INTRODUCTION — Irritable bowel syndrome (IBS) is a chronic condition of the gastrointestinal tract. Its cardinal symptoms are abdominal pain and altered bowel habits, but these symptoms have no identifiable cause.

IBS is the most commonly diagnosed gastrointestinal condition and is second only to the common cold as a cause of absence from work. An estimated 10 to 20 percent of people in the general population experience symptoms of IBS, but only about 15 percent of affected people actually seek medical help.

Several treatments and therapies are available for IBS. These measures help alleviate symptoms, but do not cure the condition. The chronic nature of IBS and the challenge of controlling its symptoms can be frustrating for both patients and doctors. Treatment is more likely to be successful when a person gathers information about IBS and works closely with his or her doctor to tailor a treatment plan.

CAUSE OF IRRITABLE BOWEL SYNDROME — A number of theories as to the origin of IBS have been proposed over the years. However, despite intensive research, no cause has been consistently identified.

- One theory suggests that IBS is caused by abnormal contractions of the colon (hence the term "spastic colon," which has sometimes been used to describe IBS). Vigorous contractions of the colon can cause severe cramps, providing the rationale for some of the treatments of IBS, such as antispasmodics and fiber (both of which help to regulate the contractions of the colon). However, abnormal colonic motility does not seem to explain IBS in all patients, and it is unclear whether it is a symptom or cause of the disorder.

- The development of IBS following severe gastrointestinal infections (such as those caused by Salmonella or Campylobacter) has been well recognized for many years. The mechanisms by which the infections trigger the development of IBS are not well understood. Most patients with IBS do not have a history of having had one of these infections.

- People with IBS in the general community have the same psychological makeup
as those without IBS. However, people with IBS who seek medical help are more likely to suffer from anxiety and stress than those who do not seek medical advice. It is known that stress and anxiety have a number of effects on the intestine; thus, it is likely that anxiety and stress worsen symptoms, but they are probably not the cause of symptoms. Some studies have suggested that IBS is more common in people who have a history of physical, verbal, or sexual abuse.

- Food intolerances are almost universal in patients with IBS, raising the possibility that IBS is caused by food sensitivity or allergy. This theory has been difficult to prove, although it continues to be studied. The best way to detect an association between symptoms of IBS and food sensitivity is to eliminate certain food groups systematically (a process called an elimination diet), which is usually best accomplished under the supervision of a doctor or nutritionist. The danger in eliminating foods in a nonsystematic way is that it can erroneously lead people to eliminate important sources of nutrition from their diet. In addition, unnecessary dietary restrictions can further worsen the quality of life in patients who already have enough to cope with.

A number of foods are known to cause symptoms that can mimic or aggravate IBS, including dairy products (which contain lactose), legumes (such as beans), and cruciferous vegetables (such as broccoli, cauliflower, brussels sprouts, and cabbage), which increase intestinal gas and can thereby cause cramps. Several medications also have effects on the intestines, and thus may be contributing to symptoms.

- Many researchers believe that IBS may be caused by heightened sensitivity of the intestines to normal sensations (so-called "visceral hyperalgesia"). This theory proposes that nerves carrying sensory messages from the bowel are overactive in people with IBS, so that normal amounts of gas or movement in the gastrointestinal tract are perceived as excessive and painful. In support of this theory is the observation that some patients with severe IBS feel better when treated with medications (such as low doses of imipramine or nortriptyline) that decrease the sensations coming from the intestine.

**SYMPTOMS OF IRRITABLE BOWEL SYNDROME** — IBS usually begins in young adulthood. Women are twice as likely as men to be diagnosed with IBS, although this might reflect an increased willingness among women in the United States and other western countries to seek medical advice for this condition. In other countries (such as India), the diagnosis is equal among men and women. The hallmark of IBS is abdominal pain in association with altered bowel habits.

**Abdominal pain** — Abdominal pain is typically crampy, varying in intensity, and located in the lower left abdomen. However, the nature, severity, and location of pain can vary considerably from person to person. Some people notice that emotional stress and eating worsen the pain, and that defecation relieves the pain. Some women with IBS notice an association between pain episodes and their menstrual cycle.

