

***H. pylori* infection and diagnosis**

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Transmission of *H. pylori*:

Transmission occurs through oral-oral, fecal-oral, and gastro-oral routes.

As an example:

- mother-to-child transmission occurs if the mother's saliva is contaminated or due to poor hand hygiene.
- The pathogen is transmitted by direct means, e.g., kissing or sharing utensils
- indirect means, such as drinking water, air, animals, flies, and food.

Risk factors:

- Living with someone who has an *H. pylori* infection increases the risk of infection. People may also be infected if someone who prepares their food does not wash their hands properly. Those who have an immediate relative with a history of gastric cancer are also at increased risk for infection.
- Living in crowded and unsanitary conditions without a reliable supply of clean water increases the risk of *H. pylori* infection. People emigrating from geographic areas with high rates of gastric cancer are also at increased risk

What illness does *H. pylori* cause?

1. **Ulcers:** *H. pylori* can damage the protective lining of your stomach and small intestine. This can allow stomach acid to create an open sore (ulcer). About 10 percent of people with *H. pylori* will develop an ulcer.

2. Inflammation of the stomach lining. *H. pylori* infection can irritate your stomach, causing inflammation (gastritis).

3. Stomach cancer. *H. pylori* infection is a strong risk factor for certain types of stomach cancer.

The symptoms of ulcers?

- An ache or burning pain in your abdomen
- Abdominal pain that's worse when your stomach is empty
- Nausea
- Loss of appetite
- Frequent burping
- Bloating
- Unintentional weight loss

Who should be tested and treated for *H. pylori*?

- Patients with active peptic ulcer disease (PUD), past history of PUD, low-grade gastric mucosa-associated lymphoid tissue (MALT) lymphoma, or a history of endoscopic resection of early gastric cancer (EGC) should be tested for *H. pylori* infection. Other patients with dyspepsia who are under 60 years old should consider getting non-endoscopic testing for *H. pylori*. Those who test positive should be offered antibiotic therapy that aims to eradicate the bacteria.
- Patients with dyspepsia who have undertaken endoscopy should be evaluated for *H. pylori* by taking gastric biopsies. These patients are strongly suggested for eradication therapy.
- Patients taking long-term, low-dose aspirin should be tested for *H. pylori* infection to reduce the risk of ulcer bleeding, and eradication therapy should be offered to those who test positive.

- Patients taking chronic treatment with non-steroidal anti-inflammatory drugs (NSAID) should be tested for *H. pylori* infection, and eradication therapy should be offered to those who test positive.
- Patients with iron deficiency anemia should be tested for *H. pylori*, and eradication therapy should be offered to those who test positive.
- Adults with idiopathic thrombocytopenic purpura (ITP) should be tested for *H. pylori* infection, and eradication therapy should be offered to those who test positive.

Are there any long-term consequences of *H. pylori* infection?

- There is an association between long-term infection with *H. pylori* and the development of gastric cancer.

How is *H. pylori* infection diagnosed?

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| -Stool/fecal antigen test | Detects the presence of <i>H. pylori</i> antigen in a stool sample |
| -Urea breath test | A person drinks a solution containing a low level of radioactive material that is harmless or a nonradioactive material. If <i>H. pylori</i> is present in the person’s gastrointestinal tract, the material will be broken down into “labeled” carbon dioxide gas that is expelled in the breath. |

-H. pylori antibody tting

Test not recommended for routine diagnosis or for evaluation of treatment effectiveness. It detect antibodies to the bacteria and will not distinguish the previous infection from a current one. If the test is negative, then it is unlikely that a person has had an *H. pylori* infection. If ordered and positive, results should be confirmed using stool antigen or breath test.

-Histology

Tissue is examined under a microscope by a pathologist, who will look for *H. pylori* bacteria and any other signs of disease that may explain a person's symptoms.

-Rapid urease testing

H. pylori produces urease, an enzyme that allows it to survive in the acidic environment of the stomach. The laboratory test can detect urease in the tissue sample.

-Culture

The bacteria are grown on/in a nutrient media; results can take several weeks. This test is necessary if the health practitioner wants to evaluate which antibiotic will likely cure the infection.

-PCR (polymerase chain reaction)

Fragments of H. pylori DNA are amplified and used to detect the bacteria; primarily used in a research setting.

In conclusion, The stool antigen test and urea breath test are recommended for the diagnosis of an H. pylori infection and for the evaluation of the effectiveness of treatment. These tests are the most frequently performed because they are fast and noninvasive. Endoscopy-related tests may also be performed to diagnose and evaluate H. pylori but are less frequently performed because they are invasive.