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Gastroesophageal Reflux Disease (GERD)

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Gastroesophageal reflux disease, or GERD, affects an estimated 5–7% of the global population – men, women, and children. Although common, the disease often is unrecognized – its symptoms misunderstood. This is unfortunate because GERD is generally a treatable disease, though serious complications can result if it is not treated properly.

The purpose of this publication is to advance understanding of the nature of GERD, how to recognize the disorder, and how to treat it. Persistent heartburn is the most frequent – but on the only – symptom of GERD. (The disease may be present even without apparent symptoms.) Heartburn is so common that it often is not associated with a serious disease like GERD. All too often, GERD is either self-treated or mistreated.

GERD is a chronic disease. Treatment usually must be maintained on a long-term basis, even after the disease has been brought under control. Issues of daily living and compliance with long-term use of medication need to be addressed as well. This can be accomplished through follow-up, support, and education.

GERD is often characterized by painful symptoms that can seriously undermine an individual's quality of life. Various methods to effectively treat GERD range from lifestyle measures to the use of medication or surgical procedures. It is essential for individuals who suffer the chronic and recurrent symptoms of GERD to seek an accurate diagnosis, to work with their physician, and to receive the most effective treatment available.

WHAT IS GERD?

Gastroesophageal reflux disease, or GERD, is a very common disorder. *Gastroesophageal* refers to the stomach and the esophagus. *Reflux* refers to the back-flow of acidic stomach contents into the esophagus. GERD is characterized by symptoms and/or tissue damage that results from repeated or prolonged exposure of the lining of the esophagus to acidic contents from the stomach. If tissue damage is present, the individual is said to have esophagitis or erosive GERD. The presence of symptoms with no evident tissue damage is referred to as non-erosive GERD.

GERD is often accompanied by persistent symptoms, such as chronic heartburn and regurgitation of acid. But sometimes there are no apparent symptoms, and the presence of GERD is revealed when complications become evident.

WHAT CAUSES REFLUX?

After swallowed food travels down the esophagus, it stimulates cells in the stomach to produce acid and pepsin, which aid in digestion. A band of muscle at the junction of the stomach and esophagus, called the lower esophageal sphincter (LES), acts as a barrier to prevent the back-flow (reflux) of stomach contents into the esophagus. The LES normally relaxes to allow swallowed food to pass into the stomach. Reflux occurs when that barrier is relaxed at inappropriate times or is otherwise compromised. Factors like distention of the stomach, delayed emptying of the stomach, or too much acid in the stomach can also make it easier for acid reflux to occur.

WHAT CAUSES GERD?

There is no known single cause of GERD. It occurs when the esophageal defenses are overwhelmed by acidic gastric contents that reflux into the esophagus. This can cause injury to tissue. GERD can also be present without esophageal damage (approximately 50% of patients have this form of the disease).

Gastroesophageal reflux occurs when the LES barrier is somehow compromised. Occasional reflux occurs normally, and without consequence other than infrequent heartburn, in people who do not have GERD. In people with GERD, reflux causes frequent symptoms or damages the esophageal tissue.

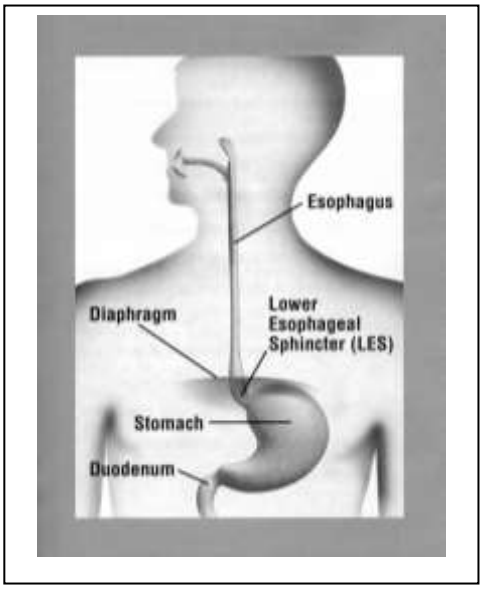
Some, but not all, people with hiatal hernia have GERD and vice versa. Hiatal hernia occurs when a part of the stomach moves above the diaphragm, from the abdominal to the chest area. The diaphragm is a muscle that separates the chest (containing the esophagus) from the abdomen (containing the stomach). If the diaphragm is not intact, it can compromise the ability of the LES to prevent acid reflux. A hiatal hernia may decrease the sphincter pressure necessary to maintain the antireflux barrier.

