Clinical Guidelines
for the State of Qatar

The assessment and management of dyspepsia

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1 Information about this guideline

1.1 Objective and purpose of the guideline
The purpose of this guideline is to define the appropriate diagnosis and management of dyspepsia in adults. The objective is to improve the appropriateness of investigation, prescribing and referral of patients presenting to provider organisations in Qatar. It is intended that the guideline will be used primarily by physicians in primary care and outpatient settings.

1.2 Scope of the guideline
Aspects of care covered in this guideline include the following:

- Management of dyspepsia in people aged over 14 years of age.
- Differential diagnosis of dyspepsia.
- Testing for and eradicating *Helicobacter pylori* infection.
- Indications for referral to specialist gastroenterology care.

Aspects of care not covered in this guideline are:

- Pregnancy-associated dyspepsia.
- Management of acute gastrointestinal bleeding.
- Management of gastro-oesophageal reflux disease.
- Management of upper GI cancer.

1.3 Editorial approach
This guideline document has been developed and issued by the Ministry of Public Health of Qatar (MOPH), through a process which aligns with international best practice in guideline development and localisation. The guideline will be reviewed on a regular basis and updated to incorporate comments and feedback from stakeholders across Qatar.

The editorial methodology, used to develop this guideline, has involved the following critical steps:

- Extensive literature search for well reputed published evidence relating to the topic.
- Critical appraisal of the literature.
- Development of a draft summary guideline.
- Review of the summary guideline with a Guideline Development Group, comprised of practising physicians and subject matter experts from across provider organisations in Qatar.
- Independent review of the guideline by the Clinical Governance body appointed by the MOPH, from amongst stakeholder organisations across Qatar.

Explicit review of the guideline by patient groups was not undertaken.

**Whilst the MOPH has sponsored the development of the guideline, the MOPH has not influenced the specific recommendations made within it.**

1.4 Sources of evidence
The professional literature published in the English language has been systematically queried using specially developed, customised, and tested search strings. Search strategies are developed to allow efficient yet comprehensive analysis of relevant publications for a given topic and to maximise retrieval of articles with certain desired characteristics pertinent to a guideline.

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For each guideline, all retrieved publications have been individually reviewed by a clinical editor and assessed in terms of quality, utility, and relevance. Preference is given to publications that:

1. Are designed with rigorous scientific methodology.
2. Are published in higher-quality journals (i.e. journals that are read and cited most often within their field).
3. Address an aspect of specific importance to the guideline in question.

Where included, the ‘goal length of stay’ stated within this guideline is supported by and validated through utilisation analysis of various international health insurance databases. The purpose of database analysis is to confirm the reasonability and clinical appropriateness of the goal, as an achievable benchmark for optimal duration of inpatient admission.

1.5 Evidence grading and recommendations
Recommendations made within this guideline are supported by evidence from the medical literature and where possible the most authoritative sources have been used in the development of this guideline. In order to provide insight into the evidence basis for each recommendation, the following evidence hierarchy has been used to grade the level of authoritativeness of the evidence used, where recommendations have been made within this guideline.

Where the recommendations of international guidelines have been adopted, the evidence grading is assigned to the underlying evidence used by the international guideline. Where more than one source has been cited, the evidence grading relates to the highest level of evidence cited:

- **Level 1 (L1):**
  - Meta-analyses.
  - Randomised controlled trials with meta-analysis.
  - Randomised controlled trials.
  - Systematic reviews.

- **Level 2 (L2):**
  - Observational studies, examples include:
    - Cohort studies with statistical adjustment for potential confounders.
    - Cohort studies without adjustment.
    - Case series with historical or literature controls.
    - Uncontrolled case series.
  - Statements in published articles or textbooks.

- **Level 3 (L3):**
  - Expert opinion.
  - Unpublished data, examples include:
    - Large database analyses.
    - Written protocols or outcomes reports from large practices.

