



# Irritable Bowel Syndrome

If you suffer from the following ongoing symptoms, you might have IBS:

- Abdominal Pain
- Bloating
- Constipation
- Diarrhea

IBS is a chronic, often debilitating, functional gastrointestinal disorder with symptoms that include abdominal pain, bloating, and altered bowel behaviours, such as constipation and/or diarrhea, or alternating between the two. In IBS, the function, or movement, of the bowel is not quite right. There are no medical tests to confirm or rule out a diagnosis and yet it is the most common gastrointestinal condition worldwide and the most frequent disorder presented by patients consulting a gastrointestinal specialist (gastroenterologist).

IBS can begin in childhood, adolescence, or adulthood and can resolve unexpectedly for periods throughout an individual's lifespan, recurring at any age. Studies show it could affect as many as 13-20% of Canadians at any given time. The lifetime risk for a Canadian to develop IBS is 30%. In Canada and most Western nations, IBS seems to arise significantly more frequently in women than in men, but the reason for this remains unclear.

Although each person has a unique IBS experience within the range of known symptoms, this condition can significantly decrease a person's quality of life. Interestingly, only about 40% of those who have IBS symptoms seek help from a physician. IBS frequently affects individuals of working age, which can lead to an increased financial burden when they are too sick to work, either taking many sick days or not being able to produce as well while at work (absenteeism).

Over the years, some have called this collection of symptoms by many names, including mucous colitis, nervous colon, spastic colon, and irritable colon, but these are all misleading, mostly because IBS is not limited to the large intestine (colon).

Sometimes, IBS is confused with colitis or other inflammatory diseases of the intestinal tract, but the difference is clear – in IBS, inflammation or infection is not evident.

## Symptoms

Almost every person has experienced abdominal cramping, bloating, constipation, or diarrhea at some point in his or her life. However, those who have IBS experience these multiple symptoms more frequently and intensely, to the extent that they interfere with day-to-day living.

A person who has IBS likely has a sensitive digestive system with heightened reactivity, so that the gastrointestinal tract responds quite differently to normal gut stimuli, such as the passage of solids, gas, and fluid through the intestines. These unusual movements may result in difficulty passing stool, or sudden, urgent elimination. Up to 20% of those who have IBS report untimely passage of stool. Some individuals with IBS may also experience straining to pass stool along with a feeling of incomplete evacuation (tenesmus) and immense relief of pain/discomfort when gas or stool finally passes. A stringy substance (mucus) may cover the stool.

Individuals might have different combinations of symptoms, with one symptom dominating while the other digestive symptoms occur more randomly and unpredictably. These bowel experiences and their unpredictability can lead to a high degree of anxiety for the IBS patient. Stool consistency may vary enormously, ranging from entirely liquid to so firm and separated that it resembles small pebbles. External factors, such as stress, can affect stool consistency. IBS has different sub-groups, which are associated with stool consistency.

- **IBS-D** is when the digestive system contracts quickly, transiting products of digestion rapidly through the digestive tract, resulting in frequent, watery bowel movements (diarrhea).
- **IBS-C** is when the digestive system contracts slowly,

delaying transit time for products of digestion, resulting in hard, difficult to pass, infrequent stools (constipation).

- **IBS-M** is when the transit time throughout the digestive tract fluctuates, causing patients to experience a mix of both diarrhea and constipation, often alternating between the two. These extreme stool consistencies can sometimes even occur within the same bowel movement.

Intestinal pain can occur when material in one section of the gut passes through slowly while material in another section passes through quickly. These simultaneous actions can produce bowel movements alternating between constipation and diarrhea, sometimes within the same bowel movement. In addition, prolonged contractions of the bowel might prevent the normal passage of air and trigger bloating, belching, and flatulence. Bloating could become so severe that clothing feels tighter and abdominal swelling becomes visible to others.

