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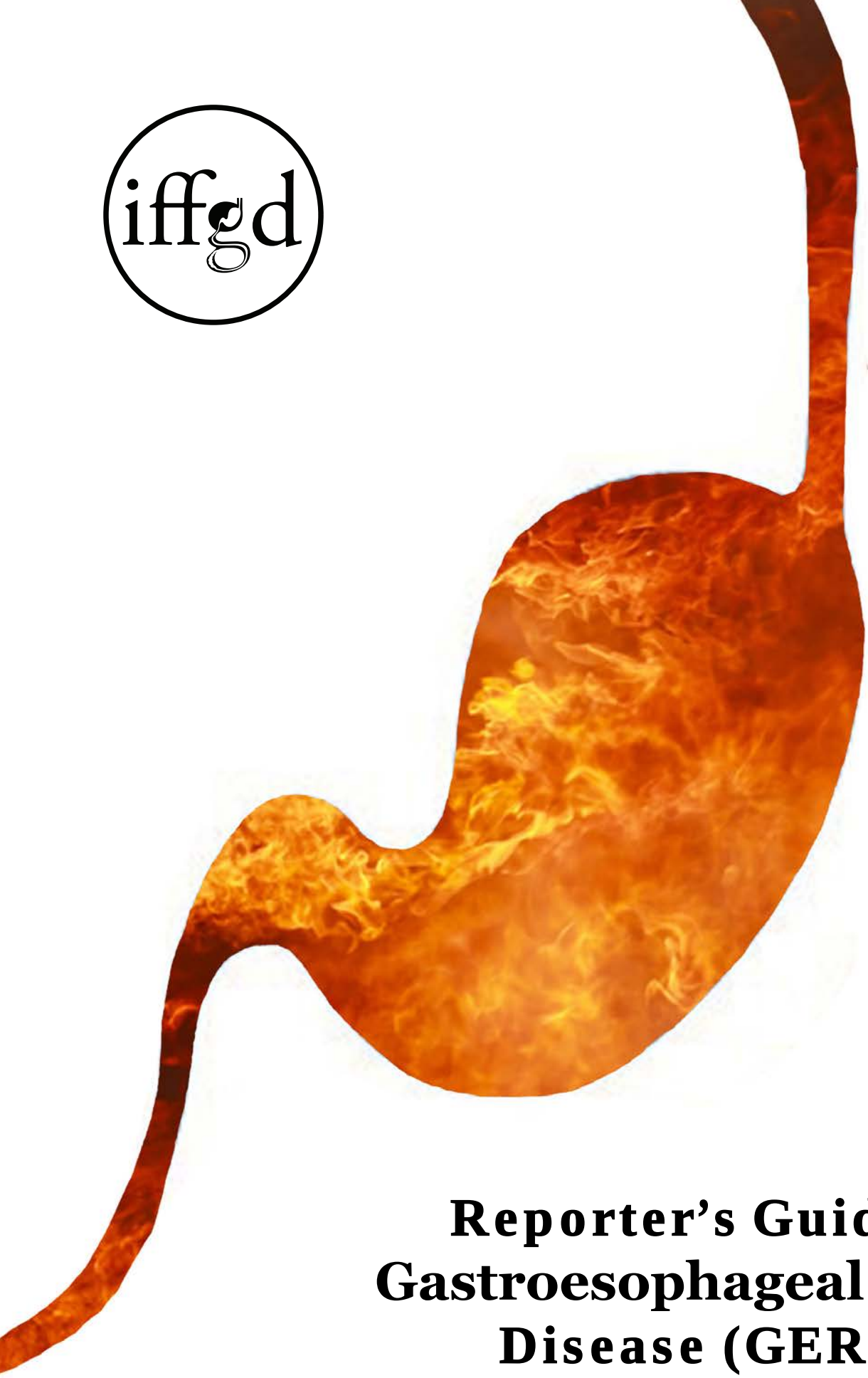

Reporter's Guide to Gastroesophageal Reflux Disease (GERD)

For more information on Gastroesophageal Reflux Disease (GERD), visit AboutGERD.org

Other websites by IFFGD:

- IFFGD.org
- aboutConstipation.org
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- aboutGastroparesis.org
- aboutgiMotility.org
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- losninosygi.com
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Other Reporter's Guides Available from IFFGD:

- Reporter's Guide to IBS (first & second editions)
- Reporter's Guide to Bowel Incontinence
- Reporter's Guide to Functional GI Disorders

