Peptic Ulcers (Stomach Ulcers)

Definition & Facts

What is a peptic ulcer?

A peptic ulcer is a sore on the lining of your stomach or duodenum. Rarely, a peptic ulcer may develop just above your stomach in your esophagus. Doctors call this type of peptic ulcer an esophageal ulcer.

Causes of peptic ulcers include

- long-term use of nonsteroidal anti-inflammatory drugs (NSAIDs), such as aspirin and ibuprofen
- an infection with the bacteria *Helicobacter pylori* (*H. pylori*)
- rare cancerous and noncancerous tumors in the stomach, duodenum, or pancreas—known as Zollinger-Ellison syndrome (ZES)

Who is more likely to develop peptic ulcers caused by NSAIDs?

People of any age who take NSAIDs every day or multiple times per week are more likely to develop a peptic ulcer than people who do not take them regularly. NSAIDs are a class of pain killers, such as aspirin and ibuprofen. Long-term use of NSAIDs can cause peptic ulcer disease.

Your chance of having a peptic ulcer caused by NSAIDs, also called an NSAID-induced peptic ulcer, is increased if you

- are age 70 or older
- are female
- are taking more than two types of NSAIDs or have taken NSAIDs regularly for a long time
- have had a peptic ulcer before
- have two or more medical conditions or diseases
- are taking other medicines, such as corticosteroids and medicines to increase your bone mass
- drink alcohol or smoke

Who is more likely to develop peptic ulcers caused by *H. pylori*?

About 30 to 40 percent of people in the United States get an *H. pylori* infection.[1] In most cases, the infection remains dormant, or quiet without signs or symptoms, for years. Most people get an *H. pylori* infection as a child.[2]

Adults who have an *H. pylori* infection may get a peptic ulcer, also called an *H. pylori*-induced peptic ulcer. However, most people with an *H. pylori* infection never develop a peptic ulcer. Peptic ulcers caused by *H. pylori* are uncommon in children.[2]

H. pylori are spiral-shaped bacteria that can damage the lining of your stomach and duodenum and cause peptic ulcer disease. Researchers are not certain how *H. pylori* spread. They think the bacteria may spread through

- unclean food
- unclean water
- unclean eating utensils
- contact with an infected person's saliva and other bodily fluids, including kissing

Researchers have found *H. pylori* in the saliva of some infected people, which means an *H. pylori* infection could spread through direct contact with saliva or other bodily fluids.[3]

What other problems can a peptic ulcer cause?

A peptic ulcer can cause other problems, including

- bleeding from a broken blood vessel in your stomach or small intestine
- perforation of your stomach or small intestine
- a blockage that can stop food from moving from your stomach into your duodenum
- peritonitis

You may need surgery to treat these problems.

Symptoms & Causes

What are the symptoms of a peptic ulcer?

A dull or burning pain in your stomach is the most common symptom of a peptic ulcer. You may feel the pain anywhere between your belly button and breastbone. The pain most often

- happens when your stomach is empty—such as between meals or during the night
- stops briefly if you eat or if you take antacids
- lasts for minutes to hours
- comes and goes for several days, weeks, or months

Less common symptoms may include

- bloating
- burping
- feeling sick to your stomach
- poor appetite
- vomiting
- weight loss

Even if your symptoms are mild, you may have a peptic ulcer. You should see your doctor to talk about your symptoms. Without treatment, your peptic ulcer can get worse.

What causes a peptic ulcer?

Causes of peptic ulcers include

- long-term use of nonsteroidal anti-inflammatory drugs (NSAIDs), such as aspirin and ibuprofen
- an infection with the bacteria *Helicobacter pylori* (*H. pylori*)
- rare cancerous and noncancerous tumors in the stomach, duodenum, or pancreas—known as Zollinger-Ellison syndrome

Sometimes peptic ulcers are caused by both NSAIDs and *H. pylori*.

How do NSAIDs cause a peptic ulcer?

To understand how NSAIDs cause peptic ulcer disease, it is important to understand how NSAIDs work. Nonsteroidal anti-inflammatory drugs reduce pain, fever, and inflammation, or swelling.

Everyone has two enzymes that produce chemicals in your body's cells that promote pain, inflammation, and fever. NSAIDs work by blocking or reducing the amount of these enzymes that your body makes. However, one of the enzymes also produces another type of chemical that protects the stomach lining from stomach acid and helps control bleeding. When NSAIDs block or reduce the amount of this enzyme in your body, they also increase your chance of developing a peptic ulcer.

How do *H. pylori* cause a peptic ulcer and peptic ulcer disease?

H. pylori are spiral-shaped bacteria that can cause peptic ulcer disease by damaging the mucous coating that protects the lining of the stomach and duodenum. Once *H. pylori* have damaged the

mucous coating, powerful stomach acid can get through to the sensitive lining. Together, the stomach acid and *H. pylori* irritate the lining of the stomach or duodenum and cause a peptic ulcer.

