

# Irritable Bowel Syndrome

*National Digestive Diseases Information Clearinghouse*



National Institute of  
Diabetes and Digestive  
and Kidney Diseases

## What is irritable bowel syndrome (IBS)?

Irritable bowel syndrome is a functional gastrointestinal (GI) disorder, meaning symptoms are caused by changes in how the GI tract works. People with a functional GI disorder have frequent symptoms; however, the GI tract does not become damaged. IBS is a group of symptoms that occur together, not a disease. In the past, IBS was called colitis, mucous colitis, spastic colon, nervous colon, and spastic bowel. The name was changed to reflect the understanding that the disorder has both physical and mental causes and is not a product of a person's imagination.

IBS is diagnosed when a person has had abdominal pain or discomfort at least three times a month for the last 3 months without other disease or injury that could explain the pain. The pain or discomfort of IBS may occur with a change in stool frequency or consistency or be relieved by a bowel movement.

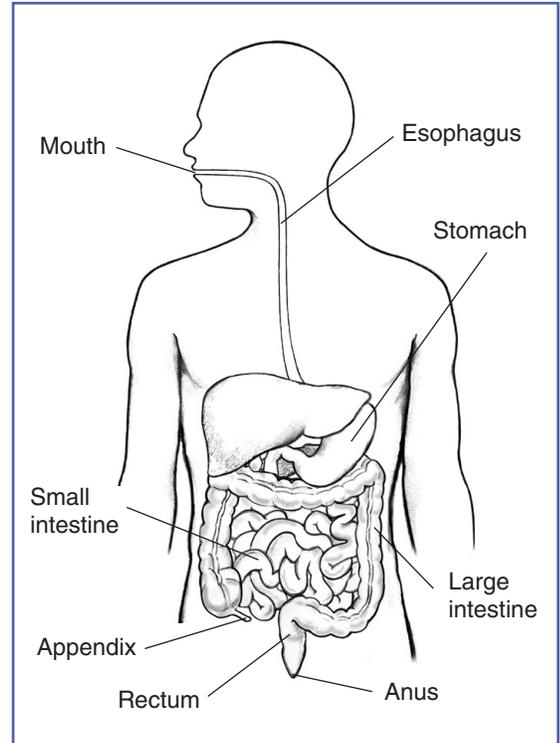
IBS is often classified into four subtypes based on a person's usual stool consistency. These subtypes are important because they affect the types of treatment that are most likely to improve the person's symptoms. The four subtypes of IBS are

- IBS with constipation (IBS-C)
  - hard or lumpy stools at least 25 percent of the time
  - loose or watery stools less than 25 percent of the time
- IBS with diarrhea (IBS-D)
  - loose or watery stools at least 25 percent of the time
  - hard or lumpy stools less than 25 percent of the time
- Mixed IBS (IBS-M)
  - hard or lumpy stools at least 25 percent of the time
  - loose or watery stools at least 25 percent of the time
- Unsubtyped IBS (IBS-U)
  - hard or lumpy stools less than 25 percent of the time
  - loose or watery stools less than 25 percent of the time

## What is the GI tract?

The GI tract is a series of hollow organs joined in a long, twisting tube from the mouth to the anus—the opening through which stool leaves the body. Food is digested by the movement of muscles in the GI tract, along with the release of hormones and enzymes. Organs that make up the GI tract are the mouth, esophagus, stomach, small intestine, large intestine—which includes the appendix, cecum, colon, and rectum—and anus. The intestines are sometimes called the bowel. The last part of the GI tract—called the lower GI tract—consists of the large intestine and anus.

The large intestine absorbs water and any remaining nutrients from partially digested food passed from the small intestine. The large intestine then changes waste from liquid to a solid matter called stool. Stool passes from the colon to the rectum. The rectum is located between the last part of the colon—called the sigmoid colon—and the anus. The rectum stores stool prior to a bowel movement. During a bowel movement, stool moves from the rectum to the anus.



