**Introduction**


**Goals**

To position health care professionals in Alberta to optimize the management of Helicobacter *Pylori* (*H. pylori*) associated peptic ulcer disease (PUD) in adults.

**Using this Guideline**

This guideline will guide therapy in 3 key situations:
- Where there is a proven diagnosis of *H. pylori* infection. (if tested and found positive treatment is indicated since the infection can cause peptic ulcers and adenocarcinoma of the stomach)
- After you have carefully assessed an individual suffering with dyspepsia, the patient is under 50, has no alarm features, is not using ASA or NSAIDs, does not have symptoms dominated by heartburn and/or acid regurgitation suggesting GERD, and a C13 urea breath test (UBT) for *H. pylori* is positive. (see Guideline for Diagnosis and Treatment of Chronic Undiagnosed Dyspepsia in Adults).
- Prior to long term (> 4 weeks) use of NSAIDs when testing reveals the patient is *H. pylori* positive

**Exclusions**

This guideline does not apply to:
- Pregnant or lactating women
- Patients under the age of 18 years

**Recommendations**

See Table 1 for *H. pylori* eradication recommendations once above criteria have been met.
- Compliance with treatment regimen is critical to successful eradication
- No eradication protocol is 100% effective
- Eradication therapy regimens that include only one antibiotic are not recommended

**Eradication Therapy**

**Post-treatment Testing for *H. pylori* associated PUD** (See Algorithm)
- If patient is asymptomatic, post-treatment testing is unnecessary
- If patient remains symptomatic, re-test using UBT >30 days following completion (2 weeks off PPI and 1 month off antibiotics) of therapy:
  - If UBT is negative, reconsider the cause of symptoms or manage as Functional

The above recommendations are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances. They should be used as an adjunct to sound clinical decision making.
Table 1
Treatment Regimens for the Eradication of H. pylori Infection in Adults

### Suggested Treatment Regimens
(see below for recommended doses)

<table>
<thead>
<tr>
<th>Treatment Regimen</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Triple Therapies (PPI + 2 antibiotics)</strong></td>
<td></td>
</tr>
<tr>
<td>Proton Pump Inhibitor (PPI) + Clarithromycin + Amoxicillin or Metronidazole</td>
<td>Eradication rates are approximately 90% Side-effects occur in &lt;5% of partients</td>
</tr>
<tr>
<td><strong>Proton Pump Inhibitor (PPI) + Clarithromycin + Metronidazole</strong></td>
<td>Appropriate for patients with penicillin allergies Metronidazole resistance may occur in 10 to 20% of patients and will lower the effective eradication rate from 90 to 75% Side-effects that affect compliance occur in &lt;10% of patients</td>
</tr>
</tbody>
</table>

### Alternative Treatment Regimen
Quadruple Therapy (PPI + BMT)

**Proton Pump Inhibitor (PPI) + Bismuth Subsalicylate + Metronidazole + Tetracycline (BMT)**

- Appropriate for patients with macrolide (clarithromycin) intolerance
- Eradication rates are >85%
- Side-effects that affect compliance have been reported for >50% of patients
- May be used for triple therapy failures

### Recommended Doses

<table>
<thead>
<tr>
<th>Proton Pump Inhibitor (PPI):</th>
<th>Antibiotics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>esomprazole = 40 mg BID or lansoprazole = 30 mg BID or omeprazole = 20 mg BID or pantoprazole = 40 mg BID or rabeprazole = 20 mg BID</td>
<td>Clarithromycin = 500 mg BID</td>
</tr>
<tr>
<td>or</td>
<td>Amoxicillin = 1gm BID</td>
</tr>
<tr>
<td>or</td>
<td>Metronidazole in triple therapy = 500 mg BID</td>
</tr>
<tr>
<td>or</td>
<td>Metronidazole in quad therapy = 250 mg QID</td>
</tr>
<tr>
<td>or</td>
<td><strong>Bismuth subsalicylate</strong> = 2 tables QID</td>
</tr>
<tr>
<td>or</td>
<td><strong>Tetracycline</strong> = 500 mg QID</td>
</tr>
</tbody>
</table>

**Notes:**
1. Using this guideline assumes the patient meets the criteria on page 1 of this guideline and has no evidence of malignant disease (See Guideline for Diagnosis and Treatment of Chronic Undiagnosed Dyspepsia in Adults)
2. Some potential exists for treatment side-effects: allergies; C. difficile colitis; metallic taste with metronidazole
Incidence

Peptic ulcer disease is a chronic, inflammatory condition of the stomach or duodenum. One-year point prevalence is 1.8% and lifetime prevalence is approximately 10%. Prevalence has shifted from a predominance in males to similar occurrences for both sexes with the lifetime prevalence for males at approximately 11-14% versus a lifetime prevalence of approximately 8-11% for women. Age trends for ulcer occurrence reveal declining rates in younger men, particularly for duodenal ulcer, and increasing rates in older women. Trends also reflect complex changes in risk factors for PUD, including age-cohort phenomena with the prevalence of H. pylori infection and the use of NSAIDs in older populations.

