Treatment of Helicobacter pylori Infection
Epidemiology of H. pylori infection (North America) Which are the high risk groups?
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• H. pylori infection is chronic and is usually acquired in childhood. The exact means of acquisition is not always clear.

• The incidence and prevalence of H. pylori infection are generally higher among people born outside North America than among people born here.

• Within North America, the prevalence of the infection is higher in certain racial and ethnic groups (African Americans, Hispanic Americans, Native Americans, and Alaska natives), the socially disadvantaged, and people who have immigrated to North America.
Risk factors for acquiring the infection include:
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• low socioeconomic status

• increasing number of siblings

• having an infected parent—especially an infected mother
What are the indications to test for, and to treat, H. pylori infection?

• Since all patients with a positive test of active infection with H. pylori should be offered treatment, the critical issue is which patients should be tested for the infection.

(Strong recommendation; quality of evidence: high for active or history of PUD, low for MALT lymphoma, low for history of endoscopic resection of EGC).
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- All patients with active peptic ulcer disease (PUD), a past history of PUD (unless previous cure of *H. pylori* infection has been documented),
- low-grade gastric mucosa-associated lymphoid tissue (MALT) lymphoma,
- a history of endoscopic resection of early gastric cancer (EGC)

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- Those who test positive should be offered treatment for the infection

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What are the indications to test for, and to treat, H. pylori infection?

• non-endoscopic testing for H. pylori infection is a consideration:

  (conditional recommendation; quality of evidence: high for efficacy, low for the age threshold).

• gastric biopsies should be taken to evaluate for H. pylori infection:

  (strong recommendation; high quality of evidence).

• Patients with typical symptoms of gastroesophageal reflux disease (GERD) who do not have a history of PUD:

  (strong recommendation; high quality of evidence).
What are the indications to test for, and to treat, *H. pylori* infection?

- non-endoscopic testing for *H. pylori* infection is a consideration:
  - In patients with uninvestigated dyspepsia <60 years and without alarm features:
  - Those who test positive should be offered eradication therapy

  (conditional recommendation; quality of evidence: high for efficacy, low for the age threshold).

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- **gastric biopsies should be taken to evaluate for *H. pylori* infection:**
  - When upper endoscopy is undertaken in patients with dyspepsia,
  - Infected patients should be offered eradication therapy (strong recommendation; high quality of evidence).

- **Patients with typical symptoms of gastroesophageal reflux disease (GERD) who do not have a history of PUD:** (strong recommendation; high quality of evidence).
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- **Patients with typical symptoms of gastroesophageal reflux disease (GERD) who do not have a history of PUD:**
  - need not be tested for *H. pylori* infection.
  - However, for those who are tested and found to be infected, treatment should be offered, acknowledging that effects on GERD symptoms are unpredictable

  *(strong recommendation; high quality of evidence).*
What are the indications to test for, and to treat, H. pylori infection?

- In patients taking long-term, low-dose aspirin, testing for H. pylori infection:
  - (conditional recommendation; moderate quality of evidence).

- NSAID:
  - (Strong recommendation; Moderate quality of evidence). The benefit of testing and treating H. pylori in a patient already taking an NSAID remains unclear
  - (conditional recommendation; low quality of evidence).

- Iron deficiency anemia:
  - (conditional recommendation; low quality of evidence).
What are the indications to test for, and to treat, *H. pylori* infection?

- **In patients taking long-term, low-dose aspirin, testing for *H. pylori* infection:**
  - could be considered to reduce the risk of ulcer bleeding.
  - those who test positive should be offered eradication therapy to reduce the risk of ulcer bleeding

- (conditional recommendation; moderate quality of evidence).

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- **NSAID:**
  - Patients initiating chronic treatment with a non-steroidal anti-inflammatory drug (NSAID) should be tested for H. pylori infection.
  - Those who test positive should be offered eradication therapy
    - (Strong recommendation; Moderate quality of evidence). The benefit of testing and treating H. pylori in a patient already taking an NSAID remains unclear
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- **Iron deficiency anemia:**
  - patients with unexplained iron deficiency anemia despite an appropriate evaluation should be tested for *H. pylori* infection.
  - Those who test positive should be offered eradication therapy
  - (conditional recommendation; low quality of evidence).
• Adults with idiopathic thrombocytopenic purpura (ITP):
  
  • (conditional recommendation; very low quality of evidence).