Diagnosis

How do doctors diagnose a peptic ulcer?

Your doctor will use information from your medical history, a physical exam, and tests to diagnose an ulcer and its cause. The presence of an ulcer can only be determined by looking directly at the stomach with endoscopy or an X-ray test.

Lab tests

To see if you have a *Helicobacter pylori (H. pylori)* infection, your doctor will order these tests:

Blood test. A blood test involves drawing a sample of your blood at your doctor's office or a commercial facility. A health care professional tests the blood sample to see if the results fall within the normal range for different disorders or infections.

Urea breath test. For a urea breath test, you will drink a special liquid that contains urea, a waste product that your body makes as it breaks down protein. If *H. pylori* are present, the bacteria will change this waste product into carbon dioxide—a harmless gas. Carbon dioxide normally appears in your breath when you exhale.

A health care professional will take a sample of your breath by having you breathe into a bag at your doctor's office or at a lab. He or she then sends your breath sample to a lab for testing. If your breath sample has higher levels of carbon dioxide than normal, you have *H. pylori* in your stomach or small intestine.

Stool test. Doctors use a stool test to study a sample of your stool. A doctor will give you a container for catching and storing your stool at home. You return the sample to the doctor or a commercial facility, who then sends it to a lab for analysis. Stool tests can show the presence of*H. pylori*.

Upper gastrointestinal (GI) endoscopy and biopsy

In an upper GI endoscopy, a gastroenterologist, surgeon, or other trained health care professional uses an endoscope to see inside your upper GI tract. This procedure takes place at a hospital or an outpatient center.

An intravenous (IV) needle will be placed in your arm to provide a sedative. Sedatives help you stay relaxed and comfortable during the procedure. In some cases, the procedure can be performed without sedation. You will be given a liquid anesthetic to gargle or spray anesthetic on the back of your throat. The doctor will carefully feed the endoscope down

your esophagusand into your stomach and duodenum. A small camera mounted on the endoscope sends a video image to a monitor, allowing close examination of the lining of your upper GI tract. The endoscope pumps air into your stomach and duodenum, making them easier to see.

The doctor may perform a biopsy with the endoscope by taking a small piece of tissue from the lining of your esophagus. You won't feel the biopsy. A pathologist examines the tissue in a lab.

Treatment

How do doctors treat peptic ulcer disease?

There are several types of medicines used to treat a peptic ulcer. Your doctor will decide the best treatment based on the cause of your peptic ulcer.

How do doctors treat an NSAID-induced peptic ulcer?

If NSAIDs are causing your peptic ulcer and you don't have an *H. pylori* infection, your doctor may tell you to

- stop taking the NSAID
- reduce how much of the NSAID you take
- switch to another medicine that won't cause a peptic ulcer

Your doctor may also prescribe medicines to reduce stomach acid and coat and protect your peptic ulcer. Proton pump inhibitors (PPIs), histamine receptor blockers, and protectants can help relieve pain and help your ulcer heal.

PPIs

PPIs reduce stomach acid and protect the lining of your stomach and duodenum. While PPIs can't kill *H. pylori*, they do help fight the *H. pylori* infection.

PPIs include

- esomeprazole (Nexium)
- dexlansoprazole (Dexilant)
- lansoprazole (Prevacid)
- omeprazole (Prilosec, Zegerid)
- pantoprazole (Protonix)
- rabeprazole (AcipHex)

Histamine receptor blockers

Histamine receptor blockers work by blocking histamine, a chemical in your body that signals your stomach to produce acid. Histamine receptor blockers include

- famotidine (Pepcid)
- ranitidine (Zantac)

Protectants

Protectants coat ulcers and protect them against acid and enzymes so that healing can occur. Doctors only prescribe one protectant—sucralfate (Carafate) —for peptic ulcer disease.

Tell your doctor if the medicines make you feel sick or dizzy or cause diarrhea or headaches. Your doctor can change your medicines.

If you smoke, quit . You also should avoid alcohol. Drinking alcohol and smoking slow the healing of a peptic ulcer and can make it worse.

What if I still need to take NSAIDs?

If you take NSAIDs for other conditions, such as arthritis , you should talk with your doctor about the benefits and risks of using NSAIDs. Your doctor can help you determine how to continue using an NSAID safely after your peptic ulcer symptoms go away. Your doctor may prescribe a medicine used to prevent NSAID-induced ulcers called Misoprosotol .

If you need NSAIDs, you can reduce the chance of a peptic ulcer returning by

- taking the NSAID with a meal
- using the lowest effective dose possible
- quitting smoking
- avoiding alcohol

How do doctors treat an NSAID-induced peptic ulcer when you have an *H. pylori* infection?

If you have an *H. pylori* infection, a doctor will treat your NSAID-induced peptic ulcer with PPIs or histamine receptor blockers and other medicines, such as antibiotics, bismuth subsalicylates, or antacids.

