

Overview of Irritable Bowel Syndrome (IBS)

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ABSTRACT

This article is the overview of irritable bowel syndrome (IBS). Irritable bowel syndrome (IBS) is a group of symptoms including abdominal pain and changes in the pattern of bowel movements without any evidence of underlying damage. These symptoms occur over a long time, often years. Irritable bowel syndrome (IBS) affects between 6-18% of people worldwide. This condition involves changes in frequency or form of bowel movements and lower abdominal pain. Diet, stress, poor sleep and changes in gut bacteria may all trigger symptoms. The precise cause of IBS isn't known. Finding ways to deal with stress may help prevent or ease symptoms of IBS. There's no test to definitively diagnose IBS. Your doctor is likely to start with a complete medical history, physical exam and tests to rule out other conditions. IBS is a chronic functional disorder of the gastrointestinal tract with symptoms of abdominal pain and altered bowel habits that include diarrhea, constipation, or both. Patients who suffer from IBS often have an impaired quality of life. IBS affects 10% to 20% of the general population, but these percentages are likely underestimated, since only a small portion of patients with IBS symptoms seek medical attention.

Keywords: Overview, irritable, bowel, syndrome, IBS.

INTRODUCTION

Irritable bowel syndrome (IBS) is a group of symptoms including abdominal pain and changes in the pattern of bowel movements without any evidence of underlying damage. These symptoms occur over a long time, often years. It has been classified into four main types depending on whether diarrhea is common, constipation is common, both are common, or neither occurs very often (IBS-D, IBS-C, IBS-M, or IBS-U respectively). IBS negatively affects quality of life and may result in missed school or work.[9] Disorders such as anxiety, major depression, and chronic fatigue syndrome are common among people with IBS [1]. The causes of IBS are not clear. Theories include combinations of gut-brain axis problems, gut motility disorders, pain sensitivity, infections including small intestinal bacterial overgrowth, neurotransmitters, genetic factors, and food sensitivity. Onset may be triggered by an intestinal infection, or stressful life event. IBS is a functional gastrointestinal disorder. Diagnosis is based on symptoms in the absence of worrisome features and

once other potential conditions have been ruled out. Worrisome features include onset at greater than 50 years of age, weight loss, blood in the stool, or a family history of inflammatory bowel disease. Other conditions that may present similarly include celiac disease, microscopic colitis, inflammatory bowel disease, bile acid malabsorption, and colon cancer [2].

There is no known cure for IBS. Treatment is carried out to improve symptoms. This may include dietary changes, medication, probiotics, and counseling. Dietary measures include increasing soluble fiber intake, a gluten-free diet, or a short-term diet low in fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAPs) [3]. The medication loperamide may be used to help with diarrhea while laxatives may be used to help with constipation. Antidepressants may improve overall symptoms and reduce pain. Patient education and a good doctor-patient relationship are an important part of care. About 10 to 15% of people in the developed world are

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believed to be affected by IBS. It is estimated that 45% of people globally are affected by IBS. It is more common in South America and less common in Southeast Asia [4]. It is twice as common in women as men and typically occurs before age 45. The condition appears to become less common with age. IBS does not affect life expectancy or lead to other serious diseases. The first description of the condition was in 1820 while the current term irritable bowel syndrome came into use in 1944.

Signs and Symptoms of Irritable Bowel Syndrome (IBS)

Irritable bowel syndrome (IBS) affects between 6–18% of people worldwide. This condition involves changes in frequency or form of bowel movements and lower abdominal pain. Diet, stress, poor sleep and changes in gut bacteria may all trigger symptoms. However, triggers are different for each person, making it difficult to name specific foods or stressors that everyone with the disorder should avoid [5]. This article will discuss the most common symptoms of IBS and what to do if you suspect you have it.

