Introduction
Gastroesophageal reflux occurs when the contents of your stomach reflux or “back up” into the esophagus and/or mouth more often or more severely than normal. This reflux of stomach contents including acid will then result in symptoms that can include heartburn, vomiting, or pain with swallowing. The reflux of stomach acid can adversely affect the vocal cords or even be inhaled into the lungs (called aspiration). People with these symptoms are given the diagnosis of gastroesophageal reflux disease or GERD for short.

What is heartburn?
Heartburn is the most common symptom of GERD. It is described as a burning sensation in the center of the chest, which sometimes spreads to the throat; there also may be an acid taste in the throat.

What is GERD?
Food is transported from the mouth to the stomach through the esophagus. The esophagus is muscular tube about 10-12 inches long and 1 inch in diameter, that expands and contracts to move food to the stomach through wave-like movements called peristalsis.

At the lower end of the esophagus, where it joins the stomach, there is a circular ring of muscle called the lower esophageal sphincter (LES). After swallowing, the LES relaxes to allow food to enter the stomach and then contracts to prevent the back-up of food and acid into the esophagus. In patients with GERD, the LES has become weakened and fails to tighten back up after swallowing. This failure of the LES to contract, allows stomach contents including acid to reflux back into the esophagus. The barrier, or “trap door” no longer works. At first, this may be a transient or intermittent failure, often caused by certain foods or lifestyle choices (see below). But, over time, the LES may fail altogether. Reflux becomes gastroesophageal reflux disease or GERD when bothersome symptoms, including heartburn, develop or damage to the esophagus occurs.

What are the symptoms of GERD?
The most common symptom of GERD is heartburn (see above). Heartburn affects about 10 million people in the US on a daily basis. However, not all patients with heartburn have GERD. Patients with heartburn at least 2-3 times per week may have GERD. Less common symptoms of GERD can include:

- Non-burning chest pain
- Difficulty swallowing (called dysphagia), or food getting stuck
- Painful swallowing (called odynophagia)
- Persistent laryngitis/hoarseness
- Persistent sore throat
- Chronic cough, new onset asthma, or asthma only at night
- Regurgitation of foods/fluids; taste of acid in the throat
- Sense of a lump in the throat
- Worsening dental disease
- Waking up with a choking sensation

The following symptoms are called “red flags” and may indicate a more serious problem. If you have any of these symptoms you should seek medical attention:

- Difficulty swallowing or pain with swallowing (feeling that food gets ‘stuck’)
- Unexplained weight loss
- Chest pain
- Choking
- Bleeding (vomiting blood or dark-colored stools)

**How is GERD diagnosed?**

GERD is usually diagnosed by the symptoms the patient describes and the response to treatment. In people who have symptoms of reflux but no sign of more serious problems or “red flags”, a trial of lifestyle changes and possibly a trial of medication may be all that is needed to make a diagnosis. Further testing is often required when the diagnosis is unclear or if there are more serious signs or symptoms as described above. In these cases, one or more of the following tests for GERD may be recommended.
**Upper endoscopy** – This is a commonly used test to evaluate the esophagus, stomach and duodenum (the first few inches of the small intestine). It allows for direct visualization of the lining of the upper digestive tract by passing a small, flexible tube with a light source and camera at the tip. The physician performing the exam is looking for damage to the lining of the esophagus caused by GERD as well as evaluating for other diseases. Biopsies of abnormal tissue can also be performed if necessary. It should be noted, however, that up to half of people with GERD will have normal appearing tissue with no sign of damage. Other tests may be necessary to make a diagnosis of GERD.

**24-hour esophageal pH and impedance study** – This test directly measures the amount of acid and fluid that refluxes into the esophagus. It involves placing a small wire into the esophagus that is then attached to a recorder worn on the patient’s belt. It records all episodes of gastroesophageal reflux during the 24-hour test period. The patient keeps a diary of symptoms during this time as well to correlate symptoms with what is actually happening in the esophagus. This test is usually reserved for cases where the diagnosis is still uncertain after a careful history, trial of medication and endoscopy. It may also be used in cases of unusual symptoms of GERD, such as cough, hoarseness, chest pain or asthma.

**What are potential complications of GERD?**
GERD can cause a variety of complications. These can include:

**Erosive esophagitis** – This is a “burn” of the lining of the esophagus that can cause erosions or ulcers that can lead to pain, a sensation of food sticking or even internal bleeding. This can usually be healed with medication.

