

# What is Peptic Ulcer Disease?

## **PEPTIC ULCER OVERVIEW**

Peptic ulcers are sores or eroded areas that form in the lining of the digestive tract. They usually occur in the stomach or in the duodenum, which is the upper region of the small intestine. The two primary causes of peptic ulcers are infection with a specific bacteria (*Helicobacter pylori*) and use of nonsteroidal antiinflammatory medications.

Peptic ulcers affect more than 4 million people each year in the United States. Most ulcers heal while others worsen over time. Complications of peptic ulcers can be serious or even life-threatening. Fortunately, most people who develop peptic ulcers can be treated successfully and avoid long-term problems.

## **HOW ULCERS DEVELOP**

The stomach and duodenal lining have several mechanisms that help prevent ulcers from developing, including the following:

1. A coating of mucus protects the stomach lining from the effects of acidic digestive juices  
Food and other substances in the stomach neutralize acid.
2. Certain chemicals produced by the stomach protect the cells lining the stomach.

If the mucous layer is damaged or if acid neutralizing substances are not present in normal amounts, digestive juices can cause irritation and breakdown of the stomach or duodenal lining, allowing an ulcer to form.

## **PEPTIC ULCER SYMPTOMS**

People with peptic ulcers may have a wide variety of symptoms, have no symptoms, or, rarely, develop potentially life-threatening complications such as bleeding. Symptoms of ulcers may include:

1. Pain or discomfort (usually in the upper abdomen)
2. Bloating
3. An early sense of fullness with eating
4. Lack of appetite
5. Nausea
6. Vomiting
7. Blood in the stools

Moderate to severe bleeding can cause foul-smelling black or tarry stools. Bleeding can also cause a low red blood cell count (anemia).

Many of these symptoms can occur in people who do not have an ulcer. For this reason, anyone who has one or more of these symptoms should discuss their concerns with a healthcare provider to determine if further testing or treatment is needed.

## Locations of ulcers:

**Gastric versus Duodenal Ulcer** — Although there is much overlap, symptoms of a gastric ulcer may be different than those of a duodenal ulcer.

Duodenal ulcer — The duodenum is the first part of your small intestines. "Classic" symptoms of a duodenal ulcer include burning, gnawing, aching, or hunger-like pain, primarily in the upper middle region of the abdomen below the breastbone. Pain may occur or worsen when the stomach is empty, usually two to five hours after a meal. Symptoms may occur at night between 11 PM and 2 AM, when acid secretion tends to be greatest.

Gastric ulcer — Symptoms of a gastric ulcer typically include pain soon after eating. Symptoms are sometimes not relieved by eating or taking antacids.

## PEPTIC ULCER CAUSES

The two most common causes of peptic ulcers are:

1. *Helicobacter pylori*, a bacteria that is frequently found in the stomach
2. Nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (and many others)

In addition, smoking and certain other genetic and environmental factors (such as medications) may influence the course of peptic ulcer disease. Psychological stress and dietary factors were once thought to be the cause of ulcers, although these factors are no longer thought have a major role.

***Helicobacter pylori* infection** — *Helicobacter pylori*, also known as *H. pylori*, is the most common chronic bacterial infection in humans. Conservative estimates indicate that the bacteria are present in the stomach in approximately one-half of the world's population. Surprisingly, the importance of *H. pylori* was not appreciated until 1982. *H. pylori* is now recognized to be an important cause of gastric and duodenal ulcers.

The presence of *H. pylori* causes a number of changes in the normal environment of the stomach and duodenum. In particular, it disrupts the mucous layer and causes the release of certain enzymes and toxins that may directly or indirectly injure the cells of the stomach or duodenum.

The effect of these changes is that underlying tissues become more vulnerable to damage from digestive juices, such as stomach acid. This results in chronic inflammation in the walls of the stomach or duodenum. Most individuals with chronic gastritis or duodenitis have no symptoms. However, some people develop more serious problems, most commonly a stomach or duodenal ulcer.

