



Prompt Treatment Can Limit Ill Effects of Peptic Ulcers, Related Gastrointestinal Diseases

Peptic ulcer disease is one of the most common ailments involving the upper gastrointestinal tract. In most cases, however, the bacteria that cause the ulcers can be treated and eliminated, and a pilot affected by the disease can be back at work within weeks.

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FSF Editorial Staff

Diseases involving irritation of the upper gastrointestinal (GI) tract — the stomach, the duodenum (upper portion of the small intestine) and the esophagus— can cause acute abdominal pain and severe bleeding (Figure 1, page 2). For pilots, these and other symptoms, and the potential for complications from these diseases, can cause at least a temporary loss of medical certification. With treatment, however, most pilots can resume flight duties.

Peptic ulcer disease is one of the most common disorders of the upper GI tract. For example, the International Civil Aviation Organization (ICAO) says that peptic ulcer disease is the most common problem with special licensing considerations.¹ In the United Kingdom, peptic ulcer disease is the 10th most common cause of death.² In the United States, one in 10 Americans will have a peptic ulcer sometime in their lives, and about 1 million people are hospitalized each year with the disease.³

A peptic ulcer is a sore in the lining of the stomach (gastric ulcer), the upper portion of the small intestine (duodenal ulcer) or the esophagus (esophageal ulcer).

Until the early 1980s, peptic ulcers were believed to be caused by stress and spicy food, or by gastric acid generated in the stomach; physicians typically prescribed bed rest and a bland diet, or medications that limited the production of gastric acid. In 1982, two Australian physicians identified a bacterium — *Helicobacter pylori* — as the cause of most peptic ulcers,



but years passed before other physicians accepted their findings.⁴

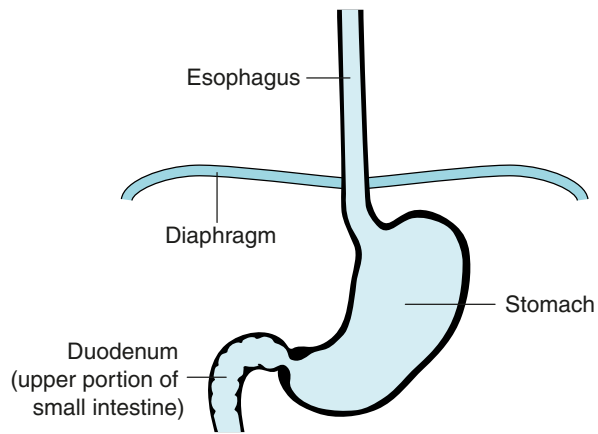
Today, medical authorities believe that the bacterium causes more than 90 percent of duodenal ulcers and as many as 80 percent of gastric ulcers. About two-thirds of the world population is infected with *H. pylori*; most of those infected have no symptoms. Nevertheless, the bacterium causes gastritis (an inflammation of the stomach's mucous membrane) as well as duodenal ulcers and gastric ulcers. An *H. pylori* infection also increases an individual's risk of developing gastric cancer and one type of lymphoma.⁵

Medical authorities are unsure how *H. pylori* is transmitted.

The most common symptom of a peptic ulcer is a gnawing pain that can be felt anywhere from the navel to the breastbone — most often just below the breastbone. The pain typically is worse when the stomach is empty and at night, and may be severe enough to awaken the person in the middle of the night. The pain, which may persist for several minutes or for several hours, sometimes is relieved temporarily by drinking milk or taking antacid medications. Less often, symptoms may include vomiting blood, which may appear to be red or black and may resemble coffee grounds; blood in the stools, which makes the stools appear to be black; nausea; unexplained weight loss; or pain in the upper back.^{6,7}

Peptic ulcers often are diagnosed through endoscopy, a procedure in which a physician inserts a long, flexible

Upper Gastrointestinal (GI) Tract



Source: Flight Safety Foundation

Figure 1

viewing tube called an endoscope through the patient's mouth and esophagus to examine the stomach. The endoscope also is used for biopsies (obtaining tissue for laboratory examination) and to stop an ulcer from bleeding. Sometimes, a diagnosis requires barium contrast X-rays, in which the patient swallows a contrast material called barium, which coats the esophagus, stomach and/or duodenum and causes them to appear bright white on the X-rays — a procedure that enables medical specialists to evaluate the upper GI tract. Sometimes, blood tests are performed to detect the presence of *H. pylori*, or gastric fluids are analyzed to determine their acid content.⁸

