



## Complete Summary

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### **GUIDELINE TITLE**

Management of helicobacter pylori infection.

### **BIBLIOGRAPHIC SOURCE(S)**

Singapore Ministry of Health. Management of helicobacter pylori infection.  
Singapore: Singapore Ministry of Health; 2004 Sep. 25 p. [29 references]

### **GUIDELINE STATUS**

This is the current release of the guideline.

## COMPLETE SUMMARY CONTENT

SCOPE  
METHODOLOGY - including Rating Scheme and Cost Analysis  
RECOMMENDATIONS  
EVIDENCE SUPPORTING THE RECOMMENDATIONS  
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS  
QUALIFYING STATEMENTS  
IMPLEMENTATION OF THE GUIDELINE  
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT  
CATEGORIES  
IDENTIFYING INFORMATION AND AVAILABILITY  
DISCLAIMER

## SCOPE

### **DISEASE/CONDITION(S)**

*Helicobacter pylori* infection

### **GUIDELINE CATEGORY**

Diagnosis  
Evaluation  
Management  
Prevention  
Risk Assessment  
Treatment

### **CLINICAL SPECIALTY**

Family Practice  
Gastroenterology  
Internal Medicine  
Oncology  
Preventive Medicine

## **INTENDED USERS**

Advanced Practice Nurses  
Allied Health Personnel  
Health Care Providers  
Nurses  
Physician Assistants  
Physicians

## **GUIDELINE OBJECTIVE(S)**

To provide recommendations on

- Who should be tested and treated for *Helicobacter pylori* infection
- Treatment regimens for patients with *Helicobacter pylori* infection

## **TARGET POPULATION**

- Patients with suspected or diagnosed *Helicobacter pylori* infection, including patients with:
  - Gastric ulcer (GU) or duodenal ulcer (DU)
  - History of peptic ulcer bleeding or perforation
  - Gastric mucosa-associated lymphoid tissue (MALT) lymphoma
  - Early gastric cancer lesions
  - Noncardiac gastric cancer
  - Gastro-esophageal reflux disease (GERD)
  - Dyspepsia
- First degree relatives of gastric cancer patients

## **INTERVENTIONS AND PRACTICES CONSIDERED**

### **Diagnosis/Evaluation**

1. Serological tests (detection of immunoglobulin G antibodies to *Helicobacter pylori*)
2. Urea breath test for *H. pylori*
3. Biopsy urease test
4. Histology (staining of biopsy specimen with hematoxylin and eosin)
5. Culture and stool antigen test for *H. pylori*
6. Gastrointestinal endoscopy
7. Post treatment testing for *H. pylori*
8. *Helicobacter pylori* cytotoxin associated gene A (CagA) protein status
9. Endoscopic ultrasonography (EUS)

Note: Screening for *H. pylori* in certain population groups was considered but not recommended.

## **Treatment/Management**

### *Combination Regimens*

1. Proton pump inhibitor (PPI)\* + clarithromycin + amoxicillin
2. PPI + clarithromycin + metronidazole (tinidazole as alternative)
3. PPI + amoxicillin + metronidazole
4. Colloidal bismuth subcitrate + metronidazole + tetracycline
5. PPI + colloidal bismuth subcitrate + metronidazole + tetracycline

\*Proton pump inhibitors currently available include omeprazole, lansoprazole, rabeprazole, pantoprazole, and esomeprazole.

## **MAJOR OUTCOMES CONSIDERED**

- Sensitivity and specificity of diagnostic tests for *Helicobacter pylori* (*H. pylori*)
- *H. pylori* eradication rate
- Relief of reflux symptoms in patients with gastro-esophageal reflux disease (GERD)
- Prevention of gastric cancer
- Remission of lymphoma in patients with gastric mucosa-associated lymphoid tissue (MALT) lymphoma

## **METHODOLOGY**

### **METHODS USED TO COLLECT/SELECT EVIDENCE**

Searches of Electronic Databases

### **DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE**

Not stated

### **NUMBER OF SOURCE DOCUMENTS**

Not stated

### **METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE**

Weighting According to a Rating Scheme (Scheme Given)

### **RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE**

#### **Levels of Evidence**

**Level Ia:** Evidence obtained from meta-analysis of randomised controlled trials

**Level Ib:** Evidence obtained from at least one randomised controlled trial

**Level IIa:** Evidence obtained from at least one well-designed controlled study without randomisation

**Level IIb:** Evidence obtained from at least one other type of well-designed quasi-experimental study

**Level III:** Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies

**Level IV:** Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities

## **METHODS USED TO ANALYZE THE EVIDENCE**

Review of Published Meta-Analyses  
Systematic Review

## **DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

Not stated

## **METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Expert Consensus (Consensus Development Conference)

## **DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Not stated

## **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

### **Grades of Recommendations**

**Grade A** (evidence levels Ia, Ib): Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation

**Grade B** (evidence levels IIa, IIb, III): Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation

**Grade C** (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality

**Good Practice Points:** Recommended best practice based on the clinical experience of the guideline development group

## COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

## METHOD OF GUIDELINE VALIDATION

Not stated

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

Each recommendation is rated based on the level of the evidence and the grade of recommendation. Definitions of the grades of the recommendations (A, B, C, Good Practice Points) and level of the evidence (Level I-Level IV) are presented at the end of the Major Recommendations field.