• testing for and treatment of H. pylori in asymptomatic individuals with a family history of gastric cancer or patients with lymphocytic gastritis, hyperplastic gastric polyps, and hyperemesis gravidarum:
• Adults with idiopathic thrombocytopenic purpura (ITP):
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  • should be tested for H. pylori infection.
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    • (conditional recommendation; very low quality of evidence).

• testing for and treatment of H. pylori in asymptomatic individuals with a family history of gastric cancer or patients with lymphocytic gastritis, hyperplastic gastric polyps, and hyperemesis gravidarum:
  • There is insufficient evidence to support routine testing for and treatment of H. pylori
What are evidence-based first-line treatment strategies for providers in North America?

(Conditional recommendation; low quality of evidence (for duration: moderate quality of evidence)).

(strong recommendation; low quality of evidence).
What are evidence-based first-line treatment strategies for providers in North America?

- Patients should be asked about any previous antibiotic exposure(s) and this information should be taken into consideration when choosing an H. pylori treatment regimen.

(Conditional recommendation; moderate quality of evidence).
What are evidence-based first-line treatment strategies for providers in North America?

- Patients should be asked about any previous antibiotic exposure(s) and this information should be taken into consideration when choosing an H. pylori treatment regimen (conditional recommendation; moderate quality of evidence).

- Clarithromycin triple therapy consisting of a PPI, clarithromycin, and amoxicillin or metronidazole for 14 days remains a recommended treatment in regions where H. pylori clarithromycin resistance is known to be <15% and in patients with no previous history of macrolide exposure for any reason (conditional recommendation; low quality of evidence (for duration: moderate quality of evidence)).
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- Bismuth quadruple therapy consisting of a PPI, bismuth, tetracycline, and a nitroimidazole for 10–14 days is a recommended first-line treatment option. Bismuth quadruple therapy is particularly attractive in patients with any previous macrolide exposure or who are allergic to penicillin (strong recommendation; low quality of evidence).
What are evidence-based first-line treatment strategies for providers in North America?

• Concomitant therapy consisting of a PPI, clarithromycin, amoxicillin and a nitroimidazole for 10–14 days is a recommended first-line treatment option

(strong recommendation; low quality of evidence [for duration: very low quality of evidence]).
What are evidence-based first-line treatment strategies for providers in North America?

• Concomitant therapy consisting of a PPI, clarithromycin, amoxicillin and a nitroimidazole for 10–14 days is a recommended first-line treatment option
  (strong recommendation; low quality of evidence (for duration: very low quality of evidence)).

• Sequential therapy consisting of a PPI and amoxicillin for 5–7 days followed by a PPI, clarithromycin, and a nitroimidazole for 5–7 days is a suggested first-line treatment option
  (conditional recommendation; low quality of evidence (for duration: very low quality of evidence)).

• Hybrid therapy consisting of a PPI and amoxicillin for 7 days followed by a PPI, amoxicillin, clarithromycin and a nitroimidazole for 7 days is a suggested first-line treatment option
  (conditional recommendation; low quality of evidence (for duration: very low quality of evidence)).

• Levofloxacin triple therapy consisting of a PPI, levofloxacin, and amoxicillin for 10–14 days is a suggested first-line treatment option
  (conditional recommendation; low quality of evidence (for duration: very low quality of evidence)).

• Fluoroquinolone sequential therapy consisting of a PPI and amoxicillin for 5–7 days followed by a PPI, fluoroquinolone, and nitroimidazole for 5–7 days is a suggested first-line treatment option
  (conditional recommendation; low quality of evidence (for duration: very low quality of evidence)).
What factors predict successful eradication when treating H. pylori infection?

(Factual statement; moderate quality of evidence).
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• the choice of regimen
• the patient’s adherence to a multi-drug regimen with frequent side-effects

(Factual statement; moderate quality of evidence).
What factors predict successful eradication when treating H. pylori infection?

• the choice of regimen
• the patient’s adherence to a multi-drug regimen with frequent side-effects
• the sensitivity of the H. pylori strain to the combination of antibiotics administered

(Factual statement; moderate quality of evidence).
What methods can be used to evaluate for \(H.\) pylori antibiotic resistance and when should testing be performed?