PPIs reduce stomach acid and protect the lining of your stomach and duodenum. While PPIs can't kill *H. pylori*, they do help fight the *H. pylori* infection.

PPIs include

- esomeprazole (Nexium)
- dexlansoprazole (Dexilant)
- lansoprazole (Prevacid)
- omeprazole (Prilosec, Zegerid)
- pantoprazole (Protonix)
- rabeprazole (AcipHex)

Histamine receptor blockers

Histamine receptor blockers work by blocking histamine, a chemical in your body that signals your stomach to produce acid. Histamine receptor blockers include

- famotidine (Pepcid)
- ranitidine (Zantac)

Antibiotics

A doctor will prescribe antibiotics to kill *H. pylori*. How doctors prescribe antibiotics may differ throughout the world. Over time, some types of antibiotics can no longer destroy certain types of *H. pylori*.

Antibiotics can cure most peptic ulcers caused by *H. pylori* or *H. pylori*-induced peptic ulcers. However, getting rid of the bacteria can be difficult. Take all doses of your antibiotics exactly as your doctor prescribes, even if the pain from a peptic ulcer is gone.

Bismuth subsalicylates

Medicines containing bismuth subsalicylate , such as Pepto-Bismol, coat a peptic ulcer and protect it from stomach acid. Although bismuth subsalicylate can kill *H. pylori*, doctors sometimes prescribe it with antibiotics, not in place of antibiotics.

Antacids

An antacid may make the pain from a peptic ulcer go away temporarily, yet it will not kill H. pylori. If you receive treatment for an H. pylori-induced peptic ulcer, check with your doctor before taking antacids. Some of the antibiotics may not work as well if you take them with an antacid.

How do doctors treat an *H.pylori*-induced peptic ulcer?

Doctors may prescribe triple therapy, quadruple therapy, or sequential therapy to treat an *H. pylori*-induced peptic ulcer.

How do doctors treat peptic ulcers caused by ZES?

Doctors use medicines, surgery, and chemotherapy to treat Zollinger-Ellison syndrome.

What if a peptic ulcer doesn't heal?

Most often, medicines heal a peptic ulcer. If an *H. pylori* infection caused your peptic ulcer, you should finish all of your antibiotics and take any other medicines your doctor prescribes. The infection and peptic ulcer will heal only if you take all medicines as your doctor prescribes.

When you have finished your medicines, your doctor may do another breath or stool test in 4 weeks or more to be sure the *H. pylori* infection is gone. Sometimes, *H. pylori* bacteria are still present, even after you have taken all the medicines correctly. If the infection is still present, your peptic ulcer could return or, rarely, stomach cancer could develop. Your doctor will prescribe different antibiotics to get rid of the infection and cure your peptic ulcer.

Can a peptic ulcer come back?

Yes, a peptic ulcer can come back. If you smoke or take NSAIDs, peptic ulcers are more likely to come back. If you need to take an NSAID, your doctor may switch you to a different medicine or add medicines to help prevent a peptic ulcer. Peptic ulcer disease can return, even if you have been careful to reduce your risk.

How can I prevent a peptic ulcer?

To help prevent a peptic ulcer caused by NSAIDs, ask your doctor if you should

- stop using NSAIDs
- take NSAIDs with a meal if you still need NSAIDs
- take a lower dose of NSAIDs
- take medicines to protect your stomach and duodenum while taking NSAIDs
- switch to a medicine that won’t cause ulcers

To help prevent a peptic ulcer caused by *H. pylori*, your doctor may recommend that you avoid drinking alcohol.

Eating, Diet, & Nutrition

How can your diet help prevent or relieve a peptic ulcer?

Researchers have not found that diet and nutrition play an important role in causing or preventing peptic ulcers.

Alcohol and smoking do contribute to ulcers and should be avoided.

References

[1] Travelers' Health. Chapter 3: Infection Diseases Related to Travel. Centers for Disease Control and Prevention website. http://wwwnc.cdc.gov . Updated August 2013. Accessed July 31, 2014.

[2] Hernandez C, et al. Peptic Ulcer Disease in Helicobacter Pylori-Infected Children: Clinical Findings and Mucosal Immune Response. *Journal of Pediatric Gastroenterology and Nutrition*. Published online July 21, 2014.

[3] Momtaz H, Souod N, Dabiri H, Sarshar M. Study of Helicobacter pylori genotype status in saliva, dental plaques, stool and gastric biopsy samples. *World Journal of Gastroenterology*. 2012;18(17):2105–2111.

[4] Metz DC. Diagnosis of the Zollinger-Ellison syndrome. *Clinical Gastroenterology and Hepatology*. 2012;10(2):126–130.

[5] Del Valle J. Zollinger-Ellison syndrome. In: Yamada T, ed. *Textbook of Gastroenterology. 5th ed.* Hoboken, NJ: Blackwell Publishing; 2009: 982–1002.

November 2014