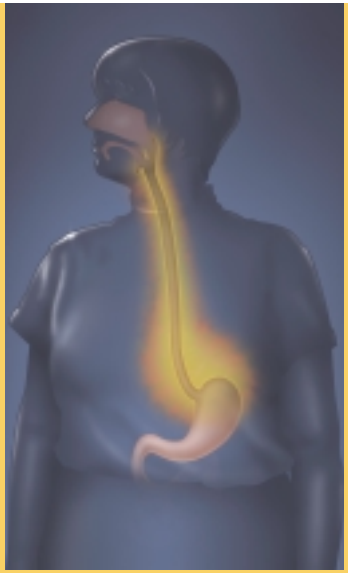
AN417/AGA/GERD/Booklet 12/3/03 3:26 PM Page 1

Heartburn?
Could It Be GERD?

Understanding Heartburn and
Gastroesophageal Reflux Disease (GERD)



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Introduction

Gastroesophageal reflux disease, or GERD, is a chronic condition.

Heartburn is a burning sensation rising from the stomach or lower chest toward the neck. It is often a symptom of GERD.

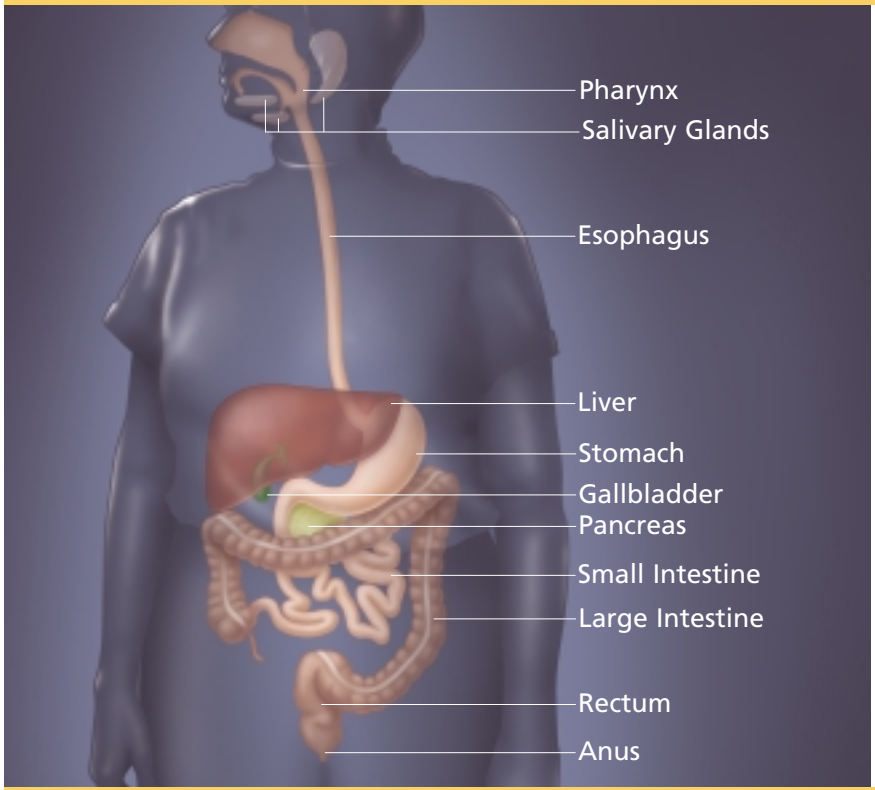
- Heartburn results when acid from the stomach flows upward into the esophagus—the muscular tube connecting the upper end of the stomach with the mouth and throat.
- The word "reflux" refers to the backward flow of stomach contents into the esophagus.

GERD can cause much physical discomfort and suffering because the stomach acid can irritate the lining of the esophagus. In some patients, this can lead to serious complications if left untreated over a long period of time. For these reasons, it is important to recognize the symptoms of GERD and to seek medical attention to determine if medical treatment is needed.

This booklet will help you to understand what GERD is, how it occurs, how to recognize it, and what types of treatments are available.

You can use this booklet as a tool to begin discussions with your doctor.

The Gastrointestinal Tract



The function of the gastrointestinal (GI) tract is to take nutrients and water from food you eat and prepare them to be absorbed into the circulatory system, which then delivers them to all cells of the body.

The gastrointestinal tract is approximately 30 feet (9 meters) long and extends from the mouth to the anus.

