NATIONAL CLINICAL GUIDELINES

THE ASSESSMENT & MANAGEMENT OF DYSPEPSIA

Ministry of Public Health
P.O. Box 42,
Doha, Qatar
Phone: (+974)4 407 0969
Email: clinicalguidelines@moph.gov.qa

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المبادئ الإرشادية السريرية لدولة قطر
NATIONAL CLINICAL GUIDELINES FOR QATAR

وزارة الصحـــــة العامـــــة
Ministry of Public Health
State of Qatar • دولـــة قطـــر

Version History

Version	Status	Date	Editor	Description
1.0	Final	14th December 2016	Guidelines Team	Final version for publication.
2.0	Final	19th March 2017	Guidelines Team	Updated with new recommendations from the GDG.
3.0	Final	28th July 2020	Guidelines Team	Final Version for Publication.

Citation

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Abbreviations

The abbreviations used in this guideline are as follows:

CLO	*Campylobacter*-like organism
CNS	Central nervous system
COX	Cyclo-oxygenase
EPS	Epigastric Pain Syndrome
FD	Functional dyspepsia
FODMAP	Fermentable Oligo-, Di-, Mono-saccharides and Polyols
GI	Gastrointestinal
GORD	Gastro-oesophageal reflux disease
H_2RA	Histamine-2-receptor antagonist
H. pylori	Helicobacter pylori
MALT	Mucosa-associated lymphoid-tissue
NSAIDs	Non-steroidal anti-inflammatory
PDS	Post-prandial Distress Syndrome
PPI	Proton-pump inhibitor
PUD	Peptic ulcer disease
USC	Urgent suspected cancer

View Pathway

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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* (*H. 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 healthcare professionals, subject matter experts and patient representatives, from across Qatar.
- Independent review of the guideline by the National Clinical Guidelines & Pathways Committee, appointed by the MOPH, from amongst stakeholder organisations across Qatar.

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 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.

For each guideline, all retrieved publications have been individually reviewed by a member of the Editorial Team 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.
3. Address an aspect of specific importance to the guideline in question.

Further information about the literature search and appraisal process is included in the appendix.

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 A (RGA):** Evidence demonstrates at least moderate certainty of a net benefit from the recommendation.
- **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 C (RGC):** Evidence demonstrates potential harm that outweighs benefit; additional research is recommended.
- **Recommendation of the GDG (R-GDG):** Recommended best practice on the basis of the clinical experience of the Guideline Development Group members.

1.6 Guideline Development Group Members

The following table lists members of the Guideline Development Group (GDG) nominated by their respective organisations and the National Clinical Guidelines & Pathways Committee. The GDG members have reviewed and provided their feedback and approval of the guideline document. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the MOPH.

Guideline Development Group Members		
Name	**Title**	**Organisation**
Dr Muneera Jassim Al-Mohannadi	Senior Consultant Gastroenterology	Hamad Medical Corp
Dr Abdulhak A. Sadalla Alnuemi	Consultant Internist and Supervisor of the Emergency Department	Al Emadi Hospital
Dr Saad Rashid M. Al Kaabi	Senior Consultant Gastroenterology, Head of GI/Hepatology Division, Department of Medicine	Hamad Medical Corp
Dr Ahmed M. Hussein Babiker	Head of Registration Section & Clinical Pharmacist	Dept of Pharmacy and Drug Control, MOPH[1]
Dr Siddiq M. O. El Malik	Senior Consultant Gastroenterology	Al Ahli Hospital
Dr Abdelnasser Y. Awad Elzouki	Senior Consultant Internal Medicine, Head of General Medicine	Hamad Medical Corp
Dr Abdul Hakeem Hamza	Senior Consultant Family Medicine	Primary Health Care Corp
Dr Mohammed Salem Nasrallah	Consultant Family Medicine	Primary Health Care Corp

[1] Dr Ahmed Babiker reviewed the guideline in his capacity as a Clinical Pharmacist and advisor on the availability of medications in Qatar.