Pain and Cramping

Abdominal pain is the most common symptom and a key factor in diagnosis. Normally, your gut and brain work together to control digestion. This happens via hormones, nerves and signals released by the good bacteria that live in your gut. In IBS, these cooperative signals become distorted, leading to uncoordinated and painful tension in the muscles of the digestive tract [7]. This pain usually occurs in the lower abdomen or the entire abdomen but is less likely to be in the upper abdomen alone. Pain typically decreases following a bowel movement. Diet modifications, such as a diet low in FODMAPs, may improve pain and other symptoms. Other treatments include bowel relaxants like peppermint oil, cognitive behavior therapy and hypnotherapy. For pain that doesn't respond to these changes, a gastroenterologist can help you find a medication specifically proven to ease IBS pain.

Diarrhea

Diarrhea-predominant IBS is one of the three main types of the disorder. It affects roughly one-third of patients with IBS. A study of 200 adults found that those with diarrhea-predominant IBS had, on average, 12 bowel movements weekly more than twice the amount of adults without IBS. Accelerated bowel transit in IBS can also result in a sudden, immediate urge to have a bowel movement. Some patients describe this as a significant source of stress, even avoiding some social situations for fear of a sudden onset of diarrhea. Additionally, stool in the diarrhea-predominant type tends to be loose and watery and may contain mucus [8].

Constipation

Although it seems counterintuitive, IBS can cause constipation as well as diarrhea. Constipation-predominant IBS is the most common type, affecting nearly 50% of people with IBS. Altered communication between the brain and bowel may speed up or slow down the normal transit time of stool. When transit time slows, the bowel absorbs more water from stool, and it becomes more difficult to pass. Constipation is defined as having fewer than three bowel movements per week. "Functional" constipation describes chronic constipation not explained by another disease. It is not related to IBS and is very common. Functional constipation differs from IBS in that it is generally not painful. In contrast, constipation in IBS includes abdominal pain that eases with bowel movements. Constipation in IBS also often causes a sensation of an incomplete bowel movement. This leads to unnecessary straining. Along with the usual treatments for IBS, exercise, drinking more water, eating soluble fiber, taking probiotics and the limited use of laxatives may help [9].

Alternating Constipation and Diarrhea

Mixed or alternating constipation and diarrhea affects about 20% of patients with IBS. Diarrhea and constipation in IBS involve chronic, recurring abdominal pain. Pain is the most important clue that changes in bowel movements are not related to diet or common, mild infections. This type of IBS tends to be

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more severe than the others with more frequent and intense symptoms. The symptoms of mixed IBS also vary more from one person to another. Therefore, this condition requires an individualized treatment approach rather than “one-size-fits-all” recommendations [10].

Changes in Bowel Movements

Slow-moving stool in the intestine often becomes dehydrated as the intestine absorbs water. In turn, this creates hard stool, which can exacerbate symptoms of constipation. Prompt movement of stool through the intestine leaves little time for absorption of water and results in the loose stools characteristic of diarrhea. IBS can also cause mucus to accumulate in stool, which is not usually associated with other causes of constipation. Blood in stool may be a sign of another, potentially serious medical condition and deserves a visit to your doctor. Blood in stool may appear red but often appears very dark or black with a tarry consistency [11].

Gas and Bloating

Altered digestion in IBS leads to more gas production in the gut. This can cause bloating, which is uncomfortable. Many with IBS identify bloating as one of the most persistent and nagging symptoms of the disorder. In a study of 337 IBS patients, 83% reported bloating and cramping. Both symptoms were more common in women and in constipation-predominant IBS or mixed types of IBS.

Food Intolerance

Up to 70% of individuals with IBS report that particular foods trigger symptoms. Two-thirds of people with IBS actively avoid certain foods. Sometimes these individuals exclude multiple foods from the diet. Why these foods trigger symptoms is unclear. These food intolerances are not allergies, and trigger foods don't cause measurable differences in digestion. While trigger foods are different for everyone, some common ones include gas-producing foods, such as FODMAPs, as well as lactose and gluten.

Fatigue and Difficulty Sleeping

Over half of people with IBS report fatigue. In one study, 160 adults diagnosed with IBS described low stamina

that limited physical exertion in work, leisure and social interactions.