Pain manifests in many ways with IBS. It can be ongoing or episodic, present sharply and resolve rapidly, occur occasionally or frequently, and move from one location in the bowel to another very quickly. Digestive pain often occurs following a meal and can last for hours. Those who have IBS tend to have a quicker and more intense reaction to digestive tract pain stimuli than do those who do not have IBS. Results of a survey we conducted – with 2,961 respondents – showed that many individuals had various levels of pain from IBS. When rating the severity level of pain experienced at some point during the past three months, 39% said their abdominal pain was mild, 53% said it was moderate, and 31% said it was severe. Only 4% of survey respondents did not experience abdominal pain in the past three months. Furthermore, more than 62% of those with IBS indicate that their pain continued after bowel movements.

## Other Experiences

Symptoms occurring outside of the digestive tract that might be related to IBS include sleep disturbances, fibromyalgia, back pain, chronic pelvic pain, interstitial cystitis, temporomandibular joint disorder, post-traumatic stress disorder, and migraine headaches. Female patients who have IBS have also reported discomfort during sexual intercourse (dyspareunia). Our survey showed 32% have some form of mood disorder, 27% have gastroesophageal reflux disease, and 27% have anxiety disorder.

The majority of people with IBS indicate that their symptoms interfere with everyday life. Patients who have IBS-D or IBS-M often feel they cannot engage in work or social activities away from home unless they are certain there are easily accessible bathroom facilities available. Some patients with IBS-C are often in such pain that they find even slight body movements uncomfortable. Pain and frequent bowel movements or preoccupation with an inability to eliminate stool may make school, work, and social situations difficult. Our survey showed 46% of IBS patients who work or go to school say they miss one or more days in an average three-month period due to their IBS

symptoms.

Those who suffer with IBS might experience a diverse range of emotions related to the condition that vary in intensity, and may include anxiety, depression, shame, fear, self-blame, guilt, anger, and loss of self-esteem. Fortunately, psychological management of IBS can often help reduce these symptoms.

## Thirty-Second IBS Test

Please take this test to see if you might have IBS

Have you had discomfort\* or pain anywhere in your abdomen at least one day a week during the past 3 months?

YES  NO

[if yes to above, then:]

Does the discomfort or pain sometimes get better after a bowel movement?

YES  NO

Is the discomfort or pain associated with a change in the frequency of bowel movements?

YES  NO

Is the discomfort or pain sometimes associated with constipation or diarrhea?

YES  NO

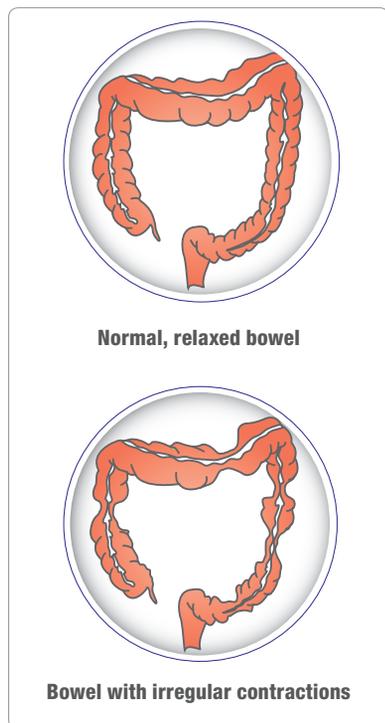
*\*discomfort means an uncomfortable sensation not described as pain*

**If you answered “no” to any of the questions**, then it is likely that you do not have IBS; however, you may still want to consult a physician if you answered “yes” to any of the questions.

**If you answered “yes” to all of the questions**, then you might have IBS. You’re not alone! Many Canadians live with this common digestive disorder. There are treatment options available to decrease or eliminate your symptoms and improve your quality of life. Please read this booklet carefully and contact your physician, pharmacist, other health care professional, or the Gastrointestinal Society for further help.

## Diagnosis

As the symptoms of IBS are varied and there are no specific organic tests to determine whether a patient has IBS, part of the diagnostic process is to rule out other known diseases. Typically, a physician takes the following steps to reach an IBS diagnosis:



## Medical History

A physician reviews the patient's medical history, considering bowel function pattern, the nature and onset of symptoms, the presence or absence of other symptoms, and warning signs that might indicate some other diagnosis. It is important to note what symptoms do *not* relate to IBS and these include weight loss, blood in the stool, and fever. If the need to defecate wakes you from your sleep, you should report this to your physician as it is not typical of IBS and could have other implications.

