with diverticulosis have no symptoms and will remain symptom free for the rest of their lives. (See '[Diverticular disease prognosis](#)' below.)

A person with diverticulosis may have diverticulitis, or diverticular bleeding.

Diverticulitis — Inflammation of a diverticulum (diverticulitis) occurs when there is thinning and breakdown of the diverticular wall. This may be caused by increased pressure within the colon or by hardened particles of stool, which can become lodged within the diverticulum.

The symptoms of diverticulitis depend upon the degree of inflammation present. The most common symptom is pain in the left lower abdomen. Other symptoms can include nausea and vomiting, constipation, diarrhea, and urinary symptoms such as pain or burning when urinating or the frequent need to urinate.

Diverticulitis is divided into simple and complicated forms.

- Simple diverticulitis, which accounts for 75 percent of cases, is not associated with complications and typically responds to medical treatment without surgery.

- Complicated diverticulitis occurs in 25 percent of cases and usually requires surgery. Complications associated with diverticulitis can include the following:
 - Abscess – a localized collection of pus
 - Fistula – an abnormal tract between two areas that are not normally connected (eg, bowel and bladder)
 - Obstruction – a blockage of the colon
 - Peritonitis – infection involving the space around the abdominal organ
 - Sepsis – overwhelming body-wide infection that can lead to failure of multiple organs

Diverticular bleeding — Diverticular bleeding occurs when a small artery located within a diverticulum is eroded and bleeds into the colon.

Diverticular bleeding usually causes painless bleeding from the rectum. In approximately 50 percent of cases, the person will see maroon or bright red blood with bowel movements.

Is bleeding with a bowel movement normal? — It is not normal to see blood in a bowel movement; this can be a sign of several conditions, most of which are not serious (eg, hemorrhoids) but some of which are serious and require immediate treatment. Anyone who sees blood after a bowel movement should consult with their healthcare provider to determine if further testing or evaluation is needed. (See ["Patient education: Blood in the stool \(rectal bleeding\) in adults \(Beyond the Basics\)"](#).)

DIVERTICULOSIS AND DIVERTICULITIS DIAGNOSIS — Diverticulosis is often found during tests performed for other reasons.

- [Barium](#) enema – This is an x-ray study that uses barium in an enema to view the outline of the lower intestinal tract. This is an older test and has been largely replaced by computed tomography (CT) scan.
- Flexible sigmoidoscopy – This is an examination of the inside of the sigmoid colon with a thin, flexible tube that contains a camera. (See ["Patient education: Flexible sigmoidoscopy \(Beyond the Basics\)"](#).)
- Colonoscopy – This is an examination of the inside of the entire colon. (See ["Patient education: Colonoscopy \(Beyond the Basics\)"](#).)
- CT scan – A CT scan is often used to diagnose diverticulitis and its complications. If diverticulitis (not just diverticulosis) is suspected, the above three tests should **not** be used because of the risk of perforation.

TREATMENT

Diverticulosis — People with diverticulosis who do not have symptoms do not require treatment. However, most clinicians recommend increasing fiber in the diet, which can help to bulk the stools and possibly prevent the development of new diverticula, diverticulitis, or diverticular bleeding. Fiber is not proven to prevent these conditions in all patients but may help to control recurrent episodes in some.

Increase fiber — Fruits and vegetables are a good source of fiber ([table 1](#)). The fiber content of packaged foods can be calculated by reading the nutrition label ([figure 2](#)). (See "[Patient education: High-fiber diet \(Beyond the Basics\)](#)".)

Seeds and nuts — Patients with diverticular disease have historically been advised to avoid whole pieces of fiber (such as seeds, corn, and nuts) because of concern that these foods could cause an episode of diverticulitis. However, this belief is completely unproven. We do not suggest that patients with diverticulosis avoid seeds, corn, or nuts.

Diverticulitis — Treatment of diverticulitis depends upon how severe your symptoms are.

