

Gas in the Digestive Tract



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WHAT EXACTLY IS "GAS"?

Gas within the digestive or gastrointestinal (GI) system—which includes the esophagus, stomach, small intestine, and large intestine—primarily consists of odorless vapors, such as oxygen, nitrogen, carbon dioxide, hydrogen, and methane. These comprise more than 99 percent of eliminated intestinal gas. Minor components of "flatus"—or gas expelled through the anus—that may be associated with unpleasant odor include trace amounts of sulfur-containing gases released by bacteria that are normally present within the large intestine.

WHAT CAUSES GAS?

Everyone has gas. If excess gas is your only symptom, it is probably not caused by a disease. A common source of upper intestinal gas is swallowed air. Each time we swallow, small amounts of air enter the stomach. This gas in the stomach is usually passed into the small intestine where part of it is absorbed. The rest travels into the colon (large intestine) to be passed out through the rectum. Gas is also produced by bacteria that normally reside in the colon by a process called fermentation. The average adult produces about one to three pints of gas each day and passes gas through the anus about 14 to 23 times per day. Burping occasionally, before or after meals, is also normal. The amount of gas varies depending upon diet and individual factors.

Some people feel that they pass too much gas from below (flatulence) or burp too frequently, both of which can be a source of embarrassment and can be uncomfortable. However, most people who complain of excessive gas do not produce more than the average person. Instead, they probably have increased awareness of normal amounts of gas. On the other hand, several foods and certain medical conditions are associated with excessive gas production. Understanding the sources of intestinal gas, conditions possibly associated with increased sensitivity to gas, and measures that may help to reduce symptoms can offer relief to many patients.

WHAT CAUSES REPETITIVE BELCHING?

Some people experience frequent belching. This is usually caused by swallowed air from eating or drinking too fast, poorly fitting dentures, not chewing food completely, carbonated beverages, chewing gum or sucking on hard candies, excessive swallowing due to nervous tension or postnasal drip, or forced belching to relieve abdominal discomfort. It may also occur due to gastritis (inflammation of the stomach). There are many causes of gastritis, including infection with a bacterium called *Helicobacter pylori*. This condition usually can be diagnosed by a specialist in digestive diseases (gastroenterologist). The doctor may diagnose the infection with a blood test, a breath test, or by taking a sample of tissue (biopsy) from the stomach, using a lighted, flexible tube (endoscope) inserted through the mouth. If your doctor diagnoses *Helicobacter pylori* infection, a treatment plan can be prescribed.

WHAT ARE THE SYMPTOMS OF GAS?

People who complain about gas usually mean that they pass excessive amounts of gas from below (flatus), burp too frequently or experience abdominal bloating. Motility refers to the contractions that automatically move food through the digestive tract. Poor motility slows the movement of food through the stomach and intestinal tract and can lead to bloating. Eating fatty foods can also delay stomach emptying, leading to bloating. Bloating is often a part of irritable bowel syndrome, a condition in which there is disorganized motility and spasm of the bowel. Reclining after eating, inactivity and stress may contribute to the problem.

Gas in the upper abdomen often is relieved by belching. Gas can collect anywhere in the colon, especially where the colon turns such as in the area under the liver (upper to mid right part of the abdomen), and in the area under the spleen (upper to mid left part of the abdomen). Some people have a heightened sensitivity to normal amounts of intestinal gas, the most common example being irritable bowel syndrome patients.

ABDOMINAL DISTENTION

Abdominal distention resulting from weak abdominal muscles is better in the morning, gets worse as the day progresses and is relieved by lying down. To prevent abdominal distention, tighten abdominal muscles by pulling in your stomach several times during the day, do sit-up exercises and wear an abdominal support garment if exercise is too difficult.

DO ANY FOODS CAUSE GAS?

Some foods contain carbohydrates such as raffinose, which are not well digested, and therefore produce gas. Raffinose is contained in beans, cabbage, cauliflower, Brussels sprouts, asparagus, broccoli and some whole grains. Starch and soluble fiber are other forms of carbohydrates that can contribute to gas formation. Potatoes, corn, noodles, and wheat produce gas while rice does not. Soluble fiber (found in oat bran, peas and other legumes, beans, and most fruit) also cause gas. Some laxatives contain soluble fiber and may cause gas, particularly during the first few weeks of use.