(strong recommendation; moderate quality of evidence)
What methods can be used to evaluate for *H. pylori* antibiotic resistance and when should testing be performed?

- by culture and/or molecular testing (currently not widely available)

(strong recommendation; moderate quality of evidence)
Should we test for treatment success after H. pylori eradication therapy?

• Whenever H. pylori infection is identified and treated, testing to prove eradication should be performed (how):

• When:

(Strong recommendation; Low quality of evidence (for the choice of methods to test for eradication: Moderate quality of evidence)).
Should we test for treatment success after H. pylori eradication therapy?

• Whenever H. pylori infection is identified and treated, testing to prove eradication should be performed (how):
  • using a urea breath test,
  • fecal antigen test or
  • biopsy-based testing

• When:

(Strong recommendation; Low quality of evidence (for the choice of methods to test for eradication: Moderate quality of evidence)).
Should we test for treatment success after H. pylori eradication therapy?

• Whenever H. pylori infection is identified and treated, testing to prove eradication should be performed (how):
  • using a urea breath test,
  • fecal antigen test or
  • biopsy-based testing

• When:
  • at least 4 weeks after the completion of antibiotic therapy and after PPI therapy has been withheld for 1–2 weeks.

(Strong recommendation; Low quality of evidence (for the choice of methods to test for eradication: Moderate quality of evidence)).
When first-line therapy fails, what are the options for salvage therapy?

(Conditional recommendation; for quality of evidence see individual statements below).
When first-line therapy fails, what are the options for salvage therapy?

• In patients with persistent *H. pylori* infection, every effort should be made to avoid antibiotics that have been previously taken by the patient (unchanged from previous ACG guideline (1)) (Strong recommendation; moderate quality of evidence).

(Conditional recommendation; for quality of evidence see individual statements below).
When first-line therapy fails, what are the options for salvage therapy?

• In patients with persistent *H. pylori* infection, every effort should be made to avoid antibiotics that have been previously taken by the patient

(unchanged from previous ACG guideline (1)) (Strong recommendation; moderate quality of evidence).

• **Bismuth quadruple therapy or levofloxacin salvage regimens** are the preferred treatment options if a patient received a first-line treatment containing clarithromycin. Selection of best salvage regimen should be directed by local antimicrobial resistance data and the patient’s previous exposure to antibiotics

(Conditional recommendation; for quality of evidence see individual statements below).
When first-line therapy fails, what are the options for salvage therapy?

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• **Clarithromycin or levofloxacin-containing salvage regimens** are the preferred treatment options, if a patient received first-line *bismuth quadruple therapy*. Selection of best salvage regimen should be directed by local antimicrobial resistance data and the patient’s previous exposure to antibiotics (Conditional recommendation; for quality of evidence see individual statements below).
The following regimens can be considered for use as salvage treatment:
The following regimens can be considered for use as salvage treatment:

- **Bismuth quadruple therapy for 14 days** is a recommended salvage regimen.
  (Strong recommendation; low quality of evidence)

- **Levofloxacin triple regimen for 14 days** is a recommended salvage regimen.
  (Strong recommendation; moderate quality of evidence (For duration: low quality of evidence))

- **Concomitant therapy for 10–14 days** is a *suggested* salvage regimen.
  (Conditional recommendation; very low quality of evidence)

- **Clarithromycin triple therapy** *should be avoided* as a salvage regimen.
  (Conditional recommendation; low quality of evidence)

- **Rifabutin triple regimen consisting of a PPI, amoxicillin, and rifabutin for 10 days** is a *suggested* salvage regimen
  (Conditional recommendation; moderate quality of evidence (For duration: very low quality of evidence)).

- **High-dose dual therapy consisting of a PPI and amoxicillin for 14 days** is a *suggested* salvage regimen
  (Conditional recommendation; low quality of evidence (For duration: very low quality of evidence)).
When should penicillin allergy testing be considered in patients with H. pylori infection?

• Most patients with a history of penicillin allergy do not have true penicillin hypersensitivity.

• After failure of first-line therapy, such patients should be considered for referral for allergy testing since the vast majority can ultimately be safely given amoxicillin-containing salvage regimens

(strong recommendation; Low quality of evidence).
Thank you!