Dear Reporter,

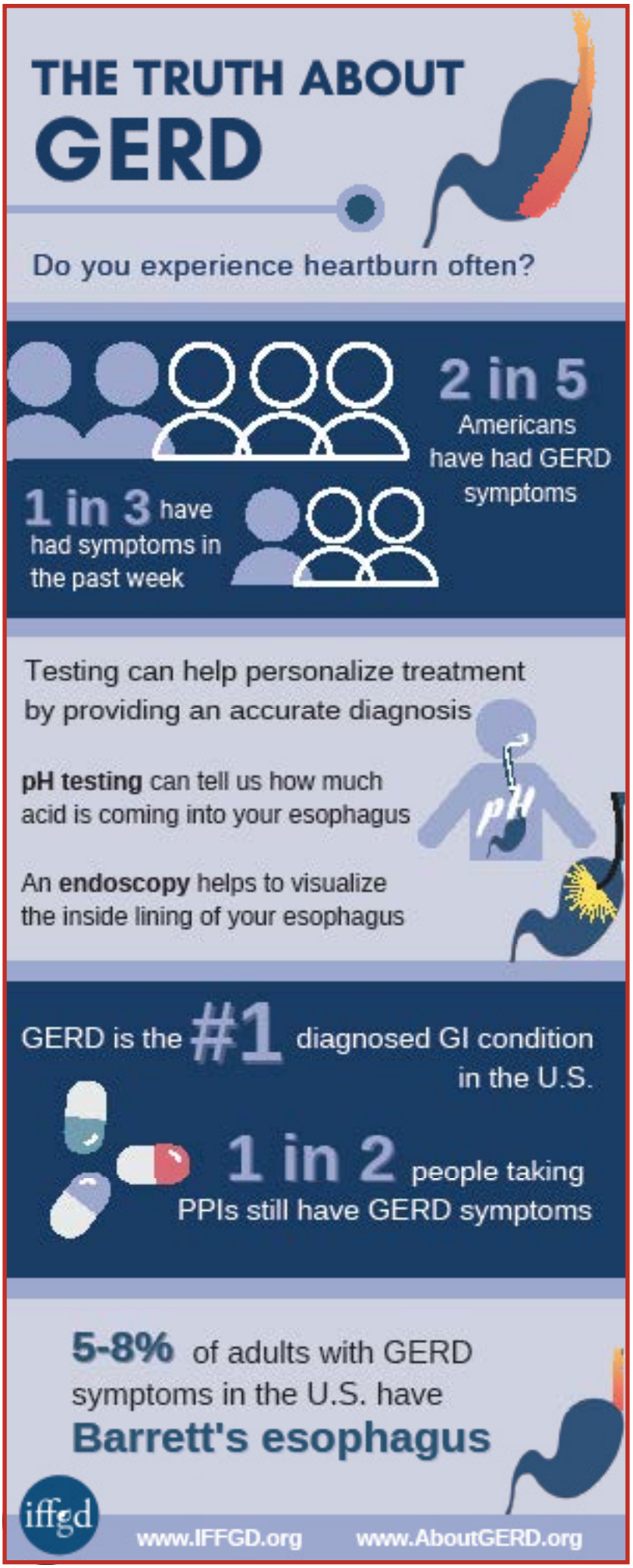
The International Foundation for Gastrointestinal Disorders (IFFGD) is pleased to provide you with the Reporter's Guide to Gastroesophageal Reflux Disease (GERD). IFFGD was founded in 1991 with a mission to educate, raise awareness and improve care for conditions ranging from irritable bowel syndrome (IBS) to GERD.

While the symptoms and impact of GERD are increasingly reported in the news, there is still a need to further educate both those who are diagnosed with GERD and the general public. The Reporter's Guide to Gastroesophageal Reflux Disease is designed to provide you with accurate information about GERD and help you cover the condition.

In this guide you will find:

- Background information about GERD
- Information about the diagnosis and treatment of GERD
- Frequently asked questions
- A glossary of medical terms
- Suggested story angles and reasons for writing about GERD

In addition to referring to this informative guide, we also encourage you and your readers to visit IFFGD's websites at www.iffgd.org and www.aboutGERD.org if they want to learn more about GERD, its symptoms, and when to seek medical care. We can also be reached via email (iffgd@iffgd.org) or by phone (414-964-1799). IFFGD is dedicated to informing, assisting, and supporting people affected by gastrointestinal disorders. For three decades, we worked to broaden understanding about gastrointestinal disorders and support research. IFFGD welcomes your inquiries, and we look forward to working with you as we continue to shed more light on GERD.



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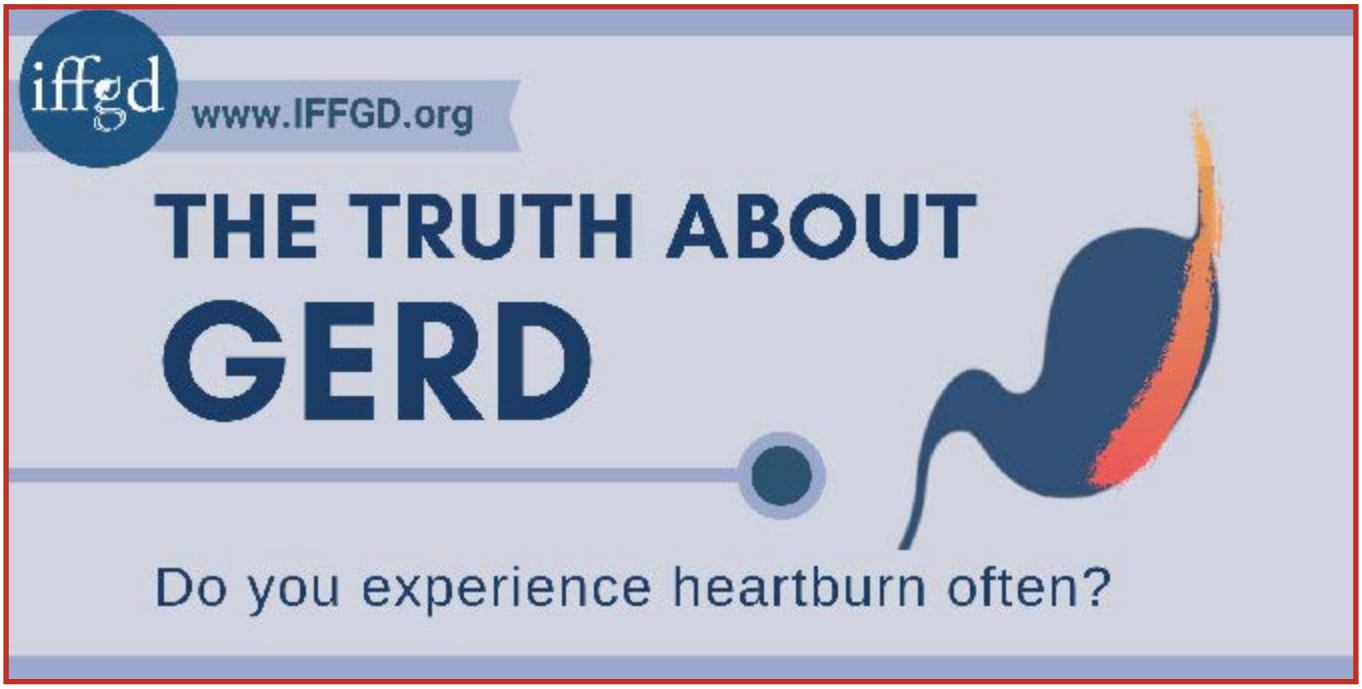
Working with the U.S. Department of Health and Human Services, IFFGD has sponsored several annual events on the U.S. National Health Observances Calendar. In 1998, we designated the week before Thanksgiving in November as GERD Awareness Week.

