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## Patient education: Helicobacter pylori infection and treatment (Beyond the Basics)

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**HELICOBACTER PYLORI OVERVIEW** — *Helicobacter pylori*, also known as *H. pylori*, is a bacterium that is commonly found in the stomach. It is present in approximately one-half of the world's population.

The vast majority of people infected with *H. pylori* has no symptoms and will never develop problems. However, *H. pylori* is capable of causing a number of digestive problems, including ulcers and, much less commonly, stomach cancer. It is not clear why some people with *H. pylori* get these conditions and others do not.

This article discusses the symptoms, testing, and treatment of *H. pylori* infections. Stomach ulcers, also known as peptic ulcers, are discussed separately. (See "[Patient education: Peptic ulcer disease \(Beyond the Basics\)](#)".)

**H. PYLORI RISK FACTORS** — *H. pylori* is probably spread by consuming food or water contaminated with fecal matter. *H. pylori* causes changes to the stomach and duodenum (the first part of the small intestine) ([figure 1](#)). The bacteria infect the protective tissue that lines the stomach. This leads to the release of certain enzymes and toxins and activation of the immune system. Together, these factors may directly or indirectly injure the cells of the stomach or duodenum. This causes chronic inflammation in the walls of the stomach (gastritis) or duodenum (duodenitis).

As a result of these changes, the stomach and duodenum are more vulnerable to damage from digestive juices, such as stomach acid.

In the United States and other developed countries, infection with *H. pylori* is unusual during childhood but becomes more common during adulthood. However, in developing countries, most children are infected with *H. pylori* before age 10.

**H. PYLORI SYMPTOMS** — Most individuals with chronic gastritis or duodenitis have no symptoms. However, some people develop more serious problems, including stomach or duodenal ulcers.

Ulcers can cause a variety of symptoms or no symptoms at all, with the most common ulcer symptoms including:

- Pain or discomfort (usually in the upper abdomen)
- Bloating

- Feeling full after eating a small amount of food
- Lack of appetite
- Nausea or vomiting
- Dark or tar-colored stools
- Ulcers that bleed can cause a low blood count and fatigue (see ["Patient education: Peptic ulcer disease \(Beyond the Basics\)"](#))

Less commonly, chronic gastritis causes abnormal changes in the stomach lining, which can lead to certain forms of cancer. It is uncommon to develop cancer as a result of *H. pylori* infection. Nevertheless, because so many people in the world are infected with *H. pylori*, it is considered to be an important cause of stomach cancer. People who live in countries in which *H. pylori* infection occurs at an early age are at greatest risk of stomach cancer.

**H. PYLORI DIAGNOSIS** — There are several ways to diagnose *H. pylori*. The most commonly used tests include the following:

**Breath tests** — Breath tests (known as urea breath tests) require that you drink a specialized solution containing a substance that is broken down by the *H. pylori* bacterium. The breakdown products can be detected in your breath.

**Stool tests** — Tests are available that detect *H. pylori* proteins in stool.

**Blood tests** — Blood tests can detect specific antibodies (proteins) that the body's immune system develops in response to the *H. pylori* bacterium. However, concerns over its accuracy have limited its use.

## WHO SHOULD BE TESTED FOR H. PYLORI?

**If you have symptoms** — Diagnostic testing for *H. pylori* infection is recommended if you have active gastric or duodenal ulcers or if you have a past history of ulcers.

Although *H. pylori* infection is the most common cause of ulcers, not all patients with ulcers have *H. pylori*. Certain medications (eg, aspirin, ibuprofen [Motrin, Advil], naproxen [Aleve]) can also cause peptic ulcers. (See ["Patient education: Peptic ulcer disease \(Beyond the Basics\)"](#).)

**If you do not have symptoms** — *H. pylori* testing is usually not recommended if you have no symptoms and no past history of peptic ulcer disease. However, it may be considered for selected people, such as those with a family history or concern about stomach cancer, particularly individuals of Chinese, Korean, Japanese, or Central American descent; these groups have a higher incidence of stomach cancer.