1.7 National Clinical Guidelines & Pathways Committee Members

The following table lists members of the National Clinical Guidelines & Pathways Committee (NCGPC), appointed by the MOPH. The NCGPC members have reviewed and provided their feedback and approval of the guideline document. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the MOPH.

National Clinical Guidelines & Pathways Committee (NCGPC) Members		
Name	**Title**	**Organisation**
Ms Huda Amer Al-Katheeri	Chair of the NCGPC, Director- Strategic Planning & Performance Department	Ministry of Public Health
Shk Dr Mohammed Hamad J. Al Thani	Co-Chair of NCGPC, Director of Public Health	Ministry of Public Health
Prof Anthony Akobeng	Chair Clinical Practice Guidelines Committee	Sidra Medicine
Dr Alshaymaa Mohammed A. M. Al-Motawa	Consultant Family Medicine	Qatar Petroleum
Dr Basil Bashqawi	Accreditation Coordinator, Dept of Health Professions	Ministry of Public Health
Dr Abi Khalil Charbel	Associate Professor of Medicine Consultant Cardiology	Weill Cornell Medicine-Qatar
Dr Paul Dijkstra	Director of Medical Education	Aspetar
Dr Mohamed Elrishi	Senior Consultant Endocrinology and Internal Medicine	Al Ahli Hospital
Dr Dahlia Mustafa Hassan	Consultant Family Medicine	Primary Health Care Corp
Dr Ghassan Youseph Hommos	Consultant Endocrinology	Al Emadi Hospital
Dr Egon Toft	VP and Dean	College of Medicine, Qatar University

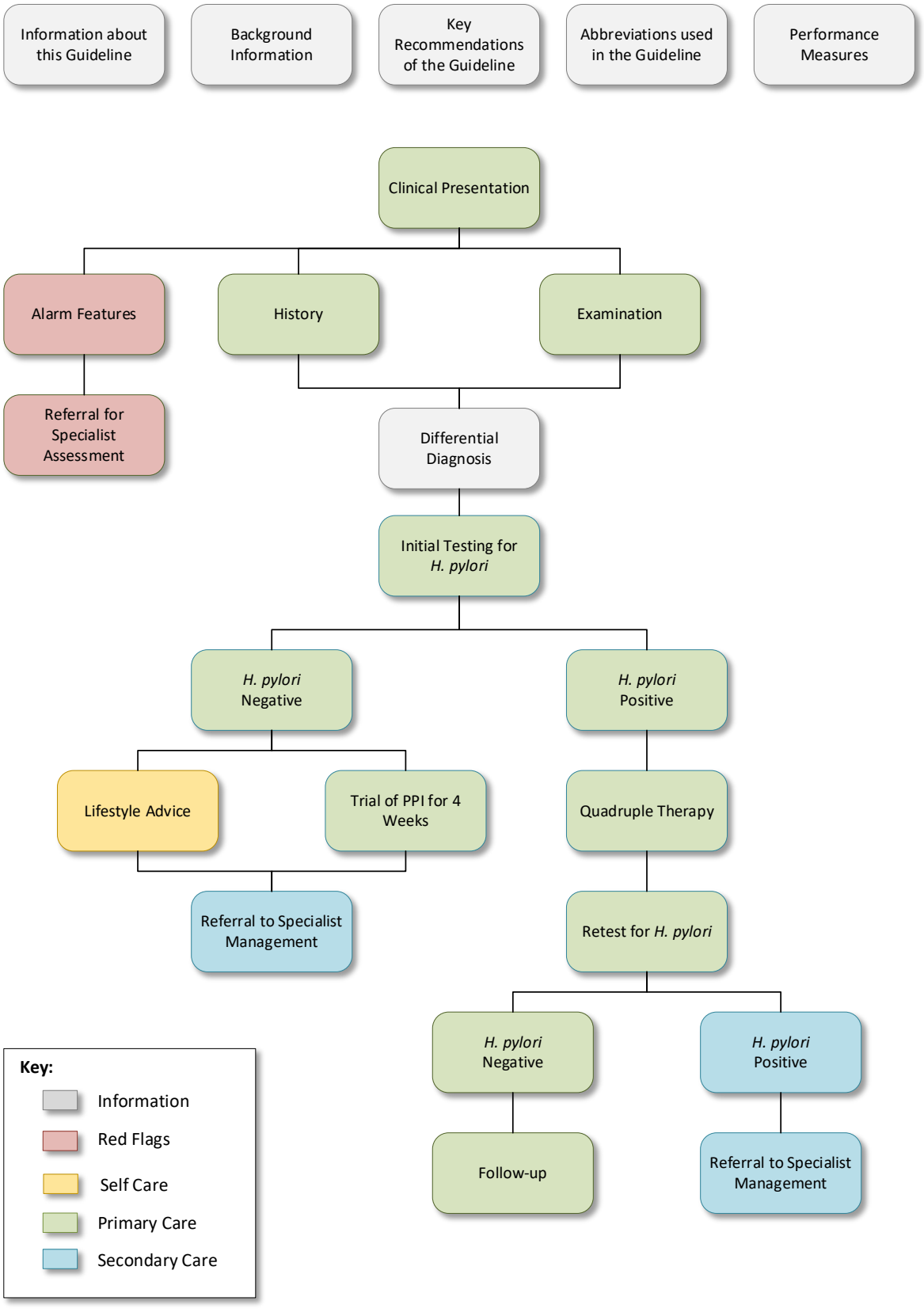
1.8 Responsibilities of Healthcare Professionals