Bowel pain and uterine/ovarian pain may be difficult to distinguish from each other, so coexisting gynecological conditions might delay or confound an IBS diagnosis in women.

## Physical Examination

During a physical evaluation, the bowel may have involuntary jerky muscular contractions (spastic) and seem tender; although the patient's physical health usually appears normal in other respects.

## Investigative Testing

A physician might request tests to rule out other possible diseases. In performing a scope, physicians view the intestinal

tract with an instrument that enters the body via the mouth (gastroscopy) or the anus (colonoscopy/sigmoidoscopy). The scope is made of a hollow, flexible tube with a tiny light and video camera.

The physician may also request routine blood and stool tests to rule out known organic diseases. Some symptoms of celiac disease overlap those of IBS, so a family history of this disease might be a reason to test for it.

A physician makes a diagnosis of irritable bowel syndrome after taking these steps, and after considering the nature of the patient's symptoms in relation to the information detailed in the *Thirty-Second IBS Test*, located on page 2.

## Possible Causes

The cause of IBS has not been determined. It primarily presents as a functional disorder with altered patterns of intestinal muscle contractions. While IBS is chronic and painful, there is no evidence for a relationship between this disorder and an increased risk of more serious bowel conditions such as inflammatory bowel disease or colorectal cancer. IBS is a multifactorial disorder involving an interaction between the GI tract, bacteria in the gut, the nervous system, and external factors such as stress.

Although not proven, theories exist as to factors that influence IBS symptoms, including:

- neurological hyper-sensitivity within the gastrointestinal (enteric) nerves
- physical and/or emotional stress
- dietary issues such as food allergies or sensitivities, or poor eating patterns
- use of systemic antibiotics
- gastrointestinal infection
- bile acid malabsorption
- the amount or pattern of physical exercise
- chronic alcohol abuse
- abnormalities in gastrointestinal secretions and/or digestive muscle contractions (peristalsis)
- acute infection or inflammation of the intestine (enteritis), such as traveller's diarrhea, which may precede onset of IBS symptoms

The gastrointestinal (GI) system is very sensitive to adrenalin, the hormone released when one is excited, fearful, or anxious, and to other hormones as well. Changes in female hormone levels also affect the GI tract, so IBS symptoms may worsen at specific times throughout the menstrual cycle. Since hormones affect the transit time of food through the digestive tract, this might account for the predominance of IBS in women, although the evidence is still lacking.

It is important to note that since there is no definitive proof of the source of IBS, many promoted potential 'causes' and advertised 'cures' of this syndrome are simply speculation.

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## Management

The gastrointestinal tract is an extremely complex system, influenced by many nerves and hormones. It is clear that the type of food eaten, the frequency and environment of eating, as well as various medications affect both the secretions and motility of the intestine.

The most important aspect of IBS treatment is for patients to understand the nature of their unique symptoms and any potential aggravating or triggering factors. It is also helpful to recognize that it may take time before bowel function returns to a more normal state.

## Dietary and Lifestyle Modifications

The bowel responds to how and when a person eats, so it is important to eat regular, well-balanced, moderately sized meals rather than erratic, variable meals. Occasionally, IBS symptoms improve by allowing sufficient time for regular eating and bathroom routines. In addition, maintaining a healthy sleep schedule and getting a moderate amount of exercise can help reduce symptoms.

Some IBS patients report that dietary fats and the food additive MSG (monosodium glutamate) trigger symptoms. Some find symptoms worsen when consuming large quantities of liquids with meals. Others find that cooking vegetables and fruits lessens IBS symptoms, compared to when eating them raw. An IBS patient should avoid or decrease consumption of gastrointestinal stimulants such as caffeine, nicotine, and alcohol, particularly if the predominant symptom is diarrhea.