**H. PYLORI TREATMENT** — People with a history of peptic ulcer disease, active gastric ulcer, or active duodenal ulcer associated with *H. pylori* infection should be treated. Successful treatment of *H. pylori* can help the ulcer to heal, prevent ulcers from coming back, and reduce the risk of ulcer complications (like bleeding).

**Medications** — No single drug cures *H. pylori* infection. Most treatment regimens involve taking several medications for 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), dexlansoprazole (Dexilant), and esomeprazole (Nexium).

- Two antibiotics are also generally recommended; this reduces the risk of treatment failure and antibiotic resistance.
- There are increasing numbers of patients with *H. pylori* infection that is resistant to antibiotics, so it is important to take all the medications prescribed and to have a test that confirms that the infection has been cleared.

For *H. pylori* treatment to be effective, it is important to take the entire course of all medications.

**Side effects** — Up to 50 percent of patients have side effects while taking *H. pylori* treatment. Side effects are usually mild, and fewer than 10 percent of patients stop 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.

- Some of the treatment regimens use a medication called metronidazole (Flagyl) or clarithromycin (Biaxin). These medications can cause a metallic taste in the mouth.
- 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.
- Bismuth, which is contained in some of the regimens, causes the stool to become black and may cause constipation.
- Many of the regimens cause diarrhea and stomach cramps.

**Treatment failure** — Up to 20 percent of patients with *H. pylori* infection are not cured after completing their first course of treatment. A second treatment regimen is usually recommended in this case. Retreatment usually requires that the patient take 14 days of a proton pump inhibitor and two antibiotics. At least one of the antibiotics is different from those used in the first treatment course.

**Follow-up** — After completing *H. pylori* treatment, repeat testing is usually performed to ensure that the infection has resolved. This is typically done with a breath or stool test (see '[Breath tests](#)' above). Blood tests are not recommended for follow up testing; the antibody detected by the blood test often remains in the blood for four or more months after treatment, even after the infection is eliminated.

## SUMMARY

- *Helicobacter pylori*, also known as *H. pylori*, is a bacterium that is commonly found in the stomach. Most people infected with *H. pylori* have no problems. However, some people develop problems, such as stomach ulcers.
- Ulcers may cause no symptoms, or may cause pain or discomfort (usually in the upper abdomen), bloating, feeling full after eating a small amount of food, lack of appetite, nausea, vomiting, and dark or tar-colored stools. Ulcers that bleed can cause a low blood count.
- *H. pylori* can be diagnosed with a test of the blood, breath, or stool.
- *H. pylori* testing is recommended for anyone with a peptic (stomach or duodenal) ulcer.
- Anyone diagnosed with *H. pylori* should be treated. *H. pylori* treatment helps to heal the ulcer, lowers the risk that the ulcer will return, and lowers the risk of bleeding from the ulcer.
- *H. pylori* treatment usually includes several medicines. At least two of the medicines are antibiotics that help to kill the bacteria. The other medication causes the stomach to make less acid; lower acid levels help the

ulcer to heal.

- Most people are cured after finishing one to two weeks of medicine. Some people need to take another two weeks of medicine. It is important to finish all of the medicine to ensure that the bacteria are killed.
- A breath or stool test is usually done after finishing the medication. This is done to be sure that the bacteria were killed.

**WHERE TO GET MORE INFORMATION** — Your healthcare provider is the best source of information for questions and concerns related to your medical problem.

This article will be updated as needed on our website ([www.uptodate.com/patients](http://www.uptodate.com/patients)). Related topics for patients, as well as selected articles written for healthcare professionals, are also available. Some of the most relevant are listed below.

**Patient level information** — UpToDate offers two types of patient education materials.

**The Basics** — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

[Patient education: H. pylori infection \(The Basics\)](#)

[Patient education: Peptic ulcers \(The Basics\)](#)

[Patient education: Stomach cancer \(The Basics\)](#)

**Beyond the Basics** — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

[Patient education: Peptic ulcer disease \(Beyond the Basics\)](#)

**Professional level information** — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

[Acute and chronic gastritis due to Helicobacter pylori](#)

[Association between Helicobacter pylori infection and duodenal ulcer](#)

[Association between Helicobacter pylori infection and gastrointestinal malignancy](#)

[Bacteriology and epidemiology of Helicobacter pylori infection](#)