The organs of the GI tract

## How common is IBS and who is affected?

Studies estimate IBS affects 3 to 20 percent of the adult population, with most studies ranging from 10 to 15 percent.<sup>1</sup> However, only 5 to 7 percent of the adult population has been diagnosed with the condition.<sup>2</sup> IBS affects about twice as many women as men and is most often found in people younger than age 45.<sup>1</sup>

## What are the symptoms of IBS?

The most common symptoms of IBS are abdominal pain or discomfort, often reported as cramping, along with changes in bowel habits. To meet the definition of IBS, the pain or discomfort will be associated with at least two of the following three symptoms:

- bowel movements that occur more or less often than usual
- stool that appears less solid and more watery, or harder and more lumpy, than usual
- bowel movements that improve the discomfort

Other symptoms of IBS may include

- diarrhea—having loose, watery stools three or more times a day and feeling urgency to have a bowel movement.

- constipation—having fewer than three bowel movements a week. During a bowel movement, stools can be hard, dry, and small, making them difficult to pass. Some people find it painful and often have to strain to have a bowel movement.
- feeling that a bowel movement is incomplete.
- passing mucus—a clear liquid made by the intestines that coats and protects tissues in the GI tract.
- abdominal bloating.

Symptoms may often occur after eating a meal. To meet the definition of IBS, symptoms must occur at least three times a month.

## What causes IBS?

The causes of IBS are not well understood. Researchers believe a combination of physical and mental health problems can lead to IBS.

### Brain-Gut Signal Problems

Signals between the brain and nerves of the small and large intestines, also called the gut, control how the intestines work. Problems with brain-gut signals may cause IBS symptoms, such as changes in bowel habits and pain or discomfort.

### GI Motor Problems

Normal motility, or movement, may not be present in the colon of a person who has IBS. Slow motility can lead to constipation and fast motility can lead to diarrhea. Spasms, or sudden, strong muscle contractions that come and go, can cause abdominal pain. Some people with IBS also experience hyperreactivity—a dramatic increase in bowel contractions in response to stress or eating.

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<sup>1</sup>Grundmann O, Yoon SL. Irritable bowel syndrome: epidemiology, diagnosis, and treatment: an update for health-care practitioners. *Journal of Gastroenterology and Hepatology*. 2010;25:691–699.

<sup>2</sup>Understanding irritable bowel syndrome. American College of Gastroenterology website. [www.patients.gi.org/gi-health-and-disease/understanding-irritable-bowel-syndrome](http://www.patients.gi.org/gi-health-and-disease/understanding-irritable-bowel-syndrome). Accessed August 15, 2013.

## **Hypersensitivity**

People with IBS have a lower pain threshold for bowel stretching caused by gas or stool compared with people who do not have IBS. The brain may process pain signals from the bowel differently in people with IBS.

## **Mental Health Problems**

Mental health, or psychological, problems such as panic disorder, anxiety, depression, and post-traumatic stress disorder are common in people with IBS. The link between these disorders and development of IBS is unclear. GI disorders, including IBS, are often found in people who have reported past physical or sexual abuse. Researchers believe people who have been abused tend to express psychological stress through physical symptoms.

## **Bacterial Gastroenteritis**

Some people who have bacterial gastroenteritis—an infection or irritation of the stomach and intestines caused by bacteria—develop IBS. Researchers do not know why gastroenteritis leads to IBS in some people and not others, though abnormalities of the GI tract lining and psychological problems may be factors.

## **Small Intestinal Bacterial Overgrowth**

Normally, few bacteria live in the small intestine. Small intestinal bacterial overgrowth is an increase in the number or a change in the type of bacteria in the small intestine. These bacteria can produce extra gas and may also cause diarrhea and weight loss. Some researchers believe that small intestinal bacterial overgrowth may lead to

IBS, and some studies have shown antibiotics to be effective in treating IBS. However, more research is needed to show a link between small intestinal bacterial overgrowth and IBS.

## **Body Chemicals**

People with IBS have altered levels of neurotransmitters—chemicals in the body that transmit nerve signals—and GI hormones, though the role these chemicals play in developing IBS is unclear. Younger women with IBS often have more symptoms during their menstrual periods. Postmenopausal women have fewer symptoms compared with women who are still menstruating. These findings suggest that reproductive hormones can worsen IBS problems.

## **Genetics**

Whether IBS has a genetic cause, meaning it runs in families, is unclear. Studies have shown IBS is more common in people with family members who have a history of GI problems. However, the cause could be environmental or the result of heightened awareness of GI symptoms.

