Gastroesophageal reflux disease, or GERD, occurs when the lower esophageal sphincter or LES, does not close properly. And stomach contents leak back, or reflux, into the esophagus (gullet). The LES is a ring of muscle at the bottom of the esophagus that acts like a valve between the esophagus and stomach. The esophagus carries food to the stomach.

When refluxed stomach acid touches the lining of the esophagus, it causes a burning feeling in the chest or throat called heartburn. The fluid may even be tasted in the back of the mouth, and this is called acid indigestion. Occasional heartburn is common but does not necessarily mean one has GERD. Heartburn that occurs more than twice a week may be considered GERD, and it can eventually lead to more serious health problems.

Anyone, including infants, children, and pregnant women, can have GERD.

What are the symptoms of GERD?
The main symptoms are constant heartburn and acid regurgitation (casting up of somewhat digested food. Some people have GERD without heartburn. Instead, they feel pain in the chest, hoarseness in the morning, or trouble swallowing. You may feel like you have food stuck in the back of your or like you are choking or your throat is tight. GERD can also cause a dry cough and bad breath.

GERD in children
Studies* show that GERD is common and may be overlooked in infants and children. It can cause repeated vomiting, coughing, and other respiratory problems. Children's undeveloped digestive systems are usually to blame, and most infants grow out of GERD by the time they are 1 year old. Still, you should talk to your child's doctor if the problem occurs and causes discomfort. Your doctor may recommend simple strategies for avoiding reflux, like burping the infant several times during feeding or keeping the infant in an upright position for 30 minutes after feeding. If your child is older, the doctor may recommend avoiding:

- sodas that contain caffeine
- chocolate and peppermint
- spicy foods like pizza
- acidic foods like oranges and tomatoes
- fried and fatty foods

Avoiding food two to three hours before bed may also help. The doctor may recommend that your child sleep with his or her head raised. If these changes do not work, the doctor may prescribe medicine for your child. In rare cases, a child may need surgery.

What causes GERD?
No one knows why people get GERD. A hiatal hernia may contribute. A hiatal hernia occurs when the upper part of the stomach is above the diaphragm, the muscle wall that separates the stomach from the chest. The diaphragm helps the LES keep acid from coming up into the esophagus. When a hiatal hernia is present, it is easier for the acid to come up. In this way, a hiatal hernia can happen in people of any age; many otherwise healthy people over 50 have a small one.
Other factors that may contribute to GERD include

- alcohol use
- overweight
- pregnancy
- smoking

Also, certain foods may be linked with reflux events, including

- citrus fruits
- chocolate
- drinks and caffeine
- fatty and fried foods
- garlic and onions
- mint flavorings
- spicy foods
- tomato-based foods, like spaghetti sauce, chili, and pizza

How is GERD treated?

If you have had heartburn or any of the other symptoms for a while, you should see your doctor. You may want to visit an internal medicine doctor or a gastroenterologist (a doctor who treats disease of the stomach and intestines). Depending on how severe your GERD, treatment may involve one or more of the following lifestyle changes and medicines or surgery.

Lifestyle changes

- Try to quit smoking
- Try to stop drinking
- Lose weight, if needed
- Eat small meals
- Wear loose-fitting clothes
- Avoid lying down for three hours after a meal
- Raise the head of your bed six to eight inches by putting blocks of wood under the bedposts—just using extra pillows will not help

Medicines

Your doctor may recommend over-the-counter antacids or medicines that stop acid production or help the muscles that empty your stomach.

- **Antacids**, such as Alka-Seltzer®, Maalox®, Pepto-Bismol®, Rolaids®, and Riopan®, are usually the first medicines recommended to relieve heartburn and other mild GERD symptoms. Many brands on the market use different mixtures of three basic salts—magnesium, calcium, and aluminum—with hydroxide or bicarbonate ions to reduce the effects of the acid in your stomach. Antacids, however, have side effects. Magnesium salt can lead to diarrhea, and aluminum salts can cause constipation. Aluminum and magnesium salts are often combined in a single product to balance these effects.

- **Foaming agents**, such as Gaviscon®, work by covering your stomach contents with foam to prevent reflux. These medicines may help if you have no damage to the esophagus.

- **H₂ blockers**, such as cimetidine (Tagamet HB®), famotidine (Pepcid® AC), nizatidine (Axid® AZR), and ranitidine (Zantac® 75), impeded acid production. They are available in prescription strength and over-the-counter. These medicines provide short-term relief. If you need to use these medicines for more than a few weeks, you need to discuss continued use with your doctor. They are effective for about half of those who have GERD symptoms. Many people benefit from taking H₂ blockers at bedtime along with a proton pump inhibitor.