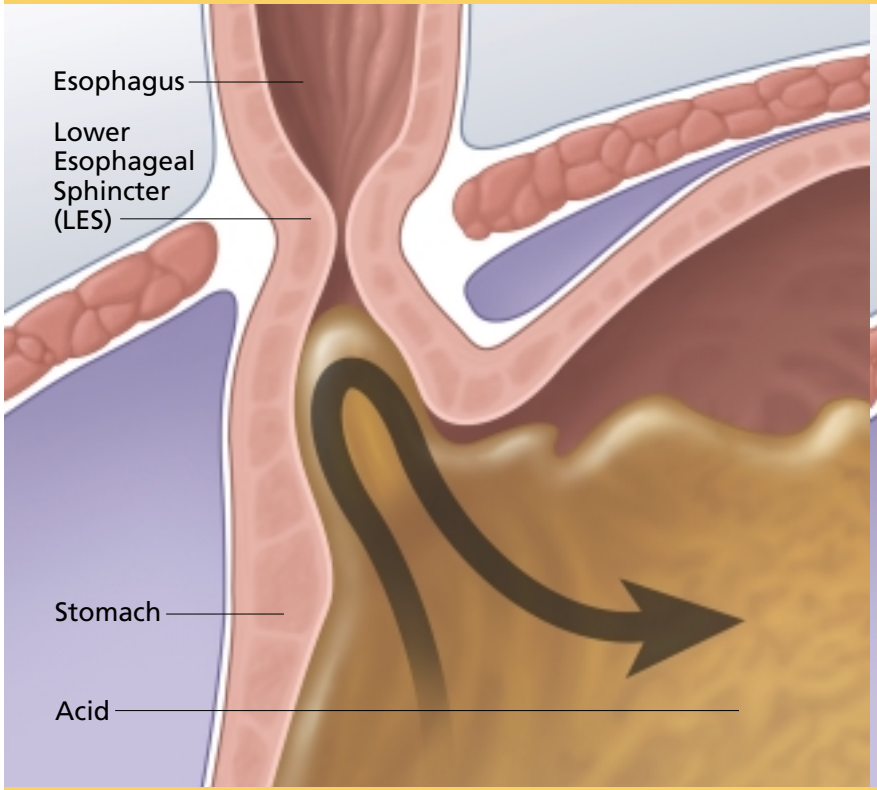
- It includes the mouth, pharynx, esophagus, stomach, small intestine, and large intestine.
- Other parts of the body help the GI system function by producing secretions that help in digestion. They include the salivary glands, liver, gallbladder, and pancreas.

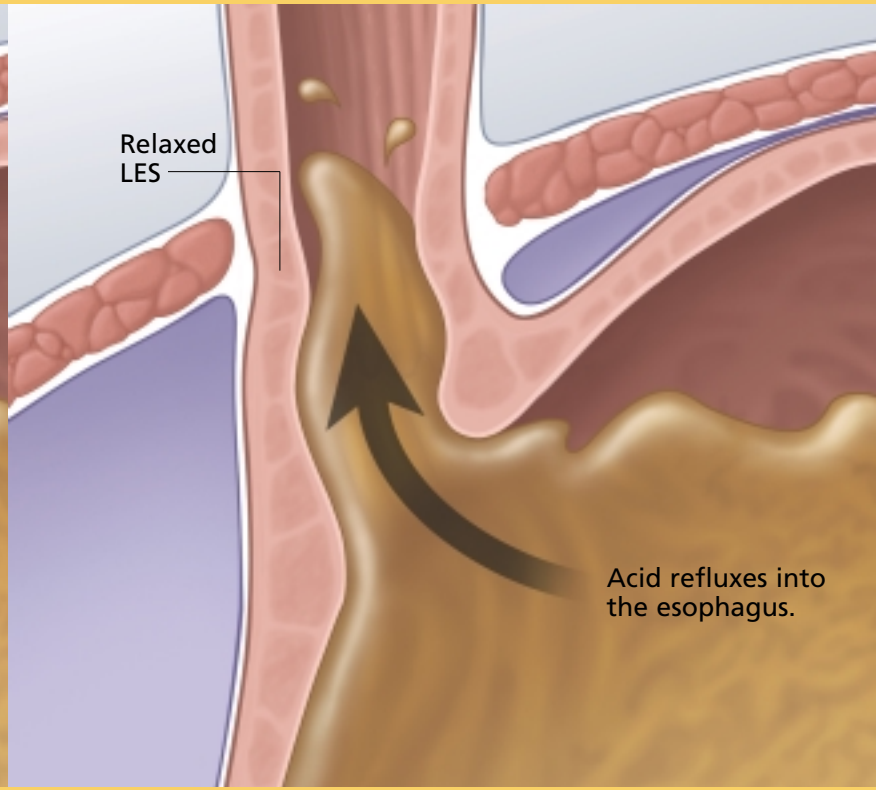
The Esophagus and Stomach

The esophagus is a muscular tube which provides a passageway for moving food from the mouth to the stomach.

Just above the point where the esophagus joins the stomach is the lower esophageal sphincter, or LES—the muscle that controls the opening into the stomach.

- When food is swallowed, the LES relaxes, allowing the food to pass from the esophagus into the stomach.
- After the food passes into the stomach, the LES tightens up, preventing the contents of the stomach from regurgitating or refluxing back up into the esophagus.
- In GERD, there is an abnormal amount of reflux of the stomach contents into the esophagus. When this happens, the acid and pepsin (a digestive enzyme) in the stomach contents irritate or damage the esophagus and heartburn results. When these highly acidic contents enter the esophagus, they can cause a severe burning sensation and difficulty breathing.
- The stomach stores, dissolves, and partially digests food, then delivers it to the small intestine, where it is further digested.