In order to give additional insight into the reasoning underlying certain recommendations and the strength of recommendation, the following recommendation grading has been used, where recommendations are made:

- **Recommendation Grade A1 (RGA1):** Evidence demonstrates at least moderate certainty of at least moderate net benefit.
- **Recommendation Grade A2 (RGA2):** Evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care.
- **Recommendation Grade B (RGB):** Evidence is insufficient, conflicting, or poor and demonstrates an incomplete assessment of net benefit vs harm; additional research is recommended.
- **Recommendation Grade C1 (RGC1):** Evidence demonstrates a lack of net benefit; additional research is recommended.
- **Recommendation Grade C2 (RGC2):** Evidence demonstrates potential harm that outweighs benefit; additional research is recommended.

1.6 **Guideline Development Group members**
The following table lists members of the Guideline Development Group (GDG) nominated by their respective organisations and the Clinical Governance Group. The GDG members have reviewed and provided feedback on the draft guideline relating to the topic. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the MOPH.

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1.7 **Responsibilities of healthcare professionals**
This guideline has been issued by the MOPH to define how care should be provided in Qatar. It is based upon a comprehensive assessment of the evidence as well as its applicability to the national context of Qatar. Healthcare professionals are expected to take this guidance into account when exercising their clinical judgement in the care of patients presenting to them.

¹ Dr Ahmed Babiker attended the MOPH in his capacity as a Clinical Pharmacist and advisor on the availability of medications in Qatar.

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The guidance does not override individual professional responsibility to take decisions which are appropriate to the circumstances of the patient concerned. Such decisions should be made in consultation with the patient, their guardians, or carers and should consider the individual risks and benefits of any intervention that is contemplated in the patient’s care.

1.8 Abbreviations used in this guideline
The abbreviations used in this guideline are as follows:

- **CLO**: *Campylobacter*-like organism
- **COX**: Cyclo-oxygenase
- **GI**: Gastrointestinal
- **GORD**: Gastro-oesophageal reflux disease
- **H2RA**: Histamine-2-receptor antagonist
- **MALT**: Mucosa-associated lymphoid-tissue
- **NSAIDs**: Non-steroidal anti-inflammatory
- **PPI**: Proton-pump inhibitor
- **PUD**: Peptic ulcer disease
- **USC**: Urgent suspected cancer
2 Organisation of care in Qatar

2.1 Role of the Ministry of Public Health
The Ministry of Public Health of Qatar (MOPH) has been given the responsibility to guide reform in Qatar in order to establish one of the world’s most admired and renowned healthcare systems. The MOPH’s role is to create a clear vision for the nation’s health direction, set goals and objectives for the country, design policies to achieve the vision, regulate the medical landscape, protect the public’s health, set the health research agenda, and monitor and evaluate progress towards achieving those objectives.

The MOPH has the dual mandate to develop policies and programmes to improve the people’s health so that they may enjoy longer and more productive lives, and to lay the foundation for a vibrant country for decades to come.

The MOPH does not provide clinical services. Instead its goal is to vest responsibility for care in the hands of both public and private sector healthcare institutions, whilst regulating, monitoring, and evaluating this care against agreed upon outcomes. The MOPH is committed to establishing an environment that promotes quality and wellness through policies in such areas as public health, health insurance, information technology, licensure and credentialing; and continuing medical education.

2.2 Provision of care
Healthcare provision in Qatar comprises of the following main entities:

- Public Sector:
  - Primary care health centres - provided by the Primary Health Care Corporation of Qatar.
  - Secondary and tertiary care hospitals and outpatient clinics - provided by the Hamad Medical Corporation (HMC).
  - Paediatric Emergency Care provided by specialist Paediatric Emergency Centres within HMC.
  - QP Clinics for personnel and families of Qatar Petroleum.
  - Sports Medicine centre provided by a specialist Sport Medicine Hospital – Aspetar.
  - Ministry of Interior clinics for personnel and families of Qatar’s police services.
  - Ministry of Defence clinics for personnel and families of Qatar’s armed forces.
  - Specialist obstetric, gynaecological and paediatric care provided by Sidra Medical & Research Center.