- **Proton pump inhibitors** include omeprazole (Prilosec®), lansoprazole (Aciphex), and esomeprazole (Nexium®), which are all available by prescription. Proton pump inhibitors work differently than H₂ blockers and can ease symptoms in patients who do not get relief with H₂ blockers. Another group of medicines, prokinetics, helps strengthen the sphincter and makes the stomach empty faster. This group includes bethanechol (Urecholine) and metoclopramide (Reglan). Metoclopramide also improves muscle action in the digestive tract, but these medicines have regular side effects that limit their usefulness.
• Because medicines work in different ways, combinations of medicines may help control symptoms. People who get heartburn after eating may take both antacids and $H_2$ blockers. The antacids work first to reduce the effects of the acid in the stomach, while the $H_2$ blockers act on acid production. By the time the acid stops working, the $H_2$ blocker will have stopped acid production. Your doctor is the best source of information on how to use medicines for GERD.

What if symptoms persist?
If your heartburn does not improve with lifestyle changes or medicines, you may need more tests.
• A barium swallow radiograph uses x-rays to help spot abnormalities (problem areas) such as a hiatal hernia and severe irritation of the esophagus. With this test, you drink a solution and then x-rays are taken. Mild irritation will not appear on this test, while narrowing of the esophagus (stricture), ulcers, hiatal hernia, and other problems will.

• Upper endoscopy can show problems not seen on a barium swallow radiograph and may be performed in a hospital or a doctor’s office. The doctor will spray your throat to numb it and slide down a thin, flexible tube called an endoscope. A tiny camera in the endoscope lets the doctor see the surface of the esophagus and look for abnormalities. If you have had fair to severe symptoms and this course of action shows injury to the esophagus, usually no other tests are needed to confirm GERD. The doctor may use tiny tweezers (forceps) in the endoscope to remove a small piece of tissue for biopsy. A biopsy viewed under a microscope can reveal damage caused by acid reflux and rule out other problems.

• In an ambulatory pH monitoring examination, the doctor puts a tiny tube into the esophagus that will stay there for 24 hours. While you go about your normal activities, it measures when and how much acid comes up into your esophagus. This test may be used in people with GERD symptoms. The exam is also helpful in detecting whether respiratory symptoms, including wheezing and coughing, are triggered by reflux.

Surgery
Surgery is an option when medicine and lifestyle changes do not work.

Fundoplication, (FUN-do-plee-KA-shun), usually a specific variation called Nissen fundoplication, is the standard surgical treatment for GERD. The upper part of the stomach is wrapped around the LES to strengthen the sphincter and prevent acid reflux and to repair a hiatal hernia.

This fundoplication procedure may be done using a laparoscope (LA-puh-ruh-SKope) and requires only tiny incisions in the abdomen. To perform the fundoplication, surgeons use small instruments that hold a tiny camera. Laparoscopic fundoplication has been used safely and effectively in people of all ages, even babies. When performed by experienced surgeons, the procedure is reported to be as good as standard fundoplication. Furthermore, people can leave the hospital in one to three days and return to work in two to three weeks.

In 2000, the U.S. Food and Drug Administration (FDA) approved two endoscopic devices to treat chronic heartburn. The Bard EndoCinch system puts stitches in the LES to create little pleats that help strengthen the muscle. The Stretta system uses electrodes to create tiny cuts on the LES. When the cuts heal, the scar tissue helps toughen the muscle. The long-term effects of these two procedures are unknown.

Surgery is required in a small percentage of patients and this should be discussed with your doctor.

What are the long-term complications of GERD?
Sometimes GERD can cause serious complications. Inflammation of the esophagus from stomach acid causes bleeding or ulcers. In addition, scars from tissue damage can narrow the esophagus and make swallowing difficult. Some people develop Barrett’s esophagus, where cells in the esophageal lining take on an abnormal shape and color, which over time can lead to cancer.

Also, studies have shown that asthma, chronic cough, and pulmonary fibrosis may be aggravated or even caused by GERD.
For information about Barrett’s esophagus, please see the Barrett’s Esophagus fact sheet from the National Institute of Diabetes and Digestive and Kidney Diseases.

Points to remember

- Heartburn, also called acid indigestion, is the most common symptom of GERD. Anyone experiencing heartburn twice a week or more may have GERD. You can have GERD without having heartburn. Your symptoms could be excessive clearing of the throat, problems swallowing, the feeling that food is stuck in your throat, burning in the mouth, or pain in the chest.
- In infants and children, GERD may cause repeated vomiting, coughing, and other respiratory problems. Most babies grow out of GERD by their first birthday.
- If you have been using antacids for more than two weeks, it is time to see your doctor.
- Doctors usually recommend starting with lifestyle and dietary changes to relieve heartburn. Many people with GERD also need medicine. Surgery may be an option for some people.

Sources


For more information

Visit kp.org/health
- Read about GERD in the health encyclopedia.

Get your Kaiser Permanente Healthwise® and Healthwise® for Life Handbook
- Read about GERD in the chapter on heartburn.

Call Kaiser Permanente Medical Advice
- Talk to your medical advice nurse 24 hours a day, 7 days a week by calling (703) 359-7878 or 1-800-777-7904 or TTY (703) 359-7616 or 1-800-700-4901.

*The information presented here is not intended to diagnose health problems or to take the place of professional medical care. If you have persistent medical problems, or if you have further questions, please consult your personal physician or member of your health care team.*