Esophagus
Lower Esophageal Sphincter (LES)
Stomach
Acid


Relaxed LES
Acid refluxes into the esophagus.

The Inner Lining of the Stomach

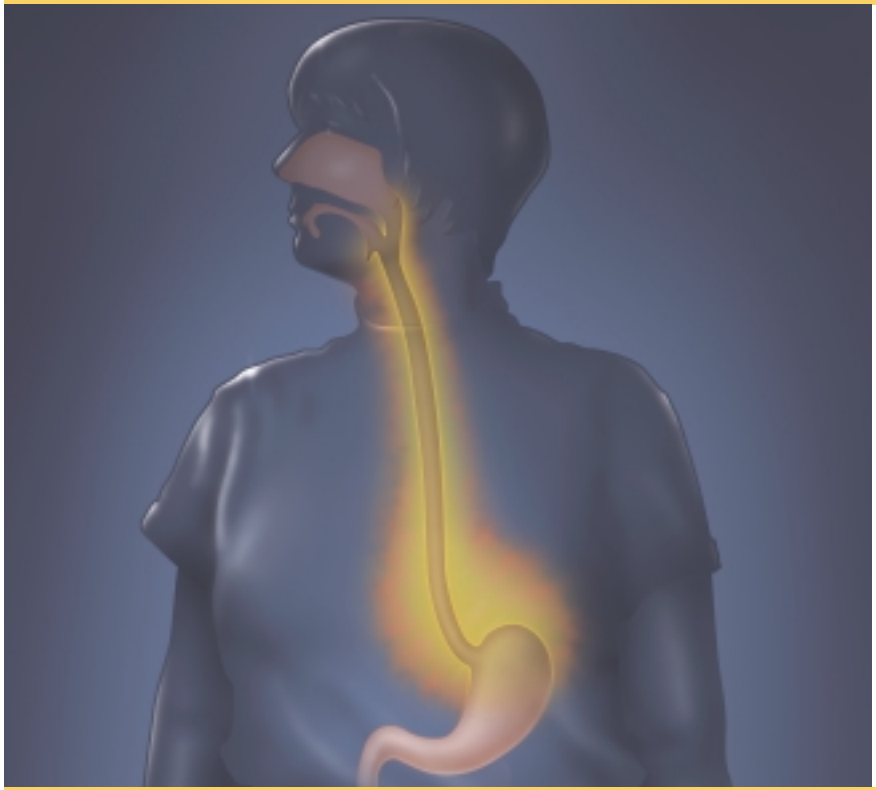
The inner lining of the stomach is thick, and its surface is covered with many small openings. These openings are located at the ends of the tube-shaped stomach glands.

The stomach glands contain many types of specialized cells, some of which:

- make hydrochloric acid (stomach acid), which helps break down food
- produce hormones that stimulate the stomach glands to release acid and pepsin
- secrete digestive enzymes
- produce large quantities of mucus, which coats the wall of the stomach and helps prevent the stomach from digesting itself

Many of the drugs used to treat GERD target the specialized cells found in the inner lining of the stomach.

Heartburn and GERD: Common Conditions



Heartburn is a very common condition.

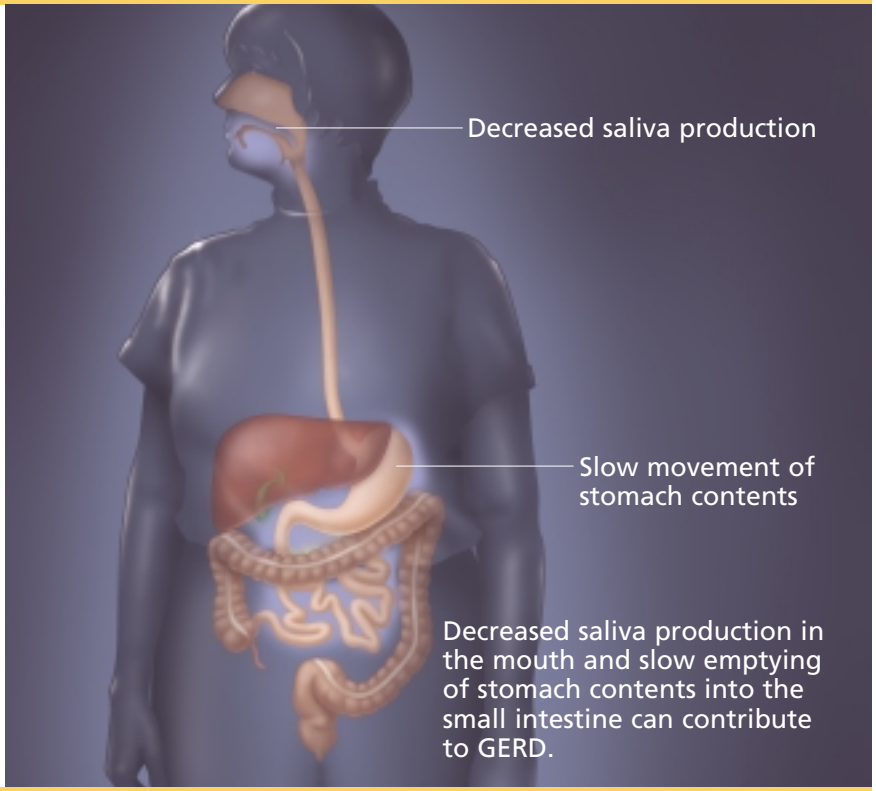
- About 20 million people experience heartburn every day.
- About twice that many experience symptoms at least once per week.
- Roughly 40% of people have heartburn at least once a month.
- The burning and pain of heartburn can last for several hours and often begin after eating food.
- Many people find that over-the-counter medicines ease their symptoms. But if these medicines do not provide relief, or if symptoms are severe, frequent, or last longer than four weeks, you should see your doctor.