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.

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 caregivers and should consider the individual risks and benefits of any intervention that is contemplated in the patient's care.

2 Dyspepsia Assessment & Management Pathway

Click on a box below to see the relevant page of the Pathway.



3 Key Recommendations of the Guideline

The key recommendations of this guideline are:

Urgent Referral (*Section 5.2*):

- New onset symptoms of >6-8 weeks in patients aged over 45 years [1] is an indication for urgent referral.
- Refer any patients with alarm symptoms (especially if multiple or severe alarm symptom) to a specialist cancer service for investigation and management [2] (see *Section 5.2*).
- 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 [2] [**R-GDG**].

Lifestyle Modification (*Section 8.1*):

- Lifestyle advice is often the initial strategy for patients with uninvestigated dyspepsia[3].
- 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[4].

Testing for *H. pylori* (*Section 8.2*):

- 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* [3] [**L1, RGA**].
- Test for *H. pylori* using a stool antigen test or Carbon-13 urea breath test[5–7].

Eradication Therapy in *H. pylori* Positive Patients (*Section 8.2.2*):

- 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 (see *Section 8.2.2*) [8].
- Bismuth-based eradication therapy comprises of [8] [**R-GDG**]:
    - PPI twice daily for 4 weeks; and
    - A 10-14-day course of *Pylera* i.e.:
        - 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 (*Pylera*) with a PPI [**R-GDG**].

Retesting for *H. pylori* (*Section 8.2.3*):

- Retest for *H. pylori,* in all patients who have undergone eradication therapy [9].
- If indicated, retest for *H. pylori* at least two weeks after stopping the PPI with either [3,5,6]:
    - *H. pylori* stool antigen; or
    - Carbon-13 urea breath test.

Management of *H. pylori* Negative Patients (*Section 8.2.4*):

- If patients are found to test negative for *H. pylori* and continue to have dyspeptic symptoms *and* lifestyle modification is ineffective, offer patients [3]:
    - A full-dose PPI therapy for 4 weeks [3].

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Specialist Non-Urgent Referral (*Section 9*):

- Referral to specialist gastroenterology services is indicated for further investigation and management of dyspepsia symptoms which do not resolve adequately with either[3,10,11]:
    - Eradication therapy in *H. pylori* positive patients; or
    - Adequate PPI therapy in *H. pylori* negative patients.

