1. Who should be tested for H. pylori?
- Patients with dyspepsia symptoms
- Patients with current or past gastric or duodenal ulcers or upper GI bleed
- Patients with a first degree relative with a history of gastric cancer
- First generation immigrants from Asia, Africa, Central and South America

2. Alarm features
Dyspepsia symptoms plus one or more of following:
- Age >60 with new and persistent symptoms (>3 months)
- GI bleeding (melena or hematemesis) or anemia (if yes, do CBC, INR, PTT as part of referral)
- Progressive dysphagia
- Persistent vomiting (not associated with cannabis use)
- Unintended weight loss (≥5-10% of body weight over 6 months)
- Personal history of peptic ulcer disease
- First degree relative with history of esophageal or gastric cancer

3. Diagnosis
- Test using HpSAT or UBT
- Before testing, patient must be off antibiotics x4 weeks and off PPI at least 3 days

4. Treatment
- Round 1: CLAMET Quad or BMT Quad
- Round 2 (if needed): CLAMET Quad or BMT Quad
- Round 3 (if needed): Levo Amox
- Round 4 (if needed): Rif-Amox or refer to GI

5. Confirm eradication
- HpSAT or UBT at least 4 weeks after finishing treatment
- Before testing, patient must be off antibiotics x4 weeks and off PPI at least 3 days

6. Treatment failure
- Proceed to next round of treatment
- Option to refer to GI after 3 failed treatment attempts
PATHWAY PRIMER

- Overall prevalence in Canada is about 20-30%, depending on age.
- Prevalence is considerably higher in First Nations communities and in immigrants from developing countries in South America, Africa, and Asia. Prevalence of antibiotic resistant strains of Hp is higher in certain immigrant populations (Southeast Asia, Africa, Central America, and South America).
- Infection most commonly occurs during childhood.
- About 5-15% of patients with Hp will develop duodenal or gastric ulcers. This is higher in patients who chronically use nonsteroidal anti-inflammatory drugs including low-dose aspirin.
- Hp increases the risk of gastric adenocarcinoma and MALT lymphoma but overall the lifetime risk of this is very low, less than 1%.
- There is an increased risk of gastric cancer among First Nations people and immigrants from developing countries such as South America and Asia.

EXPANDED DETAILS

1. Who should be tested for Helicobacter Pylori (Hp)?
- Patients with dyspepsia, characterized by epigastric pain or discomfort that may be triggered by eating and may be accompanied by a sense of abdominal distention or “bloating”, early satiety, or loss of appetite.
  - For patients with dyspepsia symptoms, testing for Hp may be completed prior to trial of proton pump inhibitor (PPI) or after PPI treatment.
  - Please see the Dyspepsia pathway.
- Patients with current or past gastric or duodenal ulcers or upper GI bleed.
- Patients who have a personal or first-degree relative with history of gastric cancer should be considered for testing once in adulthood.
- First generation immigrants from high prevalence areas (Asia, Africa, Central and South America).
- NOTE: many Hp infected patients are asymptomatic.
- Most studies suggest that Hp does not play a role in gastro-esophageal reflux disease (GERD), and patients are understandably disappointed when their GERD does not improve after eradication of Hp.
  - Please see the GERD pathway.

2. Alarm Features (warranting consideration of referral for consultation/gastroscopy)
- Dyspepsia symptoms or Hp diagnosis accompanied by one or more of the following:
  - Age >60 with new and persistent symptoms (>3 months)\(^1\)
  - GI bleeding (hematemesis or melena — see primer on black stool below) or anemia (if yes, complete CBC, INR, PTT as part of referral)
  - Progressive dysphagia
  - Persistent vomiting (not associated with cannabis use)
  - Unintended weight loss (≥ 5-10% of body weight over 6 months)
  - Personal history of peptic ulcer disease

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\(^1\) There is some variation between guidelines about the age at which dyspepsia symptoms are more concerning and warrant stronger consideration of gastroscopy. Choosing Wisely Canada now uses age 65. However, age is only one element of a risk assessment related to the need for gastroscopy to investigate dyspepsia symptoms.
First degree relative with a history of esophageal or gastric cancer.

For these patients, it is appropriate to test for H. pylori while they are waiting for consultation/ gastroscopy, and to initiate treatment if there is a positive result.