Factors Contributing to GERD

Factors that may contribute to the development of GERD symptoms include fatty foods, cigarette smoking, chocolate, caffeine, alcohol, obesity, pregnancy, delayed stomach emptying, and deficient production of saliva.

- **Fatty foods, cigarette smoking, alcohol, chocolate,** and **caffeine** can relax the lower esophageal sphincter muscles, increasing reflux.

- **Overeating** is another common cause of gastric reflux. Eating a large meal increases acid secretion over a prolonged period which increases the likelihood that stomach contents will reflux when the LES relaxes.



- Saliva helps neutralize the acid that reaches the esophagus, thus, **decreased saliva production** can result in irritation of the lining of the esophagus if acid backs up into the esophagus.
- **Delayed gastric emptying** is a condition in which the stomach empties its contents into the intestines more slowly than normal. The longer the stomach is full of food, the more likely the food (mixed with stomach acid) will reflux up into the esophagus.
- **Obesity** and **pregnancy** increase pressures within the abdomen, pushing the stomach contents up into the esophagus. Elevated female hormone levels during pregnancy can cause the LES muscles to relax, aggravating reflux and heartburn.

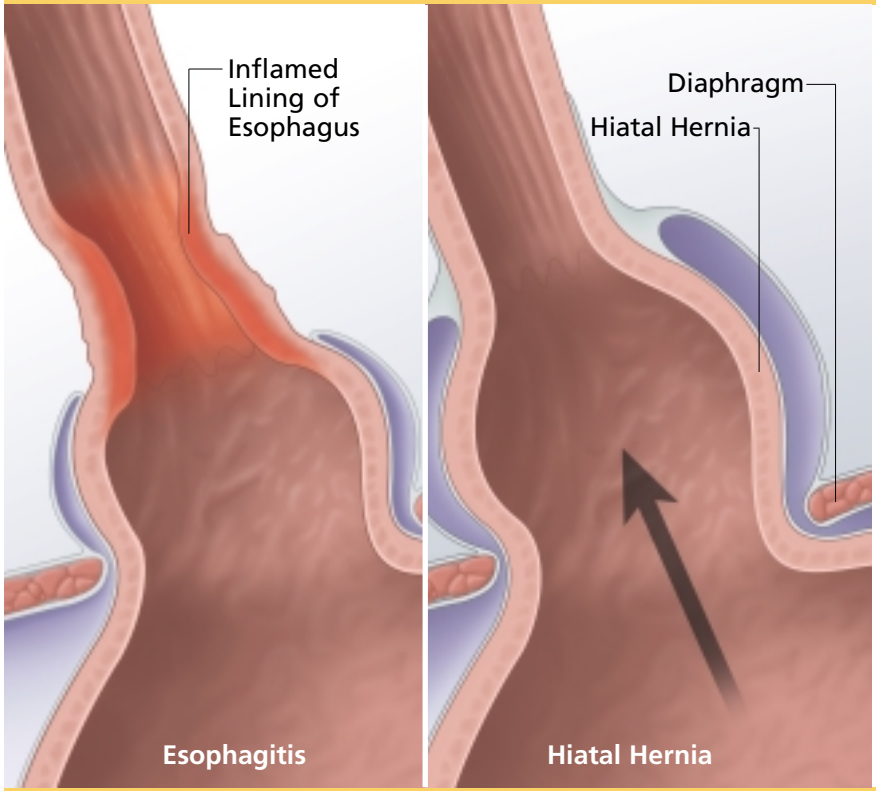
Symptoms and Complications of GERD

When GERD is not treated, serious complications can occur in some patients, such as esophageal stricture (a narrowing or obstruction of the esophagus), bleeding, or a pre-cancerous change in the lining of the esophagus called Barrett's esophagus.

Symptoms suggesting that serious GERD may be present include:

- Difficulty swallowing or a feeling that food is trapped in the chest
- Bleeding: vomiting blood or having tarry, black bowel movements
- Loss of appetite
- Unexplained weight loss
- Anemia (low red blood count)

Contact your doctor if you experience any of the above symptoms.