Specialist Management (*Section 9*)**:**

- Perform upper GI endoscopy in patients with [3]:
    - 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 [3,10]:
    - 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 care physician for regular review and ongoing management

4 Background Information

4.1 Definitions

4.1.1 Dyspepsia and Functional Dyspepsia

Dyspepsia:

- Dyspepsia is not a diagnosis but rather a symptom complex [3,12].
- Dyspepsia is defined as a group of symptoms that alert doctors to consider disease of the upper gastrointestinal (GI) tract, e.g.[3]:
    - Upper abdominal pain or discomfort.
    - Upper abdominal bloating.
    - Nausea.
    - Vomiting.
    - Excessive flatus (burping).
- **NB: New onset symptoms of >6-8 weeks is an indication for urgent referral in patients aged over 45 years** (see *Section 5.2*) [1].

The classification of dyspepsia can be made only after an upper GI endoscopy has been performed [12]:

- *Uninvestigated dyspepsia*, i.e. 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 [3] [**L2, RGB**].
- *Organic dyspepsia*, previously termed as *ulcer dyspepsia*, suggests pathological findings on endoscopy.
- *Functional dyspepsia*, previously termed as *non-ulcer dyspepsia*, suggests no pathological findings on endoscopy.

Functional dyspepsia:

- This is a diagnosis of exclusion after investigations especially upper endoscopy do not reveal any pathology [13,14].
- The Rome IV diagnostic criteria define functional dyspepsia as [13,14]:
    - One or more of the following symptoms:
        - Bothersome postprandial fullness.
        - Bothersome early satiety.
        - Bothersome epigastric pain.
        - Bothersome epigastric burning.
            - AND:
        - No evidence of structural disease that is likely to explain the symptoms.
    - Symptoms should be present for at least 3 months with onset for ≥6 months [13].

4.2 Prevalence

There is limited data available on the prevalence of dyspepsia in Qatar. Pooled prevalence of uninvestigated dyspepsia world-wide is estimated to be 21%[15]. However, a cross-sectional study using the Rome IV diagnostic criteria for functional dyspepsia estimated the prevalence to be 12% in the US and 8% in both Canada and UK [16].

4.3 Aetiology of Dyspepsia

The aetiology of dyspepsia symptoms includes [3,17–20]:

- 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.
  - Pancreatic cancer.
- Oesophageal or gastric cancers.
- Lifestyle factors, such as:
  - Diet e.g.:
    - Spicy and fatty food or caffeine intake.
    - Certain herbal supplements.
  - Smoking.
  - Drinking alcohol:
    - Certain types of alcohol may be more likely to precipitate dyspepsia [21].
  - 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 Peptic Ulcer Disease

Gastric and duodenal ulcers are collectively referred to as *peptic ulcer disease* (PUD) [22].

Proven gastric or duodenal ulceration:

- Is defined as a defect in the mucosal lining of the stomach or duodenum, respectively [22].
- Is confirmed by endoscopic examination or radiological investigation, if endoscopy is not possible or is declined [10].
- Can lead to recurrent episodes of dyspepsia[3].
- Is associated with significant complications of bleeding, perforation and gastric outlet obstruction[3].
- *H. pylori* and NSAIDs are the principal causes of PUD[3].

Additional risk factors for PUD include [23]:

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

4.3.2 Helicobacter Pylori

Helicobacter pylori (H. pylori) is a bacterium which is strongly associated with peptic ulcer disease and development of distal gastric cancer [3]. The route of transmission is not known, however faeco-oral spread is suspected to be the main route [3]:

H. pylori eradication [24]:

- Decreases gastric and duodenal ulcer recurrence and re-bleed risk.
- Results in regression of most localised gastric mucosa-associated lymphoid-tissue (MALT) lymphomas.