Introduction

Heartburn is a very common symptom that either you or someone you know likely experienced within the last week. A recent population-based survey showed that 2 of 5 Americans reported GERD symptoms in the past, and 1 of 3 had symptoms in the past week.[1] GERD is thought to affect an estimated 18 to 28% of Americans, making it the most prevalent gastrointestinal (GI) disorder in the country.[2] It is also the most common diagnosis encountered in the gastroenterology clinics with nearly 8.9 million visits in 2009.[3] However, the true prevalence of this disorder could be even higher given most individuals have access to over-the-counter acid suppressive medications (such as proton pump inhibitors [PPIs]) and typically try self-treatment first. The mean direct cost to diagnose and treat a patient with typical GERD in the first year of evaluation is $971 per patient[4] with annual national expenditure ranging from $9.3 billion[5] to 12.1 billion.[6] Whereas the evaluation and treatment of atypical symptoms associated with GERD has averaged out to $5,438 per patient in the first year with the estimated annual cost being five times that of typical GERD at $50 billion.[3]



What is GERD?

GERD is a condition where stomach contents flow back (reflux) into the esophagus causing troublesome symptoms and/or possible damage to the esophagus. The esophagus is the muscular tube that connects the mouth and the stomach, allowing food to pass into the stomach. Heartburn and/or regurgitation are common symptoms associated with GERD. Patients generally describe heartburn as a burning sensation behind their breastbone in their chest that might radiate towards their neck and throat. Occasional reflux of stomach (gastric) contents is a normal physiological process that often occurs after meals. Physiological processes include all body functions that contribute to sustaining life.

GERD occurs when this reflux is frequent enough to cause symptoms. Although heartburn and/or regurgitation are the typical symptoms associated with GERD, some patients may develop other symptoms such as hoarseness, chronic cough, feeling that there is a lump, or foreign body stuck in the throat, and throat clearing. These symptoms are considered as extra-esophageal manifestations of GERD, or symptoms that occur outside of the esophagus.[7] Other symptoms may include epigastric pain, chest pain, and sleep abnormalities. Epigastric pain is defined as pain or discomfort in the area below the ribs and in the center of the upper abdomen.

There are 3 subtypes of GERD:

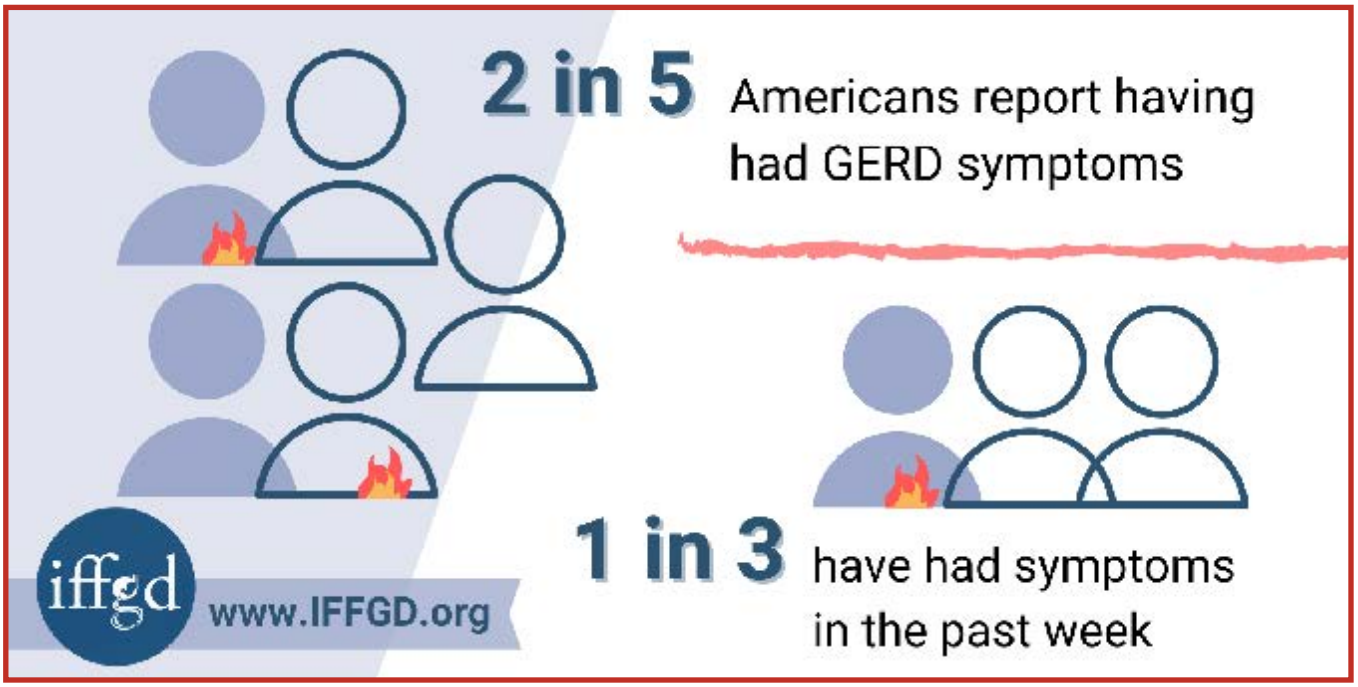
1. Non-erosive reflux disease (NERD) – Defined as abnormal esophageal acid exposure based on pH testing, but without esophageal mucosal* injury on endoscopy.
2. Erosive reflux disease (ERD) – Defined as endoscopic evidence of reflux related mucosal injury.
3. Barrett's esophagus – Replacement of the normal lining of the esophagus with lining of the stomach and cells that are typically seen in the small bowel. Developing this condition can lead to an increased risk of cancer of the esophagus (esophageal adenocarcinoma).[8, 9]

*Mucosal refers to the tissue membrane that covers the surface of internal organs, in this instance the esophagus, that acts as protection for that organ.