[Helicobacter pylori and gastroesophageal reflux disease](#)

[Indications and diagnostic tests for Helicobacter pylori infection](#)

[Peptic ulcer disease: Clinical manifestations and diagnosis](#)

[Peptic ulcer disease: Management](#)

[Treatment regimens for Helicobacter pylori](#)

[Unusual causes of peptic ulcer disease](#)

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))

- National Institute of Diabetes and Digestive and Kidney Diseases

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

- Centers for Disease Control and Prevention (CDC)

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

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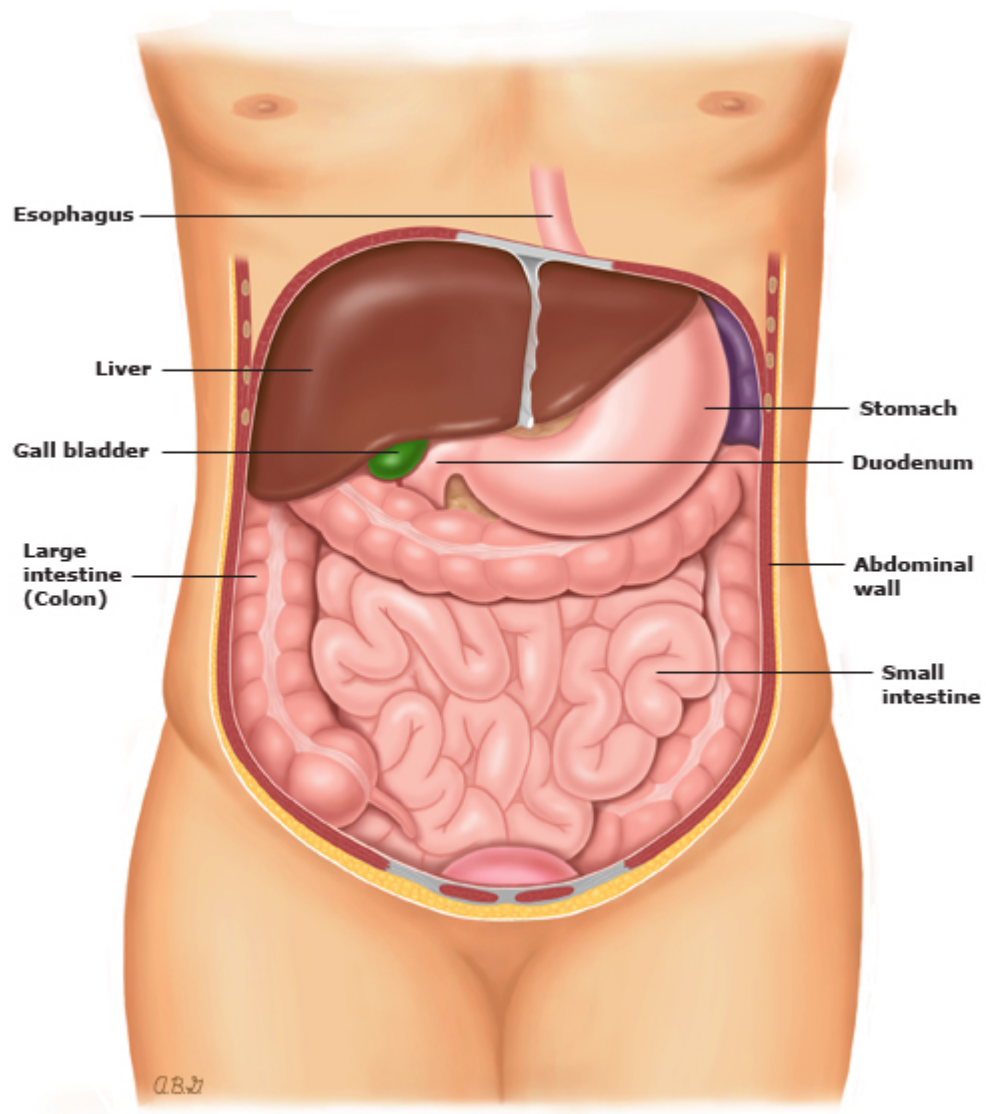
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## GRAPHICS

### Organs inside the abdomen (belly)

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