Home treatment — If you have mild symptoms of diverticulitis (mild abdominal pain, usually left lower abdomen), you can be treated at home with a clear liquid diet and oral antibiotics. However, if you develop one or more of the following signs or symptoms, you should seek immediate medical attention:

- Temperature >100.1°F (38°C)
- Worsening or severe abdominal pain
- An inability to tolerate fluids

Hospital treatment — If you have moderate to severe symptoms, you may be hospitalized for treatment. During this time, you are not allowed to eat or drink; antibiotics and fluids are given into a vein.

If you develop an abscess of the colon, you may require drainage of the abscess (usually performed by placing a drainage tube across the abdominal wall) or by surgically opening the affected area.

Surgery — If you develop a generalized infection in the abdomen (peritonitis), you will usually require an emergency operation. A two-part operation may be necessary in some cases.

- The first operation involves removal of the diseased colon and creation of a colostomy. A colostomy is an opening between the colon and the skin, where a bag is attached to collect waste from the intestine. The lower end of the colon is temporarily sewed closed to allow it to heal ([figure 3](#)).
- Approximately three to six months later, a second operation is performed to reconnect the two parts of the colon and close the opening in the skin. You are then able to empty your bowels through the rectum. Sometimes patients require up to a year to recover from the first operation, depending on how sick they were.

In non-emergency situations, the diseased area of the colon can be removed and the two ends of the colon can be reconnected in one operation, without the need for a colostomy.

Surgery versus medical therapy — An operation to remove the diseased area of the colon may not be necessary if you improve with medical therapy. However, people who are treated with an operation are felt to be cured, since only 15 percent of people develop further diverticulosis after surgery and only 2 to 11 percent of people need further surgery.

Thus, surgery may be recommended for people with repeated attacks of diverticulitis or if there are severe or repeated episodes of bleeding. The decision depends in part upon your other medical conditions and ability to undergo surgery.

Some healthcare providers recommend surgery after the first attack of diverticulitis in people who are less than 40 to 50 years. The reason for this is that the disease may be more severe in this age group and there may be an increased risk of recurrent disease that will ultimately require surgery. Thus, having surgery at a young age could potentially eliminate the chances of developing worsened disease. The decision to undergo surgery ultimately depends upon your surgeon's recommendations.

In many cases, an elective operation can be performed laparoscopically, using small incisions, rather than the typical vertical (up and down) abdominal incision. Laparoscopic surgery usually allows you to recover more quickly and shortens the hospital stay.

After diverticulitis resolves — After an episode of diverticulitis resolves, if you have not had a recent colonoscopy, the entire length of the colon should be evaluated to determine the extent of disease and to rule out the presence of abnormal lesions such as polyps or cancer. Recommended tests include colonoscopy, [barium](#) enema and sigmoidoscopy, or CT colonography. (See "[Patient education: Colon and rectal cancer screening \(Beyond the Basics\)](#)".)

Diverticular bleeding — Most cases of diverticular bleeding resolve on their own. However, some people will need further testing or treatment to stop bleeding, which may include a colonoscopy, angiography (a treatment that blocks off the bleeding artery), bleeding scan, or surgery.

DIVERTICULAR DISEASE PROGNOSIS

Diverticulosis — Over time, diverticulosis may cause no problems or it may cause episodes of bleeding and/or diverticulitis. Approximately 15 to 25 percent of people with diverticulosis will develop diverticulitis, while 5 to 15 percent will develop diverticular bleeding.

Diverticulitis — Approximately 85 percent of people with uncomplicated diverticulitis will respond to medical treatment, while approximately 15 percent of patients will need an operation. After successful treatment for a first attack of diverticulitis, one-third of patients will remain asymptomatic, one-third will have episodic cramps without diverticulitis, and one-third will go on to have a second attack of diverticulitis.

The prognosis tends to remain similar following a second attack of diverticulitis. Only 10 percent of people remain symptom-free after a second attack. Subsequent attacks tend to be of similar severity, not increasing in severity as previously believed.