Symptoms of GERD

Two common symptoms that people may experience are heartburn and acid regurgitation (refluxed material into the mouth). Other symptoms may also occur, these include:

- Difficulty or pain when swallowing
- Excessive belching – loud gas passing from the stomach and out the mouth
- The feeling of food sticking in the esophagus
- Chronic sore throat or irritated larynx
- Inflammation of the gums
- The erosion of tooth enamel
- Hoarseness – a change in voice that sounds raspy or strained
- A sour or bitter taste in the mouth



Typical Causes of GERD and Heartburn

The cause of GERD depends on many factors and is influenced by many physical characteristics. These include the pressure of the lower esophageal sphincter, the presence of a hiatal hernia, esophageal motility, and the ability of the lining of the esophagus to protect against reflux. The lower esophageal sphincter is the muscle that separates the esophagus from the stomach, acting as a valve that prevents stomach contents from moving up into the esophagus. A hiatal hernia occurs when a small portion of the upper stomach pushes up through the diaphragm into the chest. The diaphragm is the muscular, internal separation between the chest and abdomen. Esophageal motility refers to the movement of food through the esophagus, resulting from coordinated muscle contractions.

Increased number of momentary lower esophageal sphincter relaxations can lead to harmful stomach contents entering the esophagus, and might account for 48-73% of GERD symptoms.[10] Anatomical factors like the presence of hiatal hernia or an increase in pressure in the abdomen, as seen in obesity, can also increase episodes of reflux events.[11] In fact, obesity is not only associated with an increased risk of developing GERD symptoms, but also erosive esophagitis and esophageal carcinoma.[12] Other risk factors for development of GERD symptoms include age ≥50 years, tobacco use, consumption of excess alcohol, and pregnancy.[13, 14]

Psychological conditions (anxiety and depression) along with stress and lack of sleep can impact the way the esophagus recognizes pain. This can cause patients to feel low-intensity sensations in the esophagus as painful.[15, 16]

What else could cause heartburn and reflux?

Although heartburn and regurgitation are commonly recognized as being caused by GERD in a majority of patients, some patients with these symptoms do not have GERD.[9] In fact, heartburn as a symptom is not very reliable and relates to GERD in only 54% to 72% of patients based on abnormal pH testing (level of acid in the esophagus).[17, 18] Symptoms of GERD can also overlap with other conditions, which can alter medical and surgical treatments.

> *"Despite the ease of access to heartburn treating medications, it is important to have a treatment plan developed by a healthcare provider. Not all instances of heartburn are caused by GERD, and treatment should be tailored to the cause and symptoms each individual person experiences."*
>
> *Ronnie Fass, MD*

In patients with known GERD who are not responding to maximum anti-reflux treatment, it is important to identify the cause and if there is an overlap with another disorder.

Below are some disorders that can mimic symptoms of GERD:

1. ***Eosinophilic esophagitis (EoE)*** – This a condition where there are high numbers of eosinophils in the esophagus, causing inflammation and damage. Eosinophils are white blood cells linked with allergic-type reactions in the body. Symptoms of EoE can include difficulty swallowing, food getting stuck in the esophagus, heartburn, nausea, vomiting, or chest pain.
2. ***Esophageal motility disorder*** – These disorders occur as a result of changes in motility through the esophagus. Achalasia is an esophageal motility disorder where the esophageal body does not move food through properly and the lower esophageal sphincter does not open properly. This causes food to pass through the esophagus slowly. Symptoms can include dysphagia, chest pain, food regurgitation and heartburn. There are other esophageal motility disorders that usually present with either dysphagia (solids and liquids move slowly or get stuck in the esophagus) or chest pain.
3. ***Functional dyspepsia*** – This condition involves chronic or recurrent discomfort and pain in the middle upper abdomen, just below the breast bone. The stomach shows no evidence

of anatomic or mucosal abnormalities. Common symptoms include burning or pain in the upper abdomen, early fullness when eating a meal, bloating, nausea, and vomiting.

4. ***Gastroparesis (GP)*** – This is a condition of slowed stomach emptying with no visible blockage. Healthcare providers often refer to this as delayed gastric emptying, a motility disorder where the stomach does not empty solid food as quickly as it should. GP is a condition that has a significant impact on GI symptoms in patients that can vary from mild to severe and life-threatening. There are various causes for gastroparesis, but some of the most common ones include, idiopathic, diabetic, and post-surgical. Common symptoms include upper abdominal pain or discomfort, bloating, nausea, vomiting, early fullness during a meal, and unintentional weight loss.

Functional esophageal disorders

In some patients with heartburn, the cause is a functional esophageal disorder, either functional heartburn or reflux hypersensitivity. These disorders are commonly confused with GERD. Functional heartburn occurs when people have similar heartburn symptoms as GERD but do not have any physical signs of GERD. Reflux hypersensitivity is an increased sensitivity to any amount of reflux, whether acidic or nonacidic.

Approximately 10 to 40% of heartburn patients seeking care from gastroenterologists have functional heartburn and 10 to 20% have reflux hypersensitivity.[18, 19] In untreated patients with heartburn, 1 in 5 have functional heartburn and 1 in 10 have reflux hypersensitivity.[20] The prevalence is significantly higher in patients with heartburn who do not respond to typical acid suppressing medications and can reach as high as 52 to 54% for functional heartburn and 30 to 40% for reflux hypersensitivity.[21] Although people with functional esophageal disorders do not have increased reflux of acid into their esophagus, it is important to recognize that the severity of symptoms and decreased quality of life is very similar to GERD. An accurate diagnosis and proper treatment is important as approximately two-thirds of patients still report having symptoms 2 years after being diagnosed.[22]

In these patients stress, anxiety and other psychological problems may trigger or worsen symptoms.[23] Often, patients with functional esophageal disorders have normal esophageal acid exposure but demonstrate increased sensitivity to events in the esophagus or specifically to normal amount of reflux that healthy people experience.