IBS patients do not necessarily produce more gas, but their intestines may be highly sensitive to the passage of gas. Steps an IBS patient can take to help include reducing the ingestion of air, which is the major source of intestinal gas, and avoiding large quantities of gas-producing foods. To decrease swallowed air, avoid chewing gum, gulping food, drinking carbonated beverages, washing food down with liquids, and sipping hot drinks.

Poor-fitting dentures, a chronic postnasal discharge, chronic pain, anxiety, or tension may also contribute to increased air swallowing. For more information, ask about our *Intestinal Gas* pamphlet.

A proposed therapy for IBS, called the low FODMAP diet, is increasing in popularity in North America. FODMAP is an abbreviation for Fermentable Oligosaccharides, Disaccharides, Monosaccharides, and Polyols. These are the names of poorly digested carbohydrates, which travel into the large intestine where they are fermented by the resident bacteria. For many individuals, these foods do not cause any problems but some who have IBS find that these foods worsen their symptoms. The diet involves avoiding specific foods for six to eight weeks to see if symptoms subside. If the symptoms improve, you can slowly reintroduce FODMAPs into the diet to a tolerable limit. FODMAPs are in many foods, so removing them from your

diet can increase your risk of nutritional deficiencies. While the results of studies conducted on the low FODMAP diet show promise as a possible management approach for IBS, it does not help everyone, and further research is required. See [www.badgut.org](http://www.badgut.org) for more information.

It is important to note that IBS is highly variable, and each individual can experience different triggers. By keeping a food intake diary and noting any adverse reactions, you can quickly identify and remove problematic food from your diet and determine an approach that works best for you. Be sure to consult a registered dietitian before eliminating any food group long-term. For more information on a balanced diet, consult *Canada's Food Guide*, available from Health Canada.

## Fibre

An important step in controlling the symptoms of IBS is to increase dietary fibre from plants, which the human body cannot digest on its own. The fibre content of foods stays the same with cooking, although this process may change its effect within the gut. When considering fibre, it is important to look at both the fibre content of foods and the type of fibre (insoluble or soluble).

Gradually increase your dietary fibre intake, allowing your body to adjust to the change, but make sure to increase the amount of water you drink as well. This will minimize any adverse effects that may arise from a sudden dietary change. Your physician or dietitian may recommend the addition of one of the many commercially prepared, concentrated fibre compounds on the market, such as Benefibre® or Metamucil® to your diet.

**Insoluble** fibres increase stool bulk, increase colonic muscle tone, and accelerate the transit time of gastrointestinal contents, thus relieving mild constipation.

Water-insoluble fibres include:

- lignin (found in vegetables)
- cellulose (found in whole grains)
- hemicellulose (found in cereals and vegetables)

**Soluble** fibres form gels when mixed with water, making the bowel contents stickier and resistant to flow (viscous) so that food stays in the digestive tract longer. This is important for people who suffer from diarrhea.

Some examples of water-soluble fibres include:

- pectins (e.g., apples, bananas, grapefruit, oranges, strawberries)
- gums (e.g., cabbage, cauliflower, peas, potatoes, oats, barley, lentils, dried peas, beans)

It is important to note that for some IBS-D patients, a diet excessively high in bran fibre might trigger more frequent diarrhea, while other types of fibre could still be helpful. Consult your physician or dietitian if you have any questions regarding fibre in your diet.

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## Stress

Separate from the central nervous system, the gut has its own independent nervous (enteric) system, which regulates the processes of digesting foods and eliminating solid waste. The enteric nervous system communicates with the central nervous system and they affect each other. Many IBS patients report high levels of stress, which might relate to factors such as poor sleep habits, working too hard, and the excessive use of caffeine, alcohol, and/or tobacco. IBS is not a psychological disorder, even though stress, depression, panic, or anxiety may aggravate bowel symptoms. Proper exercise and rest can help reduce stress and positively influence IBS symptoms.

Psychological treatments may augment medical treatment, including relaxation training, time management, lifestyle changes, and cognitive restructuring. For more information, ask for our *Stress Management* pamphlet.