Another study of 85 adults found that the intensity of their symptoms predicted the severity of fatigue. IBS is also related to insomnia, which includes difficulty falling asleep, waking frequently and feeling unrested in the morning. In a study of 112 adults with IBS, 13% reported poor sleep quality. Another study of 50 men and women found that those with IBS slept about an hour longer yet felt less refreshed in the morning than those without IBS [12]. Interestingly, poor sleep predicts more severe gastrointestinal symptoms the following day.

Anxiety and Depression

IBS is linked to anxiety and depression, as well. It's unclear whether IBS symptoms are an expression of mental stress or whether the stress of living with IBS makes people more prone to psychological difficulties [13]. Whichever comes first, anxiety and digestive IBS symptoms reinforce one another in a vicious cycle. In a large study of 94,000 men and women, people with IBS were over 50% more likely to have an anxiety disorder and over 70% more likely to have a mood disorder, such as depression. Another study compared levels of the stress hormone cortisol in patients with and without IBS. Given a public speaking task, those with IBS experienced greater changes in cortisol, suggesting greater stress levels (35).

Causes of Irritable Bowel Syndrome (IBS)

The precise cause of IBS isn't known. Factors that appear to play a role include:

- **Muscle contractions in the intestine.** The walls of the intestines are lined with layers of muscle that contract as they move food through your digestive tract. Contractions that are stronger and last longer than normal can cause gas, bloating and diarrhea. Weak intestinal contractions can slow food passage and lead to hard, dry stools.
- **Nervous system.** Abnormalities in the nerves in your digestive system may cause you to experience greater than normal

discomfort when your abdomen stretches from gas or stool. Poorly coordinated signals between the brain and the intestines can cause your body to overreact to changes that normally occur in the digestive process, resulting in pain, diarrhea or constipation.

- **Inflammation in the intestines.** Some people with IBS have an increased number of immune-system cells in their intestines. This immune-system response is associated with pain and diarrhea.
- **Severe infection.** IBS can develop after a severe bout of diarrhea (gastroenteritis) caused by bacteria or a virus. IBS might also be associated with a surplus of bacteria in the intestines (bacterial overgrowth).
- **Changes in bacteria in the gut (microflora).** Microflora are the "good" bacteria that reside in the intestines and play a key role in health. Research indicates that microflora in people with IBS might differ from microflora in healthy people.

Prevention of Irritable Bowel Syndrome (IBS)

Finding ways to deal with stress may help prevent or ease symptoms of IBS. Consider trying:

- **Counseling.** A counselor can help you learn to modify or change your responses to stress. Studies have shown that psychotherapy can provide significant and long-lasting reduction of symptoms.
- **Biofeedback.** Electrical sensors help you receive information (feedback) on your body's functions. The feedback helps you focus on making subtle changes, such as relaxing certain muscles, to ease symptoms.
- **Progressive relaxation exercises.** These exercises help you relax muscles in your body, one by one. Start by tightening the muscles in your feet, then concentrate on slowly letting all of the tension go [14]. Next, tighten and relax your calves. Continue until the muscles in

your body, including those in your eyes and scalp, are relaxed.

- **Mindfulness training.** This stress-reduction technique helps you focus on being in the moment and letting go of worries and distractions.

Risk factors

Many people have occasional signs and symptoms of IBS. But you're more likely to have the syndrome if you:

- **Are young.** IBS occurs more frequently in people under age 50.
- **Are female.** In the United States, IBS is more common among women. Estrogen therapy before or after menopause also is a risk factor for IBS.
- **Have a family history of IBS.** Genes may play a role, as may shared factors in a family's environment or a combination of genes and environment.
- **Have a mental health problem.** Anxiety, depression and other mental health issues are associated with IBS. A history of sexual, physical or emotional abuse also might be a risk factor.

Diagnosis of Irritable bowel syndrome (IBS)

There's no test to definitively diagnose IBS. Your doctor is likely to start with a complete medical history, physical exam and tests to rule out other conditions [15]. If you have IBS with diarrhea, you likely will be tested for gluten intolerance (celiac disease).

