

# Diagnostic Imaging Pathways - Dyspepsia

## Population Covered By The Guidance

This pathway provides guidance on the investigation of adult patients presenting with dyspepsia, with emphasis on the symptoms that indicate the need for endoscopic or radiological examination.

**Date reviewed: August 2014**

**Date of next review: 2017/2018**






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## Quick User Guide

Move the mouse cursor over the **PINK** text boxes inside the flow chart to bring up a pop up box with salient points.

Clicking on the **PINK** text box will bring up the full text.

The relative radiation level (RRL) of each imaging investigation is displayed in the pop up box.

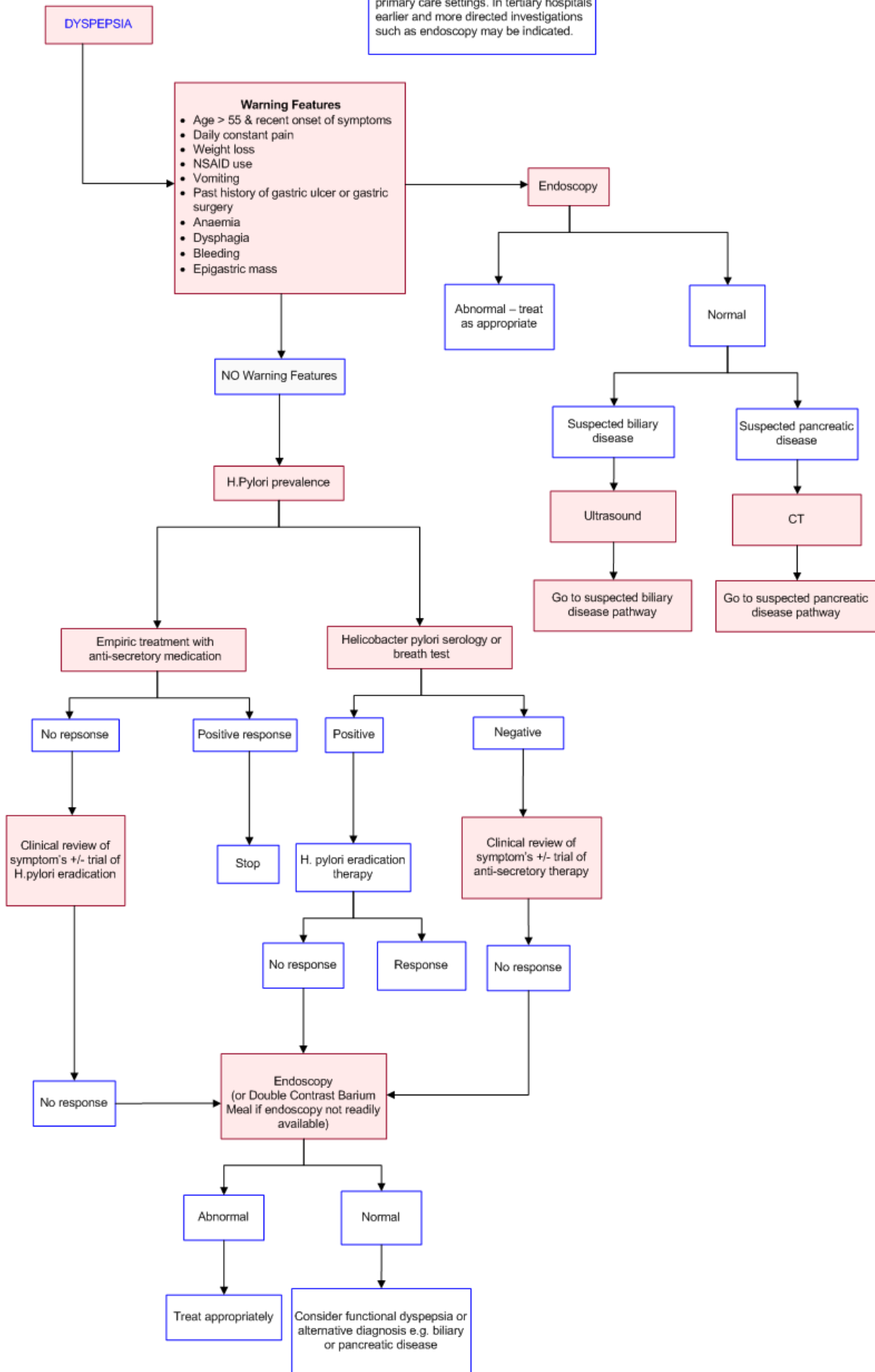
SYMBOL	RRL	EFFECTIVE DOSE RANGE
	None	0
	Minimal	< 1 millisieverts
	Low	1-5 mSv
	Medium	5-10 mSv
	High	>10 mSv

## Pathway Diagram



Date reviewed: August 2014  
 Please note that this pathway is subject to review and revision

The following pathway is relevant to primary care settings. In tertiary hospitals earlier and more directed investigations such as endoscopy may be indicated.