4.3.3 Drugs Associated with Dyspepsia

Drugs associated with dyspepsia include [3,18,24–26]:

- 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.

4.4 Aetiology of Functional Dyspepsia

Rome IV criteria further subdivide functional dyspepsia (FD) into [13]:

- Post-prandial Distress Syndrome (PDS):
  - Postprandial fullness and early satiety triggered or aggravated by a meal.
  - Patient may also have other symptoms including bloating, nausea, vomiting and belching.
  - Heartburn can also be present and does not exclude the diagnosis of FD.
  - Predominant heartburn symptoms should be managed as gastro-oesophageal reflux.
- Epigastric Pain Syndrome (EPS):
  - Epigastric pain or burning, triggered, or aggravated by a meal.
  - Patient may also have other symptoms including bloating, nausea, vomiting and belching.

Different pathophysiological mechanisms are considered to underlie these two distinct subtypes [27]. Delayed gastric emptying (23%) and impaired accommodation (40%) are thought to be the main mechanisms leading to PDS. Hypersensitivity to gastric distension (35%) is also implicated in PDS but it is thought to be the main pathophysiological mechanism in EPS [27].

Duodenal hypersensitivity, gastric dysrhythmia, *H. Pylori* infection and non-acid reflux are other mechanisms implicated. In addition, CNS dysfunction likely mediates symptom generation and perception [27].

5 Presentation

5.1 Characteristic Features of Dyspepsia

Characteristic features of dyspepsia include [3,10,20,28,29]:

- 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 [3,10,30]:

- 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 45 years with unexplained persistent recent onset dyspepsia (> 6-8 weeks) [1].
- 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 [2][**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 Clinical Assessment

6.1 History

Enquire about and record the finding related to the following symptoms [3,20]:

- 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 [3]:

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

Other key points in the history [26,30]:

- 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 [3].

6.2 Examination

Perform a detailed physical examination at the initial presentation [18,23,28,30,31]:

- 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*).

7 Differential Diagnosis

Differential diagnoses other than functional dyspepsia, peptic ulcer dyspepsia, and GORD include [3,18]:

- Irritable bowel syndrome.
- Biliary disease [28,32,33]:
    - 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 [3,28,32]:
    - 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 [34].
- Other rare causes include [18,34]:
    - 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 [18]:
        - Diabetes mellitus.
        - Thyroid and parathyroid disorders.
        - Connective tissue disease.

8 Initial Investigation and Management

NB: Patients aged 45 years or above [1] with new onset of dyspepsia and any patients with alarm symptoms (especially if multiple or severe alarm symptom), should be referred to a specialist cancer service for urgent investigation and management[2].

The following description of management applies to those patients in whom an upper GI pathology has been excluded or is not suspected (i.e. uninvestigated dyspepsia and functional dyspepsia). Organic dyspepsia should be managed according to aetiology.

8.1 Lifestyle Advice and Symptomatic Treatment

Lifestyle advice and symptomatic treatment [3]:

- Lifestyle advice is often the initial strategy for patients with uninvestigated 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[3] [**L2, RGA**]:

- Healthy eating:
  - Small frequent meals which are low in fat are encouraged.
  - Avoid foods which are Fermentable Oligo-, Di-, Mono-saccharides and Polyols (i.e. low FODMAP diet) [21].
- Weight reduction.
- Smoking and alcohol cessation or reduction.

Consider the following to diminish reflux symptoms (if present) [3] [**L3, RGA**]:

- 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 [4]:

- 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.

8.2 Test and Treat *H. pylori* Infection

8.2.1 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* [3] [**L1, RGA**].

Test for *H. pylori* using [5–7]:

- A stool antigen test:
  - Detects current infection.
  - Simple and non-invasive.
  - Most cost-effective test.
  - Used as an initial test for *H. pylori* diagnosis.
- Carbon-13 urea breath test (for testing and re-testing).

