GAS

What Is It?

The presence of excessive gas in the stomach is known as eructation/belching and in the intestines it is known as flatulence. Flatulence, when paired with other gastrointestinal symptoms, can be a sign of a serious GI disorder such as: malabsorption, bacterial imbalance in the intestines (dysbiosis), parasitic infection, irritable bowel syndrome (IBS), colitis, gallbladder disease, Candida overgrowth, gastroesophageal rellux disease (GERD) or even a pancreatic tumor. At the very least, excessive gas production is a signal of incomplete digestion. In and of itself, the passing of gas is not considered a medical problem unless it is excessive. Trapped gas can cause a great deal more distress than that passed either through the rectum or by belching.

Certain gases are normally present in the GI tract and have no odor. These include nitrogen, oxygen, carbon dioxide and hydrogen. It is other gases, like hydrogen sulfide and byproducts of anaerobic bacteria (like indole, butyric acid, cadaverine, putrescine and skatole) that give off the foul-smelling odor of flatulence. People who pass excess gas have more sulfate-reducing bacteria in their feces. These bacteria cause high levels of sulfides in the feces, which is associated with disease of the colon.

What Causes It?

There are five major reason gas could create problems:

- A person may be hypersensitive to trapped gas and react to this gas in a similar way as irritable bowel syndrome (IBS)
- Carbon dioxide gas that is formed in the duodenum by a chemical reaction of hydrochloric acid from the stomach and the bicarbonate of the pancreatic secretions
- Incomplete digestion of protein, carbohydrates or fats
- Candida overgrowth causing yeast fermentation
- Dysbiosis causing bacterial fermentation

When bacteria in the colon or distal small bowel act on undigested food not absorbed in the small intestine, sulfide gases are generated by the bacteria resulting in an unpleasant odor.

Excessive gas can be the result of swallowing too much air. This can happen when: talking too much while eating, eating too rapidly, drinking carbonated beverages, chewing gum, smoking, or sucking on hard candies. Postnasal drip and ill-fitting dentures can also cause air to be swallowed due to excessive salivation.

Lactose intolerance is another cause of excessive gas. People who are lactose intolerant lack the enzyme lactase needed to break down the lactose (milk sugar) present in milk. The milk, therefore, is not properly digested, and undergoes fermentation in the large intestine causing gas. (See the Lactose Intolerance section for more information.)
Some people are intolerant to other sugars and sugar substitutes as well due to a deficiency in the enzymes that digest those sugars.

Some foods that may give rise to gas production include:

- Cauliflower
- Brussels sprouts
- Legumes (peas, beans, lentils)
- Broccoli
- Cabbage
- Dried and sulfured fruits
- Cucumbers
- Celery
- Apples
- Carrots
- Onions
- Garlic
- Rutabaga
- Cantaloupe
- Kohlrabi
- Radishes
- Grapes
- Raisins
- Prune juice
- Bananas

Not all of these foods will cause excess gas in all people, but any of these can be a potential problem. The cruciferous vegetables—kale, collard greens, broccoli, cauliflower, cabbage, brussels sprouts and turnips—contain a special type of carbohydrate (stachyose) that is poorly absorbed by the body, but is quickly digested by bacteria in the intestines. Overeating can also result in excess gas production due to incomplete food chewing and digestion.

Over-consumption of caffeine, alcohol, salt, refined sugar, carbohydrates and processed oils can be particularly problematic irritants.

Nutritional deficiencies of digestive enzymes, hydrochloric acid, B vitamins (needed for carbohydrate combustion) and food allergies or sensitivities may also result in excessive gas production, as can too much vitamin C.

Poor food combining may result in excess gas production for some people. Improper food combining results primarily from mixing starchy foods; like grains, potatoes or fruits; with protein foods; like meat, eggs or cheese. Starchy foods and fruits are relatively low in protein and fat, and are more quickly absorbed and digested when eaten alone (especially raw fruit with its high enzyme content). It is believed that when protein and fat are combined with starch or fruit the slower overall absorption allows for more bacterial fermentation of the starch and sugars, thereby creating more gas. The total digestive need for more enzymes then becomes a factor particularly with aging.