After other conditions have been ruled out, your doctor is likely to use one of these sets of diagnostic criteria for IBS:

- **Rome criteria.** These criteria include abdominal pain and discomfort lasting on average at least one day a week in the last three months, associated with at least two of these factors: Pain and discomfort are related to defecation, the frequency of defecation is altered, or stool consistency is altered.
- **Manning criteria.** These criteria focus on pain relieved by passing stool and on having incomplete bowel movements, mucus in the stool and changes in stool

consistency. The more symptoms you have, the greater the likelihood of IBS.

- **Type of IBS.** For the purpose of treatment, IBS can be divided into three types, based on your symptoms: constipation-predominant, diarrhea-predominant or mixed.

Your doctor will also likely assess whether you have other signs or symptoms that might suggest another, more serious, condition. These signs and symptoms include:

- Onset of signs and symptoms after age 50
- Weight loss
- Rectal bleeding
- Fever
- Nausea or recurrent vomiting
- Abdominal pain, especially if it's not completely relieved by a bowel movement, or occurs at night
- Diarrhea that is persistent or awakens you from sleep
- Anemia related to low iron

If you have these signs or symptoms, or if an initial treatment for IBS doesn't work, you'll likely need additional tests.

Additional tests

Your doctor may recommend several tests, including stool studies to check for infection or problems with your intestine's ability to take in the nutrients from food (malabsorption). You may also have a number of other tests to rule out other causes for your symptoms.

Imaging tests can include:

- **Flexible sigmoidoscopy.** Your doctor examines the lower part of the colon (sigmoid) with a flexible, lighted tube (sigmoidoscope).
- **Colonoscopy.** Your doctor uses a small, flexible tube to examine the entire length of the colon.
- **X-ray or CT scan.** These tests produce images of your abdomen and pelvis that might allow your doctor to rule out other causes of your symptoms, especially if you have abdominal pain. Your doctor might fill your large intestine with a liquid (barium) to make any problems more visible on X-ray. This

barium test is sometimes called a lower GI series.

Laboratory tests can include:

- **Lactose intolerance tests.** Lactase is an enzyme you need to digest the sugar found in dairy products. If you don't produce lactase, you may have problems similar to those caused by IBS, including abdominal pain, gas and diarrhea. Your doctor may order a breath test or ask you to remove milk and milk products from your diet for several weeks.
- **Breath test for bacterial overgrowth.** A breath test also can determine if you have bacterial overgrowth in your small intestine. Bacterial overgrowth is more common among people who have had bowel surgery or who have diabetes or some other disease that slows down digestion.
- **Upper endoscopy.** A long, flexible tube is inserted down your throat and into the tube connecting your mouth and stomach (esophagus). A camera on the end of the tube allows the doctor to inspect your upper digestive tract and obtain a tissue sample (biopsy) from your small intestine and fluid to look for overgrowth of bacteria. Your doctor might recommend endoscopy if celiac disease is suspected [16].
- **Stool tests.** Your stool might be examined for bacteria or parasites, or a digestive liquid produced in your liver (bile acid), if you have chronic diarrhea.

Treatment of Irritable bowel syndrome

Treatment of IBS focuses on relieving symptoms so that you can live as normally as possible. Mild signs and symptoms can often be controlled by managing stress and by making changes in your diet and lifestyle. Try to:

- Avoid foods that trigger your symptoms
- Eat high-fiber foods
- Drink plenty of fluids
- Exercise regularly
- Get enough sleep

Your doctor might suggest that you eliminate from your diet:

- **High-gas foods.** If you experience bloating or gas, you might avoid items such as carbonated and alcoholic beverages, caffeine, raw fruit, and certain vegetables, such as cabbage, broccoli and cauliflower.
- **Gluten.** Research shows that some people with IBS report improvement in diarrhea symptoms if they stop eating gluten (wheat, barley and rye) even if they don't have celiac disease.
- **FODMAPs.** Some people are sensitive to certain carbohydrates such as fructose, fructans, lactose and others, known as FODMAPs — fermentable oligo-, di-, and monosaccharides and polyols. FODMAPs are found in certain grains, vegetables, fruits and dairy products. Your IBS symptoms might ease if you follow a strict low-FODMAP diet and then reintroduce foods one at a time.

A dietitian can help you with these diet changes.