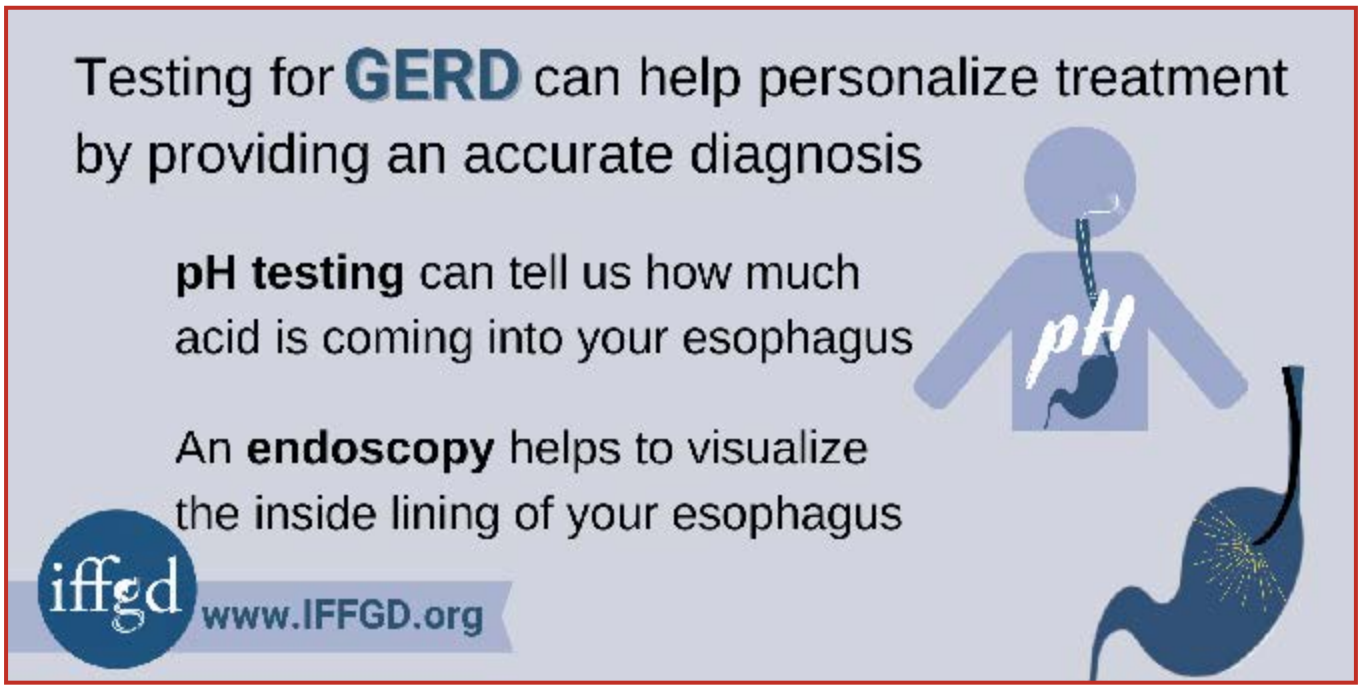
Testing Options

Why is an accurate diagnosis important?

Esophageal testing allows us to personalize management of patients with GERD symptoms. Accurate diagnosis based on objective testing allows healthcare providers to individualize treatment recommendations.

1. Endoscopy

Upper endoscopy is a procedure used to visually examine the esophagus, stomach, and duodenum (first part of the small intestine). An endoscopy involves placing a long flexible tube with a small camera on the end through the mouth and down into the GI system. This test is done while the patient is under anesthesia, or "asleep". In patients with heartburn, this allows healthcare providers to see any damage to the lining of the esophagus and evaluate the lower esophageal sphincter which is the body's anti-reflux barrier. The healthcare provider will also look for the presence of a hiatal hernia, and to rule out other causes of heartburn (such as eosinophilic esophagitis). Studies show that over 50% of patients that see their primary care physician for GERD symptoms have a normal endoscopy, but it is an important part of diagnostic testing.[24, 25]



2. Ambulatory pH testing

Ambulatory pH testing is used to evaluate how often stomach acid moves into the esophagus. As a majority of patients with heartburn will have a normal endoscopy, ambulatory pH testing plays an essential role in determining if there is abnormal reflux into the esophagus. This can be done using either a trans nasal 24-hour pH-impedance catheter or extended recording time to 48 or 96 hours using a wireless pH monitoring system that can be placed after endoscopy. The 24-hour pH-impedance test involves placing of a small flexible catheter through the nose and into the esophagus. It can detect both acid and non-acid reflux into the esophagus. This test is usually done with the patient taking an acid suppressing medication to determine if symptoms occur even when acid-reflux is not present. The discomfort that is caused by placing a tube through the nose can affect the accuracy of this test.

In contrast, 48- or 96-hour wireless pH monitoring system involves using a capsule that attaches to the bottom of the esophagus. This is a more comfortable test for patients, but only detects acid reflux into the esophagus. This test should be done when patients are not taking acid suppressing medications. Most patients on these medications will have a normal pH test.[26, 27] Use of pH testing allows healthcare providers to accurately diagnose the underlying cause of heartburn in individual patients with normal endoscopy.

"Although heartburn and regurgitation are commonly recognized as being caused by GERD in a majority of patients, some patients with these symptoms do not have GERD. Esophageal testing can allow your health care provider to determine cause and individualize treatment."

Dhyanesh Patel, MD

Treatments

All treatments should begin with an accurate diagnosis. This helps ensure that appropriate treatment is given and minimizes any unnecessary risk.