Everyone passes gas. The average person passes it approximately 13 times a day. About 30 percent of the U.S. population have bacteria in the colon or small intestine that produce excessive amounts of methane and hydrogen. These are the people who are likely to be the most disease-prone. Overgrowth of bacteria in the colon or small bowel can cause serious problems due to increased intestinal permeability that allows absorption of microbial toxins and partially digested food.
What Are the Signs and Symptoms?

Excess intestinal gas is thought to produce:

- Belching
- Bloating
- Abdominal distention and discomfort
- Bad breath
- Feeling of fullness
- Release of malodorous gas through the anus

It appears that some people who suffer from these symptoms (especially those with irritable bowel syndrome) produce normal amounts of gas and yet are hypersensitive to it.

How Is It Diagnosed?

Unless the passage of gas is chronic and accompanied by other symptoms, no special diagnostics are indicated. Taking a thorough and detailed medical history can help give the attending physician an idea of the cause of the problem.

Consultation with a physician is recommended for anyone experiencing any of the symptoms above. Further tests will then be done to rule out or confirm the suspected diagnosis.

A comprehensive stool analysis (CSA), often used by natural health practitioners, can be used to detect candidiasis and other dysbiotic imbalances. Food sensitivities, which can sometimes be spotted by keeping a food diary, may be determined through testing. (See the Appendix for information on these tests.)

What Is the Standard Medical Treatment?

Recommended treatment is aimed primarily at:

- Altering lifestyle elements so that air swallowing is reduced
- Suppressing symptoms through use of drugs
- Altering the diet

The following measures may help to reduce air swallowing:

- Eat slowly and chew thoroughly with the mouth closed.
- Avoid chewing gum.
- Quit smoking.
- Eliminate carbonated beverages.
- Make sure dentures fit properly.
- Seek treatment for any disorder (such as peptic ulcer) that may cause reflex hypersalivation.
- Don't talk excessively while eating.
- Drink iced-cold beverages in moderation, if at all.
- Eliminate or reduce sorbitol and xylitol, undigestible sugars, that may cause gas.
- Exclude dairy products if lactose intolerant.
- Reduce or eliminate medications (under a doctor's supervision) that may cause excessive salivation.
- Try biofeedback and relaxation therapy.
- Eliminate antacids if associated with belching.

Several drugs incorporating simethicone, an agent that breaks up small gas bubbles, have been used (with variable results) to treat gas. Anti-cholinergic drugs have been used with similar results. These affect the nervous system.
Since excessive intestinal gas at times may be associated with increased microbial fermentation in the lower intestine, a test known as the lactulose tolerance test can be done. This involves giving the patient a standardized dose of the poorly-absorbable sugar lactulose. After a given period of time expired air is measured for both methane gas and hydrogen gas. It is generally considered that excess fermentation is present if the test is positive for hydrogen or methane. This indicates a condition known as small intestinal bacterial overgrowth (SIBO), a form of dysbiosis which is usually remedied with the 4R program: Remove pathogens with antimicrobials, Reinoculate with probiotics, Replace with digestive enzymes, HCl and bile salts, and Repair with glutamine, arginine, vitamin A, zinc, gamma oryzanol and N-acetyl-D-glucosamine.

Interestingly, in applying the lactulose breath test to patients with IBS, those with IBS constipation tend to have higher levels of methane whereas patients with IBS diarrhea tend to have higher levels of hydrogen, which would support the fact that different bacteria may cause different problems.

A positive lactulose breath test result may also be found in patients with other conditions such as fibromyalgia. In one study 42 out of 42 patients were positive with elevated hydrogen, suggesting that the SIBO led to increased intestinal permeability (leaky gut) with immune upregulation contributing to fibromyalgia.6

Did You Know
- Almost half of Americans (46 percent) claim to have been embarrassed by intestinal gas in public.
- According to the Canadian Society of Intestinal Research, careful analysis of intestinal gas has shown that about 90 percent is ingested air, and only 10 percent is actually formed in the intestine.
- Gas occurring within one to one and a half hours after eating may suggest poor digestion of food which is being delivered undigested to the lower intestines.
- There are some people who lack the enzyme that is needed to digest lactose, the sugar in milk, resulting in the production of gas in the large intestine.
Gas is a broad symptom that can be a part of different conditions. It is important to determine just where the gas occurs, and if it is associated with other symptoms. Many times people simply say, “It’s in my stomach,” or “It’s in my belly,” but they are not clear on just where the gas and bloating occur. Figure out where in the body the gas is located. If the gas involves belching, bloating or discomfort that feels higher up towards the ribs, you are dealing with something different than if your lower abdomen is bloated and you are experiencing flatulence.

