

## Gas in the Digestive Tract

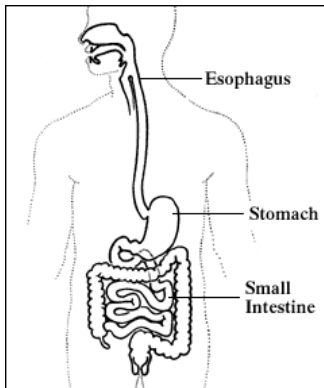
Everyone has gas and eliminates it by burping or passing it through the rectum (flatulence). Up to 7% of the general population complain of excessive or bothersome belching, and 11% report frequent bloating. Many people think they have too much gas when they really have normal amounts. Most people produce about 1-4 pints a day and pass gas about 14 times a day, but passing gas up to 20 times a day is still considered normal.

Gas is made primarily of odorless vapors—carbon dioxide, oxygen, nitrogen, hydrogen, and sometimes methane. The unpleasant odor comes from the bacteria in the large intestine that release small amounts of gas that contain sulfur.

Although having gas is common, it can be uncomfortable and embarrassing. Understanding causes, ways to reduce symptoms, and treatment will help most people find relief.

### What causes gas?

Gas in the digestive tract (that is, the esophagus, stomach, small intestine, and large intestine) comes from two sources:



- Swallowed air
- Normal breakdown of certain undigested foods by harmless bacteria naturally present in the large intestine (colon).

### Swallowed air

Air swallowing (aerophagia) is a common cause of gas in the stomach. Everyone swallows small amounts of air when eating and drinking.

However, eating and drinking rapidly, gulping beverages, chewing gum, sucking on hard candy, smoking or wearing loose dentures can cause some people to take in more air. People also swallow more frequently, and therefore swallow more air, when they are nervous.

Burping, or belching, is the way most swallowed air leaves the stomach. In some people, excessive belching has become a learned behavior, or habit, that initially may have been associated with the relief of indigestion symptoms, but now continues almost unconsciously. Belching may also be facilitated by foods that relax the sphincter between the esophagus and the stomach such as chocolate, fats and mints.

The air that is swallowed and not removed by belching will pass through the digestive tract and eventually pass as flatus from the rectum. In normal people, about 50% of the gas passed from the rectum comes from swallowed air, and this can increase with those who swallow excessive amount of air. Sometimes, gas moves too slowly from the stomach to the rectum and can be felt as bloating. Gas accumulates in the intestine causing increased stretching of the bowel walls and therefore abdominal discomfort.

### **Breakdown of undigested foods**

The body does not digest and absorb some carbohydrates (the sugar and starch found in many foods) in the small intestine because of a shortage of certain enzymes.

This undigested food then passes from the small intestine into the large intestine, where normal, harmless bacteria break down the food, producing gas (hydrogen, carbon dioxide and sometimes methane). Eventually these gases exit through the rectum.

Foods that produce gas in one person may not cause gas in another. Some common bacteria in the large intestine can destroy the hydrogen that other bacteria produce. The balance of the two types of bacteria may explain why some people have more gas than others.

### **Which foods cause gas?**

Most foods that contain carbohydrates can cause gas. By contrast, fats and proteins cause little gas.

### **Sugars**

The sugars that cause gas are raffinose, lactose, fructose and sorbitol.

- **Raffinose:** Beans contain large amounts of this complex sugar. Smaller amounts are found in cabbage, brussel sprouts, broccoli, asparagus, other vegetables and whole grains.
- **Lactose:** Lactose is the natural sugar in milk. It is also found in milk products, such as cheese and ice cream, and in processed foods, such as bread, cereal, and salad dressing. Many people, particularly those of African, Native American, or Asian background, normally have low levels of the enzyme lactase needed to digest lactose after childhood. Also, as people age, their enzyme levels decrease. As a result, over time people may experience increasing amounts of gas after eating foods containing lactose.
- **Fructose:** Fructose is naturally present in onions, artichokes, pears and wheat. It is also used as a sweetener in some soft drinks and fruit drinks.

- Sorbitol: Sorbitol is a sugar found naturally in fruits, including apples, pears, peaches, and prunes. It is also used as an artificial sweetener in many dietetic foods and sugar free candies and gum.