### Primer on black stool

#### Possible causes of black stool
- Upper GI bleeding
- Slow right-sided colonic bleeding
- Epistaxis or hemoptysis with swallowed blood

#### Melena is dark/black, sticky, tarry, and has a distinct odour

#### Patient history should include:
- Any prior GI bleeds or ulcer disease
- Taking ASA, NSAIDs, anticoagulants, Pepto Bismol, or iron supplements
- Significant consumption of black licorice
- Significant alcohol history or hepatitis risk factors
- Any other signs of bleeding (e.g. coffee ground emesis, hematemesis, hematochezia, or bright red blood per rectum)
- Any dysphagia, abdominal pain, change in bowel movements, constitutional symptoms or signs/symptoms of significant blood loss

#### Physical exam should include vitals (including postural if worried about GI bleeding) and a digital rectal exam for direct visualization of the stool to confirm, in addition to the remainder of the exam

#### Initial labs to consider include CBC, BUN (may be elevated with upper GI bleeding), INR

#### If the patient is actively bleeding, suggest calling GI on call and/or the ED for assessment, possible resuscitation, and possible endoscopic procedure.

### 3. Diagnosis

- Depending on local availability, test with the Hp Stool Antigen Test (HpSAT) or the Urea Breath Test (UBT).
  - HpSAT is the primary test for Hp in the Calgary Zone, Edmonton Zone and South Zone.

- False positive results with both UBT and HpSAT are rare, but false negatives may result from recent use of antibiotics or anti-secretory drugs (PPI or H2-receptor antagonists).

- Accurate test results depend on proper preparation:
  - Patients should be off antibiotics for at least 4 weeks before the test.
  - Patients should not take bismuth preparations (e.g. Pepto Bismol) for two weeks before the test.
  - Patients should be off PPIs at least 3 days before the test, but preferably this should be 2 weeks.
  - Patients with symptoms may take antacids up to 24 hours before their test.

- Patient preparation instructions can be found at the following links:
  - DynaLIFE (UBT): [https://dynalife.ca/Portals/0/pdf/Patient%20instructions/Urea%20breath.pdf](https://dynalife.ca/Portals/0/pdf/Patient%20instructions/Urea%20breath.pdf)
4. Treatment

- Standard triple therapy regimens (HpPAC, PPI Clarithromycin with amoxicillin, or metronidazole) are no longer recommended\(^2\) due to changing resistance.
- Pregnant and nursing women should not be treated for Hp.
- To determine the appropriate treatment regimen for children with Hp infection, consult a pediatric gastroenterologist through Specialist LINK or eReferral Advice Request (depending on local availability).
- For all other patients, treat as follows:

<table>
<thead>
<tr>
<th>Helicobacter pylori treatment regimens for patients not allergic to Penicillin</th>
<th>First Round</th>
<th>CLAMET Quad for 14 days</th>
<th>BMT Quad for 14 days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• PPI standard dose BID</td>
<td>• PPI standard dose BID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Clarithromycin 500mg BID OR</td>
<td>• Bismuth subsalicylate 2 tabs QID (524mg)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Amoxicillin 1000mg BID</td>
<td>• Metronidazole 500mg QID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Metronidazole 500mg BID</td>
<td>• Tetracycline 500mg QID</td>
</tr>
<tr>
<td>Second Round</td>
<td>• If CLAMET Quad was used as initial treatment, use BMT Quad for second round</td>
<td>• If BMT Quad was used as initial treatment, use CLAMET Quad or consider Levo-Amox</td>
<td></td>
</tr>
<tr>
<td>Third Round</td>
<td>Levo-Amox for 14 days</td>
<td>• PPI standard dose BID</td>
<td>• PPI standard dose BID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Amoxicillin 1000mg BID</td>
<td>• Rifabutin 150mg BID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Levofloxacina 250mg BID or 500mg once daily</td>
<td>• Amoxicillin 1000mg BID</td>
</tr>
<tr>
<td>Fourth Round</td>
<td>If Hp has not been eradicated after three rounds of treatment, the family physician may:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Provide Rif-Amox treatment as noted below, if comfortable doing so</td>
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<tr>
<td></td>
<td></td>
<td>o NOTE: Rifabutin may require special authorization for patients with Alberta Blue Cross coverage</td>
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<tr>
<td></td>
<td></td>
<td>• Consult with GI through Specialist Link or Advice Request (as locally available)</td>
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<tr>
<td></td>
<td></td>
<td>• Refer to GI</td>
<td></td>
</tr>
<tr>
<td>Rif-Amox for 10 days</td>
<td>• PPI standard dose BID</td>
<td>• PPI standard dose BID</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rifabutin 150mg BID</td>
<td>• Rifabutin 150mg BID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Amoxicillin 1000mg BID</td>
<td>• Amoxicillin 1000mg BID</td>
</tr>
<tr>
<td>IMPORTANT: Rifabutin has rarely been associated with potentially serious myelotoxicity (low white cell or platelet count). The pros and cons of fourth-line therapy should be decided on a case-by-case basis.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Helicobacter pylori treatment regimens for patients allergic to Penicillin/Amoxicillin | First Round | Bismuth Quadruple Regimen for 14 days | |
| --- | --- | --- | |
| | | 1. PPI standard dose BID | |
| | | 2. Bismuth subsalicylate 2 tabs QID (524mg) | |
| | | 3. Metronidazole (500mg) four times a day | |
| | | 4. Tetracycline (500mg) four times a day | |
| Second Round | Modified Triple Therapy (PCM) for 14 days | |
| | | 1. Pantoprazole (40mg) two times a day | |
| | | 2. Clarithromycin (500mg) two times a day | |
| | | 3. Metronidazole (500mg) two times a day | |