## Physiotherapy

The pelvic floor consists of muscles that help control defecation. IBS patients might have pelvic floor incoordination (dyssynergia/anismus). A physiotherapist with training in pelvic floor rehabilitation can conduct a thorough examination, which may include a digital vaginal exam (for women), a digital rectal exam, observation and touching (palpation) of the perineum and abdominal wall, and electromyographic (EMG) biofeedback assessment. The goal of physiotherapy treatment is to develop the ability to relax the pelvic floor completely while simultaneously allowing gentle propulsive forces from deep abdominal muscles to evacuate the bowel fully. Physiotherapy might also help those who have diarrhea-predominant symptoms and experience bowel urgency and/or incontinence of watery stools. Check with your regional physiotherapy association to find a registered physiotherapist who has incontinence or pelvic floor training.

## Medications

Researchers are continuing to look for new medications to treat IBS symptoms and your physician may prescribe products other than those listed based on your symptoms. See medication chart on page 7.

Since IBS presents primarily as a motility disorder, physicians usually prescribe drugs that target this situation. These agents, pinaverium bromide (Dicetel®), and trimebutine maleate (Modulon®), help to restore the normal contraction process of the bowel. They are most effective when taken for a full course of treatment and are not designed for immediate symptom relief or sporadic, intermittent use. Dicetel® is a gastrointestinal selective calcium antagonist, which works by blocking calcium uptake, and helps to synchronize the muscle movement of the bowel. Dicetel® treats symptoms of abdominal pain, bowel disturbances, and intestinal discomfort in both women and men. Modulon® regulates motility by moderating kappa opiate receptor affinity and slows the movements of the

bowel. These agents may worsen gas and bloating because they relax the gut muscles and slow down passage of gas in the gut.

The following anti-diarrheal medications work by altering the muscle activity of the intestine, thereby slowing transit time:

- non-narcotic loperamide (Imodium®), which is also useful in fecal incontinence as it helps tighten the anal sphincter
- narcotic agents such as diphenoxylate (Lomotil®), codeine, tincture of opium and paregoric
- anti-spasmodic agents that block the transmission of nerve impulses, such as hyoscyamine sulfate (Levsin®), dicyclomine (Bentylol®), and hyoscine butylbromide (Buscopan®)

Anti-diarrheal drugs are generally not helpful long-term for those with IBS-M, and those who have IBS-C should not take them.

Some products can ease both diarrhea and constipation by bulking up the intestine, helping it to function better by regulating content transit time and stool consistency. Included are various bulk-formers, which adjust stool looseness and frequency by soaking up (binding to) water. Commercial fibre products with these benefits come in the forms of bran cereals, wafers, ispaghula husk, psyllium seed (Metamucil®), and inulin (Benefibre®). Remember to go slowly when adding these products to the diet and increase your water intake. Check the labels carefully or consult a pharmacist to ensure the product you obtain will help your symptoms.

A guanylate cyclase-C agonist, linaclotide (Constella®) treats IBS-C. It acts locally in the intestine to increase intestinal fluid secretion and intestinal transit. The body only minimally absorbs this medication. In clinical trials, Constella® showed statistically significant improvement in both bowel habits, (e.g., spontaneous bowel movements, complete spontaneous bowel movements, stool consistency, and straining), and abdominal symptoms, (e.g., abdominal pain, bloating, abdominal discomfort, and percent of abdominal pain-free days) during the 26-week treatment period. Mild-to-moderate diarrhea was the most common side effect.

Eluxadoline (Viberzi®) is an oral medication approved for the treatment of the multiple symptoms associated with IBS-D in adults. It acts locally in the gut and the body only minimally absorbs this medication. It slows intestinal transit and secretion and reduces abdominal pain. In clinical trials, Viberzi® showed significant improvements in both bowel habits (e.g., urgency-free days, stool consistency, and frequency), and abdominal symptoms (e.g., abdominal pain and bloating) during the 26-week treatment period. Mild-to-moderate constipation was the most common side effect. However, individuals who have had pancreatitis, those without a gallbladder, and those with heavy alcohol use should not use Viberzi®.