Even when the LES and the diaphragm are intact and functioning normally, reflux can still occur. The LES may relax at times for no known reason. When that happens there is not enough pressure at the LES to prevent reflux.

The extent of injury to the esophagus – and the degree of severity of GERD – depends on the frequency of reflux, the amount of time the refluxed material stays in the esophagus, and the quantity of acid in the esophagus.

WHAT ARE THE COMMON SYMPTOMS OF GERD?

Symptoms of GERD vary from person to person. The majority of people with GERD have mild symptoms, with no visible evidence of tissue damage and little risk of developing complications. Chronic heartburn is the most frequently reported symptom of GERD. Acid regurgitation (refluxed material into the mouth) is another common symptom.



Can Symptoms Other Than Heartburn be Signs of GERD?
Numerous symptoms other than heartburn are associated with GERD. These may include belching, difficulty or pain when swallowing, or waterbrash (sudden excess of saliva). An alarming symptom needing prompt medical attention is dysphagia (the sensation of food sticking in the esophagus). Symptoms may involve chronic sore throat, laryngitis, and other oral complaints such as inflammation of the gums and erosion of the enamel of the teeth. Small amounts of acid can reflux into the back of the throat or into the lungs and cause irritation. Hoarseness in the morning, a sour taste, or bad breath may be clues of GERD. Chronic asthma, cough, wheezing, and noncardiac chest pain, (it may feel like angina) may be due to GERD. People with these symptoms often have less frequent or even absent typical symptoms of GERD such as heartburn.

Chest pain or chest pressure may indicate acid reflux. Nevertheless, this kind of pain or discomfort should prompt urgent medical evaluation. Possible heart conditions must always be excluded first.

Relief of symptoms after a two-week trial therapy with a proton pump inhibitor (a prescription medication that inhibits gastric acid secretion) is an indication that GERD is the cause. This can also be confirmed with pH monitoring, which measures the level of acid refluxing into the esophagus and as high as the larynx.

WHAT IS HEARTBURN?

Most people describe heartburn as a burning sensation in the center of the chest. It may radiate upward toward the throat. Heartburn is usually caused by acid reflux in the esophagus. The lining of the esophagus is much more sensitive to acid than the stomach, which is why the burning sensation is felt. In people with GERD, persistent heartburn can be painful, can disrupt daily activities, and can awaken a person at night.

Is Heartburn Dangerous?
Heartburn is a symptom. It is very common; it is estimated that over 20% of Americans have heartburn once a month. Nevertheless, if heartburn occurs on a regular basis, the acid that causes heartburn has the potential to injure the lining of the esophagus. It can cause ulceration, which may cause discomfort or even bleeding. Stricture (narrowing of the esophagus caused by acid, which leads to scar formation) can also result from chronic and frequent heartburn. People with stricture may have difficulty swallowing food.

Occasional heartburn that occurs just after a meal or when bending over, which occurs less than once a week, is likely a "benign" condition. If satisfactory relief is obtained from periodic over-the-counter medication, it is unlikely that there is an urgent need to see a physician.

Heartburn that occurs more frequently than once a week, becomes more severe, or occurs at night and wakes a person from sleep, may be a sign of a more serious condition and consultation with a physician is advised. Even occasional heartburn – if it has occurred for a period of five years or more, or is associated with dysphagia – may signal a more serious condition. People with long-standing chronic heartburn are at a greater risk for complications including stricture or a potentially pre-cancerous disease that involves a cellular change in the esophagus called Barrett's esophagus.

When Are Over-the-Counter Preparations Appropriate to Treat Heartburn?

Multiple preparations are available without a prescription to treat occasional heartburn. These include: antacids, which neutralize acid (e.g., sodium bicarbonate, calcium carbonate, aluminum hydroxide, magnesium hydroxide); alginic acids (e.g., Gaviscon), which form a foam barrier to reflux; and low-dose H_2 blockers (e.g., Pepcid AC, Tagamet HB, Zantac 75, Axid AR), which reduce acid production – and are available in higher doses by prescription to treat GERD. These medications are useful to relieve intermittent heartburn, particularly if brought on occasionally by foods or various activities. Antacids and alginic acids give the most rapid relief. The H_2 blockers give more sustained relief and are most useful if taken prior to an activity known to bring on heartburn, like eating spicy foods.