Esophagitis—inflammation of the esophagus—can result from excessive reflux of stomach acid and pepsin.

- People with esophagitis can experience moderate to severe heartburn, bleeding, or vomiting.

Hiatal hernia may increase the likelihood of reflux.

- Hiatal (hiatus) hernia is the protrusion of a part of the stomach through the esophageal hiatus—the opening in the diaphragm through which the esophagus passes.
- People with hiatus hernia may have a predisposition to developing GERD.

Outside the Esophagus

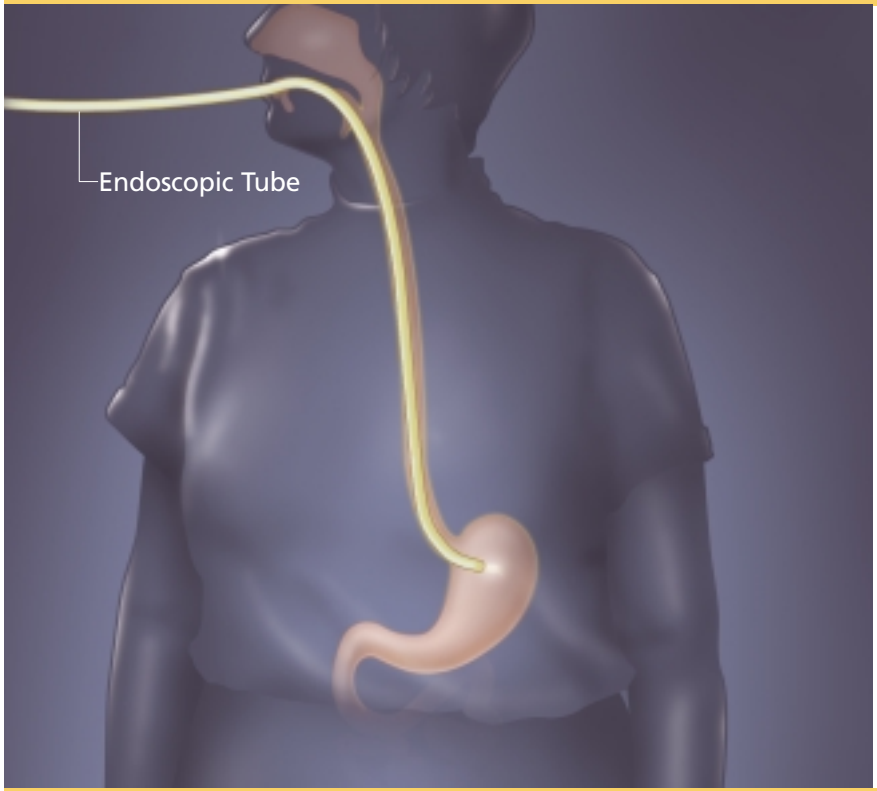
One of the most interesting new discoveries about GERD is that it may be associated with conditions outside the esophagus.

- These conditions include:
  - hoarse voice
  - chronic cough
  - erosion of tooth enamel
  - lung disease
  - chest pain similar to that of a heart attack
- GERD may be one of the factors that makes breathing difficult in asthma patients.

Diagnosing GERD

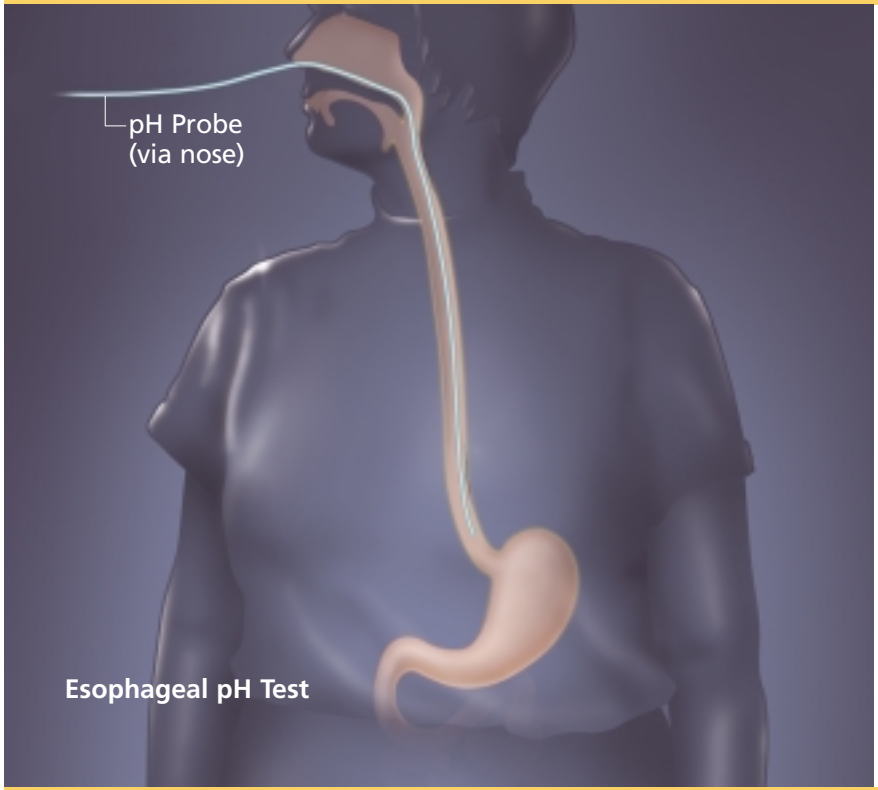
The diagnosis of GERD is usually suggested by the symptoms you report to your doctor. Tests to confirm GERD include endoscopy, the esophageal pH test, the Bernstein test, or most often, a trial of acid suppression therapy.