NB:

- Office-based serology is **not** recommended for diagnostic purposes [5–7].
- Do not test patients who have a documented oesophagitis, or predominant symptoms of reflux suggestive of GORD [5] **[L1, RGC]**.

8.2.2 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 [8] [**R-GDG**]:

Offer a course of treatment with [8] [**R-GDG**]:

- PPI twice daily for 4 weeks; and
- A 10-14-day course of *Pylera*, i.e.:
  - 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 (*Pylera*) with a PPI [**R-GDG**].

Alternatively, *H. pylori* positive patients can be offered in addition to the PPI course, a 7 days course of amoxicillin and either clarithromycin or metronidazole [3] **[L1, RGA]**.

If the patient is allergic to penicillin, they can be offered PPI and clarithromycin and metronidazole [3] **[L1, RGA]**. If the patient is allergic to penicillin and they have previously received clarithromycin treatment, they can be offered PPI and bismuth and metronidazole and tetracycline [3] **[L1, RGA]**. If the patient's test is still positive, the same treatment can be repeated for another 7 days [3] **[L1, RGA].**

Ultimately, the choice of antibiotics should depend on the most recent antibiogram data in Qatar.

8.2.3 Retesting for H. pylori

Retest for *H. pylori,* in all patients who have undergone eradication therapy [9].

Retest for *H. pylori* at least four weeks after stopping the antibiotics with either [3,5–7] :

- *H. pylori* stool antigen; or
- Carbon-13 urea breath test.

If the patient continues to have symptoms after treatment [3,10,11] :

- Check compliance with the eradication treatment.
- Review possible medication and dietary causes.
- Reconsider the diagnosis.

8.2.4 *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 [3] :

- A full-dose PPI therapy for 4 weeks [3] :
    - In trials of patients with uninvestigated dyspepsia, PPIs are more effective than antacids and histamine-2-receptor antagonists (H_2RAs).

If there is an inadequate response to a PPI, consider [3,10] :

- 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.

8.3 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 [3,10] :

- Ongoing lifestyle modification.
- Offer an annual review to patients who need long-term management of dyspeptic symptoms [3] [**L2, RGB**].
- Advise the patient to return if symptoms persist for several weeks or deteriorate over time.

9 Referral to Specialist Care

Referral to specialist gastroenterology services is indicated for further investigation and management of dyspepsia symptoms which do not resolve adequately with either [3,10,11] :

- 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 [2].

Perform upper GI endoscopy in patients with [3]:

- Alarm symptoms (see *Section 5.2*).
- Continuing symptoms despite:
    - Compliance with quadruple therapy; or
    - Adequate use of PPI therapy in *H. pylori* negative patients.

At endoscopy [3,10] :

- 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 [3,10] :

- Treat *H. pylori* according to the results of CLO testing and histological analysis.
- Treat identified pathology according to nature of the underlying disease.
- If no gastric or duodenal pathology is identified, considering discharging the patient back to the care of their primary care physician for regular review and ongoing management of functional dyspepsia.

Treatment of functional dyspepsia in specialist settings includes [35]:

- Differentiate between Post-prandial Distress Syndrome (PDS) and Epigastric Pain Syndrome (EPS).
    - For patients with PDS-dominant symptoms, consider further gastric emptying studies and consider a trial of:
        - Prokinetic drugs (e.g. metoclopramide, domperidone).
        - Fundus-relaxing drugs (e.g. acotiamide, buspirone).
        - Centrally-acting neuromodulators (e.g. mirtazapine).
    - For patients with EPS-dominant symptoms, consider a trial of:
        - Acid-suppressive drugs (e.g. PPIs).
        - Tricyclic antidepressants (e.g. amitriptyline, nortriptyline).
    - Psychological therapies may also be appropriate in some patients with refractory symptoms.

10 Key Considerations for Patient Preferences

Patient preferences refer to patient perspectives, beliefs, expectations, and goals for health and life, and to the steps employed by individuals in assessing the potential benefits, harms, costs, and limitations of the management options in relation to one another. Patients may have preferences when it comes to defining their problems, identifying the range of management options and selecting or ranking the outcomes used to compare these options.