- Private sector:
  - A range of single-handed generalist and specialist clinics.
  - Polyclinics.
  - Specialist hospitals.

The aim of the MOPH’s National Health Strategy is to rebalance healthcare delivery with a greater emphasis on primary and community care and an expansion of the role played by the private sector.
The key recommendations of this guideline are:

**Urgent referral:**
- New onset symptoms of >6-8 weeks is an indication for urgent referral in patients aged over 55 years (see Section 5.2)[4].
- If cancer is suspected, refer urgently, to be seen within 48 hours, using the Urgent Suspected Cancer (USC) referral form, available from www.ncp.qa [4][R-GDG].

**Lifestyle modification:**
- Lifestyle advice is often the initial strategy for patients with dyspepsia.
- Where possible, avoid long-term, frequent, and continuous use of proton-pump inhibitors (PPIs), due to concerns over emerging evidence on adverse effects associated with long-term use.

**Testing for *H. pylori***:
- If the patient is taking a PPI or an antibiotic, ensure both medications are stopped prior to testing. Ensure the patient is antibiotic-free for at least 4 weeks, and PPI-free for at least two weeks, prior to testing for *H. pylori* [1][L1, RGA2].
- Test for *H. pylori* using a stool antigen test [23,24].

**Eradication therapy in *H. pylori* positive patients:**
- Offer bismuth-based quadruple therapy as first-line empirical eradication therapy to all patients who have dyspeptic symptoms, unresolved with lifestyle modification and who test positive for *H. pylori* on stool antigen testing [25][see Section 9.2.2].
- Bismuth-based eradication therapy comprises of [25][R-GDG]:
  - PPI twice daily for 4 weeks; and
  - A 10-14 day course of:
    - Tripotassium dicitratobismuthate, either 240mg bd or 120mg qds; and
    - Tetracycline 500mg tds; and
    - Metronidazole 500mg tds.
- Quadruple therapy may be prescribed separately or as a combination drug with a PPI [R-GDG].

**Retesting for *H. pylori***:
- Consider retesting for *H. pylori*, if the following apply [1,23,24,27]:
  - The patient continues to experience symptoms at the end of the 4-week treatment period.
  - Symptoms recur after successful eradication.
  - In complicated known peptic ulcer disease (in order to ensure eradication of *H. pylori*).
  - In diagnosed cases of gastric MALT lymphoma.
- If indicated, retest for *H. pylori* at least two weeks after stopping the PPI with either [1,23,24]:
  - *H. pylori* stool antigen; or
  - Carbon-13 urea breath test.

**Management of *H. pylori* negative patients:**
- If patients are found to test negative for *H. pylori* and continue to have dyspeptic symptoms and lifestyle modification is ineffective, offer patients [1]:
  - A full-dose PPI therapy for 4 weeks [1].
Specialist non-urgent referral:

- Referral to specialist gastroenterology services is indicated for further investigation and management of dyspepsia symptoms which do not resolve adequately with either [1,3,26]:
  - Eradication therapy in *H. pylori* positive patients; or
  - Adequate PPI therapy in *H. pylori* negative patients.

Specialist management:

- Perform upper GI endoscopy in patients with [1]:
  - Alarm symptoms (see Section 5.2).
  - Continuing symptoms despite:
    - Compliance with quadruple therapy; or
    - Adequate use of PPI therapy in *H. pylori* negative patients.
- Following endoscopy [1,3]:
  - Treat *H. pylori* according to the results of CLO testing and histological analysis.
  - Treat identified pathology according to nature of the underlying disease.
  - Consider further investigation for other possible causes of dyspepsia, as indicated.
  - If no gastric or duodenal pathology is identified, refer the patient back to the care of their primary/generalist physician for regular review and ongoing management.
4 Background information