Over-the-counter preparations provide only temporary symptom relief. They do not prevent recurrence of symptoms or allow an injured esophagus to heal. They should not be taken regularly as a substitute for prescription medicines – they may be hiding a more serious condition. If needed regularly, for more than two weeks, consult a physician for a diagnosis and appropriate treatment.

HOW IS GERD DIAGNOSED?

A diagnosis of GERD should be made by a physician. The disease can usually be diagnosed based on the presentation of symptoms alone. GERD can occur, however, with no apparent symptoms. Diagnostic tests may be used to confirm or exclude a diagnosis or to look for complications such as inflammation, stricture, or Barrett's esophagus.

What Tests are Used to Diagnose GERD?

Diagnostic tests are used to confirm or exclude a suspected diagnosis or as part of a pre-surgical evaluation. One method is a therapeutic trial with a proton pump inhibitor, or PPI, a medication used to treat GERD. Studies have shown that symptomatic relief after two weeks of treatment with a PPI correlates with a diagnosis of GERD. Other tests include endoscopy, esophageal manometry, and esophageal pH monitoring.

Endoscopy is used to identify complications such as inflammation (esophagitis), stricture, or Barrett's esophagus. Endoscopy is an extremely safe procedure. A thin fiberoptic tube is used to examine the esophagus, stomach, and upper small intestine. The individual is sedated so that the procedure can be performed comfortably. A painless biopsy (tissue sample) may be taken of the lower end of the esophagus to determine if Barrett's esophagus is present.

Esophageal manometry measures pressure throughout the esophagus and in the area of the LES. A thin tube is inserted through the nose and into the esophagus. The test helps a physician determine whether the esophagus and LES are functioning properly.

Esophageal pH monitoring uses a thin tube inserted through the nose and into the esophagus to sense and measure the amount of acid in the esophagus over a 24-hour period. Normal activities may be conducted while monitoring acid levels. Measurements can tell whether reflux is causing symptoms, how often reflux occurs, and how much acid is refluxed.

Is GERD associated with cancer of the esophagus?

In a small subset of patients with GERD, a complication has been identified as a potentially pre-cancerous condition. The condition is called Barrett's esophagus. It occurs when a transformation takes place in the normal tissue lining the esophagus and may be a risk factor for development of esophageal cancer. The number of people who develop Barrett's esophagus is relatively small; approximately 10% of patients who have GERD will develop the condition, and only about 1% of those (or 0.1% of all patients with GERD) will develop esophageal cancer. Barrett's esophagus is most common in people who have had heartburn for many years (more than 5–10 years), are over the age of 50, and are Caucasian males. If Barrett's esophagus is present, regular endoscopic screening (every 2–3 years) is advised.

Not everyone with frequent or severe heartburn will develop Barrett's esophagus. For some reason, some people have heartburn and no esophageal damage, while other people have esophageal damage and no heartburn. Nevertheless, for those with chronic GERD or frequent symptoms, it is prudent to see a

physician for evaluation and consideration for an endoscopy to determine if Barrett's esophagus is present.

In the absence of Barrett's esophagus, there is not strong evidence that GERD is a risk factor for developing cancer. It is wise, however, to work with a physician and be evaluated periodically to determine if the current course of treatment is optimal.

Is There a Relationship Between GERD and a Gastric Infection as There is for Ulcers?

Infection with *helicobacter pylori* bacteria (*H. pylori*) is associated with peptic ulcer (an ulcer in the duodenum or the stomach). There is no strong evidence that *H. pylori* can cause GERD.

Is GERD Caused by Diet and Wrong Foods?

Diet does not cause GERD. Nevertheless, gastroesophageal reflux and its most frequent complaint of heartburn can be aggravated by foods. The foods that most often bother people are chocolate, fried foods, fatty foods, peppermint, alcohol, caffeinated beverages, and acidic foods. Spicy foods and citrus foods can worsen heartburn. Large fatty meals, because they slow the emptying of the stomach, and eating late at might can contribute to nocturnal heartburn. Alcohol can weaken the LES and make reflux worse.