Managing your diet

Unproven evidence has shown associations of GERD symptoms and certain foods and drinks (such as chocolate, peppermint, spices, raw onions, orange juice, tomato juice, caffeine, and coffee), but factual evidence-based data on their relation remains unclear. This has led patients to often self-modify their diet based on symptoms.[42] Diets high in fat are a risk factor for Barrett's esophagus, while diets rich in fruits and vegetables can help protect the esophagus.[43] A Mediterranean diet (high intake of vegetables, legumes, fruits, whole grains, fish; low intake of red/processed meat) has been associated with decreased risk of GERD symptoms.[44] Lastly, portion control may be helpful as large meals can increase gastric distention and lead to increased episodes of reflux after meals.[45]

Drinking alcohol and carbonated beverages have been shown to increase gastric acid secretion, gastric distention (expanded or swollen stomach), and acid reflux.[28, 46] On the other hand, contrary to popular belief, drinking coffee has not been found to significantly affect GERD symptoms.[47]

Lifestyle Modifications

Lifestyle modifications as a treatment for GERD are frequently recommended by physicians.[28] These changes can have an overall health benefit when combined with medication and/or surgical treatment. Below are some of the lifestyle modifications that have been studied for GERD:

- Weight loss
  - Body mass index (BMI) correlates with GERD symptoms. Even a small amount of weight gain among people who are considered "healthy weight" may cause or worsen reflux symptoms.[29] People with an increased BMI have more severe and frequent reflux symptoms. They also have higher acid reflux as shown by pH testing and the endoscopy is more likely to show breaks in the esophageal lining.[30] Weight gain is linked to an increased risk of developing reflux symptoms while a 10% weight loss has been shown to lessen these symptoms.[29, 31]

- Sleep habits
  - A decreased amount of sleep has been linked to poor eating habits and increased symptoms of GERD.[32] The following lifestyle modifications have also been studied and shown to be effective in reducing nighttime reflux symptoms:
    - Avoiding late night meals and laying down within 3-4 hours of a meal[33]
    - Raising the head of bed[34-36]
    - Avoid sleeping on the right side[37-39]
    - Improving sleep hygiene
- Smoking habits
  - Stopping tobacco use has been associated with decreased reflux symptoms.[30, 40] It also has beneficial effects on overall health and other conditions.
  - Hookah smoking and opium use have also been shown to have an impact on causing GERD symptoms.[41]

Prescription and Over-the-Counter (OTC) Medications

Anti-reflux medications are highly effective and serve as an important foundation for treatment of bothersome GERD-related symptoms.

- Histamine receptor antagonists (H2RA)
  H2RAs are available OTC (famotidine and cimetidine) and are frequently used for treatment of GERD. They are effective in treatment of heartburn, but regular use should be limited as some people may quickly develop a tolerance to them.[48] These medications should be used as needed for mild to moderate symptoms and as an additional treatment to PPIs.
- Proton pump inhibitors (PPIs)
  PPIs are the most effective medications for GERD. The first compound in this class of drugs, omeprazole, was introduced in the late 1980s. Since that time, multiple over the counter (omeprazole, esomeprazole, and lansoprazole) and prescription (rabeprazole, pantoprazole, and dexlansoprazole) formulations are now available. Several studies have shown that PPI treatment is superior to H2RA for symptomatic relief and healing esophagitis in patients with GERD.[49, 50] Esophagitis occurs when there is inflammation in the esophagus. Patients with esophagitis tend to have higher response rate compared to those without esophagitis.[51] When comparing different types of PPIs, multiple studies have shown similar efficacy in terms of heartburn control, healing esophagitis, and relapse rates.[52]

Treatments, continued

In patients with partial or lack of response to PPIs, it is important to make sure the medication is taken regularly and 30 minutes before a meal. Patients receiving a prescription PPI from a gastroenterologist are more likely to take the proper dose at the correct time than those who obtain it over the counter. This can lead to better overall symptom control.[53]

PPIs have long been considered a safe class of drugs; however, over the last decade multiple studies have raised concerns about chronic use of PPIs. Those studies reported different side effects, such as osteoporosis, heart disease, pneumonia, enteric infections, dementia, kidney disease, and nutritional deficiencies. Given PPIs are the most widely prescribed class of medications worldwide, these studies raised concerns about their use by patients and providers alike. An online survey of GERD patients using PPIs showed that 46% were somewhat/extremely concerned about PPI safety, and 36% had attempted to stop PPI without provider recommendation.[54] Newer better-quality studies were not able to substantiate many of those claims.[55-57] In one of the recent studies, it was found that there is only a slightly increased risk of enteric infections, a type of intestinal illness caused by viruses, bacteria, or other microorganisms. Overall, PPIs are considered safe and effective for the treatment of GERD, but similar to all medications, the reason for use should be regularly evaluated. The goal should be to treat symptoms by using the lowest dose possible for each person. Approximately 80% of patients on twice daily PPI therapy can be safely weaned to a once daily dose with adequate control of symptoms.[58]

- Neuromodulators (pain medications for the esophagus)
  Neuromodulators are a necessary part of treatment for patients with a functional esophageal disorder (functional heartburn or reflux hypersensitivity). This type of mediation can help reduce the observed increase in esophageal sensitivity in patients with a functional esophageal disorder.[59] This group of medications include tricyclic antidepressants (TCAs), selective serotonin reuptake inhibitors (SSRIs), and serotonin-norepinephrine uptake inhibitors (SNRIs).[9]

Surgical options

Fundoplication is the most commonly performed anti-reflux surgery, but studies have shown a rapid decline in its use between 2004 and 2013.[60] This is likely due to increased use of PPIs for the treatment of GERD. Studies have shown that PPIs have similar benefits as surgical fundoplication.[61] Surgical fundoplication should be offered to patients after evaluation with an upper endoscopy and if negative, pH testing providing objective evidence of GERD as the cause (etiology) of symptoms. Surgical fundoplication involves taking the upper curved portion of the stomach and wrapping it around the lower opening of the esophagus. The biggest predictor for successful outcome after anti-reflux surgery tends to be positive response to PPI.[62] Other ways to tell if surgical fundoplication may be a good treatment option include the presence of a large hiatal hernia and regurgitation.