WHERE TO GET MORE INFORMATION — Your healthcare provider is the best source of information for questions and concerns related to your medical problem.

This article will be updated as needed on our website (www.uptodate.com/patients). Related topics for patients, as well as selected articles written for healthcare professionals, are also available. Some of the most relevant are listed below.

Patient level information — UpToDate offers two types of patient education materials.

The Basics — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

[Patient education: Diverticulitis \(The Basics\)](#)

Beyond the Basics — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

[Patient education: Blood in the stool \(rectal bleeding\) in adults \(Beyond the Basics\)](#)

[Patient education: Flexible sigmoidoscopy \(Beyond the Basics\)](#)

[Patient education: Colonoscopy \(Beyond the Basics\)](#)

[Patient education: High-fiber diet \(Beyond the Basics\)](#)

[Patient education: Colon and rectal cancer screening \(Beyond the Basics\)](#)

Professional level information — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

[Acute diverticulitis complicated by fistula formation](#)

[Clinical manifestations and diagnosis of acute diverticulitis in adults](#)

[Colonic diverticular bleeding](#)

[Segmental colitis associated with diverticulosis](#)

[Colonic diverticulosis and diverticular disease: Epidemiology, risk factors, and pathogenesis](#)

[Acute colonic diverticulitis: Medical management](#)

The following organizations also provide reliable health information.

- National Library of Medicine
(www.nlm.nih.gov/medlineplus/healthtopics.html)
- National Institute of Diabetes and Digestive and Kidney Diseases
(www.niddk.nih.gov)
- The American Society of Colon and Rectal Surgeons
(www.fascrs.org)

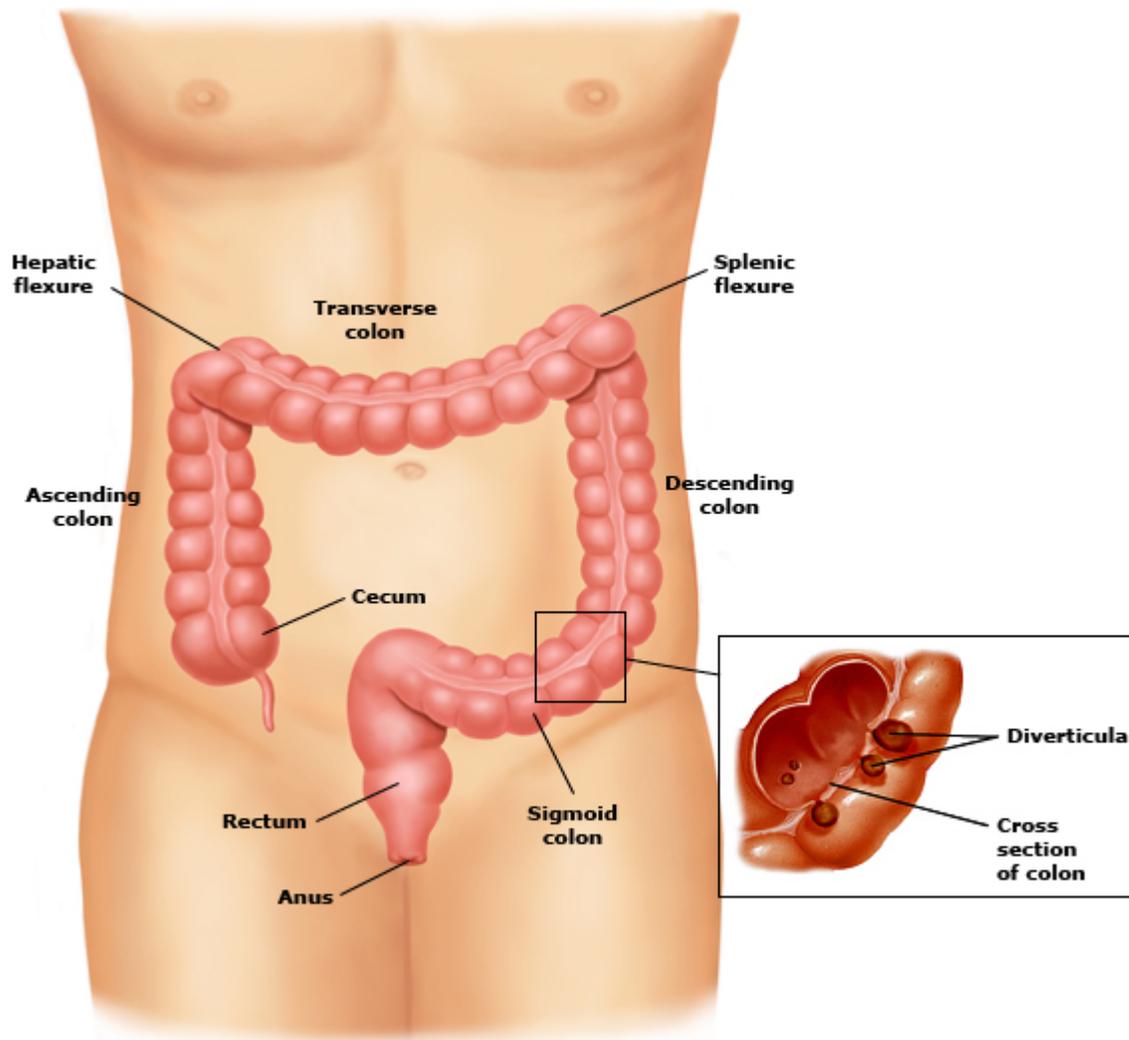
[1]