Although *H. pylori* is the most common cause of peptic ulcers, the following also can cause peptic ulcers or aggravate them:⁹

- Regular use of nonsteroidal anti-inflammatory drugs (NSAIDs), such as aspirin and ibuprofen, to relieve pain, can irritate the lining of the stomach and the small intestine. About 20 percent of people who regularly take NSAIDs develop peptic ulcers. NSAIDs also may increase the risk of peptic ulcers in people infected with *H. pylori*.

The U.S. Air Force *Flying Safety Magazine* reported the case of a military pilot who visited a physician because he had stomach pain and black stools and had almost fainted when he stood after sitting on a couch. The pilot estimated that he had taken 20 to 30 aspirin a day for several years because of sinus headaches. The physician diagnosed a bleeding peptic ulcer in the pilot's stomach. After treatment, the pilot returned to flight duties within "a couple of months," the report said;¹⁰

- The nicotine in tobacco products increases the amount of gastric acid and the concentration of the acid, thereby increasing the risk of a peptic ulcer. Smoking also may slow healing;

- Alcoholic beverages may irritate the lining of the stomach and the intestines and may cause inflammation and bleeding. Nevertheless, medical authorities have not determined whether consumption of alcohol can, by itself, cause peptic ulcers or whether another cause — such as *H. pylori* or use of NSAIDs — also must be present; and,
- Stress, which once was believed to be a major cause of peptic ulcers, is now considered by some authorities to be an aggravating factor that sometimes may slow healing.

Peptic ulcers typically are treated with at least two of the following types of medications:¹¹

- Antibiotics, which typically are prescribed for one week to two weeks, destroy *H. pylori*;
- Acid blockers (histamine blockers, or H₂ blockers) and proton pump inhibitors limit the body's production of gastric acid. H₂ blockers block histamine, a substance in the body that stimulates acid production; proton pump inhibitors stop the "pumps" within the cells that pump acid into the stomach; and,
- Antacids neutralize gastric acid and relieve pain.

With treatment, most peptic ulcers heal within three months, and some heal in less than one month. Peptic ulcers that do not heal within three months (refractory ulcers) may result from infections cause by bacteria other than *H. pylori*, digestive diseases such as cancer or Crohn's disease (an inflammation of the wall of the intestine), or extreme overproduction of stomach acid.¹²

Bleeding Is Common Complication

In some cases, peptic ulcers develop complications that can be life threatening. Bleeding is a common complication, symptomized by vomiting blood and/or blood in the stools. Bleeding ulcers can lead to a low red-blood-cell count (anemia), a condition in which the blood cannot transport enough oxygen throughout the body, typically symptomized by fatigue or feeling faint. Rarely, the loss of blood causes a loss of consciousness, especially at high cabin altitudes.

The pilot cited in the Air Force report had a red-blood-cell count that was less than half the normal level; later, in a recurrent bout of peptic ulcer disease, the same pilot became hypoxic and lost consciousness during a flight as a passenger on a commercial airliner with a cabin altitude of about 7,000 feet. At the time, his red-blood count was slightly more than half the normal level.¹³

Bleeding peptic ulcers can be treated by cauterization, administering acid blockers and/or antacids, and administering nutrients intravenously to allow the GI tract to rest. The most serious cases may require an injection of blood-clotting medication or surgery.¹⁴

In some cases, the swelling of inflamed tissues around a peptic ulcer or scars from earlier peptic ulcers form an obstruction that results in narrowing of the duodenum or the outlet from the stomach. Symptoms include repeated vomiting, a bloated feeling and a loss of appetite. Most cases are resolved when the peptic ulcer is treated, but sometimes, endoscopy or surgery is required to remove the obstruction.

Other complications include penetration, in which a peptic ulcer extends through the wall of the stomach or duodenum into an adjacent organ, such as the pancreas; the result can be pancreatitis (inflammation of the pancreas). Treatment of the ulcer involves medication and/or surgery.