4.1 Definitions

4.1.1 Dyspepsia

Dyspepsia:
- Dyspepsia is not a diagnosis but rather a symptom complex [1,2].
- Dyspepsia is defined as a group of symptoms that alert doctors to consider disease of the upper gastrointestinal (GI) tract, e.g. [1]:
  - Upper abdominal pain or discomfort.
  - Heartburn.
  - Nausea.
  - Vomiting.
- The Rome III criteria define dyspepsia as one or more of the following 4 symptoms, which have been present for 3 months within the initial 6 months of symptom onset [3]:
  - Bothersome postprandial fullness.
  - Early satiety.
  - Epigastric pain.
  - Epigastric burning.
- NB: New onset symptoms of >6-8 weeks is an indication for urgent referral in patients aged over 55 years (see Section 5.2)[4].

The classification of dyspepsia can be made after an upper GI endoscopy has been performed [2]:
- Organic dyspepsia suggests pathological findings on endoscopy.
- Functional dyspepsia, also known as non-ulcer dyspepsia, suggests no pathological findings on endoscopy.
- Uninvestigated dyspepsia – no upper GI endoscopy performed.
  - Be aware that in primary care uninvestigated dyspepsia is defined broadly to include those with: recurrent epigastric pain; heartburn; acid regurgitation; with or without bloating, nausea, vomiting [1][L2, RGB].
- Where endoscopy is not possible or has been declined, it is reasonable to perform a barium meal as an alternative to endoscopy, however endoscopy is preferred where possible [R-GDG].

4.1.2 Peptic ulcer disease

Gastric and duodenal ulcers are collectively referred to as peptic ulcer disease (PUD) [5].

Proven gastric or duodenal ulceration:
- Is defined as a defect in the mucosal lining of the stomach or duodenum, respectively [5].
- Is confirmed by endoscopic examination or radiological investigation, if endoscopy is not possible or is declined [3].
- Can lead to recurrent episodes of dyspepsia [1].
- Is associated with significant complications of bleeding, perforation and gastric outlet obstruction [1].
4.1.3 *Helicobacter pylori*

*Helicobacter pylori* (*H. pylori*) is a bacterium which is strongly associated with peptic ulcer disease and development of distal gastric cancer [1]. The route of transmission is not known, however faeco-oral spread is suspected to be the main route [1]:

*H. pylori* eradication [6]:
- Decreases gastric and duodenal ulcer recurrence and re-bleed risk.
- Results in regression of most localised gastric mucosa-associated lymphoid-tissue (MALT) lymphomas.

4.2 Prevalence

There is limited data available on the prevalence of dyspepsia in Qatar, however approximately 70% of the population of Saudi Arabia and the United Arab Emirates and over 90% of the population of Iran are estimated to be infected with *H. pylori* [7].

4.3 Aetiology

The aetiology of dyspepsia symptoms includes [1,8-11]:
- Gastritis, duodenitis and peptic ulcer disease:
  - *H. pylori* infection is strongly associated with peptic ulcers.
- Gastro-oesophageal reflux disease (GORD):
  - Is a chronic condition in which gastric juices from the stomach – usually acidic – flow back up into the oesophagus.
  - Can be severe or frequent enough to cause symptoms, damage the oesophagus (e.g. oesophagitis), or both.
- Oesophagitis.
- Hepatobiliary and pancreatic disease e.g.:
  - Gallbladder disease.
  - Chronic pancreatitis.
- Oesophageal or gastric cancers.
- Lifestyle factors, such as:
  - Diet e.g.:
    - Spicy and fatty food or caffeine intake.
    - Certain herbal supplements.
  - Smoking.
  - Drinking alcohol.
  - Habitual chewing of qat leaves (catha edulis).
  - Obesity or excessive weight.
  - A stressful lifestyle.
  - Use of medications, e.g. non-steroidal anti-inflammatory drugs (NSAIDs).