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Topic 2005 Version 12.0

GRAPHICS

Diverticulum



This figure depicts the various parts of the colon (also known as the large intestine), the rectum, and the anus.

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Graphic 82042 Version 2.0

Amount of fiber in different foods

Food	Serving	Grams of fiber
Fruits		
Apple (with skin)	1 medium apple	4.4
Banana	1 medium banana	3.1
Oranges	1 orange	3.1
Prunes	1 cup, pitted	12.4
Juices		
Apple, unsweetened, w/added ascorbic acid	1 cup	0.5
Grapefruit, white, canned, sweetened	1 cup	0.2
Grape, unsweetened, w/added ascorbic acid	1 cup	0.5
Orange	1 cup	0.7
Vegetables		
Cooked		
Green beans	1 cup	4.0
Carrots	1/2 cup sliced	2.3
Peas	1 cup	8.8
Potato (baked, with skin)	1 medium potato	3.8
Raw		
Cucumber (with peel)	1 cucumber	1.5
Lettuce	1 cup shredded	0.5
Tomato	1 medium tomato	1.5
Spinach	1 cup	0.7
Legumes		
Baked beans, canned, no salt added	1 cup	13.9
Kidney beans, canned	1 cup	13.6
Lima beans, canned	1 cup	11.6
Lentils, boiled	1 cup	15.6
Breads, pastas, flours		
Bran muffins	1 medium muffin	5.2
Oatmeal, cooked	1 cup	4.0
White bread	1 slice	0.6
Whole-wheat bread	1 slice	1.9
Pasta and rice, cooked		
Macaroni	1 cup	2.5
Rice, brown	1 cup	3.5
Rice, white	1 cup	0.6
Spaghetti (regular)	1 cup	2.5

Nuts		
Almonds	1/2 cup	8.7
Peanuts	1/2 cup	7.9

To learn how much fiber and other nutrients are in different foods, visit the United States Department of Agriculture (USDA) National Nutrient Database at: <http://www.nal.usda.gov/fnic/foodcomp/search/>.

Created using data from the USDA National Nutrient Database for Standard Reference. Available at <http://www.nal.usda.gov/fnic/foodcomp/search/>.