If your problems are moderate or severe, your doctor might suggest counseling — especially if you have depression or if stress tends to worsen your symptoms.

In addition, based on your symptoms your doctor might suggest medications such as:

- **Fiber supplements.** Taking a supplement such as psyllium (Metamucil) with fluids may help control constipation.
- **Laxatives.** If fiber doesn't help symptoms, your doctor may prescribe magnesium hydroxide oral (Phillips' Milk of Magnesia) or polyethylene glycol (Miralax).
- **Anti-diarrheal medications.** Over-the-counter medications, such as loperamide (Imodium), can help control diarrhea. Your doctor might also prescribe a bile acid binder, such as cholestyramine (Prevalite), colestipol (Colestid) or colesevelam (Welchol). Bile acid binders can cause bloating.
- **Anticholinergic medications.** Medications such as dicyclomine (Bentyl) can help relieve

painful bowel spasms. They are sometimes prescribed for people who have bouts of diarrhea. These medications are generally safe but can cause constipation, dry mouth and blurred vision.

- **Tricyclic antidepressants.** This type of medication can help relieve depression as well as inhibit the activity of neurons that control the intestines to help reduce pain. If you have diarrhea and abdominal pain without depression, your doctor may suggest a lower than normal dose of imipramine (Tofranil), desipramine (Norpramine) or nortriptyline (Pamelor). Side effects — which might be reduced if you take the medication at bedtime — can include drowsiness, blurred vision, dizziness and dry mouth.
- **SSRI antidepressants.** Selective serotonin reuptake inhibitor (SSRI) antidepressants, such as fluoxetine (Prozac, Sarafem) or paroxetine (Paxil), may help if you're depressed and have pain and constipation.
- **Pain medications.** Pregabalin (Lyrica) or gabapentin (Neurontin) might ease severe pain or bloating.

Medications specifically for IBS

Medications approved for certain people with IBS include:

- **Alosetron (Lotronex).** Alosetron is designed to relax the colon and slow the movement of waste through the lower bowel. Alosetron can be prescribed only by doctors enrolled in a special program, is intended for severe cases of diarrhea-predominant IBS in women who haven't responded to other treatments, and isn't approved for use by men [5]. It has been linked to rare but important side effects, so it should only be considered when other treatments aren't successful.
- **Eluxadoline (Viberzi).** Eluxadoline can ease diarrhea by reducing muscle contractions and fluid secretion in the intestine, and increasing muscle tone in the rectum. Side effects can include nausea, abdominal pain and mild

constipation. Eluxadoline has also been associated with pancreatitis, which can be serious and more common in certain individuals.

- **Rifaximin (Xifaxan).** This antibiotic can decrease bacterial overgrowth and diarrhea.
- **Lubiprostone (Amitiza).** Lubiprostone can increase fluid secretion in your small intestine to help with the passage of

stool. It's approved for women who have IBS with constipation, and is generally prescribed only for women with severe symptoms that haven't responded to other treatments.

- **Linaclotide (Linzess).** Linaclotide also can increase fluid secretion in your small intestine to help you pass stool. Linaclotide can cause diarrhea, but taking the medication 30 to 60 minutes before eating might help.

CONCLUSION

IBS is a chronic functional disorder of the gastrointestinal tract with symptoms of abdominal pain and altered bowel habits that include diarrhea, constipation, or both. Patients who suffer from IBS often have an impaired quality of life. IBS affects 10% to 20% of the general population, but these percentages are likely underestimated, since only a small portion of patients with IBS symptoms seek medical attention. Patients who suffer from IBS often do not respond to lifestyle and diet modifications. Although a few medications are available to treat IBS symptoms, several of these drugs have strict limitations on use. Many

patients do not find complete symptomatic relief, even when physicians explore off-label drug options [8] [9]. Well-designed studies are needed to support the use and optimize the dosing for older medications that are used off-label. Additionally, comparative effectiveness studies, which would help guide treatment selection, are lacking for IBS medications. Emerging treatment options for IBS, such as asimadoline, eluxadoline, and rifaximin, show promise, but better understanding of the disease pathophysiology is needed to facilitate drug development.

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