4.3.1 Drugs associated with dyspepsia

Drugs associated with dyspepsia include [1,6,9,12-13]:
- NSAIDs, including:
  - Cyclooxygenase (COX)-2 inhibitors.
  - Aspirin.
- Corticosteroids.
- Bisphosphonates.
- Theophylline.
- Nitrates.
- Calcium antagonists.
- Digoxin.
- Selective serotonin reuptake inhibitors.
- Iron.
- Immunosuppressive agents.
- Antibiotics, e.g.:
  - Metronidazole.
  - Macrolides.
  - Quinolones.
  - Tetracyclines (cause oesophageal irritation).
- Antiplatelet drugs, e.g.:
  - Clopidogrel.
  - Ticagrelor.
- Oestrogens.
- Quinidine.
- Lipid lowering drugs, e.g.:
  - Gemfibrozil.
- Colchicine.
- Nicotine replacement therapy.
- Antidiabetic drugs, e.g.:
  - Metformin.
- Opioid analgesics.
- Orlistat.

### 4.3.2 Additional risk factors for peptic ulcer disease

Additional risk factors for peptic ulcer disease (PUD) include [14]:

- Male sex.
- Family history of PUD.
- Past medical history of PUD.
- Hypercalcaemia.
- Hyperparathyroidism.
- Polycythaemia rubra vera.
- Chronic renal failure.
- COPD.

### 5 Presentation

#### 5.1 Characteristic features of dyspepsia

Characteristic features of dyspepsia include [1,3,11,15,16]:

- Upper abdominal discomfort or pain which may be described as burning or heaviness.
- Accompanying symptoms, such as nausea, upper abdominal fullness, or belching.
- Symptoms that improve with antacids and may be relieved/worsened with eating or vomiting.
5.2  Alarm features

Alarm features in a patient presenting with dyspepsia, include [1,3,17]:

- Dysphagia/odynophagia.
- Persistent vomiting.
- Epigastric mass, cervical lymphadenopathy or suspicious barium meal.
- Progressive unexplained unintentional weight loss.
- GI bleeding.
- Unexplained iron deficiency anaemia.
- Patients aged over 55 years with unexplained persistent recent onset dyspepsia (> 6-8 weeks).
- Family history of upper GI cancer in a first-degree relative.
- Previous gastric surgery.
- Jaundice.
- Worsening dyspepsia or reflux, with known:
  - Barrett’s oesophagus.
  - Atrophic gastritis.
  - Intestinal metaplasia.
  - Dysplasia.

5.2.1  Referral of patients with alarm features

If cancer is suspected, refer urgently, to be seen within 48 hours, using the Urgent Suspected Cancer (USC) referral form, available from www.ncp.qa [4][R-GDG].

NB: If the patient presents with symptoms or signs of acute upper GI bleeding, refer immediately to the Emergency Department, to be seen on the same day [R-GDG].

6  History

Enquire about and record the finding related to the following symptoms [1,11]:

- Abdominal pain.
- Heartburn/acid reflux.
- Nausea and vomiting.
- Relieving factors, such as antacids, alginates, or eating.
- Certain lifestyle factors that make exacerbate symptoms, such as alcohol and fat intake.
- Check for alarm symptoms – see Section 5.2.

Assess for symptoms and signs of possible differential diagnoses, such as [1]:

- Cardiac disease.
- Biliary disease.
- NB: For further information on differential diagnoses, see Section 8 ‘Differential diagnosis’.

Other key points in the history [13,17]:

- Ensure all current medication and over-the-counter herbal preparations are reviewed for possible contribution to dyspeptic symptoms – see Section 4.3.1.
- Identify any psychological-social stressors.

NB: In primary care, presenting symptoms poorly predict the cause or severity of dyspepsia [1].
7 Examination

Perform a detailed physical examination at the initial presentation [9,14,15,17,18]:
- Palpate for an upper abdominal mass.
- Localised epigastric tenderness may be present on palpation, but this is a common and non-specific sign:
  - Examine for alarm signs (see Section 5.2).
    - Assess haemodynamic status, checking for hypotension and tachycardia, which may be present if there is significant loss of blood volume from a GI bleed.
- Note any findings that point to a diagnosis other than functional dyspepsia.
- Examine for signs of other conditions (see Section 8: Differential diagnosis).