## **Food Sensitivity**

Many people with IBS report that symptoms are triggered by foods rich in carbohydrates, spicy or fatty foods, coffee, and alcohol. However, people with food sensitivity typically do not have clinical signs of food allergy. Researchers have proposed that symptoms may result from poor absorption of sugars or bile acids, which help break down fats and get rid of wastes in the body.

## How is IBS diagnosed?

To diagnose IBS, a health care provider will conduct a physical exam and take a complete medical history. The medical history will include questions about symptoms, family history of GI disorders, recent infections, medications, and stressful events related to the onset of symptoms. An IBS diagnosis requires that symptoms started at least 6 months prior and occurred at least three times a month for the previous 3 months. Further testing is not usually needed, though the health care provider may perform a blood test to screen for other problems. Additional diagnostic tests may be needed based on the results of the screening blood test and for people who also have signs such as

- fever
- rectal bleeding
- weight loss
- anemia—too few red blood cells in the body, which prevents the body from getting enough oxygen
- family history of colon cancer
- family history of irritable bowel disease—long-lasting disorders that cause irritation and ulcers, or sores, in the GI tract
- family history of celiac disease—an abnormal immune reaction to gluten, a protein found in wheat, rye, and barley, that damages the lining of the small intestine and prevents absorption of nutrients

Additional diagnostic tests may include a stool test, lower GI series, and flexible sigmoidoscopy or colonoscopy. Colonoscopy may also be recommended for people who are older than age 50 to screen for colon cancer.

A **stool test** is the analysis of a sample of stool. The health care provider will give the person a container for catching and storing the stool. The sample is returned to the health care provider or a commercial facility and sent to a lab for analysis. The health care provider may also do a rectal exam, sometimes during the physical exam, to check for blood in the stool. Stool tests can show the presence of parasites or blood.

A **lower GI series** is an x ray that is used to look at the large intestine. The test is performed at a hospital or an outpatient center by an x-ray technician, and the images are interpreted by a radiologist—a doctor who specializes in medical imaging. Anesthesia is not needed. The health care provider may give written bowel prep instructions to follow at home before the test. The person may be asked to follow a clear liquid diet for 1 to 3 days before the procedure. A laxative or an enema may be used before the test. A laxative is medication that loosens stool and increases bowel movements. An enema involves flushing water or laxative into the anus using a special squirt bottle.

For the test, the person will lie on a table while the radiologist inserts a flexible tube into the person's anus. The large intestine is filled with barium, making signs of underlying problems show up more clearly on x rays.

For several days, traces of barium in the large intestine cause stools to be white or light colored. Enemas and frequent bowel movements may cause anal soreness. A health care provider will provide specific instructions about eating and drinking after the test.

**Flexible sigmoidoscopy and colonoscopy** are similar, although colonoscopy is used to view the rectum and entire colon, while flexible sigmoidoscopy is used to view just the rectum and lower colon. These tests are performed at a hospital or an outpatient center by a gastroenterologist—a doctor who specializes in digestive diseases. Before either test, a health care provider will give written bowel prep instructions to follow at home. The person may be asked to follow a clear liquid diet for 1 to 3 days before either test. The night before either test, the person may need to take a laxative or one or more enemas. One or more enemas may also be required about 2 hours before a flexible sigmoidoscopy.

In most cases, light anesthesia and possibly pain medication help people relax during colonoscopy. For either test, the person will lie on a table while the gastroenterologist inserts a flexible tube into the anus. A small camera on the tube sends a video image of the intestinal lining to a computer screen. The tests can show signs of problems in the lower GI tract.

The gastroenterologist may also perform a biopsy, a procedure that involves taking a piece of intestinal lining for examination with a microscope. The person will not feel the biopsy. A pathologist—a doctor who specializes in diagnosing diseases—examines the tissue in a lab.

Cramping or bloating may occur during the first hour after either test. Driving is not permitted for 24 hours after a colonoscopy to allow the sedative time to wear off. Before the appointment, a person should make plans for a ride home. Full recovery is expected by the next day.