### **Starches**

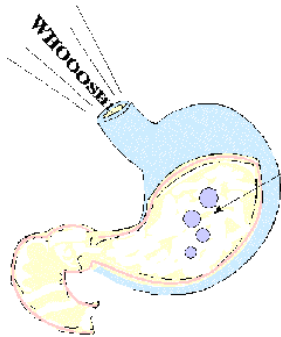
Most starches, including potatoes, corn, noodles, and wheat, produce gas as they are broken down in the large intestine. Rice is the only starch that does not cause gas.

### **What are some symptoms and problems of gas?**

The most common symptoms of gas are flatulence, abdominal bloating, abdominal pain, and belching. However, not everyone experiences these symptoms. The determining factors probably are how much gas the body produces, how many fatty acids the body absorbs, and a person's sensitivity to gas in the large intestine.

### **Belching**

An occasional belch during or after meals is normal and releases gas when the stomach is full of food. However, people who belch frequently may be swallowing too much air and releasing it before the air enters the stomach.



Occasionally, some people believe that swallowing air and releasing it will relieve the discomfort of certain disorders, and this person may intentionally or unintentionally develop a habit of belching to relieve discomfort.

Gas-bloat syndrome may occur after fundoplication surgery to correct GERD. The surgery creates a one-way valve between the esophagus and stomach that allows food and gas to enter the stomach but often prevents normal belching and the ability to vomit. It occurs in about 10% of people who have this surgery but may improve with time.

### **Flatulence**

Another common complaint is passage of too much gas through the rectum (flatulence). However, most people do not realize that passing gas 14-23 times a day is normal.

### **Abdominal bloating**

Many people believe that too much gas causes abdominal bloating. However, people who complain of bloating from gas often have normal amounts and distribution of gas. They actually may be unusually aware of gas in the digestive



tract. In some people, the intestines are more sensitive to and less tolerant of stretching and therefore the person is more aware of pain or discomfort.

Doctors believe that bloating is usually the result of an intestinal disorder, such as irritable bowel syndrome (IBS). The cause of IBS is unknown, but may involve abnormal movements and contractions of intestinal muscles and increased pain sensitivity in the intestine. These disorders may give a sensation of bloating because of increased sensitivity to gas.

### **Abdominal Pain and Discomfort**

Some people have pain when gas is present in the intestine. When pain is on the left side of the colon, it can be confused with heart disease. When the pain is on the right side of the colon, it may mimic gallstones or appendicitis.



### **Why does flatulence smell?**

The gas that makes your farts stink is the hydrogen sulfide gas. The gas contains sulfur which causes farts to have a smelly odor. The more sulfur rich your diet, the more your farts will stink. Some foods that cause really smells gas include: beans, cabbage, cheese, soda and eggs.

### **What diagnostic tests are used?**

Because gas symptoms may rarely be caused by a more serious disorder, those causes should be ruled out. The doctor usually begins with a review of dietary habits and symptoms. The doctor may ask the patient to keep a diary of foods and beverages consumed for a specific time period.

If lactase deficiency is the suspected cause of gas, the doctor may suggest avoiding milk products for a period of time. A blood or breath test may be used to diagnose lactose intolerance.

In addition, to determine if someone produces too much gas in the colon or is unusually sensitive to the passage of normal gas volumes, the doctor may ask patients to count the number of times they pass gas during the day and include this information in a diary.

Careful review of diet and the amount of gas passed may help relate specific foods to symptoms and determine the severity of the problem.

Because the symptoms that people may have are so variable, the provider may order other types of diagnostic tests in addition to a physical exam, depending on the patient's symptoms and other factors.

### **How is gas treated?**

Experience has shown that the most common ways to reduce the discomfort of gas are changing diet, taking medicines, and reducing the amount of air swallowed.

### **Lifestyle modifications**

Eat and drink slowly, and stop chewing gum and sucking on hard candy. Discontinue carbonated beverages and drinking from straws. Try to quit smoking. Some patients find relaxation or behavioral therapy helpful as well.



Bloating and flatulence are sometimes related to constipation, and treating the constipation may be helpful. As patients eliminate stool from the colon, gas is also able to pass more easily. As patients are able to pass gas from the colon, the intestinal distention decreases as does the pain.

### **Diet**

Doctors may tell people to eat fewer foods that cause gas. This includes vegetables such as cabbage, onions, brussels sprouts and beans. Patients should also avoid foods with sorbitol and added fructose (including drinks, candy, gum or breath mints).