8 Differential diagnosis

Differential diagnoses other than functional dyspepsia, peptic ulcer dyspepsia, and GORD include [1,9]:
- Biliary disease [15,19,20]:
  - Suggested by:
    - Upper abdominal pain localised to the epigastrium or right hypochondrium.
    - Nausea and vomiting due to biliary obstruction.
    - Jaundice.
    - A positive Murphy’s sign.
    - High swinging fever with rigors and chills in acute cholangitis.
  - Consider investigations, such as liver function tests and abdominal ultrasound if biliary disease is suspected.
- Cardiac disease [1,15,19]:
  - Suggested by:
    - Symptoms associated with exertion and relieved by rest.
    - Pressure radiating to the left arm or jaw.
    - Associated dyspnoea.
    - Risk factors for cardiovascular disease.
- Musculoskeletal pathology [21].
- Other rare causes include [9,21]:
  - Pancreatic pathology e.g. pancreatitis.
  - Colonic pathology.
  - Gastric or oesophageal cancer.
  - Malabsorption e.g. Coeliac disease.
  - Gastroparesis.
  - Hepatoma.
  - Ischaemic bowel.
  - Infiltrative diseases of the stomach:
    - Crohn disease.
    - Sarcoidosis.
  - Intestinal parasites:
    - *Giardia* species.
    - *Strongyloides* species.
  - Metabolic disturbances:
    - Hypercalcaemia.
▪ Hyperkalaemia.
▪ Hypoglycaemia.
▪ Diabetic ketoacidosis.

Systemic disorders [9]:
▪ Diabetes mellitus.
▪ Thyroid and parathyroid disorders.
▪ Connective tissue disease.

9 Initial investigation and management

NB: Patients with alarm symptoms should be referred to a specialist cancer service for urgent investigation and management [4]. The following description of management applies to those patients in whom an upper GI cancer has been excluded or is not suspected.

9.1 Lifestyle advice and symptomatic treatment
Lifestyle advice and symptomatic treatment [1]:
▪ Lifestyle advice is often the initial strategy for patients with dyspepsia.
▪ May provide general health improvements when patients are compliant.
▪ If patients are non-compliant with lifestyle advice, withholding pharmacological treatment is not recommended, given that lifestyle choices are unlikely to have a major causal role in the development of dyspepsia.

Offer simple lifestyle advice, including [1][L2, RGA2]:
▪ Healthy eating.
▪ Weight reduction.
▪ Smoking and alcohol cessation or reduction.

Consider the following to diminish reflux symptoms (if present) [1][L3, RGA1]:
▪ Sleeping with the head of the bed raised; and
▪ Eating an evening meal well before going to bed.
▪ Antacid and/or alginate therapy – for symptom relief.

Where possible, avoid long-term, frequent, and continuous use of proton-pump inhibitors (PPIs), due to concerns over emerging evidence on adverse effects associated with long-term use. These include [22]:
▪ Concerns over alteration of absorption of vitamins and minerals – although evidence is weak.
▪ Possible metabolic effects on bone density – although evidence is conflicting.
▪ Alteration of pharmacokinetics/pharmacodynamics and related drug interactions.
▪ Infection risk – particularly community acquired pneumonia and C. difficile infection.
▪ Hypersensitivity response with consequent organ damage.

9.2 Test and treat H. pylori infection

9.2.1 Initial testing for H. pylori
NB: If the patient is taking a PPI or an antibiotic, ensure both medications are stopped prior to testing.
Ensure the patient is antibiotic-free for at least 4 weeks, and PPI-free for at least two weeks, prior to testing for H. pylori [1][L1, RGA2].

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Test for *H. pylori* using [23,24]:
- A stool antigen test:
  - Detects current infection.
  - Simple and non-invasive.
  - Most cost-effective test.
  - Used as an initial test for *H. pylori* diagnosis.
- NB: Laboratory-based serology is not recommended for diagnostic purposes [23,24].