## How is IBS treated?

Though IBS does not have a cure, the symptoms can be treated with a combination of

- changes in eating, diet, and nutrition
- medications
- probiotics
- therapies for mental health problems

## Eating, Diet, and Nutrition

Large meals can cause cramping and diarrhea, so eating smaller meals more often, or eating smaller portions, may help IBS symptoms. Eating meals that are low in fat and high in carbohydrates, such as pasta, rice, whole-grain breads and cereals, fruits, and vegetables, may help.

Certain foods and drinks may cause IBS symptoms in some people, such as

- foods high in fat
- some milk products
- drinks with alcohol or caffeine
- drinks with large amounts of artificial sweeteners, which are used in place of sugar
- beans, cabbage, and other foods that may cause gas

People with IBS may want to limit or avoid these foods. Keeping a food diary is a good way to track which foods cause symptoms so they can be excluded from or reduced in the diet.

Dietary fiber may improve constipation symptoms in people with IBS, although it may not help with reducing pain. Fiber softens stool so it moves smoothly through the colon. Adults are advised to consume 21 to 38 grams of fiber a day.<sup>3</sup> Fiber may cause gas and trigger symptoms in some people with IBS. Increasing fiber intake slowly, by 2 to 3 grams a day, may help reduce the risk of increased gas and bloating.

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<sup>3</sup>Dietary reference intakes: recommended dietary allowances and adequate intakes, total water and macronutrients. In: Ross AC, Taylor CL, Yaktine AL, Del Valle HB, eds. *Dietary Reference Intakes for Calcium and Vitamin D*. Washington, D.C.: The National Academies Press; 2011: 1110.

## Medications

A health care provider will select medications based on a person's symptoms.

- **Fiber supplements** may be recommended to relieve constipation when increasing dietary fiber is ineffective.
- **Laxatives** may help constipation. Laxatives work in different ways, and a health care provider can provide information about which type is best for each person. Read more in *Constipation* at [www.digestive.niddk.nih.gov](http://www.digestive.niddk.nih.gov).
- **Loperamide** is an antidiarrheal that has been found to reduce diarrhea in people with IBS, though it does not reduce pain, bloating, or other symptoms. Loperamide reduces stool frequency and improves stool consistency by slowing the movement of stool through the colon.
- **Antispasmodics**, such as hyoscine, cimetropium, and pinaverium, help to control colon muscle spasms and reduce abdominal pain.
- **Antidepressants**, such as low doses of tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs), can help relieve IBS symptoms, including abdominal pain. In theory, TCAs should be better for people with IBS-D and SSRIs should be better for people with IBS-C due to the effect on colon transit, although this theory has not been confirmed in clinical studies. TCAs work in people with IBS by reducing sensitivity to pain in the GI tract as well as normalizing GI motility and secretion.

- **Lubiprostone (Amitiza)** is prescribed for people who have IBS-C. The medication has been found to improve abdominal pain or discomfort, stool consistency, straining, and constipation severity.
- **Linaclotide (Linzess)** is also prescribed for people who have IBS-C. Linzess has been found to relieve abdominal pain and increase the frequency of bowel movements.

The antibiotic rifaximin can reduce abdominal bloating by treating small intestinal bacterial overgrowth; however, scientists are still debating the use of antibiotics to treat IBS and more research is needed.

### Probiotics

Probiotics are live microorganisms, usually bacteria, that are similar to microorganisms normally found in the GI tract. Studies have found that when taken in large enough amounts, probiotics, specifically *Bifidobacteria* and certain probiotic combinations, improve symptoms of IBS. However, more research is needed. Probiotics can be found in dietary supplements, such as capsules, tablets, and powders, and in some foods, such as yogurt. A health care provider can give information about the right kind and amount of probiotics to take to improve IBS symptoms. To help ensure coordinated

and safe care, people should discuss their use of complementary and alternative medical practices, including their use of dietary supplements and probiotics, with their health care provider. Read more at [www.nccam.nih.gov/health/probiotics](http://www.nccam.nih.gov/health/probiotics).

### Therapies for Mental Health Problems

The following therapies can help improve IBS symptoms due to mental health problems:

- **Talk therapy** may reduce stress and improve IBS symptoms. Two types of talk therapy used to treat IBS are cognitive behavioral therapy and psychodynamic, or interpersonal, therapy. Cognitive behavioral therapy focuses on a person's thoughts and actions. Psychodynamic therapy focuses on how emotions affect IBS symptoms. This type of therapy often involves relaxation and stress management techniques.
- **Hypnotherapy** may help a person relax the muscles in the colon.
- **Mindfulness training** teaches people to focus their attention on sensations occurring at the moment and avoid catastrophizing, or worrying about the meaning of those sensations.