- During **endoscopy,** a flexible viewing tube called an endoscope is placed into the mouth and pushed down into the esophagus and stomach.
- It allows the inside of the esophagus, stomach, and part of the small intestine to be seen by the doctor.
- If necessary, biopsies (samples of tissue) can be collected during the procedure.
- Endoscopy is usually performed for patients who have symptoms of more serious disease or for those who do not respond to a reasonable trial of therapy.
- Endoscopy should be performed in patients who have had heartburn for many years to ensure that Barrett's esophagus has not developed.



When endoscopy results are normal, but symptoms still suggest GERD, other tests may be ordered.

- The **esophageal pH test** is a 24-hour test that measures and records the degree of acidity in the esophagus.
- A pH probe is placed through the mouth or nose into the esophagus.
- It measures changes in the acid content of the esophagus, which can indicate how long or how often reflux occurs and how severe it is.
- The test can also be done by clipping a small pH recording device to the lining of the esophagus, but this method is used less often.
- The **Bernstein test** is also called an acid perfusion test. It tries to reproduce the symptoms of heartburn.



Esophageal pH Test

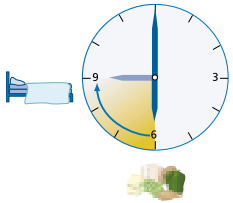
- Tubes are inserted through your nose and down your esophagus. A solution of hydrochloric acid (the same acid as stomach acid) is injected through the tube, alternating with a salt solution.
- A positive result (feeling of heartburn) indicates that your symptoms are caused by acid reflux.
- A **barium upper gastrointestinal study** is a test that may be ordered by your doctor. It requires drinking barium, a chalky substance that can be seen on an x-ray.
- This test is not very sensitive for detecting GERD, but is very useful for evaluating patients who have difficulty swallowing.

Treating GERD with Lifestyle and Diet Changes

There are two main components to the treatment of GERD. The first consists of changes in lifestyle and diet and the second is use of medications.

The goal of lifestyle and diet changes is to decrease the amount of acid reflux and reduce damage to the lining of the esophagus caused by refluxed materials. These changes are most likely to be helpful if symptoms are mild or infrequent.

- Avoid foods high in fat.
- Chew gum as it boosts saliva production and allows quicker and more efficient neutralization of acid in the esophagus.
- Don't eat for 3 hours before sleep.
- Sleep on your left side.

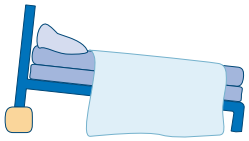


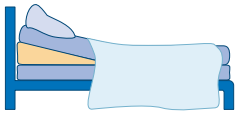
- Avoid foods and beverages that:
  - *contribute* to heartburn, such as: chocolate, coffee, peppermint, greasy or spicy foods, and alcohol
  - *irritate* a damaged esophageal lining, like: citrus fruits and juices, tomato products, and pepper
- Stop smoking. Smoking can weaken the lower esophageal sphincter.

- Lose weight if you are too heavy.

- Avoid large meals.

- Elevate the head of your bed 4 to 6 inches (10 to 15 centimeters) by placing blocks under the legs of the bed or a wedge under the mattress (see illustrations).





Treating GERD with Medications

Non-Prescription Medications

When lifestyle and diet changes fail to improve symptoms, medications may be recommended.

Several non-prescription, or over-the-counter (OTC), medications are available to treat occasional heartburn and GERD, but if symptoms persist for more than 4 weeks, you should consult your doctor.

Antacids neutralize acid in the esophagus and stomach and stop heartburn if taken regularly. Although antacids are inexpensive and safe, they tend to provide only short-term relief. Long-term frequent use of antacids can result in negative side effects that may include diarrhea, problems with calcium metabolism (how it's used by the body), and a buildup of magnesium in the body.

H_2 receptor antagonists, or H_2 blockers, are another type of OTC medication used to treat heartburn and GERD. They block the action of histamine which is produced in the wall of the stomach and stimulates acid production. Over-the-counter H_2 blockers include cimetidine (Tagamet®), famotidine (Pepcid®), nizatidine (Axid®), and ranitidine (Zantac®). H_2 blockers are generally effective and well tolerated for mild GERD. It should be noted that OTC medications are half the strength of prescription doses and take longer to work. However, it is not advisable to take larger doses of OTCs than what is indicated on the label without your physician's advice.