Providers may also suggest limiting high-fat foods to reduce bloating and discomfort. This helps the stomach empty faster, allowing gases to move into the small intestine.

Unfortunately, the amount of gas caused by certain foods varies from person to person. Effective dietary changes depend on learning through trial and error how much of the offending foods one can handle.

### **Nonprescription medicines**

Many nonprescription, over-the-counter medicines are available to help reduce symptoms, including antacids with simethicone. Digestive enzymes, such as lactase supplements, actually help digest carbohydrates and may allow people to eat foods that normally cause gas.

Antacids, such as Mylanta II, Maalox II, and Di-Gel, contain simethicone, a foaming agent that joins gas bubbles in the stomach so that gas is more easily belched away. However, these medicines have no effect on

intestinal gas. Dosage varies depending on the form of medication and the patient's age. Response to these medications is variable.

The enzyme lactase, which aids with lactose digestion, is available in caplet and chewable tablet form without a prescription (Lactaid and Lactrase). Chewing lactase tablets just before eating helps digest foods that contain lactose. Also, lactose-reduced milk and other products are available at many grocery stores (Lactaid and Dairy Ease).

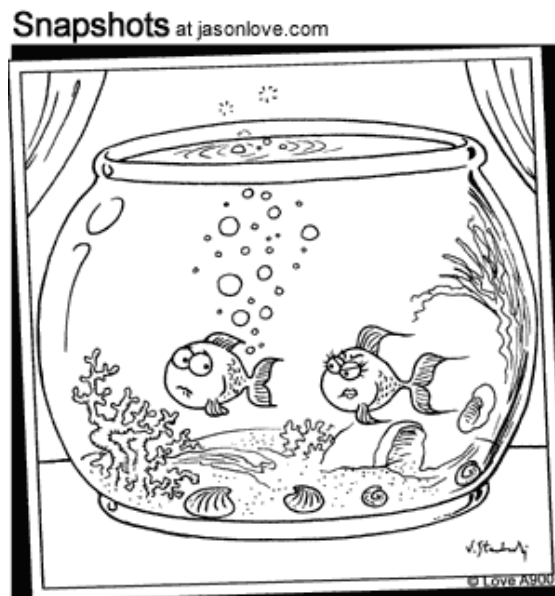
Beano, an over-the-counter digestive aid, contains the sugar-digesting enzyme that the body lacks to digest the sugar in beans and many vegetables. The enzyme comes in liquid and tablet form. Five drops are added per serving or 1 tablet is swallowed just before eating to break down the gas-producing sugars. Beano has no effect on gas caused by lactose or fiber.

### **Reducing Swallowed Air**

For those who have chronic belching, doctors may suggest ways to reduce the amount of air swallowed. Recommendations are to avoid chewing gum and to avoid eating hard candy. Eating at a slow pace and checking with a dentist to make sure dentures fit properly should also help.

### **Conclusion**

Although gas may be uncomfortable and embarrassing, it is not life-threatening. Understanding causes, ways to reduce symptoms, and treatment will help most people find some relief.



Fish don't get away with silent gas.

## **Points to remember**

- Everyone has gas in the digestive tract
- People often believe normal passage of gas to be excessive
- Gas comes from two main sources: swallowed air and normal breakdown of certain foods by harmless bacteria naturally present in the large intestine.
- Many foods with carbohydrates can cause gas. Fats and proteins cause little gas.
- Foods that may cause gas include:
  - Beans
  - Vegetables, such as broccoli, cabbage, brussels sprouts, onions, artichokes, and asparagus
  - Fruits, such as pears, apples and peaches
  - Whole grains, such as whole wheat and bran
  - Soft drinks and fruit drinks
  - Milk and milk products, such as cheese and ice cream, and packaged foods prepared with lactose, such as bread, cereal, and salad dressing
  - Foods containing sorbitol, such as dietetic foods and sugarfree candies and gums
- The most common symptoms of gas are belching, flatulence, bloating, and abdominal pain. However, some of these symptoms are often caused by an intestinal disorder, such as irritable bowel syndrome, rather than too much gas.
- The most common ways to reduce the discomfort of gas are changing diet, taking nonprescription medicines, and reducing the amount of air swallowed.
- Digestive enzymes, such as lactase supplements, actually help digest carbohydrates and may allow people to eat foods that normally cause gas.