A newer surgical technique using magnetic sphincter augmentation (MSA) has also been recently added as an option for patients with GERD. A ring composed of magnetic titanium beads is placed around the lower part of the esophagus. MSA has been shown to be more effective compared to a double-dose of PPI when regurgitation is the primary symptom.[63] Approximately 89% of patients who underwent MSA reported resolution of regurgitation compared to 10% of those taking a double-dose of PPI after 6 months.[63] Greater than 90% of patients report improved quality of life after MSA.[64] MSA also has significant advantages compared to fundoplication due to less gas bloating post-surgery. As this is a new treatment option long term data on safety is still needed.[65]

Endoscopic therapies

Several endoscopic techniques to treat GERD are available and include, the Stretta procedure, transoral incisionless fundoplication (TIF) and the Medigus ultrasonic surgical endostapler (MUSE).[66, 67] These procedures help to restore the barrier between the esophagus and the stomach, significantly reducing reflux. These procedures have been effective in a selected group of patients with mild to moderate reflux and a hiatal hernia of less than three centimeters in size.[68]

What happens if left untreated?

Primary risks associated with untreated GERD include development of severe erosive esophagitis, stricture in the esophagus (a narrowing in the esophagus that can cause difficulty with swallowing), and Barrett's esophagus. Untreated GERD is associated with poor quality of life, in particular poor sleep and the possibility of having extra-esophageal symptoms. From 2003 to 2006, there were approximately 10,570 hospital admissions annually from erosive esophagitis and 14,000 admissions for esophageal stricture.[69] Among patients with long history of reflux symptoms, 10-15% will develop Barrett's esophagus during their lifetime. It is estimated that 5.6% of adults in the United States have Barrett's esophagus.[70] Risk factors for development of Barrett's esophagus include older age, male gender, history of smoking, and obesity.[71] Although Barrett's esophagus is considered to be a pre-cancerous condition, most patients with Barrett's esophagus do not progress to esophageal adenocarcinoma (risk of 0.1 to 0.3% per year).[72, 73]

Story Angles/Ideas

Is this more than just occasional heartburn?
Heartburn can occur in all of us from time to time, especially after eating foods that are very acidic. However, it is important to recognize when occasional heartburn becomes a regular problem that needs to be discussed with a healthcare provider.

Is my GERD medication safe?
There have been many claims that PPIs, the most commonly prescribed GERD medications, are not safe. Research has proven the safety and effectiveness of this type of medication when taken properly. It is always important to discuss medication concerns with your healthcare provider before making any changes.

GERD treatments: Is surgery right for me?
Many people feel significant relief of GERD symptoms from medication, while many others achieve that relief after surgery. Always consider your personal symptoms, lifestyle needs, and other conditions when discussing treatment options with a healthcare provider.

Adenocarcinoma of the esophagus – one of the fastest rising cancers
It is important to know the risk factors for esophageal cancer which is rapidly becoming more common. Undiagnosed and improperly treated esophageal conditions increase the chances of developing Barrett's esophagus, a risk factor for then developing cancer.

Sleep disturbances can result from GERD
Many people affected by GERD may also have difficulty falling asleep and staying asleep. This can be a direct result from GERD symptoms and reflux entering the esophagus while laying down. Lifestyle modifications and proper individualized treatment of GERD can help improve this issue.

Patients with GERD and its complications are becoming younger
Often people associate heartburn and GERD symptoms with age, but children, adolescents, and young adults are experiencing these symptoms at a higher rate. Learn about these symptoms to help ensure proper treatment and the best quality of life for young GERD sufferers.

Does heartburn only suggest reflux?
Heartburn is the most well recognized symptom of GERD, but that does not mean your heartburn is being caused by GERD. There are many other conditions that also have heartburn as a side effect. To successfully treat heartburn, tell your healthcare provider about all your symptoms and so they can recommend testing and determine the cause of symptoms.

Frequently Asked Questions

What is GERD?

Gastroesophageal reflux disease (GERD) is a condition where stomach contents flow back (reflux) into the esophagus causing troublesome symptoms and/or possible damage to the esophagus. GERD is a chronic disease for which long-term medical, surgical, or endoscopic therapy are usually effective.

What are the signs and symptoms of GERD?

The most common symptom of GERD is heartburn. Another typical symptom is regurgitation, which is reflux of fluid into the mouth.

Some of the other less common symptoms may include difficulty or pain when swallowing, sensation of food sticking in the esophagus, hoarseness, throat-clearing, chronic sore throat, wheezing, or chronic cough.

What causes GERD?

There is no known single cause of GERD. Reflux occurs when the barrier between the stomach and the esophagus does not work as it should.

How do I know if I have GERD?

Only a doctor can make a diagnosis of GERD. Talk to your doctor if:

- You have heartburn that happens 2 or more times a week
- Your heartburn gets worse
- Your heartburn wakes you from sleep at night
- You've had heartburn now for several years
- You have difficulty or pain when swallowing
- Your discomfort interferes with daily activities

GERD is commonly diagnosed based on the presence of typical symptoms (heartburn and regurgitation). Tests may be done to confirm or exclude a GERD diagnosis.

How is GERD treated?

Treatment of GERD is long-term. The goals are to control or reduce symptoms, heal an injured esophagus, and manage or prevent complications.

Treatment options include:

- Lifestyle changes – This means changing things you have control over. Try to identify and avoid things that may bring on symptoms or make them worse. Ask your doctor about diet. Let your doctor know about any medicines you take as some can worsen symptoms.