## What other conditions are associated with IBS?

People with IBS often suffer from other GI and non-GI conditions. GI conditions such as gastroesophageal reflux disease (GERD) and dyspepsia are more common in people with IBS than the general population. GERD is a condition in which stomach contents flow back up into the esophagus—the organ that connects the mouth to the stomach—because the muscle between the esophagus and the stomach is weak or relaxes when it should not. Dyspepsia, or indigestion, is upper abdominal discomfort that often occurs after eating. Dyspepsia may be accompanied by fullness, bloating, nausea, or other GI symptoms. Read more in *Gastroesophageal Reflux (GER) and Gastroesophageal Reflux Disease (GERD) in Adults and Indigestion* at [www.digestive.niddk.nih.gov](http://www.digestive.niddk.nih.gov).

Non-GI conditions often found in people with IBS include

- chronic fatigue syndrome—a disorder that causes extreme fatigue, which is tiredness that lasts a long time and limits a person’s ability to do ordinary daily activities
- chronic pelvic pain
- temporomandibular joint disorders—problems or symptoms of the chewing muscles and joints that connect the lower jaw to the skull
- depression
- anxiety
- somatoform disorders—chronic pain or other symptoms with no physical cause that are thought to be due to psychological problems

## How does stress affect IBS?

Stress can stimulate colon spasms in people with IBS. The colon has many nerves that connect it to the brain. These nerves control the normal contractions of the colon and cause abdominal discomfort at stressful times. In people with IBS, the colon can be overly responsive to even slight conflict or stress. Stress makes the mind more aware of the sensations that arise in the colon. IBS symptoms can also increase a person’s stress level. Some options for managing stress include

- participating in stress reduction and relaxation therapies such as meditation
- getting counseling and support
- taking part in regular exercise such as walking or yoga
- minimizing stressful life situations as much as possible
- getting enough sleep

## Points to Remember

- Irritable bowel syndrome (IBS) is a functional gastrointestinal (GI) disorder, meaning symptoms are caused by changes in how the GI tract works. People with a functional GI disorder have frequent symptoms; however, the GI tract does not become damaged.
- IBS is a group of symptoms that occur together, not a disease.
- Studies estimate IBS affects 3 to 20 percent of the adult population, with most studies ranging from 10 to 15 percent. However, only 5 to 7 percent of the adult population has been diagnosed with the condition.
- The most common symptoms of IBS are abdominal pain or discomfort, often reported as cramping, along with changes in bowel habits. Other symptoms of IBS may include
  - diarrhea
  - constipation
  - feeling that a bowel movement is incomplete
  - passing mucus
  - abdominal bloating
- The causes of IBS are not well understood. Researchers believe a combination of physical and mental health problems can lead to IBS.
- To diagnose IBS, a health care provider will conduct a physical exam and take a complete medical history. The medical history will include questions about symptoms, family history of GI disorders, recent infections, medications, and stressful events related to the onset of symptoms.
- Though IBS does not have a cure, the symptoms can be treated with a combination of
  - changes in eating, diet, and nutrition
  - medications
  - probiotics
  - therapies for mental health problems

## Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases' (NIDDK's) Division of Digestive Diseases and Nutrition conducts and supports basic and clinical research into many digestive disorders.

Clinical trials are research studies involving people. Clinical trials look at safe and effective new ways to prevent, detect, or treat disease. Researchers also use clinical trials to look at other aspects of care, such as improving the quality of life for people with chronic illnesses. To learn more about clinical trials, why they matter, and how to participate, visit the NIH Clinical Research Trials and You website at [www.nih.gov/health/clinicaltrials](http://www.nih.gov/health/clinicaltrials). For information about current studies, visit [www.ClinicalTrials.gov](http://www.ClinicalTrials.gov).

## For More Information

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You may also find additional information about this topic by visiting MedlinePlus at [www.medlineplus.gov](http://www.medlineplus.gov).

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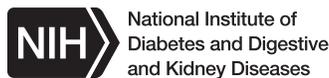
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