9.2.2 Empirical eradication therapy
If the patient tests positive for the presence of *H. pylori* and lifestyle modification to improve symptoms is ineffective, treat the *H. pylori* infection, with a bismuth-based eradication therapy [25][R-GDG]:

Offer a course of treatment with [25][R-GDG]:
- PPI twice daily for 4 weeks; and
- A 10-14 day course of:
  - Tripotassium dicitratobismuthate, either 240mg bd or 120mg qds; and
  - Tetracycline 500mg tds; and
  - Metronidazole 500mg tds.
- Quadruple therapy may be prescribed separately or as a combination drug with a PPI [R-GDG].

9.2.3 Retesting for *H. pylori*
If the patient continues to have symptoms after treatment [1,3,26]:
- Check compliance with the eradication treatment.
- Review possible medication and dietary causes.
- Reconsider the diagnosis.

Consider retesting for *H. pylori*, if any of the following apply [1,23,24,27]:
- The patient continues to experience symptoms at the end of the 4-week treatment period.
- Symptoms recur after successful eradication.
- In complicated known peptic ulcer disease (in order to ensure eradication of *H. pylori*).
- In diagnosed cases of gastric MALT lymphoma.

If indicated, retest for *H. pylori* at least two weeks after stopping the PPI with either [1,23,24]:
- *H. pylori* stool antigen; or
- Carbon-13 urea breath test.

9.2.4 *H. pylori* negative patients
If patients are found to test negative for *H. pylori* and continue to have dyspeptic symptoms and lifestyle modification is ineffective, offer patients [1]:
- A full-dose PPI therapy for 4 weeks [1]:
  - In trials of patients with uninvestigated dyspepsia, PPIs are more effective than antacids and histamine-2-receptor antagonists (H₂RAs).

If there is an inadequate response to a PPI, consider [1,3]:
- Non-compliance with treatment.
• Failure to detect *H. pylori* infection due to recent PPI or antibiotic ingestion.
• Possible malignancy.
• Surreptitious/inadvertent NSAID or aspirin use.
• Ulceration due to ingestion of other drugs.
• Other alternative diagnoses (see Section 8).
• Referral to a specialist gastroenterologist for further investigation.

9.3 Follow-up
If the patient experiences an adequate response to eradication or PPI treatment; or does not meet the criteria for referral to specialist care, advise [1,3]:
• Ongoing lifestyle modification.
• Offer an annual review to patients who need long-term management of dyspeptic symptoms [1][L2, RGB].
• Advise the patient to return if symptoms persist for several weeks or deteriorate over time.

10 Specialist management of dyspepsia

Referral to specialist gastroenterology services is indicated for further investigation and management of dyspepsia symptoms which do not resolve adequately with either [1,3,26]:
• Eradication therapy in *H. pylori* positive patients; or
• Adequate PPI therapy in *H. pylori* negative patients.

NB: If cancer is suspected urgent referral in accordance with the *MOPH National Cancer Guideline for Upper Gastrointestinal Cancer* is indicated [4].

Perform upper GI endoscopy in patients with [1]:
• Alarm symptoms (see Section 5.2).
• Continuing symptoms despite:
  o Compliance with quadruple therapy; or
  o Adequate use of PPI therapy in *H. pylori* negative patients.

At endoscopy [1,3]:
• Perform the *Campylobacter*-like organism (CLO) test to determine the presence of *H. pylori*.
• Perform a mucosal biopsy of the gastric antrum and send samples for histological analysis.

Following endoscopy [1,3]:
• Treat *H. pylori* according to the results of CLO testing and histological analysis.
• Treat identified pathology according to nature of the underlying disease.
• Consider further investigation for other possible causes of dyspepsia, as indicated.
• If no gastric or duodenal pathology is identified, refer the patient back to the care of their primary/generalist physician for regular review and ongoing management.

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11 References