**Altered bowel habits** — Altered bowel habits are a second hallmark of IBS. These altered habits may include diarrhea, constipation, or alternating diarrhea and constipation. If diarrhea is the more common pattern, the condition is called diarrhea predominant IBS; if constipation is the more common pattern, the condition is called constipation dominant IBS.

**Diarrhea** — The diarrhea of IBS is usually characterized by frequent loose stools of small to moderate volume. Bowel movements usually occur during the daytime, and most often in the morning or after meals. Diarrhea is often preceded by a sense of extreme urgency and followed by a feeling of incomplete evacuation. About one-half
of people with IBS also notice mucous discharge with diarrhea. Diarrhea occurring during sleep is very uncommon in IBS and should alert to other possible diagnoses.

**Constipation** — The constipation of IBS can last from days to months. Stools are often hard and pellet-shaped. Sometimes people experience a sensation of incomplete evacuation, even when the rectum is empty. This faulty sensation can lead to straining, sitting on the toilet for prolonged periods of time, and the use of enemas and laxatives for relief.

**Other gastrointestinal symptoms** — Other gastrointestinal symptoms commonly experienced in patients with IBS include bloating, gas, belching, heartburn, reflux, difficulty swallowing, an early feeling of fullness with eating, and nausea.

**Symptoms outside the gastrointestinal tract** — Non-gastrointestinal symptoms may accompany the gastrointestinal symptoms of IBS. These symptoms may include frequent and urgent urination, painful menstruation, and sexual problems.

**DIAGNOSIS OF IRRITABLE BOWEL SYNDROME** — Several intestinal disorders have symptoms that are similar to IBS. Examples include malabsorption (abnormal absorption of nutrients), inflammatory bowel disease (such as ulcerative colitis and Crohn’s disease), and microscopic and eosinophilic colitis (uncommon diseases associated with intestinal inflammation). Because there is no single diagnostic test for IBS, most doctors compare a person's symptoms to formal sets of diagnostic criteria (such as the Rome or Manning criteria) (show table 1). However, these criteria do not perfectly discriminate among people with IBS, people with other gastrointestinal conditions, and healthy people. Thus, a medical history, physical examination, and select tests can help to rule out other medical conditions.

When choosing among the many available diagnostic tests, a doctor usually considers the information that they can provide, the likelihood that a person's symptoms are being caused by some other medical condition, the cost of the test, and the safety of the test. It is important to establish a firm diagnosis so that both you and your doctor are confident in the treatment approach.

**Medical history** — The diagnosis of IBS begins with a comprehensive medical history. The medical history will include a discussion of the nature, duration, and severity of gastrointestinal and other symptoms. Sometimes a medical history reveals that dietary factors or drugs are actually causing a person's symptoms. Doctors routinely ask about past and present physical or sexual abuse and psychologic stress because these factors may have a role in IBS.

**Physical examination** — A thorough physical examination usually reveals no abnormalities in people with IBS, but it can help detect or rule out conditions that mimic IBS.

**Tests** — Most doctors order routine blood tests in people with suspected IBS; these tests are usually normal, but they can help rule out other medical conditions. Sometimes, based upon certain symptoms or other factors in your medical history, a doctor will order thyroid function tests and/or stool tests to check for certain other conditions. Some doctors also order more invasive tests, such as sigmoidoscopy or colonoscopy, especially in people over the age of 40 years. These tests allow for visual and microscopic inspection of the inside of the colon.

**TREATMENT OF IRRITABLE BOWEL SYNDROME** — There are a number of different treatments and therapies for IBS. Many of these measures can be combined to effectively reduce the pain and other symptoms of IBS. Because of the wide variability of symptoms in people with this condition, different treatments and
therapies work for different people. Treatment is usually a long-term process; during this process, it is important to maintain good communication with your doctor about your symptoms, your concerns, and any psychologic and social issues that arise.

**Monitoring** — The first step in treating IBS may be close monitoring of your symptoms, your daily habits, and any other factors that may affect gastrointestinal function. This step can identify factors that worsen symptoms in some people with IBS, such as lactose or other food intolerances and stress. A daily diary can be helpful.