After pinpointing just where the gas occurs, then determine whether there are other accompanying symptoms. Do you also have diarrhea? Constipation? Heartburn? Does your gas occur after eating certain foods? If your gas involves the lower intestines, you may have over-fermentation in the lower small intestine. This can involve bacterial or Candida overgrowth, and can lead to a more serious condition known as non-alcoholic fatty liver disease (NAFLD). (See the NAFLD section for more information.)

If you are able to rule out the possible underlying conditions (see below), follow the suggestions below to help minimize or eliminate your gas and bloating.

**Rule Out:**

After you have really investigated your symptoms, it is important to rule out the following possible underlying conditions:
- Candida overgrowth (See the Candidiasis section.)
- Parasites (See Parasitic Disease section.)
- Food sensitivities (See Allergies or Gluten Sensitivity sections.)
- Lactose intolerance (See the Lactose Intolerance section.)

**Recommended Testing**

- Comprehensive stool analysis (CSA) (See the Appendix.)
- Lactulose breath test (See the Appendix.)

**Diet**

Follow the Candida Diet (see the Appendix) if you think that different foods are triggering your gas. This diet is also helpful for people who experience over-fermentation in the gut due to sugary foods and simple carbs. From there, you can begin to introduce certain foods and move toward the Fiber 35 Eating Plan, keeping out any foods that you determine to be gas-producing.

**Lifestyle**

- Check with your doctor to see if any medications you are taking could be causing gas.
- Do not eat late at night; stop eating a few hours before bed to give your body enough time to digest the food you have eaten.
- Exercise to help stimulate the passage of gas through the GI tract.

**Complementary Mind/Body Therapies**

- Colon hydrotherapy sessions could be helpful in removing excess gas from the colon.
- Abdominal massage can be helpful in moving out trapped gas.
<table>
<thead>
<tr>
<th>Recommended Nutraceuticals</th>
<th>Dosage</th>
<th>Benefit</th>
<th>Comments</th>
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<tbody>
<tr>
<td><strong>Critical Phase</strong> <strong>Daily maintenance recommendations should also be taken during this phase unless otherwise indicated.</strong></td>
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<tr>
<td>Enzyme Formula specific for gas</td>
<td>Take with meals</td>
<td>Helps digest gas forming foods.</td>
<td>Look for formula with alpha galactosidase, phytase, cellulase and fennel seed.</td>
</tr>
<tr>
<td>Bentonite clay/ Glucomannan/Charcoal Formula</td>
<td>Use as directed</td>
<td>Absorbs bacterial toxins from over-fermentation and improves elimination.</td>
<td>Take with plenty of water.</td>
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<tr>
<td><strong>Helpful</strong></td>
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<tr>
<td>Fennel or Peppermint Tea</td>
<td>2-3 cups daily or when needed</td>
<td>Has long history of relieving gas and bloating.</td>
<td>Either use the prepared tea bags or seeds of fennel.</td>
</tr>
<tr>
<td><strong>Daily Maintenance</strong></td>
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<tr>
<td>Digestive Enzymes</td>
<td>Take with meals</td>
<td>Helps digest and absorb nutrients from food.</td>
<td>If low stomach acid is found find a formula that contains hydrochloric acid.</td>
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<tr>
<td>Probiotics</td>
<td>30 - 80 billion cultures daily</td>
<td>Crowds out pathogenic or bad forming bacteria. Re-establishes bacteria balance in intestine.</td>
<td>May need to start with lower dosage and increase over time to avoid excess flatulence as bacteria balance.</td>
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<tr>
<td>Omega-3 Fatty Acids</td>
<td>At least 2 grams daily of EPA/DHA combination</td>
<td>Helps restore moisture to the intestinal tract.</td>
<td>Look for a concentrated, enteric coated fish oil.</td>
</tr>
<tr>
<td>Fiber</td>
<td>4-5 grams twice daily</td>
<td>Helps produce healthy bacteria levels and good elimination.</td>
<td>Use in conjunction with high fiber diet to reach 35 g daily.</td>
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See further explanation of supplements in the Appendix