#### Diagnosis of *Helicobacter pylori* (*H. pylori*) infection

**A** - Serological tests for *Helicobacter pylori* (*H. pylori*) infection should be locally validated and have a sensitivity and specificity of at least 90% (**Grade A Level Ib**)

**A** - The urea breath test (UBT) is a reliable test for *H. pylori* before and after treatment. (**Grade A, Level Ib**)

**A**- Biopsy urease test is the endoscopic investigation of choice for *H. pylori* infection. (**Grade A, Level Ib**)

**B** - Culture is an impractical means of diagnosing *H. pylori* infection. (**Grade B, Level IIa**)

**B** - Post-treatment testing is desirable. (**Grade B, Level IIa**)

**A** - Stool antigen test (HpSA). (**Grade A, Level Ia**)

#### Treatment of *H. pylori* Infection

**A** - All gastric and duodenal ulcer patients who are infected with *H. pylori* should be treated with eradication therapy. Patients with a history of ulcer bleeding or perforation should also be treated. (**Grade A, Level Ia**)

**A** - Routine testing for, and treatment of, *H. pylori* infection is not recommended prior to initiating treatment with nonsteroidal anti-inflammatory drugs (NSAIDs). For patients with a past history of peptic ulcer disease or ulcer complications

(perforation, bleeding, or obstruction), testing for and treatment of *H. pylori* infection is recommended. (**Grade A, Level Ib**)

**GPP** - In patients requiring long-term NSAID therapy, who have a current or recent history of dyspepsia, appropriate investigation of the dyspepsia and treatment for *H. pylori* infection, if documented to be present, is recommended. (**GPP**)

**A** - Patients with nonulcer dyspepsia (i.e., dyspepsia after investigation) can be considered for treatment of *H. pylori* infection on a case-by-case basis. (**Grade A, Level Ia**)

**GPP** - Patients who are first degree relatives of gastric cancer patients should be treated for *H. pylori* infection. (**GPP**)

**C** - Patients with gastro-oesophageal reflux disease and who require long-term proton pump inhibitor (PPI) therapy should be treated for *H. pylori* infection. (**Grade C, Level IV**)

### ***H. pylori* Infection and Gastric Cancer**

**C** - It is recommended that *H. pylori* infection be treated in patients following resection of early gastric cancer. Screening asymptomatic individuals for *H. pylori* infection as a means of reducing the incidence of gastric cancer is not currently recommended. (**Grade C, Level IV**)

**B** - Treatment for *H. pylori* infection is recommended in patients with low-grade gastric mucosa-associated lymphoid tissue lymphoma. (**Grade B, Level III**)

### ***H. pylori* Infection and Dyspepsia**

**C** - Screening all dyspeptic patients for *H. pylori* infection is not recommended. (**Grade C, Level IV**)

**GPP** - It is possible to identify dyspeptic patients who require early endoscopy based on the incidence of gastric cancer in a particular country; the presence of alarm features such as weight loss, bleeding, and anaemia; the age of presentation of the patient with the cut-off depending on the age-specific incidence of gastric cancer in that country. (**GPP**)

**A** - Dyspeptic patients, after full investigation (i.e., non-ulcer dyspepsia) may be offered *H. pylori* eradication therapy. (**Grade A, Level Ia**)

### **Drug Regimens for *H. pylori* Infection**

**A** - In 1998, drug regimens for *H. pylori* infection could produce an eradication rate of 90% or greater on a per-protocol analysis and 80% or greater on an intent-to-treat analysis in properly designed clinical trials. Based on these criteria, the following combination regimens are recommended:

PPI in standard dose<sup>(1)</sup> + clarithromycin 500 mg + amoxicillin 1,000 mg

PPI in standard dose<sup>(1)</sup> + clarithromycin 500 mg + metronidazole 400 mg

<sup>(1)</sup>Proton Pump Inhibitor: lansoprazole 30 mg, omeprazole 20 mg

**(Grade A, Level Ia)**

Each of the above regimens should be given for seven days on a twice-daily basis.