Can Stress Make Reflux Worse?

About 25% of patients complain that stress makes their heartburn worse. Studies using 24-hour pH monitoring show that the presence or absence of stress does not affect the total amount of actual reflux. However, the perception of frequency and severity of symptoms is amplified during stressful events. Stress management in these individuals appears to be beneficial.

WHAT IS THE TREATMENT FOR GERD?

GERD is a recurrent and chronic disease for which long-term medical therapy is generally effective. It is important to recognize that chronic reflux does not resolve itself. There is not yet a cure for GERD. Long-term and appropriate treatment is necessary.

The treatment of GERD is generally initiated by an individual when symptoms develop or when an individual with no apparent symptoms develops complications of GERD. The goals of treatment are: to bring the symptoms under control so that the individual feels better; heal the esophagus of inflammation or injury; manage or prevent complications such as Barrett's esophagus or stricture; and maintain the symptoms of GERD in remission so that daily life is unaffected or minimally affected by reflux. Treatment options include lifestyle modifications, medications, surgery, or a combination of methods.

Lifestyle modifications – Avoid factors that may aggravate symptoms, such as: reduce fats (they delay the emptying of gastric material and reduce LES pressure); reduce intake of caffeine and chocolate (they decrease LES pressure); and eliminate or reduce intake of citrus and tomato products (acidic foods increase esophageal acid sensitivity). Increase protein intake (may accelerate gastric emptying). Alcohol intake and smoking adversely effect LES pressure and acid secretion. Do not lie down within 3–4 hours after eating (gastric distention stimulates LES relaxation). Elevating the head of the bed 6" may help to more rapidly clear refluxed acid from the esophagus at night. Sleeping on one of your sides (usually the left) may help reduce the amount of reflux.

Disclose the use of any medications to your physician. Certain medications can aggravate symptoms. Some examples include: nonsteroidal anti-inflammatory drugs (used commonly to treat arthritis and general inflammation) which can cause direct esophageal injury; sedatives and calcium channel blockers (used primarily to treat high blood pressure and angina) relax the LES; alendronate sodium (used to treat osteoporosis), unless taken exactly as directed and with lots of water, may damage the esophagus or increase reflux.

Medications – The classes of drugs prescribed to treat GERD are promotility agents, H_2 blockers, and proton pump inhibitors. Promotility agents, such as metoclopramide (Reglan) or cisapride (Propulsid), primarily accelerate gastric emptying, helping improve LES pressure, and improve the clearance of acid from the esophagus. They can be helpful in some people (after careful screening for known risk factors) with non-erosive GERD or mild esophagitis. Significantly, there are reported adverse effects in people with certain pre-existing conditions and some known drug interactions that can be associated with dangerous cardiac arrhythmias. (As of this printing, cisapride is available only to patients who meet specific clinical eligibility criteria for a limited-access protocol.) *Be sure to discuss this with your physician.*

H_2 blockers (famotidine, cimetidine, ranitidine, nizatidine) reduce the amount of acid produced in the stomach. In prescription doses, they eliminate symptoms and allow esophageal healing in about 50% of patients. However,

remission is maintained in only about 25% of people using H_2 blockers.

Proton pump inhibitors limit acid secretion in the stomach. They allow rapid resolution of symptoms and healing of the esophagus in 80–90% of patients. The drug is also useful in managing stricture, one of the more serious complications of GERD. They are more effective than H_2 blockers in inhibiting acid secretion during the day. Some studies suggest that the H_2 blockers may be more effective in controlling nocturnal acid secretion.

There are five proton pump inhibitors available in the U.S. The FDA originally approved omeprazole (Prilosec) in 1989 and lansoprazole (Prevacid) in 1995. More recently, the FDA approved rabeprazole (Aciphex) in 1999, pantoprazole (Pantoloc/Protonix) in 2000, and esomeprazole (Nexium) in 2001.

Surgery – Surgical therapy may be indicated in patients whose symptoms cannot be controlled by medical management, when symptoms recur, or if serious complications progress or recur. A thorough review of all aspects of the procedure with a gastroenterologist (a physician who specializes in these disorders) and a surgeon is advised.