**Dietary modification** — As discussed above, people with IBS commonly describe food intolerances. Many have already eliminated or avoid certain foods known to aggravate their symptoms. The systematic elimination of particular foods can be helpful to determine the relationship between the food and symptoms. This strategy may be particularly useful in patients who have eliminated multiple foods, a behavior which in itself can contribute to the decreased quality of life experienced by many people with IBS.

Many doctors recommend the temporary elimination of dairy products, since lactose intolerance is common and can cause symptoms similar to IBS or aggravate IBS. People who avoid lactose should take dietary calcium supplements.

Several foods are only partially digested in the intestines. When they reach the colon, further digestion takes place by bacteria, which produce gas as a byproduct of their digestion. As a result, these foods can cause gas and cramps. The most common are the legumes (such as beans) and cruciferous vegetables (ie, vegetables that have a cross at their base) such as cabbage, brussels sprouts, cauliflower, and broccoli. In addition, some patients have trouble with onions, celery, carrots, raisins, bananas, apricots, prunes, sprouts, and wheat.

**Increasing dietary fiber** — Increasing dietary fiber (either by adding certain foods to the diet or using fiber supplements) can relieve symptoms in some people with IBS, particularly people who have combined abdominal pain and constipation. It may also be helpful in people with diarrhea predominant symptoms since it can improve the consistency of stools. It is often helpful to take a dietary fiber supplement (such as psyllium [Metamucil] or methylcellulose [Citrucel]) since it is difficult to consume enough fiber in the diet, particularly when avoiding foods known to increase intestinal gas. Dietary fiber supplements should be increased to the prescribed dose over several weeks to help reduce the symptoms of excessive intestinal gas, which can occur in some people when beginning fiber therapy. The reasons that fiber helps people with IBS are not completely understood.

**Psychosocial therapies** — Stress and anxiety can worsen IBS in some people. The best approach for reducing stress and anxiety depends upon the individual and the severity of symptoms. You should have an open discussion with your doctor about the possible role that stress and anxiety could be having on your symptoms, and together decide upon the best course of action for you.

- Some patients benefit from formal counseling with or without pharmacologic therapy or other treatments such as hypnosis and biofeedback.

- Participation in a support group can also be valuable.

- Many patients find that daily exercise can be extremely helpful to their sense of well-being. Exercise can also have favorable effects on bowel action.
Drugs — Although many drugs are available to treat the symptoms of IBS, these drugs do not cure the condition, and they are used primarily to support other types of treatment. The choice among these drugs depends in part upon whether a person has diarrhea, constipation, or pain predominant IBS. Furthermore, the effectiveness of specific drugs varies from one person to another. As a general rule, drugs are reserved for patients whose symptoms have not adequately responded to more conservative measures such as changes in diet and fiber supplementation.

**Anticholinergic drugs** — Anticholinergic drugs block the nervous system’s stimulation of the gastrointestinal tract and thus have an antispasmodic effect, relieving severe cramping and irregular contractions of the colon. Drugs in this category include dicyclomine (Bentyl) and hyoscyamine (Levsin). These drugs may be particularly helpful when taken prophylactically (ie, before symptoms) and thus are most helpful for patients who can predict the onset of their symptoms. Common side-effects include dry mouth and eyes and blurred vision.

**Antidepressants** — Many antidepressants have a pain relieving effect that is independent of their depression relieving effect. The pain relieving effect can often be observed at doses that are too low to have an antidepressant effect. These drugs can alleviate the abdominal pain of IBS, although they typically require three to four weeks to take effect. One class of antidepressants, tricyclic antidepressants, which includes amitriptyline, imipramine, and nortriptyline, also slow movement of contents through the gastrointestinal tract and may be most helpful in people with diarrhea predominant IBS. Another class of antidepressants, the selective serotonin reuptake inhibitors, including the drugs paroxetine (Paxil), fluoxetine (Prozac), sertraline (Zoloft), and citalopram (Celexa), are usually prescribed for people who have both IBS and depression.

**Antidiarrheal drugs** — The drugs loperamide (Imodium) or diphenoxylate with atropine (Lomotil) can help slow the movement of contents through the gastrointestinal tract. Loperamide and diphenoxylate/atropine are most helpful in people with diarrhea predominant IBS. However, doctors usually recommend that these drugs should only be used as needed, and rarely on a continuous basis.