\(^2\) Canadian Association of Gastroenterology, 2016
* It is recommended to give all Hp treatments in a blister pack to improve adherence.

5. Confirm eradication

- After treatment, patients should be retested for Hp, no sooner than 4 weeks after completing treatment. Retesting too soon risks a false negative test.
- The patient must be off all antibiotics (including antibiotics for Hp treatment) for at least 4 weeks and off PPIs for at least 3 days (preferably 2 weeks).
- Once cured, re-infection rate is <2%.
- If symptoms persist, refer to the dyspepsia pathway for additional treatment options.

6. Treatment failure

- Treatment failure may be due to antibiotic resistance, but intolerance or non-adherence must also be explored with the patient.
- After treatment failure, there is no point in retrying the same regimen - see chart for next option.
- Referral to GI may be made after three failed rounds of treatment if the family physician does not feel comfortable assessing for/prescribing Rif-Amox treatment. In the referral, outline testing and treatment provided to date.

BACKGROUND

About this pathway

- Digestive health primary care pathways were originally developed in 2015 as part of the Calgary Zone’s Specialist LINK initiative. They were co-developed by the Department of Gastroenterology and the Calgary Zone’s Specialty Integration task group, which includes medical leadership and staff from Calgary and area Primary Care Networks, the Department of Family Medicine, and Alberta Health Services.
- The pathways were intended to provide evidence-based guidance to support primary care providers in caring for patients with common digestive health conditions within the medical home.
- Based on the successful adoption of the primary care pathways within the Calgary Zone, and their impact on timely access to quality care, in 2017 the Digestive Health Strategic Clinical Network led an initiative to validate the applicability of the pathways for Alberta and to spread availability and foster adoption of the pathways across the province.

Authors and conflict of interest declaration

- This pathway was reviewed and revised under the auspices of the Digestive Health Strategic Clinical Network in 2018, by a multi-disciplinary team led by family physicians and gastroenterologists. Names of participating reviewers and their conflict of interest declarations are available on request.

Pathway review process, timelines

- Primary care pathways undergo scheduled review every three years, or earlier if there is a clinically significant change in knowledge or practice. The next scheduled review is February 2022. We welcome feedback; please email comments to Digestivehealth.SCN@ahs.ca.
PROVIDER RESOURCES

Advice options

Non-urgent advice is available to support family physicians.

- Gastroenterology advice is available across the province via Alberta Netcare eReferral Advice Request (responses are received within five calendar days). Visit http://www.albertanetcare.ca/documents/Getting-Started-Advice-Requests-FAQs.pdf for more information.

- In the Calgary Zone, specialistlink.ca connects family physicians and specialists in real time via a tele-advice line. Family physicians can request non-urgent advice from a gastroenterologist online at specialistlink.ca or by calling 403-910-2551. The service is available from 8 a.m. to 5 p.m., Monday to Friday (excluding statutory holidays). Calls are returned within one hour.

- Family physicians in the Edmonton Zone can request tele-advice via ConnectMD, which is available by calling 1-844-633-2263.

Local resources

As referenced in the algorithm and Expanded Details, local availability of testing for a diagnosis can vary in Alberta. Physicians should use the Hp Stool Antigen Test (HpSAT) or the Urea Breath Test (UBT).

- HpSAT is the primary test for Hp in the Calgary Zone, Edmonton Zone and South Zone.

- False positive results with both UBT and HpSAT are rare, but false negatives may result from recent use of antibiotics or anti-secretory drugs (PPI or H2-receptor antagonists).

- Patient preparation instructions can be found at the following links:
  - DynaLIFE HpSAT: https://dl.labqms.com/labFrame.asp?DID=9237&FLDVr=317
## Resources, references

<table>
<thead>
<tr>
<th>Reference</th>
<th>URL</th>
</tr>
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</table>

## PATIENT RESOURCES

### Information

- Patient information sheets on each treatment regimen are attached.