Nonsteroidal anti-inflammatory drugs — Nonsteroidal anti-inflammatory drugs (NSAIDs) are responsible for the majority of peptic ulcers not caused by *H. pylori*. A number of

NSAIDs are available in both prescription and over-the-counter medications, including aspirin, ibuprofen (Advil, Motrin), naproxen (Aleve, Anaprox), and others. The risk of developing an ulcer depends upon the specific type of NSAID, the dose and duration of use, and individual factors. A few other drugs increase the risk of developing an ulcer, although these cause far fewer ulcers than NSAIDs.

Other contributing factors — H. pylori infection or NSAID use alone may not be sufficient to cause peptic ulcer disease. Genetic and environmental factors may also contribute. For example, people with duodenal ulcers are more likely to have family members with duodenal ulcers compared to the general population. Another risk factor for developing an ulcer is use of tobacco (cigarette smoking); smoking increases the risk of developing ulcers and impairs their healing. Alcohol abuse also appears to interfere with ulcer healing.

### **PEPTIC ULCER DIAGNOSIS**

Not everyone with ulcer symptoms has an ulcer. Similar symptoms can be caused by a wide variety of conditions such as functional dyspepsia (ie, the presence of ulcer-symptoms without a specific cause), abnormal emptying of the stomach, acid reflux, gallbladder problems, and, much less commonly, stomach cancer. Thus, the process needed to diagnose an ulcer depends upon the person's medical history and sometimes, use of specific tests.

**H. pylori testing** — Many people with ulcer symptoms are tested for H. pylori with a blood, breath, or stool test. Those who test positive for H. pylori are treated for the infection and ideally re-tested after treatment to ensure that the infection has been cured. However, some providers recommend further testing only if symptoms recur.

Upper endoscopy — People who have certain "alarm" features, such as weight loss, difficulty swallowing, or anemia, particularly if the person is older, typically undergo more specific tests to better define the cause. The most common test is an upper endoscopy, in which a small flexible tube with a camera is passed through the mouth to examine the lining of the stomach and the duodenum.

### **PEPTIC ULCER COMPLICATIONS**

Peptic ulcers can heal spontaneously and may come and go. They can also be associated with serious, potentially life-threatening complications, sometimes without warning signs. This is most common in elderly patients and those who take NSAIDs. The most common complications of ulcers are bleeding and perforation.

Bleeding ---can be gradual or abrupt; abrupt bleeding often causes black, tarry, loose stools, and a drop in blood pressure. Most ulcer bleeding can be controlled with endoscopy, which allows a physician to cauterize the ulcer or inject it with epinephrine to stop the bleeding. Only about 2 to 5 percent of people with a peptic ulcer require surgery.

Perforation — Perforation is the medical term for a puncture of the stomach lining or duodenum caused by the ulcer. Perforation usually causes sudden severe abdominal pain and usually requires surgery.

## **PEPTIC ULCER TREATMENT**

Most ulcers can be healed with medications. Surgery is rarely needed, except when complications have developed.

**Identify cause of ulcer** — The initial step in treating an ulcer is to identify the cause. NSAIDs should be stopped, regardless of the cause. People who have H. pylori are treated with antibiotics and a medication that reduces acid production.

**Treating H. pylori** — No single drug effectively cures H. pylori infection. Treatment involves taking several medications for 7 to 14 days. Most of the treatment regimens include a medication called a proton pump inhibitor. This medication decreases the stomach's production of acid, which allows the tissues damaged by the infection to heal. Examples of proton pump inhibitors include lansoprazole (Prevacid®) omeprazole (Prilosec®) pantoprazole (Protonix®) rabeprazole (AcipHex®) and esomeprazole (Nexium®). Two antibiotics are generally recommended; this reduces the risk of treatment failure and antibiotic resistance.

Although the optimal treatment regimen continues to be investigated, the American College of Gastroenterology has recommended four regimens that use a combination of at least three medications. These regimens successfully cure infection in up to 90 percent of people. For the treatment to be effective, the entire course of all medications must be taken.

