

# FLATULENCE

## Patient Information Fact Sheet

### What is flatulence?

Otherwise known as gas, more than 90% of flatus is made up of five gases: nitrogen (the main component of air), oxygen, carbon dioxide, hydrogen and methane. The remaining 10% is comprised of a small amount of other gases. Gas is produced in the gut, a muscular tube stretching from the esophagus to the rectum that is about 40 feet long if stretched out. People usually produce about 1 to 3 pints of gas every day and pass this gas through the rectum as flatus.

### What causes flatulence?

The nitrogen and oxygen come from swallowed air; the carbon dioxide is produced by the interaction of stomach acid and the bicarbonate in bile and pancreatic juices. These gases get into the small intestine where most of the oxygen and carbon dioxide are absorbed into the blood stream; the nitrogen is passed down to the large bowel. The small intestine is where the food we eat is digested and absorbed; the residues, such as dietary fiber and some carbohydrates, pass on to the large bowel. The colon acts as a gas works. It contains a huge population of many different kinds of bacteria, which are essential to good health and which ferment the residues delivered from the small intestine, producing large volumes of hydrogen, methane, carbon dioxide and other gases in the process. Most of these gases are absorbed into the blood stream and eventually excreted in the breath; the rest is passed as flatus.

### Common forms of gas

*Belching, burping or flatulence.* Every time we swallow we take some air into the stomach. A belch is an involuntary expulsion of gas by the stomach when it becomes distended from an excess of swallowed air. Eating rapidly or gulping food and drink, drinking a lot of liquid with meals, chewing gum, smoking, or wearing loose dentures promote air swallowing. Some people swallow saliva to relieve heartburn and swallow air at the same time. Other people swallow air without noticing it, especially when they are tense. Fizzy drinks like beer cause belching because they produce gas (carbon dioxide) in the stomach.

*Chronic or repetitive burping (aerophagy).* In this case, air is not swallowed into the stomach but sucked into the esophagus and rapidly expelled. Repetitive belching like this can last for minutes at a time and is very embarrassing. It is nearly always due to stress or anxiety. There is no medical treatment, and the cure lies in realizing the cause. Air cannot be sucked in when the jaws are separated, so repetitive belching can be temporarily controlled by firmly clenching something like a pencil between the teeth. Some people develop aerophagy because of discomfort in the chest. If you develop belching associated



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with chest discomfort—especially discomfort associated with exertion—or if you have difficulties in swallowing, you should seek medical help promptly.

*Bloating.* Abdominal bloating is a common complaint often blamed on excess gas in the bowel. It usually occurs in people with irritable bowel syndrome, in which the gut is very sensitive to distension, so that normal contents of gas or digestive products cause discomfort; and because the movements are not coordinated, the gut contents do not pass down the gut in an orderly fashion and this causes discomfort as well. Research has shown that when small amounts of gas are infused into the intestine, people with irritable bowel syndrome develop bloating and pain, whereas other people tolerate the same or even larger amounts of gas without any discomfort. How distention of the gut is perceived as bloating is not known. Bloating may also be caused by rich fatty meals which delay stomach emptying.

Bloating is often associated with abdominal distension so that skirts or belts have to be loosened. This is usually due to relaxation of the abdominal muscles in an unconscious attempt to relieve discomfort. The distension usually disappears on lying flat or on contracting the abdominal muscles. Bloating is difficult to treat; some understanding of the problem helps. A high-fiber diet is responsible for bloating in some people but generally the bloating improves with time. On the other hand, a high-fiber diet may relieve bloating in others because fiber absorbs water in the gut and gently distends it, helping to prevent the uncoordinated contractions that are partly responsible for the bloating. An irritable bowel may be caused by stress or anxiety so that stress may be responsible for your bloating.

Some people find that activated charcoal or defoaming agents containing simethicone are helpful. Avoiding gas-producing foods may also help. If the bloating is severe, your doctor may prescribe drugs that help to co-ordinate the contractions of the gut or prevent spasms. Bloating due to a buildup of gas occurs in intestinal diseases such as Crohn's disease or bowel tumor. These conditions give rise to other symptoms such as weight loss, severe abdominal pains or diarrhea and require prompt medical investigation.