**Anxiolytic drugs** — Anxiolytic drugs reduce anxiety. Diazepam (Valium) belongs to this class of drugs. Anxiolytic drugs are occasionally prescribed for people with IBS who are experiencing acute anxiety that is worsening their symptoms. However, these drugs should only be taken for short periods of time since they interact with other drugs, and cause addiction and withdrawal syndromes.

**Drugs affecting serotonin receptors** — Serotonin is a hormone that is involved in intestinal contractions and sensation. Drugs that stimulate the serotonin receptors increase intestinal contractions while drugs that block them decrease intestinal contractions.

The blocking category of these drugs is best suited for people with diarrhea-predominant symptoms. The first that received approval from the Food and Drug Administration was alosetron (Lotronex). However, alosetron was withdrawn from the market soon after its introduction because of concerns related to its safety. It was later reintroduced under tight regulatory control. Whether other drugs in this class will prove to be safer remains to be determined.

**Tegaserod** (Zelnorm) is the first of the stimulating category of drugs to be approved by the Food and Drug Administration. In clinical trials, it appeared to be moderately effective for patients with constipation-predominant symptoms.
Drugs in development — Several new classes of medications for IBS are currently in development. Their efficacy and safety compared to other treatments that are already available remains to be determined.

HERBS AND NATURAL THERAPIES — A number of herbal and natural therapies have been advocated for the treatment of IBS. Unfortunately, evidence supporting their benefit from scientifically conducted studies is lacking. It is important to appreciate that even though small studies exist that support a benefit of many of these therapies, the studies are either too small or have major flaws that make definitive conclusions impossible.

Peppermint oil — There is a small amount of evidence supporting a benefit for peppermint oil, although it is difficult to make definitive conclusions. Peppermint oil can cause or worsen heartburn.

Acidophilus — There is increasing interest in the possible beneficial effects of so called "healthy" bacteria in a variety of intestinal diseases including IBS. Whether supplements containing these bacteria (such as acidophilus with or without "FOS" or Lactobacillus) are of any benefit is unproven.

Chamomile tea — Chamomile tea is of unproven benefit in IBS. Furthermore, chamomile can aggravate allergies in people who tend to be allergic. People allergic to the grass family can have an allergic reaction to chamomile as well.

Evening primrose oil — Evening primrose oil, a supplement containing gamma linolenic acid, is of unproven benefit.

Fennel seeds — Fennel seeds are of unproven benefit.

Wormwood — Wormwood is of unproven benefit and may be unsafe. Wormwood oil can cause damage to the nervous system.

Comfrey — Comfrey is of unproven benefit and can cause serious liver problems.

PROGNOSIS — Although IBS can produce substantial physical discomfort and emotional distress, studies show that most people with IBS do not develop serious long-term health conditions. Furthermore, the vast majority of patients learn to control their symptoms.

Over time, less than 5 percent of people originally diagnosed with IBS will be diagnosed with some other gastrointestinal condition, so it is important to work with your doctor to monitor your symptoms over time. Further testing might be required if your symptoms have changed. On the other hand, studies also show that IBS does not decrease life expectancy; people with IBS live just as long as people in the general population.

WHERE TO GET MORE INFORMATION — Your doctor is the best resource for finding out important information related to your particular case. Not all patients with IBS are alike, and it is important that your situation is evaluated by someone who knows you as a whole person.

This discussion will be updated as needed every four months on our web site (www.uptodate.com). Additional topics as well as selected discussions written for health care professionals are also available for those who would like more detailed information.
A number of other sites on the internet have information about IBS. Information provided by the National Institutes of Health, national medical societies, and some other well-established organizations are often reliable sources of information, although the frequency with which their information is updated is variable.

- National Library of Medicine
  (http://www.nlm.nih.gov/medlineplus)

- National Institute of Diabetes and Digestive and Kidney Diseases
  (http://www.niddk.nih.gov)

- The American Gastroenterological Association
  (http://www.gastro.org)

- The American College of Gastroenterology
  (http://www.acg.gi.org)

- International Foundation for Functional Gastrointestinal Disorders
  (IFFGD)  
  (http://www.iffgd.org/)

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REFERENCES