**Side Effects** — Up to 50 percent of people have side effects of H. pylori treatment. Side effects are usually mild, with fewer than 10 percent of patients stopping treatment because of side effects. For those who do experience side effects, it may be possible to make adjustments in the dose or timing of medication. Some of the most common side effects are described below.

1. Some of the treatment regimens use a medication called metronidazole (Flagyl®) or clarithromycin. These medications can cause a metallic taste in the mouth.
2. Alcoholic beverages (eg, beer, wine) should be avoided while taking metronidazole; the combination can cause skin flushing, headache, nausea, vomiting, sweating and a rapid heart rate.
3. Bismuth, which is contained in some of the regimens, causes the stool to become black and may cause constipation.
4. Many of the regimens cause diarrhea and stomach cramps.

**Ways to help ulcers heal** — A number of other measures help to ensure ulcer healing and prevent ulcer recurrence.

1. Stop smoking.
2. Avoid NSAIDs if possible. All medications should be reviewed with a healthcare provider to make sure that they do not contain NSAIDs. If it is necessary to

continue NSAIDs, one or more medications may be added to aid in ulcer healing and prevent recurrence.

3. If you had complications from your ulcer (such as bleeding or perforation), you should be retested for *H. pylori* to make sure that antibiotic therapy was successful. Although controversial, most experts recommend that a medication to reduce acid secretion is continued, even after a complicated ulcer has healed.
4. Caffeine-containing foods (such as coffee, tea, and chocolate) stimulate acid secretion and may worsen ulcer pain in some people.
5. Antacids are permissible during ulcer treatment if needed, although antacids should not be used within one hour before or two hours after taking ulcer medications since they can interfere with their absorption.
6. Although small amounts of alcohol are probably safe, we recommend avoiding alcohol until the ulcer has had time to heal. Excessive use of alcohol impairs ulcer healing and has a number of other serious health consequences. "Excessive" alcohol use is defined as more than 14 alcoholic beverages per week.
7. Efforts to reduce stress can benefit your overall health and may have a small benefit in healing ulcers. However, most ulcers heal with medications, even in people who continue to live a stressful life.
8. Herbal medications and supplements (such as licorice, marshmallow, and glutamine) probably have no role in the treatment of peptic ulcers. In addition, the manufacture of these treatments is not regulated and their safety and efficacy are not known.

### **PEPTIC ULCER FOLLOW UP**

**Duodenal ulcers** — People with uncomplicated duodenal ulcers should have follow-up testing after treatment, especially if symptoms recur or do not improve. Follow up testing is also recommended for people who have had complications (such as bleeding or perforation) to ensure that *H. pylori* has been successfully cured.

**Gastric ulcers** — People with gastric ulcers usually undergo a repeat endoscopy to ensure that the ulcer has healed and to ensure that the ulcer does not contain cancer cells. Long-term treatment to suppress stomach acid is usually recommended if a person has a high risk of ulcer recurrence (e.g., a history of ulcer complications or frequent recurrences). People with ulcers due to *H. pylori* are unlikely to develop another ulcer if NSAIDs are avoided.

### **WHERE TO GET MORE INFORMATION**

The following organizations also provide reliable health information.

National Library of Medicine

([www.nlm.nih.gov/medlineplus/healthtopics.html](http://www.nlm.nih.gov/medlineplus/healthtopics.html))

Centers for Disease Control and Prevention (CDC)

Phone: (404) 639-3534

Toll-free: (800) 311-3435

([www.cdc.gov](http://www.cdc.gov))

National Institute of Diabetes and Digestive and Kidney Diseases

Phone: (301) 654-3810

([www.niddk.nih.gov](http://www.niddk.nih.gov))

The American Gastroenterological Association

([www.gastro.org](http://www.gastro.org))

The American College of Gastroenterology (ACG)

([www.acg.gi.org](http://www.acg.gi.org))

The Helicobacter pylori Foundation

([www.helico.com](http://www.helico.com))