It is important for healthcare professionals to develop an understanding of the patient as an individual and the unique way in which each person experiences a condition and its impact on their life.

The following recommendations are therefore made for physicians and other healthcare professionals regarding general principles of patient care in Qatar:

- **Respect Patients:** Treat patients with respect, kindness, dignity, courtesy and honesty. Ensure that the environment is conducive to discussion and that the patient's privacy is respected, particularly when discussing sensitive, personal issues. Ask the patient how they wish to be addressed and ensure that their choice is respected and used.

- **Maintain Confidentiality:** Respect the patient's right to confidentiality and avoid disclosing or sharing patients' information without their informed consent. In this context, students and anyone not directly involved in the delivery of care should first be introduced to the patient before starting consultations or meetings, and let the patient decide if they want them to stay.

- **Clarify Third-Party Involvement:** Clarify with the patient at the first point of contact whether and how they like their partner, family members or carers to be involved in key decisions about their care or management and review this regularly. If the patient agrees, share information with their partner, family members or carers.

- **Obtain Informed Consent:** Obtain and document informed consent from patients, in accordance with MOPH policy and guidance.

- **Encourage Shared Decision Making:** Ensure that patients are involved in decision making about their own care, or their dependent's care, and that factors that could impact the patient's participation in their own consultation and care including physical or learning disabilities, sight, speech or hearing impairments and problems with understanding, reading or speaking English are addressed.

- **Disclose Medical Errors:** Disclose errors when they occur and show empathy to patients.

- **Ensure Effective Communication:** Explore ways to improve communication including using pictures, symbols or involving an interpreter or family members. Avoid using medical jargon. Use words the patient will understand and confirm understanding by asking questions.

- **Ensure Continuity of Care:** Provide clear and timely sharing of patient information between healthcare professionals especially at the point of any transitions in care.

11 Performance Measures

A list of performance measures is given in the table below. Healthcare organisations are encouraged to monitor service performance using the indicator definitions below [36].

Number	Numerator	Denominator
DP01	Number in the denominator who are referred for urgent direct access endoscopy.	Total number of adults presenting with dyspepsia or reflux symptoms and dysphagia in the last 12 months.
DP02	Number in the denominator who are prescribed bismuth-based quadruple therapy as first-line empirical eradication therapy.	Total number of adult patients, who are diagnosed with dyspepsia and who test positive for *H. pylori*, in the last 12 months.
DP03	Number of patients diagnosed with *H. pylori* antimicrobial resistance.	Total number of patients who tested positive for *H. pylori* in the last 12 months.

Table 11.1: Performance measures [36].

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Appendix: Detailed Description of the Literature Search

A systematic search for existing literature on dyspepsia was performed in the period January 19th – January 30th, 2020.

All existing references were evaluated and where necessary and applicable, the latest version of the specific manuscript was used to update the guideline and replace the older reference. The search for clinical practice guidelines on dyspepsia assessment and/or management was performed in the *PubMed* database and websites of relevant organisations and societies including the *Association of Upper Gastrointestinal Surgeons of Great Britain*, the *British Infection Association,* the *National Health Service* and the *Public Health England*. The present guideline is primarily based on *UK NICE*, ASGE, and *RCS* guidelines and is supplemented with other relevant studies.

Peer-reviewed scientific publications were found in PubMed and via *Google Scholar* Internet search engine. Non-peer reviewed studies were identified in *bioRxiv*. Books were checked on *Amazon* and via *Google* and *Google Scholar* search engines.

The included publications were identified using the terms "dyspepsia" and specified with the following terms in combinations:

guideline, epidemiology, definition, prevalence, risk factors, screening, diagnosis, differential diagnosis, symptoms, epigastric pain, ulcer, classification, lifestyle, diet, alcohol, smoking, helicobacter pylori, management, investigation, endoscopy, stool antigen test, breath test, treatment, eradication therapy, PPI, tripotassium dicitratobismuthate, tetracycline, metronidazole, monitoring, referral, specialist, follow-up.