Individuals vary in their ability to digest carbohydrates. A classic example is lactose, the major sugar contained in dairy products. When lactose passes undigested into the colon, it is fermented by bacteria, which then produce gas. Lactose intolerance is a very common problem. Your doctor can help determine if this is a factor in your symptoms with a simple blood test or a breath test.

In addition to lactose and raffinose, some individuals may be intolerant to other sugars contained in foods. Two common examples are fructose (contained in onions, artichokes, pears and in some fruit drinks or soft drinks) and sorbitol (a sugar substitute).

OTHER CAUSES OF GAS

Certain diseases can also lead to excessive bloating and gas. For example, patients with diabetes mellitus or scleroderma may, over time, develop sluggishness in the peristaltic activity of their small intestine. This may lead to bacterial overgrowth within the bowel, with poor digestion of carbohydrates and other nutrients. Excessive gas due to bacterial fermentation of the unabsorbed food can produce gaseousness. In addition to bacterial overgrowth, carbohydrate malabsorption can occur in patients with celiac disease (a disease caused by intolerance to a protein contained in wheat), short bowel syndrome, and those who have rare primary disorders of the enzymes needed to digest specific forms of carbohydrates.

TREATMENT OF GAS

Doctors may recommend several measures to help reduce bothersome gas and associated discomfort. The approach depends upon the individual, the type of symptoms, and the cause. Patients with excessive belching are recommended to avoid pipes, cigarettes, and cigars; chewing gum and hard candy; sipping through straws and bottles with narrow mouths; and dentures that do not fit properly as these can all increase saliva and air swallowing. It is helpful to eat slowly and avoid foods containing air, such as carbonated beverages or whipped cream. Simethicone or activated charcoal may be helpful.

Specific recommendations may include avoidance of foods (see gas elimination trial diet below) that appear to aggravate symptoms, and a variety of over-the-counter products such as simethicone, activated charcoal and digestive enzymes. Often people find that these drugs do not help much, but some of them do help some people. Beano™ contains an enzyme that metabolizes certain complex carbohydrates, and can be effective in reducing gas production due to eating beans or other vegetables containing the carbohydrate raffinose.

Restricting lactose in the diet and using certain lactose-digestive aids, such as lactose-reduced milk, or over-the-counter "[lactase](#)" supplements (eg, LactAid® tablets or liquid) in patients who have been diagnosed with lactose intolerance.

Digestive enzymes, or probiotics, may decrease gas formation and it's associated symptoms. The bacteria in probiotics can affect the production of methane gas. Less methane gas has been shown to improve intestinal activity leading to less gas retention in the gut. In addition, the bacteria can aid digestion of some of the other non-digestible carbohydrates and thereby decrease gas formation.

GAS ELIMINATION TRIAL DIET

Eliminate one category of gas producing foods for at least one week. If there is no benefit, put the foods back in your diet and go on to eliminate another category. Follow this procedure until reaching a level of gas that is tolerable. Then add one food at a time back to your diet. Continue to include this food in your diet for 3-4 days. If it causes problems, eliminate it and go on to the next food. Sometimes the food may not have to be completely eliminated; smaller amounts may be tolerated.

SUMMARY

Gas means different things to different people – belching, abdominal bloating or rectal gas. It may simply be an embarrassment, while for others it can be quite uncomfortable. However, gas is rarely a serious medical problem. Your doctor is the best resource for finding out important information related to your particular case. Not all patients with gas and bloating are alike, and it is important that your situation is evaluated by someone who knows you as a whole person.

FOODS THAT CONTRIBUTE TO GAS PRODUCTION

Legumes: Dried beans and peas, baked beans, soy beans, lima beans

Milk Products: Milk, ice cream, cheese

Vegetables: Cabbage, radishes, onions, broccoli, Brussels sprouts, cauliflower, cucumbers, sauerkraut, kohlrabi, asparagus

Root Vegetables: Potatoes, rutabaga, turnips

Fruits: Prunes, apricots, apples, raisins, bananas

Cereals & Breads: Cereals, breads, pastries, and all foods containing wheat and wheat products.

Fatty Foods: Pan-fried or deep-fried foods, fatty meats, rich cream sauces and gravies, pastries.

Liquids: Carbonated beverages, fizzy medicine