How Long is it Necessary to Take Medication to Control GERD?

GERD is a chronic disease, and most people require some form of regular, long-term therapy to keep their symptoms under effective control. This is similar to having high blood pressure or chronic headaches – clinical conditions that require regular medication. Even after symptoms are brought under control, the underlying disease remains present. It is possible that a person may need to take a medication for the rest of their life to manage GERD. This may change as new medications and procedures are developed.

Are There Concerns About Long-Term Usage of Medication to Treat GERD?

Any long-term use of medication should be under the direction and supervision of a physician. This includes both prescription and nonprescription drugs that are readily available over-the-counter. Side effects are rare; nonetheless, any drug can potentially have adverse effects.

The H_2 blockers have been used since the mid-1970's to treat reflux disease. Since 1995, they have been available in lower, nonprescription doses to treat occasional heartburn. The drugs have been shown to be safe, although adverse effects can occur such as headache and diarrhea.

The proton pump inhibitors omeprazole and lansoprazole have been used regularly in patients with GERD for many years. (Omeprazole has been available in the U.S. since 1989 and worldwide for several years beyond that.) Side effects from these agents are rare and principally include occasional diarrhea, headache, or stomach upset. These side effects are generally no more frequent than are seen with a placebo and usually occur when use of the drug course first begins. If no side effects have developed after several months or years of using a PPI, it is unlikely that any will develop later.

Initial laboratory studies of the proton pump inhibitors raised concerns about possible adverse effects. However, after years of use by people, no clinically important risk is associated with this type of drug. Data on the use of this class of medications in patients indicate that they are safe.

When is Surgery an Alternative to Medical Treatment for GERD?

Medical therapy helps control symptoms as long as the medication is taken correctly. Surgery is an alternative that is generally applied when long-term medical treatment is either ineffective or undesirable, or when certain complications of GERD are present.

The most common surgical procedure for GERD is the Nissen fundoplication. It can be performed laparoscopically by an experienced surgeon. The goal of the surgery is to increase the pressure of the LES and prevent reflux. When performed by an experienced surgeon (at least 30–50 laparoscopic operations) it may have a success rate approaching that of a well planned and carefully taken medical treatment with a proton pump inhibitor.

Side effects or complications associated with the surgery occur in 5–20% of patients. The most common is dysphagia, or difficulty swallowing. It is usually temporary and resolves after 3–6 months. Another problem that occurs in some patients is impairment of their ability to belch or vomit. This occurs because the surgical procedure forms a physical barrier to any type of back-flow of any gastric contents. A condition known as "gas-bloat" syndrome can occur; abdominal distention and discomfort results from not being able to belch effectively.

Antireflux surgery can break down, similar to hernia repairs in other parts of the body. The recurrence rate is not well defined but may be in the range of 10–30% over 20 years. Factors that can contribute to this breakdown include heavy lifting, strenuous athletic activity, marked changes in weight, and violent vomiting. Any of these factors have the potential to intermittently increase pressure that can cause a weakening or disruption of the surgery.

In some individuals, even after surgery, reflux symptoms may persist, and the use of medication may need to continue.

Living with GERD

It is important to recognize that GERD is a disease that should not be ignored or self-treated. Heartburn, the most frequent symptom, is so common that its significance may be underestimated. It is often casually dismissed and not associated with a disease, like GERD.

It is important to understand that GERD can have serious consequences for an individual. In addition to the physical complications that can arise, surveys report that uncomfortable or painful symptoms of acid reflux can intrude on all aspects of an individual's daily life – emotionally, socially, and professionally.

In studies that measure emotional well-being, people with unresolved GERD often report worse scores than those with other chronic diseases, like diabetes, high blood pressure, peptic ulcer, or angina. Yet, nearly half of acid reflux sufferers do not recognize it as a disease.

GERD is a disease. It is not caused by lifestyle decisions. It is usually accompanied by obvious symptoms but may occur in the absence of obvious symptoms. If ignored or not appropriately treated, it can lead to more serious complications.

Most people with GERD have a mild form of the disease that can be controlled through lifestyle changes and medication. If you suspect you may have GERD, the first step is to consult a physician to obtain an accurate diagnosis. Recognize that GERD is generally a treatable disease. Then work in partnership with your physician to initiate the best available treatment plan for you.

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