Figure A.1 below demonstrates graphically the results of the search and application of exclusion criteria.

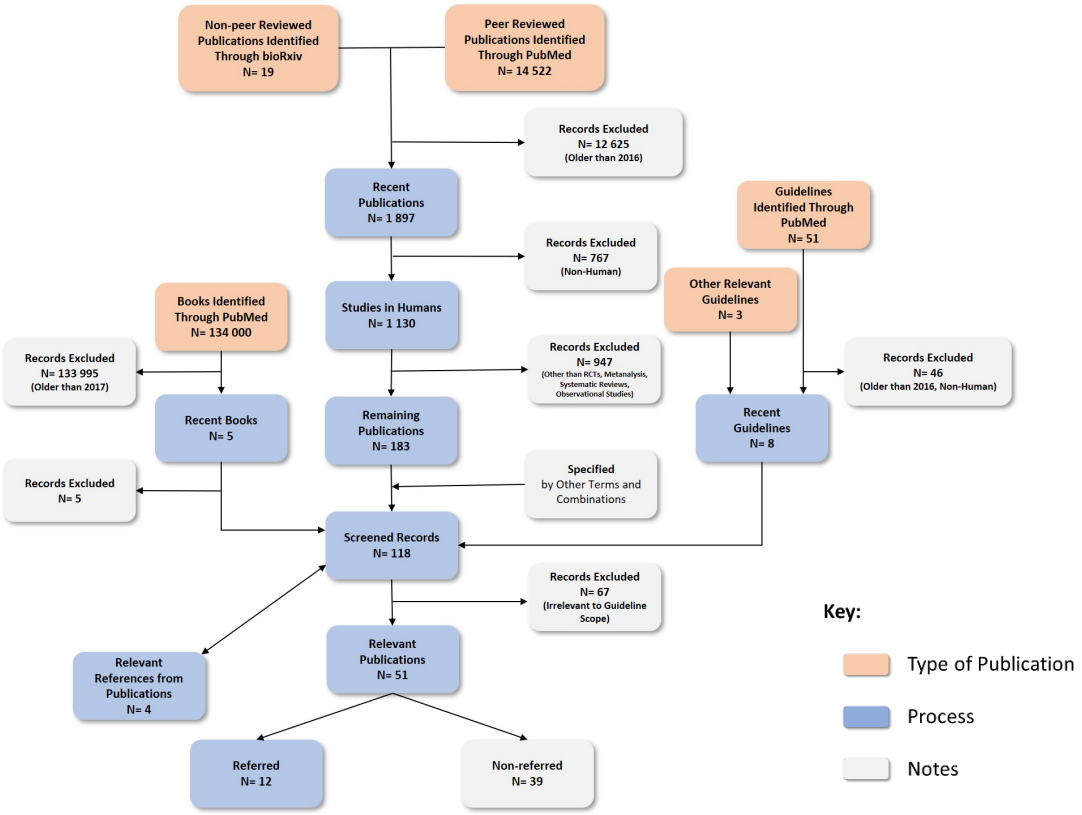

Fig A.1: Literature search results and application of exclusion criteria.

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- **Dr Rasmeh Ali Salameh Al Huneiti**, *Guideline & Standardisation Specialist.*
- **Dr Bushra Saeed**, *Quality Improvement Coordinator.*
- **Dr Mehmood Syed,** *Managing Director & Project Clinical Lead.*
- **Dr Samuel Abegunde,** *Physician Executive.*
- **Dr Natalia Siomava,** *Senior Medical Writer.*
- **Ms Rouba Hoteit,** *Medical Writer.*

Please use the following email address to provide feedback on this guideline:
clinicalguidelines@moph.gov.qa