Rifaximin (Xifaxan®) is a gut-specific antibiotic approved for the treatment of symptoms associated with IBS-D in adults. It is a 14-day treatment that is effective for long-term relief of

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abdominal pain, bloating, urgency, and diarrhea associated with IBS-D. Zaxine® is minimally absorbed, acts locally in the gut, and might work by decreasing bacteria and bacterial toxins in the digestive tract. It also has anti-inflammatory properties in the gut that can further help alleviate IBS symptoms. Zaxine® might also be effective for re-treatment in cases where a person responds well to Zaxine®, but subsequently relapses. The most common side effect is nausea (in less than 1% over placebo).

Other medications could offer some symptom reduction by working in different ways. For example, pancreatic enzymes such as Cotazym®, Creon®, Pancrease®, Ultrase®, and Viokase® may also work in a small number of cases to relieve symptoms of IBS by facilitating digestion. Bile salt binders such as cholestyramine (Olestyr®, Questran®) help against diarrhea, and are especially useful when transit time in the small intestine is very fast. Anti-depressants and anti-anxiety medications in low doses may help the enteric nervous system to relax as well as relieve pain and improve disordered sleep. Iberogast®, a medicine consisting of plant extracts, may help relieve IBS symptoms. The effectiveness of these agents differs between individuals.

For more information, ask us for our *Constipation* pamphlet.

## Probiotics

Probiotics are friendly, living microorganisms (bacteria and yeasts) that offer a health benefit when introduced to the human gut. Some research links the origin and development (pathogenesis) of various chronic intestinal disorders to disturbances in the gut flora itself or to the body's inability to interact properly with the flora. These results have encouraged scientists to develop new ways of modifying the complex intestinal ecosystem as a means of therapy and prompted the medical community to increase its efforts to reduce the use of antibiotics as they disrupt the natural gut microorganism balance. However, some antibiotics have shown benefit in IBS.

While probiotics have a particular appeal in treating IBS, the treatment challenges are plentiful. Many commercial products fail to contain the quantity of live bacteria claimed on their labels. Additionally, harsh stomach acids kill most probiotics (which food producers/manufacturers add to foods such as yogurt) before they reach the colon, where they need to be alive to do their job. If you want to add probiotics to your diet, it is likely you will not have sufficient quantities in yogurt to

improve your digestive health, as some marketers might claim.

Some commercial products do contain sufficient quantities of probiotics and they have special formulations to help them pass the acidic stomach environment. Emerging science suggests that specific probiotics are effective only for particular medical conditions. We urge consumers to ensure that the probiotic they are purchasing is a proven treatment for their medical condition.

The true potential benefits and risks of probiotics in GI health have yet to be determined but research in this innovative field is advancing quickly. Examples of Natural Health Products containing bacterial probiotics proven for treating the symptoms of IBS are TuZen® (*Lactobacillus plantarum* 299V), which has demonstrated effectiveness in relieving abdominal pain, bloating, constipation, and diarrhea, and Align® (Bifantis® *Bifidobacterium infantis* 35624), which addresses symptoms such as abdominal discomfort, gas, and bloating. Another example is Florastor® (*Saccharomyces boulardii* lyo), the digestion-friendly yeast (found naturally on the skin of lychees and mangosteens in Indochina), which has demonstrated effectiveness in regulating the number and consistency of stools. BioGaia® Drops (*Lactobacillus reuteri*), are effective in early infancy to reduce episodes of colic.

At this point in time, science on the benefits and risks of probiotics is still lacking. However, as our understanding of the intricate milieu of microorganisms within the human gut deepens, we might be able to customize probiotic therapies as significant and effective IBS treatments.

## Outlook

Over time, with understanding and faithful adherence to an individualized treatment plan, many patients with irritable bowel syndrome can look forward to a significant improvement in their condition. In fact, statistics show that approximately 10% of IBS patients get better each year, although a new set of people will develop the condition, keeping the percentage of people in the population with IBS at any given time fairly consistent.