Recently, the **proton-pump inhibitor (PPI)** omeprazole (Prilosec®) was approved for OTC use.

Prescription Medications

If symptoms persist despite the use of OTC medications, your doctor may prescribe stronger medication without doing any tests. Generally, tests are done only if patients are not responsive to treatment.

Prescription medications used in the treatment of GERD generally fall into one of three categories: H_2 blockers, proton-pump inhibitors, and promotility agents.

H_2 blockers available by prescription are generally effective and well tolerated; they are double the strength of OTC H_2 blockers and work quickly.

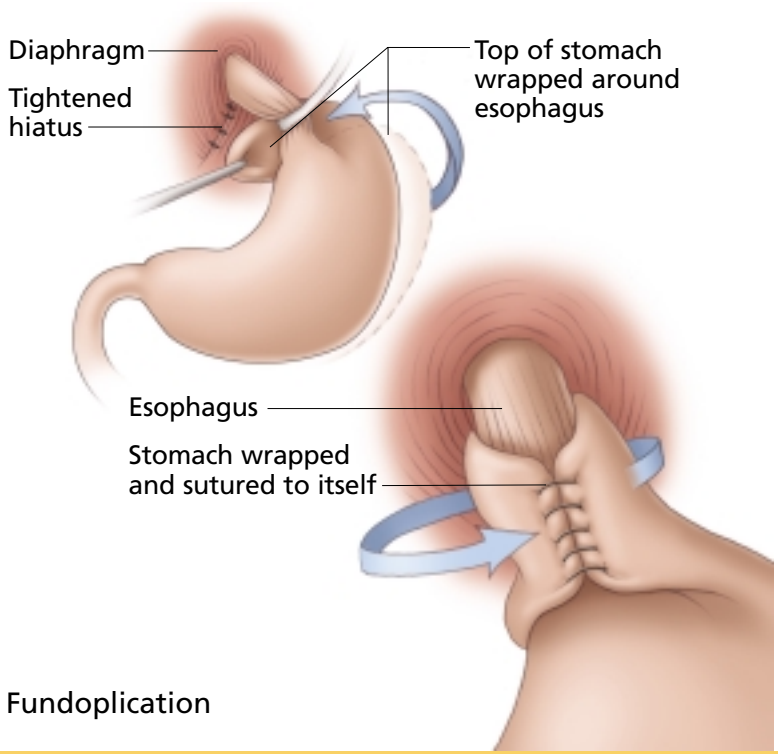
Proton-pump inhibitors (PPIs) are even stronger acid-reducing medications. They work by significantly reducing the stomach's production of acid and are often more effective than H_2 blockers. Usually, only a single pill is required daily.

Examples of PPIs include omeprazole (Prilosec®), lansoprazole (Prevacid®), rabeprazole (Aciphex®), pantoprazole (Protonix®), and esomeprazole (Nexium®).

Long-term suppression of stomach acid with PPIs helps to prevent recurrence of symptoms. The prescribed dose may vary depending on the severity of symptoms. Long-term use of PPIs is generally effective and safe.

In addition to the over-the-counter and prescription medicines just described, drugs known as promotility agents may be used in some patients.

Promotility agents work by increasing the pressure of the lower esophageal sphincter and promoting the emptying of the stomach. They may be prescribed in combination with acid reducing medications. Talk to your doctor, who will determine if these agents are appropriate for you.



Fundoplication

Surgery and Other Treatments

The role of surgery in GERD is still evolving. The long-term efficacy of surgical and endoscopic procedures is not yet clear. Generally, surgery should be considered as an alternative approach to medication for long-term management of GERD rather than for uncontrollable symptoms or serious complications, such as stricture (a narrowing or obstruction of the esophagus).

- **Fundoplication** is the standard surgical procedure for GERD. The upper part of the stomach is wrapped around the LES to give strength to the sphincter and stop acid reflux. This procedure is now usually done through laparoscopy, a technique that allows surgery to be performed through small incisions and generally results in only a short hospital stay.

- The results of the Nissen fundoplication done by laparoscope are comparable to treatment with PPIs for control of symptoms, healing of esophagitis, prevention of stricture recurrence, and for keeping GERD in remission.

- One concern of surgery is that up to 50% of patients will return to using their acid-blocking medications within 3 to 10 years after their operation.
- Another concern is that 5 to 8% of patients who have a laparoscopic Nissen operation may have temporary or long-term side effects, such as trouble swallowing, gas bloating, diarrhea, and an inability to belch or vomit.
- However, surgery can be beneficial for many GERD patients. As for many surgeries, the outcome can relate to the experience of the surgeon.

Endoscopic Procedures

New endoscopic treatments for GERD may provide an alternative to long-term medication use or surgery. These techniques use the endoscope to assist in the following procedures: placing stitches and pleats in the upper stomach, using heat to treat the LES muscle, or injecting bulking agents into or around the LES to create an implant.