Peptic ulcer disease includes newly diagnosed or previously documented duodenal or gastric ulcers not associated with ASA, NSAIDs, or malignancy. The strongest indication for H. pylori eradication therapy is for patients with peptic ulcer disease. H. pylori eradication therapy in GERD is not currently recommended for patients with GERD. (refer to Guideline for the Treatment of Gastroesophageal Reflux Disease)

Most duodenal and gastric ulcers are due to infection with H. pylori or use of ASA/NSAIDs. Fewer than 15% of patients with H. pylori infection will develop PUD. A small portion of people with H. pylori infection will develop gastric malignancy as a consequence of long standing infection.

Eradication regimens with a proton pump inhibitor (PPI) plus two antibiotics are presently recommended as choices to eradicate H. pylori. Successful eradication requires clarithromycin as one of the 2 antibiotics in these protocols (see Table 1). These protocols continue to perform well in Canada with over 80% cure rates. Extending the duration of treatment beyond 7 days is unlikely to be beneficial. Resistance to metronidazole and clarithromycin is increasing and can affect the performance of eradication protocols that utilize these antibiotics. Antibiotic sensitivities are not performed routinely in the clinical setting but are done by research centres investigating the effectiveness of standard and new treatments for H. pylori eradication. Fluoroquinolone antibiotics are used in many of the new protocols being tested.

Relationship Between H. pylori and Gastric Malignancy

H. pylori infection is one of the most common pathogenic bacterial infections in the world due to extremely high prevalence in developing countries. There is evidence that H. pylori infection is associated with adenocarcinoma of the stomach.

However, gastric cancer occurs in some individuals with no evidence of H. pylori infection, and in the United States, fewer than 1% of H. pylori infected individuals will ever develop gastric cancer.

In 1994, the International Agency for Research on Cancer Working Group stated, “H. pylori infection is estimated to be present in 35 to 60% of cases of gastric cancer based on the evidence from case controlled studies.” In Canada, the incidence and mortality rates of gastric cancer have declined steadily over the past decades. One explanation for this is the declining prevalence of H. pylori in developed countries. This would lead to a decrease in the numbers of people with chronic H. pylori induced gastritis over a period of many decades with a subsequent
Helicobacter Pylori

Reduced incidence of gastric adenocarcinoma. The effect of prevention or treatment of H. pylori infection on gastric cancer risk, while theoretically plausible, has not been determined. Therefore, screening for H. pylori infection and treatment of those who test positive in order to reduce gastric cancer risk cannot be recommended at this time. First degree relatives of patients with adenocarcinoma of the stomach can discuss the option of testing for and treating H. pylori to reduce the risk. This strategy targets individuals who might have increased genetic vulnerability to stomach cancer. Those who have been tested and are positive for the infection should be offered treatment since the infection is a known cause of ulcers and stomach cancer in some individuals.

Advice to Patients

The Toward Optimized Practice Program supports the right of the patient to make an informed decision about his/her health care options. Patient education is important in decisions surrounding testing for H. pylori.

It is paramount that patients recognize that the success of eradication therapy hinges on compliance with treatment recommendations, and, that the opportunity for treatment failure and antibiotic resistance increases with poor compliance.
Reference List


a. Ford A, Delaney B, Forman D, Moayyedi P. Eradication therapy for peptic ulcer disease in Helicobacter pylori positive patients. Cochrane Database of Systematic Reviews, 2004(4) CD003840

Comment in:
Toward Optimized Practice (TOP) Program

Arising out of the 2003 Master Agreement, TOP succeeds the former Alberta Clinical Practice Guidelines program, and maintains and distributes Alberta CPGs. TOP is a health quality improvement initiative that fits within the broader health system focus on quality and complements other strategies such as Primary Care Initiative and the Physician Office System Program.

The TOP program supports physician practices, and the teams they work with, by fostering the use of evidence-based best practices and quality initiatives in medical care in Alberta. The program offers a variety of tools and out-reach services to help physicians and their colleagues meet the challenge of keeping practices current in an environment of continually emerging evidence.

To Provide Feedback

The TOP Program encourages your feedback. If you need further information or if you have difficulty applying this guideline, please contact:

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Algorithm
Post-treatment Testing for H. pylori Infection in Adults

Helicobacter Pylori

Review patient >30 days after treatment completed.

Does patient still have symptoms?

No

No further testing required

Yes

If symptoms recur

Re-test using UBT

Positive test result

- Eradication failure
- Alternative eradication protocol
- Consider referral

Negative test result

Reconsider diagnosis

Notes:
1. Ensure that antibiotics have not been used in the past 30 days, and proton pump inhibitor (PPI) in the past 14 days prior to urea breath test (UBT).
2. Serology is not appropriate for post-treatment testing.
3. PPI-BMT may be used for some triple therapy failures.