- Medications – Over-the-counter medication provide only temporary relief of heartburn. Tell your doctor if you need to take one for more than two weeks.

  The most commonly prescribed medications to treat GERD are H2 blockers and PPIs (proton pump inhibitors). These reduce or limit acid secretion in your stomach.

- Surgery – For some people, surgery to strengthen the barrier between the stomach and esophagus may be an option. Before having surgery, review all aspects of the procedure with your primary care doctor or gastroenterologist and the surgeon.

Glossary of Terms

Abdomen
The part of the body which contains the digestive organs. Also called the belly, between the diaphragm and the pelvis.

Ambulatory pH testing
A test used to evaluate how often stomach acid moves into the esophagus.

Anatomical factors
Relating to the structure of the body.

Anti-reflux barrier
The part of the gastrointestinal system consisting of rings of muscles (known as sphincters) that prevent contents from coming back up the esophagus from the stomach. It is made up of the lower esophageal sphincter (LES), and the crural diaphragm that functions as an external sphincter.

Barrett's esophagus
Replacement of the normal lining of the esophagus with lining of the stomach and cells that are typically seen in the small bowel. Developing this condition can lead to an increased risk of cancer of the esophagus (esophageal adenocarcinoma).

Body mass index (BMI)
A person's weight in kilograms divided by the square of height in meters. It is a way to measure the body fat of an individual based on height and weight.

Catheter
A flexible tube which is inserted through a narrow opening into a body cavity (with GERD testing procedures, the nose).

Diaphragm
The muscular, internal separation between the chest and abdomen.

Endoscopy
A procedure where a long flexible tube with a small camera on the end is placed through the mouth and down into the GI system.

Enteric infections
A type of intestinal illness caused by viruses, bacteria, or other microorganisms.

Eosinophil
White blood cells linked with allergic-type reactions in the body.

Eosinophilic esophagitis
A condition with high numbers of eosinophils (type of white blood cells) in the esophagus.

Epigastric pain
Pain or discomfort in the area below the ribs and in the center of the upper abdomen.

Erosive esophagitis
Inflammation, irritation, and/or swelling of the lining of the esophagus.

Erosive reflux disease (ERD)
Defined as endoscopic evidence of reflux related mucosal injury.

Esophageal carcinoma
Cancer of the esophagus.

Esophageal motility
The movement of food through the esophagus as a result of esophageal muscle contractions.

Esophageal sphincter
The muscle that separates the esophagus from the stomach, acting as a valve that prevents stomach contents from moving up into the esophagus.

Esophagitis
Inflammation in the esophagus.

Esophagus
The muscular tube that passes food from the mouth to the stomach.

Extra-esophageal
Referring to symptoms of GERD that occur outside of the esophagus.

Functional dyspepsia
A condition with chronic or recurrent discomfort and pain in the chest area with no evidence of disease.

Functional gastrointestinal disorders (FGIDs)
Common disorders that are characterized by persistent and recurring GI symptoms which occur even though there is normal functioning in the GI tract. They are not caused by structural (tumors or masses) or any other currently explainable abnormalities.

Functional heartburn
This occurs when people have similar heartburn symptoms as GERD but do not have any physical signs of GERD.

Fundoplication
A surgical operation where the upper curved portion of the stomach is wrapped around the lower opening of the esophagus. This helps to reinforce the sphincter and relieve inflammation caused by reflux.

Reflux hypersensitivity
An increased sensitivity to any amount of reflux, whether acidic or nonacidic.

Gastric
Referring to the stomach.

Gastric acid secretion
Acid secreted in stomach to aid with digestion of food.

Gastric distention
An expanded or swollen abdomen or belly.

Gastroesophageal reflux disease (GERD)
GERD is often associated with repeat occurrences of stomach contents flowing backward, or reflux, into the esophagus (the tube connecting the mouth to the stomach), causing irritation.

Gastroparesis
A condition of delayed stomach emptying with no visible blockage.

Heartburn
A burning sensation behind their breastbone in their chest that might radiate towards their neck and throat.

Hiatal hernia
This occurs when a small portion of the upper stomach pushes up through the diaphragm into the chest.

Hookah
An oriental tobacco pipe with a long, flexible tube which draws the smoke through water contained in a bowl.

Glossary of Terms, continued

Larynx
Also known as the voice box, it is the organ that helps with breathing, swallowing, and talking. It plays a vital role in the respiratory system by allowing air to pass through while blocking food from entering the trachea.

Lower esophageal sphincter
This is the muscle that separates the esophagus from the stomach, acting as a valve that prevents stomach contents from moving up into the esophagus.

Medigus ultrasonic surgical endostapler (MUSE)
Uses surgical staples to attach part of the stomach to the esophagus, creating a partial fundoplication.

Mediterranean diet
A diet containing a high intake of vegetables, legumes, fruits, whole grains, fish and a low intake of red/processed meat.

Mucosa
Refers to the tissue membrane that covers the surface of internal organs and acts as protection for that organ.

Neuromodulator
A chemical substance or medical device that increases or decreases the transmission of nerve impulses.

Non-erosive reflux disease (NERD)
Defined as abnormal esophageal acid exposure based on pH testing, but without esophageal mucosal injury on endoscopy.

Physiological processes
Includes all body functions that contribute to sustaining life

Reflux
Occurs when stomach contents flow back into the esophagus. This can include contents that may or may not be acidic.

Regurgitation
Bringing food up again to the mouth from the esophagus after swallowing.

Sleep Hygiene
Habits and practices that help you sleep well on a regular basis.

Stretta procedure
An endoscopic procedure that delivers radiofrequency energy in the form of electromagnetic waves through electrodes at the end of a catheter to the lower esophageal sphincter (LES) into the stomach.

Trans nasal
A tube passed through the nose into the gastrointestinal tract.

Transoral incisionless fundoplication (TIF)
An endoscopic treatment aimed to alleviate GERD symptoms by going through the mouth into the stomach and wrapping a portion of the stomach around the esophagus.

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