

## **Patient information: Gastroesophageal reflux disease in adults**

**INTRODUCTION** — Gastroesophageal reflux occurs when the stomach contents reflux or back up into the esophagus and/or mouth. Reflux is a normal process that occurs in healthy infants, children, and adults. Most episodes are brief and do not cause bothersome symptoms or complications. In contrast, people with gastroesophageal reflux disease (GERD) experience symptoms as a result of the reflux. Symptoms 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). Patients with GERD may have inflammation, damage to the esophageal mucosa called esophagitis or even ulcers. Some patients may experience symptoms of GERD but have no physical damage to the esophagus; this is referred to as non-erosive esophageal reflux disease or NERD. With either condition the treatment and lifestyle modifications can be the same.

**WHAT IS GASTROESOPHAGEAL REFLUX?** — When we eat, food is carried from the mouth to the stomach through the esophagus, a tube-like structure that is approximately 10 inches long and 1 inch wide in adults. The esophagus is made of tissue and muscle layers that expand and contract to propel food to the stomach through a series of 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. However, sometimes the LES is weak or becomes relaxed, allowing the contents stomach to wash back into the esophagus.

**Reflux** — Reflux becomes gastroesophageal reflux disease (GERD) when it causes bothersome symptoms or injury to the esophagus. The amount of reflux required to cause GERD varies. In general, damage to the esophagus is more likely to occur when acid refluxes frequently, the reflux is very acidic, or the esophagus is unable to clear away the acid quickly. The most common symptoms associated with reflux are heartburn, regurgitation, chest pain, and trouble swallowing.

**Hiatus hernia** — The diaphragm is a large flat muscle at the base of the lungs that contracts and relaxes as a person breathes in and out. The esophagus passes through an opening in the diaphragm called the diaphragmatic hiatus before it joins with the stomach. Normally, the diaphragm contracts, which improves the strength of the LES. If there is a weakening in the diaphragm muscle at the hiatus, the

stomach may be able to partially slip through the diaphragm into the chest, forming a sliding hiatus hernia. The presence of a hiatus hernia makes reflux more likely. A hiatus hernia is more common in people over age 50. Obesity and pregnancy are also contributing factors. There is no way to prevent a hiatus hernia.

**SYMPTOMS** — People who experience heartburn at least two to three times a week may have gastroesophageal reflux disease, or GERD. The most common symptom of GERD, heartburn which can sometimes spread to the throat; there also may be an acid taste in the throat. Less common symptoms include: Stomach pain, non-burning chest pain, difficulty or painful swallowing, 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, a sense of a lump in the throat, worsening dental disease, recurrent pneumonia, chronic sinusitis, or waking up with a choking sensation.

**COMPLICATIONS** — The vast majority of patients with GERD will not develop serious complications, particularly when reflux is adequately treated. However, a number of serious complications can arise in patients with severe GERD.

**Ulcers** — Ulcers can form in the esophagus as a result of burning from stomach acid. In some cases, bleeding occurs. Patients may not be aware of bleeding, but it may be detected in a stool sample with a test called hemocult. This test is performed by putting a small amount of stool on a chemically coated card.

**Stricture** — Damage from acid can cause the esophagus to scar and narrow, causing a blockage (stricture) that can cause food or pills to get stuck in the esophagus. The narrowing is caused by scar tissue that develops as a result of ulcers that repeatedly damage and then heal in the esophagus.

**Lung and throat problems** — Some patients reflux acid into the throat, causing inflammation of the vocal cords, a sore throat, or a hoarse voice. The acid can be inhaled into the lungs and cause a type of pneumonia (aspiration pneumonia) or asthma symptoms. Chronic acid reflux into the lungs may eventually cause permanent lung damage, called pulmonary fibrosis or bronchiectasis.

**Barrett's esophagus** — Barrett's esophagus occurs when the normal cells that line the lower esophagus (squamous cells) are replaced by a different cell type (intestinal cells). This process usually results from repeated damage to the esophageal lining, and the most common cause is longstanding GERD. The intestinal

cells have a small risk of transforming into cancer cells. As a result, patients with Barrett's esophagus are advised to have a periodic endoscopy to monitor for early warning signs of cancer.

Esophageal cancer — There are two main types of esophageal cancer: adenocarcinoma and squamous cell carcinoma. A major risk factor for adenocarcinoma is Barrett's esophagus, discussed above. Squamous cell carcinoma does not appear to be related to GERD. Unfortunately, adenocarcinoma of the esophagus is on the rise in the United States and in many other countries. However, only a small percentage of people with GERD will develop Barrett's esophagus and an even smaller percentage will develop adenocarcinoma.

TREATMENT — GERD is treated according to its severity.

Mild symptoms — Initial treatments for mild reflux include dietary changes and using non-prescription medications, including antacids or histamine type 2 receptor antagonists.

Histamine antagonists — The histamine antagonists reduce production of acid in the stomach. However, they are somewhat less effective than proton pump inhibitors (PPIs, see below). Examples of histamine antagonists available in the United States include ranitidine (Zantac®), famotidine (Pepcid®), cimetidine (Tagamet®), and nizatidine (Axid®). These medications are usually taken by mouth once or twice per day. Over-the-counter preparations, which contain a lower dose than the prescription strength, are available for cimetidine, ranitidine, and famotidine.

Lifestyle changes — Changes to the diet or lifestyle have been recommended for many years, although their effectiveness has not been extensively evaluated in well-designed clinical trials. A review of the published literature concluded that there was evidence supporting the effectiveness of weight loss and head of bed elevation, but no evidence for the other measures described below. Thus, these recommendations may be helpful in some, but not all people with mild symptoms of reflux.

Weight loss — Losing weight may help people who are overweight to reduce reflux. In addition, weight loss has a number of other health benefits, including a decreased risk of type 2 diabetes and heart disease.

Raise the head of the bed six to eight inches — Although most people only have heartburn for the two- to three-hour period after meals, some wake up at night with

heartburn. People with nighttime heartburn can elevate the head of their bed, which raises the head and shoulders higher than the stomach, allowing gravity to prevent acid from refluxing. Raising the head of the bed can be done with blocks of wood under the legs of the bed or a foam wedge under the mattress. 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.

**Avoid reflux inducing foods** — Some foods also cause relaxation of the lower esophageal sphincter, promoting reflux. Excessive caffeine, chocolate, alcohol, peppermint, and fatty foods may cause bothersome reflux in some people.

**Quit smoking** — Saliva helps to neutralize refluxed acid, and smoking reduces the amount of saliva in the mouth and throat. Smoking also lowers the pressure in the lower esophageal sphincter and provokes coughing, causing frequent episodes of acid reflux in the esophagus. Quitting smoking can reduce or eliminate symptoms of mild reflux

**Avoid large and late meals** — Lying down with a full stomach may increase the risk of reflux. By eating three or more hours before bedtime, reflux may be reduced. In addition, eating smaller meals may prevent the stomach from becoming over distended, which can cause reflux.

**Avoid tight fitting clothing** — At a minimum, tight fitting clothing can increase discomfort, but it may also increase pressure in the abdomen, forcing stomach contents into the esophagus.

**Chew gum or use oral lozenges** — Chewing gum or using lozenges can increase saliva production, which may help to clear stomach acid that has entered the esophagus.