

*H. pylori* infection is the most prevalent chronic bacterial infection in humans. Its unique features enable it to survive in the stomach's acidic environment and, if left untreated, can cause peptic ulcer disease, chronic gastritis, gastric adenocarcinoma, and gastric mucosa associated lymphoid tissue (MALT) lymphoma.

## INDICATIONS FOR TESTING

Laboratory testing is used to diagnose *H. pylori* infection and evaluate treatment success. Screening asymptomatic patients in the general population is not recommended. Testing is appropriate in patients who present with predominant epigastric pain lasting at least 1 month and if the clinician plans to offer treatment for positive results.

The American College of Gastroenterology specifically recommends testing in individuals with active peptic ulcer disease (PUD), a history of PUD, or uninvestigated dyspepsia, and in those initiating prolonged treatment with a nonsteroidal anti-inflammatory drug (NSAID).

## DIAGNOSTIC TESTING

Testing for *H. pylori* can be divided into invasive and noninvasive tests. For accurate results, it is recommended that patients stop use of proton pump inhibitors (PPIs) for 2 weeks before any *H. pylori* testing.

### Invasive Tests

Endoscopy and biopsy are indicated for children, adults 60 years and older, and those with alarm symptoms (GI bleeding, unexplained iron deficiency anemia, early satiety, unexplained weight loss, progressive dysphagia, odynophagia, recurrent vomiting, family history of GI cancer, and previous esophagogastric malignancy). Biopsy of the antrum is recommended at a minimum, but biopsy of additional areas (e.g. the corpus) may improve diagnostic utility and is recommended in children. Biopsy-based tests are less sensitive when performed in patients with active GI bleeding. Noninvasive testing may be considered if a false-negative result is suspected.

### Noninvasive Tests

Noninvasive testing is indicated for adults younger than 60 years of age who present without alarm symptoms. It is also acceptable for children if a false-negative result from an invasive test is suspected or when evaluating causes of chronic immune thrombocytopenic purpura.

### Stool Antigen

The stool antigen test uses an enzyme immunoassay to detect *H. pylori* antigen in a random stool sample. Its ability to detect infection is equal to that of the urea breath test and can be performed on patients of all ages.

### Urea Breath Test

The urea breath test detects carbon-13 in exhaled breath that is liberated from the breakdown of carbon-13-labeled urea by the urease enzyme produced by *H. pylori*. Testing requires the patient to fast and abstain from smoking for 1 hour before consuming a beverage containing carbon-13-labeled urea. Achlorhydria or urease-positive organisms other than *H. pylori* in the gut may increase the risk of a false-positive result. Histamine 2-receptor antagonists may reduce urease activity on urea breath tests and should be discontinued 24-48 hours before sample collection. When used for patients 3-17 years of age, the age, weight, height, and sex of the patient must be provided.

Either the stool antigen or the urea breath tests are recommended in diagnostic and management guidelines, as both detect active *H. pylori* infection and can be used to monitor treatment response.

	STOOL ANTIGEN TEST	UREA BREATH TEST
TriCore Test Code	HELAG	Not available. This is a miscellaneous referral test.
Sensitivity	95%	94%
Specificity	96%	96%
Patient Preparation	No antibiotics, proton pump inhibitors, or bismuth preparations within the previous 14 days.*	No antibiotics, proton pump inhibitors, or bismuth preparations within the previous 14 days.*
Turnaround Time	Performed at TriCore. Results available in 1-3 days.	Performed at ARUP Laboratories. Results available in 2-5 days.
* Positive results from patients that have used antibiotics, proton pump inhibitors, bismuth preparations, or histamine 2-receptor antagonists prior to sample collection are still considered accurate.		

## REFERENCES

1. Chey WD, Wong BC; Practice Parameters Committee of the American College of Gastroenterology. American College of Gastroenterology guideline on the management of Helicobacter pylori infection. *Am J Gastroenterol.* 2007;102(8):1808-1825.
2. Malfertheiner P, Megraud F, O'Morain CA, et al. Management of Helicobacter pylori infection--the Maastricht IV/ Florence Consensus Report. *Gut.* 2012;61(5):646-664.
3. Chey WD, Leontiadis GI, Howden CW, Moss SF. ACG Clinical Guideline: Treatment of Helicobacter pylori Infection [published correction appears in *Am J Gastroenterol.* 2018 Jul;113(7):1102]. *Am J Gastroenterol.* 2017;112(2):212-239.
4. Jones NL, Koletzko S, Goodman K, et al. Joint ESPGHAN/NASPGHAN Guidelines for the Management of Helicobacter pylori in Children and Adolescents (Update 2016). *J Pediatr Gastroenterol Nutr.* 2017;64(6):991-1003.