Graphic 52349 Version 3.0

Nutrition label

Nutrition Facts	
Serving Size 1 Cup (148g/5.3oz)	
Amount Per Serving	
Calories 100	Calories from Fat 0
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Cholesterol 0mg	0%
Sodium 0mg	0%
Potassium 720mg	21%
Total Carbohydrate 26g	9%
Dietary Fiber 3g	12%
Sugars 3g	
Protein 4g	
Vitamin A 0% • Vitamin C 45%	
Calcium 2% • Iron 6%	
Thiamin 8% • Riboflavin 2%	
Niacin 8% • Vitamin B ₆ 10%	
Folate 6% • Phosphorous 6%	
Zinc 2% • Magnesium 6%	
*Percent Daily Values are based on a 2,000 calorie diet.	

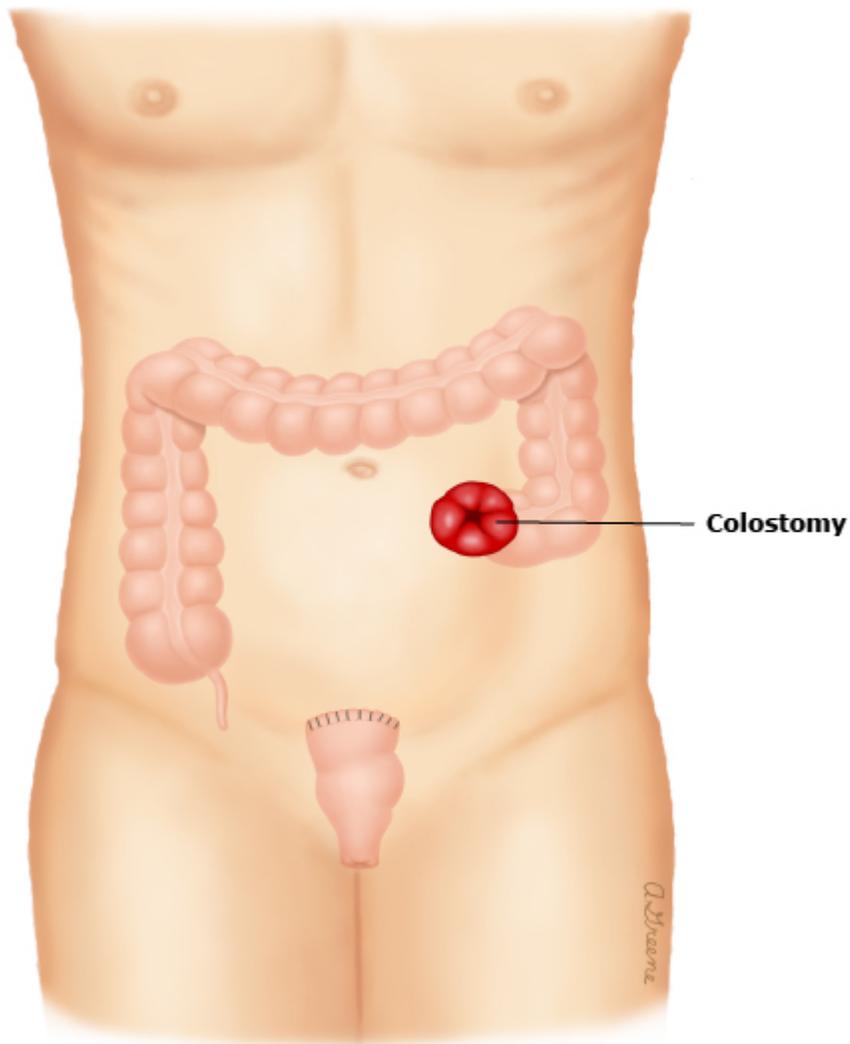
Dietary fiber content = 3 grams

This is an example of a nutrition label. To know how much fiber is in a food, look at the line that reads "dietary fiber." This product has 3 grams of fiber in each serving.

=: percent.

Graphic 51585 Version 5.0

Colostomy



This picture shows a colostomy, which is necessary in some people with severe diverticulitis or Crohn disease, or who are being treated for colon cancer. In some people, the colostomy is temporary. In other people, the colostomy is permanent.

Graphic 57774 Version 6.0