*Rumblings/grumbings or noisy guts (politely called borborygmi).* Bowel noises, or borborygmi, are produced when the liquid and gas contents of the intestine are shuffled backward and forward by vigorous contractions of the gut. They may be produced by hunger, or by anxiety, or fright: they are very common in irritable bowel syndrome. Loud borborygmi or rumblings also occur because of vigorous contraction caused by diseases of the intestine such as Crohn's disease or to overcome obstruction. These conditions are associated with other symptoms such as severe abdominal pain and should be reported to your doctor.



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*Flatus.* The complaint of excessive flatus, or gas, is made when a person believes he/she passes wind more often than their friends or more often than in the past. Often this is because an embarrassing incident like a loud or smelly break of wind in public has led to the belief that something is wrong. A normal individual passes wind by the rectum on average 15 times per day (ranging between three and 40 times), depending on diet. A high-fiber diet produces more wind than a low-fiber diet or a low-carbohydrate diet. So if you think you have excessive flatus, count every time you break wind (even the little silent ones) for a day or so. If you break wind less than 40 times a day you are normal.

### How is flatulence managed?

But whatever the number, you may wish to reduce it. Most flatus is generated by the normal bacterial fermentation of food residues in the colon. On the principle “no bugs, no gas,” you might think that antibiotics would work, but they don’t. Although the bacteria are killed off by the antibiotics, they quickly re-establish themselves. Besides, antibiotics produce *more* flatus in most people.

A high-fiber diet has mixed blessings. It produces a soft, easily passed stool, protects against colon cancer and may protect against stroke and heart disease, may help people to lose weight, and improves symptoms in irritable bowel syndrome. The downside is that a high-fiber diet produces a lot of flatus. However, it is possible to reduce flatus production even on a high-fiber diet by avoiding the big gas producers. They contain carbohydrates called oligosaccharides that cannot be digested in the small intestine but are food to bacteria in the colon. Cabbage, brussels sprouts, cauliflower, turnips, onions, garlic, leeks and some seeds such as fennel, sunflower and poppy all produce a lot of gas in the colon. Reducing the amount of these foods in the diet will reduce flatus.

Sometimes activated charcoal seems to reduce the amount (and smell) of flatus. Some otherwise healthy people lack the enzyme necessary to digest lactose, the sugar in cow’s milk. As a result the lactose is fermented by the colon bacteria with the production of large amounts of carbon dioxide and hydrogen. The condition is called lactose intolerance and besides gas production may cause abdominal cramps. It occurs most commonly in people born around the Mediterranean Basin but occurs sporadically in all populations. The “cure” is to reduce milk intake to a level at which symptoms are controlled. Your doctor may carry out special tests to confirm the diagnosis.

Sorbitol, a sweetener used in diabetic diets and present in jams, sweets and sugarless chewing gum, is also not digested in the small intestine and can give rise to flatus for the same reason as lactose. Certain medical conditions such as Crohn’s disease, celiac disease and other states of impaired absorption cause excess flatus because of impaired digestion. These conditions are associated with symptoms such as severe abdominal pains, weight



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loss, anemia and persistent diarrhea with pale smelly stools that tend to float in the toilet bowl. These symptoms require medical investigation.

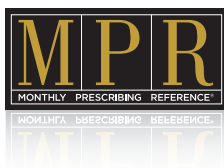
*Loud flatulence.* Loud flatulence is produced by powerful contractions of the bowel wall forcing gas out through a narrow anus—the muscle at the bottom of the rectum that keeps the intestinal contents in their place. There is not much you can do about this except grin and bear it, but measures to reduce flatus production may help.

*Smelly flatulence.* Smelly flatulence is not your fault. It is caused by smelly substances such as indoles, skatoles and hydrogen sulphide that are produced by bacterial fermentation in the colon. Garlic and onions, many spices and some herbs of the fennel family that are used in Indian cooking produce smelly gases. Beer, white wine and fruit juices give rise to smelly hydrogen sulphide in some people. Worse still, some of these smelly gases are absorbed into the blood stream and excreted in the breath as well.

### Further information

National Digestive Diseases Information Clearinghouse (NDDIC): <http://digestive.niddk.nih.gov/ddiseases/pubs/gas/>

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