**A** - If clarithromycin is not available, either of the following two regimens may be considered:

PPI in standard dose twice daily + Amoxicillin 1,000 mg twice daily + Metronidazole 400 mg twice daily. For 7 days

Colloidal bismuth subcitrate 120 mg four times daily + Metronidazole 400 mg twice daily + Tetracycline 500 mg four times daily. For 14 days

**(Grade A, Level Ib)**

**A** - In the event of a treatment failure with a PPI regimen containing clarithromycin, "salvage therapy" is required. **(Grade A, Level Ib)** (Malfertheiner et al., 2002)

A regimen for use after initial treatment failure is:

PPI in standard dose twice daily + Colloidal bismuth subcitrate 120 mg four times daily + Metronidazole 400 mg twice daily + Tetracycline 500 mg four times daily

### **Definitions:**

### **Grades of Recommendations**

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### **CLINICAL ALGORITHM(S)**

A clinical algorithm is provided for the management of new onset uninvestigated dyspepsia

## **EVIDENCE SUPPORTING THE RECOMMENDATIONS**

### **REFERENCES SUPPORTING THE RECOMMENDATIONS**

[References open in a new window](#)

### **TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

## **BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS**

### **POTENTIAL BENEFITS**

#### **Overall Benefits**

- Appropriate diagnosis, risk assessment, treatment, and prevention of *Helicobacter pylori* (*H. pylori*) infection
- Better outcomes and improved quality of life of patients with *H. pylori* infection

### **POTENTIAL HARMS**

- In children false-negative tests for *Helicobacter pylori* (*H. pylori*) infection can occur from a few weeks to a few months after an infection but before an immune response occurs

- Treatment of *H. pylori* infection in patients with nonulcer dyspepsia may aggravate symptoms in the short-term

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

- These guidelines are not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.
- The contents of this publication are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care. Each physician is ultimately responsible for the management of his/her unique patient in the light of the clinical data presented by the patient and the diagnostic and treatment options available.
- Users should supplement the guidelines with any new evidence that has emerged since publication.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

The desired clinical outcome is eradication of *Helicobacter pylori* (*H. pylori*) in all patients in whom eradication is of proven benefit, i.e. patients with complicated or uncomplicated *H. pylori*-associated peptic ulcer disease.

Audit should look at:

- Proportion of patients with upper gastrointestinal bleeding that are tested for *H. pylori* infection
- The proportion of patients with bleeding peptic ulcer due to *H. pylori* infection that are offered eradication therapy.
- Proportion of patients with peptic ulcer disease receiving long-term anti-secretory treatment that are offered eradication therapy.
- Proportion of patients treated for gastric ulcer or complicated duodenal ulcer with *H. pylori* infection, who demonstrate cure of infection.
- Proportion of peptic ulcer disease patients with *H. pylori* infection that relapse after treatment.

### IMPLEMENTATION TOOLS

Audit Criteria/Indicators  
Clinical Algorithm  
Patient Resources  
Staff Training/Competency Material

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better  
Living with Illness  
Staying Healthy

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Management of helicobacter pylori infection.  
Singapore: Singapore Ministry of Health; 2004 Sep. 25 p. [29 references]

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

2004 Sep

### GUIDELINE DEVELOPER(S)

Gastroenterological Society of Singapore - Medical Specialty Society  
Singapore Ministry of Health - National Government Agency [Non-U.S.]

### SOURCE(S) OF FUNDING

Singapore Ministry of Health (MOH)

### GUIDELINE COMMITTEE

Workgroup on the Management of Helicobacter Pylori Infection

### COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

*Workgroup Members:* Professor Fock Kwong Ming, Division of Gastroenterology, Changi General Hospital (Chairman); Associate Professor Yeoh Khay Guan, Department of Medicine, National University Hospital; Dr Lim Chee Chian, Department of General Medicine, Tan Tock Seng Hospital; Dr Widjaja Luman, Department of Gastroenterology, Singapore General Hospital; Dr Alexius Chee

Eng Nam, Mt Elizabeth Medical Centre; Dr Johnathan Pang Sze Kang, Ever Health Family Clinic & Surgery

## **FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

Not stated

## **GUIDELINE STATUS**

This is the current release of the guideline.

## **GUIDELINE AVAILABILITY**

Electronic copies: Available in Portable Document Format (PDF) from the [Singapore Ministry of Health Web site](#).

Print copies: Available from the Singapore Ministry of Health, College of Medicine Building, Mezzanine Floor 16 College Rd, Singapore 169854.

## **AVAILABILITY OF COMPANION DOCUMENTS**

The full text guideline and summary card are available for PDA download in ISilo and MSReader formats from the [Singapore Ministry of Health Web site](#).

## **PATIENT RESOURCES**

The following is available:

- Management of helicobacter pylori infection. Singapore: Singapore Ministry of Health; 2005 Jan. 3 p.

Electronic copies: Available in Portable Document Format (PDF) from the [Singapore Ministry of Health Web site](#).

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

## **NGC STATUS**

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