

Resource 8-3: Diagnostic Testing and Treatment Options for *H. pylori*

Diagnostic Testing for <i>Helicobacter pylori</i> NB: The sensitivity of nonendoscopic tests that identify active <i>H. pylori</i> infection is reduced by use of PPIs, bismuth, or antibiotics.		
Invasive/Endoscopic testing	Advantages	Disadvantages
Histology	Excellent sensitivity and specificity	Expensive Requires infrastructure and trained personnel
Rapid urease testing	Inexpensive and provides rapid results Excellent specificity, very good sensitivity in properly selected patients	Sensitivity significantly reduced in the posttreatment setting
Culture	Excellent specificity Allows determination of antibiotics sensitivities	Expensive Difficult to perform Not widely available Only marginal sensitivity
Polymerase chain reaction (PCR)	Excellent sensitivity and specificity Allows determination of antibiotics sensitivities	Methodology not standardized across laboratories and not widely available
Noninvasive/Nonendoscopic testing	Advantages	Disadvantages
Serologic antibody testing (quantitative and qualitative)	Ease of specimen collection Widely available Very good negative predictive value (NPV)	Poor predictive value in populations with low <i>H. pylori</i> prevalence Cannot distinguish between active infection and prior <i>H. pylori</i> exposure Not recommended as a first-line test Reimbursement not consistent
Urea breath tests (¹³ C and ¹⁴ C)	Identifies active <i>H. pylori</i> infection Excellent positive predictive value (PPV) and NPV, regardless of <i>H. pylori</i> prevalence Useful before and after <i>H. pylori</i> therapy	Higher cost Need to discontinue antibiotics or proton pump inhibitors at least 2 weeks prior to testing
Fecal antigen test	Identifies active <i>H. pylori</i> infection Excellent positive and negative predictive values, regardless of <i>H. pylori</i> prevalence Useful before and after <i>H. pylori</i> therapy	Polyclonal test less well validated than the UBT in the posttreatment setting Monoclonal test appears reliable before and after antibiotic therapy Unpleasantness associated with collecting stool
Abbreviations: PPI, proton pump inhibitor; PPV, positive predictive value; NPV, negative predictive value; UBT, urea breath tests.		

Source: Chey WD, Wong BC; Practice Parameters Committee of the American Journal of Gastroenterology: American College of Gastroenterology Guideline on the Management of *Helicobacter pylori* Infection. *Am J Gastroenterol.* 2007;102(8):1808-1825. Available at <http://s3.gi.org/physicians/guidelines/ManagementofHpylori.pdf>

Theel ES. *Helicobacter pylori*: An update on diagnostic testing. Mayo Clinic Mayo Medical Laboratories Website. <https://news.mayocliniclabs.com/2016/02/01/helicobacter-pylori-an-update-on-diagnostic-testing-hot-topic/>

First-line Regimens for *Helicobacter pylori* Eradication

Regimen	Duration	Eradication rates	Comments
Standard-dose PPI* PO BID (esomeprazole is QD), clarithromycin 500 mg PO BID, amoxicillin 1000 mg PO BID	10–14 d	70%–85%	Consider in non-penicillin-allergic patients who have not previously received a macrolide
Standard-dose PPI* PO BID, clarithromycin 500 mg PO BID, metronidazole 500 mg PO BID	10–14 d	70%–85%	Consider in penicillin-allergic patients who have not previously received a macrolide or are unable to tolerate bismuth quadruple therapy
Bismuth subsalicylate 525 mg PO QID, metronidazole 250 mg PO QID, tetracycline 500 mg PO QID, ranitidine 150 mg PO BID or standard-dose PPI* QD to BID	10–14 d	75%–90%	Consider in penicillin-allergic patients
PPI + amoxicillin 1 g PO BID followed by: PPI, clarithromycin 500 mg PO, tinidazole 500 mg PO BID	5 d 5 d	>90%	Requires validation in North America

Abbreviations: PPI, proton pump inhibitor; PO, orally; QD, once daily; BID, twice daily; QID, four times daily.

*Standard dosages for PPIs are as follows:

Lansoprazole, 30 mg PO; omeprazole, 20 mg PO; pantoprazole, 40 mg PO; rabeprazole, 20 mg PO; esomeprazole, 40 mg PO.

Note: The above recommended treatments are not all FDA approved. The FDA-approved regimens are as follows:

1. Bismuth 525 mg PO QID, + metronidazole 250 mg PO QID + tetracycline 500 mg PO QID × 2 wk + H₂RA as directed × 4 wk.
2. Lansoprazole 30 mg PO BID + clarithromycin 500 mg PO BID + amoxicillin 1 g PO BID × 10 days.
3. Omeprazole 20 mg PO BID + clarithromycin 500 mg PO BID + amoxicillin 1 g PO BID × 10 days.
4. Esomeprazole 40 mg PO QD + clarithromycin 500 mg PO BID + amoxicillin 1 g PO BID × 10 days.
5. Rabeprazole 20 mg PO BID + clarithromycin 500 mg PO BID + amoxicillin 1 g PO BID × 7 days.

Source: Chey WD, Wong BC; Practice Parameters Committee of the American Journal of Gastroenterology: American College of Gastroenterology Guideline on the Management of *Helicobacter pylori* Infection. *Am J Gastroenterol.* 2007;102(8):1808-1825. Available at <http://s3.gi.org/physicians/guidelines/ManagementofHpylori.pdf>