**Stricture formation** – This is a narrowing of the esophagus caused by scar tissue that occurs when the esophagus lining is repeatedly damaged. It can cause a blockage of food traveling down the esophagus leading to symptoms of food sticking. It can be treated with medication that heals the damage and may require dilation (or stretching) of the scar tissue at the time of endoscopy.

**Barrett’s esophagus** – Barrett’s esophagus is a precancerous change in the lining of the esophagus that occurs in a minority (about 10%) of patients with longstanding GERD symptoms. The exposure of the lining of the esophagus in these people causes the normal cells (that look like skin cells) to be replaced with cells that look like intestinal cells. Barrett’s esophagus can lead to esophageal cancer in a small number of patients over time (about 5% of patients followed for 10 years). Patients at higher risk for Barrett’s esophagus include white men over age 50, people who suffer heartburn symptoms more than 2-3 times per week for greater than 5 years, or have a family history of Barrett’s esophagus or esophageal cancer.
How is GERD treated?
How GERD is treated depends in large part on the severity of the symptoms. The following are potential treatments and when they might be used.

For mild symptoms:
Antacids. For occasional mild symptoms of heartburn, over-the-counter antacids provide quick relief by buffering the acid in your stomach. However, they only work for a short period of time, so they are often not very effective. Examples include Tums, Maalox and Mylanta.

H2 blockers. These medications block the effects of histamine on acid production in the stomach. They take a little longer than antacids to start working, but last longer because they actually decrease production of acid for 6-12 hours. However, they are less effective than proton pump inhibitors at controlling acid production. Examples of histamine antagonists available in the United States include ranitidine (Zantac®), famotidine (Pepcid®), cimetidine (Tagamet®), and nizatidine (Axid®). These drugs are also available over-the-counter in lower doses.

Lifestyle changes. Changes in diet and other lifestyle measures can also be an important adjunct to treatment of mild GERD. However, many of these measures may not be adequate to treat all symptoms. In scientific studies, only weight loss and elevating the head of the bed were effective. Below is a list of changes that can be tried.

Weight loss. Weight loss may help reduce reflux symptoms in patients who are overweight. Weight loss may also decrease the risk of other health problems including diabetes, heart disease and cancer.

Elevate head of bed. Elevating the head of your bed by 6-8 inches may help reduce nighttime reflux symptoms by bringing the chest and shoulders above the stomach and using gravity to keep acid in the stomach. Raising the head of the bed can be done with blocks of wood or books under the legs of the bed. A foam wedge under the mattress can also be used. Several manufacturers have developed commercial products for this purpose (for one example, see www.bedge.com). However, it is not helpful to use additional pillows; this can cause an unnatural bend in the body that increases pressure on the stomach, worsening reflux.

Dietary changes. Avoid foods that promote reflux like caffeine, chocolate, alcohol, peppermint, fatty foods and carbonated beverages. Also avoid eating large meals or eating late at night.
**Quit smoking.** Smoking lowers the pressure in the lower esophageal sphincter promoting reflux. In addition, smoking dries out the mouth decreasing the production of saliva that helps buffer acid in the stomach. Finally, coughing caused by smoking increase the pressure in the stomach forcing acid into the esophagus.

**For moderate to severe symptoms:**

**Proton pump inhibitors.** Also called PPIs, this class of medications reduces acid production by blocking the acid pumps (or proton pumps) in the stomach. These are more powerful acid blockers than H2 blockers and are, therefore, the most effective medications at controlling acid reflux. Examples of PPIs include omeprazole (Prilosec®), esomeprazole (Nexium®), lansoprazole (Prevacid®), dexlansoprazole (Kapidex®), pantroprazole (Protonix®), and rabeprazole (Aciphex®). Omeprazole is the only PPI currently available over-the-counter (Prilosec OTC and other generic brands available).

**Surgery.** Some patients may do well with surgery to help strengthen the lower esophageal sphincter and recreate a barrier to acid reflux. The most commonly performed surgery is called a fundoplication. Since most patients have good control of their symptoms with medication, surgery is not commonly performed unless patients have symptoms not controlled with PPIs, have side-effects to the medications used for acid reflux or desire an alternative to long-term medications. Please ask your doctor for more information on whether or not you would be a good candidate for surgery.