Perforation occurs when a peptic ulcer extends through the front wall of the duodenum or stomach and creates an opening to the abdominal cavity. This can lead to an infection (peritonitis), which — if not treated — can result in shock. This is a condition that usually is treated with emergency surgery and intravenous antibiotics.

ICAO says that pilots who have peptic ulcers without significant complications should be considered fit for flight if the ulcers require no treatment other than dietary controls. Many — but not all — pilots whose ulcers have developed complications such as bleeding or obstruction and pilots with chronic peptic ulcers should be considered unfit because the complications “might be common causes of sudden incapacitation,” ICAO said.¹⁵

For example, in Australia, the *Designated Aviation Medical Examiner’s Handbook* says that pilots with bleeding ulcers are unlikely to receive medical certification, and those who require “long-term therapy” with H₂ blockers or similar medications should be considered individually. Pilots whose ulcers have been treated with surgery usually are fit to fly, the handbook says.¹⁶

In the United States, the *Guide for Aviation Medical Examiners* says that pilots who have had a peptic ulcer within the previous three months or a bleeding ulcer within the previous six months must provide “evidence that the ulcer is healed,” including a physician’s report, accompanied by confirmation that the pilot has no symptoms, radiographic or endoscopic proof that the ulcer has healed, and the names and dosages of medications used for treatment or prevention.¹⁷

“Under favorable circumstances, the FAA [U.S. Federal Aviation Administration] may issue a certificate with special requirements,” such as periodic follow-up examinations, the guide says. Use of H₂ blockers, proton pump inhibitors and other medications may be permitted if the pilot does not experience side effects.

Heartburn May Signal Upper GI Problems

Gastroesophageal reflux disease (GERD; acid reflux) occurs when gastric acid and the contents of the stomach move up the esophagus, causing irritation or inflammation.

The most frequent symptom of GERD is heartburn, a burning sensation behind the breastbone that usually occurs after eating, but symptoms also may include regurgitation of the stomach contents into the mouth or excessive salivation. The movement of the stomach’s contents, including gastric acid, upward into the esophagus causes pain because the esophagus — unlike the stomach — does not have a protective lining to limit the effects of gastric acid. In some cases, the esophagus becomes inflamed, and bleeding may occur.¹⁸

Complications of GERD include the scarring and narrowing of the lower portion of the esophagus, which makes swallowing difficult; esophageal ulcers; and changes in the esophageal lining (Barrett’s esophagus) that may lead to cancer of the esophagus.

GERD usually is caused by weakness in the lower esophageal sphincter (LES), a circular muscle at the base of the esophagus. The LES relaxes to allow foods and liquids to flow through the esophagus to the stomach; when it relaxes at other times, the stomach’s contents flow upward into the esophagus.

Diagnosis of GERD may require X-rays, an endoscopy, pressure measurements of the LES and/or evaluations of the esophageal acid.

GERD often is treated by raising the head of the bed by about six inches (15 centimeters) to limit the flow of gastric acid toward the esophagus; avoiding coffee, alcohol, tobacco, chocolate, spicy foods and fatty foods; taking antacids about one hour after meals and before bedtime; taking medications to limit production of gastric acid; or taking medications to help the LES close. Surgery may be required for serious esophageal bleeding. If the esophagus has narrowed because of GERD, treatment involves medication and/or dilation with medical balloons or metal dilators.

GERD sometimes is associated with hiatal hernia (diaphragmatic hernia), in which a portion of the stomach protrudes through the diaphragm (the muscle and connective tissue that separate the chest from the abdomen). Hiatal hernia occurs in about 25 percent of people older than 50 and is most likely among women and people who are overweight.¹⁹

Many people have hiatal hernias — especially small ones — without symptoms. If the hiatal hernia is large, it may cause heartburn and/or GERD. Discomfort caused by hiatal hernia is treated in much the same way as GERD; large hiatal hernias sometimes require surgery, however. Sometimes, a paraesophageal hiatal hernia (in which a portion of the stomach protrudes above the diaphragm to a position next to the esophagus) is pinched by the diaphragm and stops receiving blood. In these cases of “strangulation,” immediate surgery is required.²⁰

Gastrointestinal illnesses, including GERD and peptic ulcer disease, can cause pain and bleeding. With proper treatment,

however, most peptic ulcers can be eliminated and most pilots can be back at work after a minimal absence.♦

Notes

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