The results of effectiveness, durability, and safety of these procedures are awaited from ongoing clinical studies.

- The **Endocinch system** is an endoscopic suturing technique that places stitches in the LES to create pleats that strengthen the LES.
- The **Stretta procedure** is an endoscopic procedure that uses thermal energy to create small lesions in the area of the LES. When the lesions heal, scar tissue forms and helps tighten the LES.
- Another treatment option is implants. The **Enteryx procedure** injects a liquid solution into the LES muscle where it forms a permanent implant and may enhance the LES.

Questions and Concerns

Questions to ask yourself before talking with the doctor or nurse:

Where do I feel the pain or discomfort?

When does the pain begin?

What foods or activities bring it on?

What seems to make it worse?

How long does the pain last?

What do I do to manage the pain?

Do I have any other symptoms (such as coughing, difficulty breathing, shortness of breath, or anything else)?

Questions you may wish to ask your doctor:

How common is heartburn?

What is heartburn? What is GERD?

What causes heartburn and GERD?

If my symptoms are infrequent, what treatment is right for me?

What are the complications of GERD if left untreated?

What are the warning signs that I should be on the alert for?

How effective are medications in treating GERD?

What should I do if my symptoms persist?

What is a gastroenterologist?

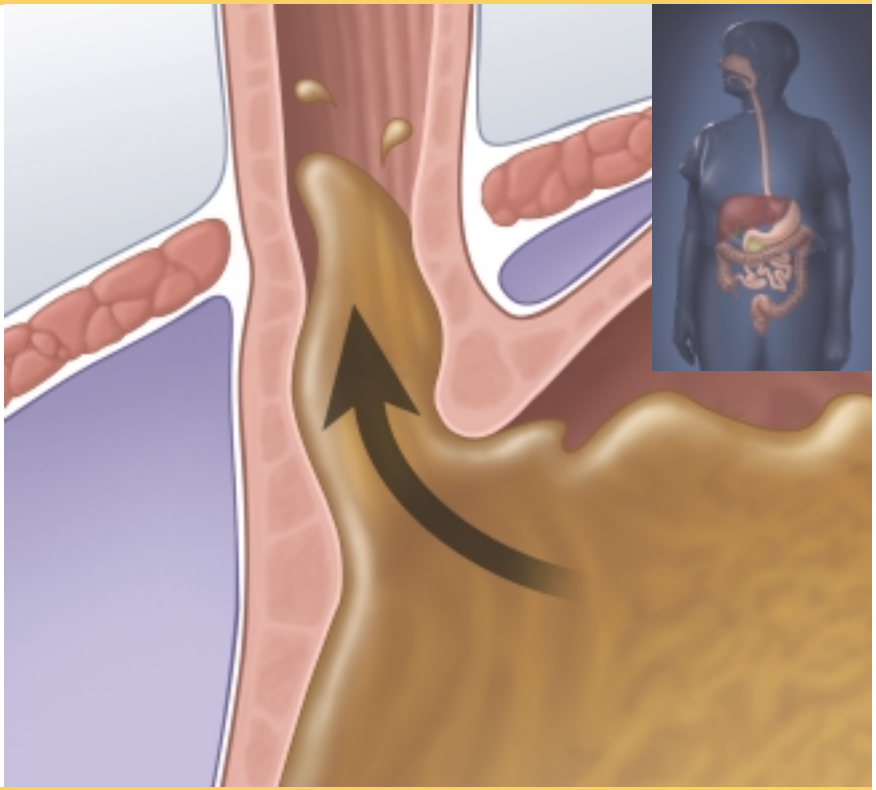
What types of tests will I need to evaluate my GERD?

Q A

What are the possible side effects of the medication you are prescribing for me?

Q A

Will I need surgery?



Tracking Your Pain

Taking time to track your pain or discomfort and the foods or activities that activate it or make it worse may help you and your doctor determine the best treatment for you.

Day and time		
Where is the pain?		
When did it start?		
What were you doing when it started?		
What did you eat in the 3 hours before?		
How did you manage the pain?		
Other		

Notes

Recommendations

- ❑ Avoid large meals and foods that irritate
- ❑ Decrease fat intake
- ❑ Do not lie down for 3 hours after eating
- ❑ Raise the head of your bed 4–6 inches
- ❑ Sleep on your left side
- ❑ Stop smoking
- ❑ Lose weight
- ❑ Chew gum
- ❑ Medications

- ❑ Diagnostic tests

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Founded in 1897, the American Gastroenterological Association is one of the oldest medical specialty societies in the United States. Its members include physicians and scientists who research, diagnose, and treat disorders of the gastrointestinal tract and liver. Representing almost 14,000 gastroenterologists worldwide, the AGA serves as an advocate for its members and their patients, supports gastroenterology practice and scientific needs, and promotes the discovery, dissemination, and application of new knowledge, leading to the prevention, treatment, and cure of digestive and liver diseases.

For more information on heartburn or GERD, go to www.gastro.org.