IBS remains a condition that can significantly compromise an individual's quality of life and, regrettably, not everyone with IBS will become symptom-free. In most cases, treatment will be ongoing and individualized to meet the specific patient needs and improve daily function.

# Irritable Bowel Syndrome (IBS) Medication & Treatment Chart

## Abdominal Pain

### Analgesics to reduce abdominal pain

preferred choice is acetaminophen (Tylenol®) without codeine

### Anti-depressants

e.g., amitriptyline

### Anti-spasmodics

hyoscyamine sulfate (Levsin®)  
dicyclomine HCl (Bentylol®)  
propantheline bromide  
hyoscine butylbromide (Buscopan®)  
belladonna alkaloids, phenobarbital

### Enteric opioid

trimebutine maleate (Modulon®)

### GI selective calcium antagonist

pinaverium bromide (Dicetel®)

### Guanylate cyclase-C agonist

linaclotide (Constella®)

### μ opioid receptor agonist/δ opioid receptor antagonist

eluxadoline (Viberzi®)

### Gut-specific antibiotic

rifaximin (Zaxine®)

### Other

Iberogast®  
*Lactobacillus plantarum* 299V (TuZen®)  
Bifantis® *Bifidobacterium infantis* 35624 (Align®)

## Bloating (abdominal gas)

### Antiflatulent

simethicone (e.g., Gas-X®)  
other agents (e.g., Diovol®)  
antacids/anti-flatulent (e.g., Maalox®)

### GI selective calcium antagonist

pinaverium bromide (Dicetel®)

### Guanylate cyclase-C agonist

linaclotide (Constella®)

### Motility agents

domperidone maleate

### μ opioid receptor agonist/δ opioid receptor antagonist

eluxadoline (Viberzi®)

### Gut-specific antibiotic

rifaximin (Zaxine®)

### Other

peppermint oil  
Iberogast®  
*Lactobacillus plantarum* 299V (TuZen®)  
*Saccharomyces boulardii* Iyo (Florastor®)  
Bifantis® *Bifidobacterium infantis* 35624 (Align®)  
*Lactobacillus reuteri* (BioGaia® Drops), for infant colic, which is generally associated with abdominal gas

## Constipation

### Bulking agents

bran, psyllium seed, or ispaghula husk derivatives (e.g., Metamucil®)  
calcium polycarbophil (Prodiem®)

### GI selective calcium antagonist

pinaverium bromide (Dicetel®)

### Guanylate cyclase-C agonist

linaclotide (Constella®)

### Mucosal protective agent

misoprostol (Cytotec®)

### Osmotic laxatives

magnesium hydroxide (milk of magnesia)  
lactulose

### Other

Iberogast®  
*Lactobacillus plantarum* 299V (TuZen®)

## Diarrhea

### GI selective calcium antagonist

pinaverium bromide (Dicetel®)

### Gut-specific antibiotic

rifaximin (Zaxine®)

**Anti-diarrheal (group 1).** Alter muscle activity of the intestine, slowing down content transit:

### Anti-spasmodics

hyoscyamine sulfate (Levsin®)  
dicyclomine (Bentylol®)  
propantheline bromide  
hyoscine butylbromide (Buscopan®)  
belladonna alkaloids, phenobarbital

### Narcotic anti-diarrheal agents

diphenoxylate-atropine sulphate (Lomotil®)  
codeine, tincture of opium, paregoric

### Non-narcotic anti-diarrheal agent

loperamide HCl (Imodium®)

### μ opioid receptor agonist/δ opioid receptor antagonist

eluxadoline (Viberzi®)

**Anti-diarrheal (group 2).** Heterogeneous bulk formers that adjust stool looseness and frequency by soaking up (binding to) water in the bowel:

### Bile salt binder

cholestyramine resin (Olestyr®, Questran®)

### Bulking agents

bran, psyllium seed, or ispaghula husk derivatives (e.g., Metamucil®)  
inulin (e.g., Benefibre®)

### Other

Iberogast®  
*Lactobacillus plantarum* 299V (TuZen®)  
*Saccharomyces boulardii* Iyo (Florastor®)