## Image Gallery

*Note: These images open in a new page*

1



### Duodenal Ulcer

Image 1 (Barium Meal): Ulcer located in the first part of the duodenum (arrow).

2



### Malignant Gastric Ulcer

Image 2 (Barium Meal): Malignant gastric ulcer located in the antrum (arrow).

3a



### Gastric Adenocarcinoma

Image 3a (H&E, x2.5) and 3b (H&E, x10): Histological section of a gastric adenocarcinoma (intestinal type) showing irregular malignant glands invading through the muscularis propria of the stomach wall. The high power image illustrates the usual cellular features of malignancy including hyperchromatic and pleomorphic nuclei with prominent nucleoli.

3b



## Teaching Points

- 'Alert' features include
  - Age >55 and recent onset of symptoms
  - Daily constant pain
  - Weight loss
  - NSAID use
  - Vomiting
  - Past history of gastric ulcer or gastric surgery
  - Anaemia
  - Dysphagia
  - Bleeding
  - Epigastric mass
- In the absence of 'alert' symptoms empirical treatment is indicated with anti-secretory drugs +/- H.pylori testing
- In the presence of 'alert' features endoscopy is indicated

## Double Contrast Barium Meal (DCBM)

- Endoscopy should be performed instead of DCBM for the evaluation of dyspepsia if available
- DCBM has a high sensitivity for diagnosis of gastric carcinoma and gastric ulcers. [1,2](#) However in most cases, gastroscopy is required for definitive investigation
  - Particular strengths include the diagnosis of minor strictures, motility disorders, malrotations (including gastric volvulus), herniations and other structural abnormalities
  - Advantages - no sedation
  - Limitations - inability to show subtle mucosal lesions [3,4](#)
  - Disadvantages - exposure to ionising radiation

## Dyspepsia

- Dyspepsia affects up to 40% of the general population and is a symptom complex of epigastric pain or discomfort thought to arise from the upper gastrointestinal tract [5](#)
- Symptoms may also include those of gastro-oesophageal reflux (GORD) – heartburn and acid regurgitation – excessive belching, bloating, early satiety and nausea, although the recent Rome III definition excludes symptoms of gastro- oesophageal reflux, such as heartburn and belching [6](#)
- The causes of dyspepsia include peptic ulcer disease, erosive oesophagitis from GORD, and oesophago-gastric malignancy. [7](#) However, in patients presenting with dyspeptic symptoms, at least half will have no demonstrable structural disease to account for their symptoms and will be labelled as having non-ulcer dyspepsia or more appropriately, “functional dyspepsia” (FD) [8,9](#)
- FD describes these symptoms in the absence of an identifiable organic, systemic, or metabolic aetiology and is best defined by the Rome III criteria [6](#)
  - One or more of epigastric pain or burning, early satiety or bothersome post-prandial fullness or bloating, with onset of at least 6 months ago, and present during the last 3 months
  - FD can be divided into two categories by the Rome III criteria, although there is considerable overlap between the two. The first is postprandial distress syndrome, characterized by postprandial fullness and early satiety; the second is epigastric pain syndrome characterized by epigastric pain and burning
- The Rome III definition does not include symptoms of gastro- oesophageal reflux, such as heartburn and belching
- Diseases that can mimic symptoms of dyspepsia include biliary tract disease, pancreatic disease, cardiac and mesenteric “angina”, and irritable bowel syndrome. These alternative diagnoses should be considered especially if patients do not respond to empirical therapy for dyspepsia
- Endoscopy (rather than barium meal) is considered to be the investigation of choice for diagnosis, [3](#) but the management of dyspepsia in primary care has shifted from urgent endoscopy to empirical approaches such as acid suppression therapy or “test and treat” for *Helicobacter pylori* (NICE guidelines) [4,10,11,12,13](#)
- Patients who fail to respond to H pylori eradication, empirical treatment and/or have no structural abnormality at endoscopy should be reassessed for an alternative cause of dyspepsia (e.g. biliary or pancreatic disease) or functional dyspepsia
- Suspected biliary disease should be initially investigated with ultrasound. However, it has not been shown to be cost effective to investigate all patients with dyspepsia with US at presentation [14](#)
- Pancreatic disease is likely to be accompanied by alarm symptoms such as weight loss. Pain radiating through to the back should also suggest possible pancreatic disease. CT scan is the most effective primary investigation (in addition to endoscopy) in these patients

## Upper Gastrointestinal Endoscopy

- Endoscopy is the test of choice to exclude gastro-duodenal ulceration, reflux oesophagitis, and upper gastro-intestinal tract malignancy [3](#)
- Patients who fail to respond to H pylori eradication, empirical treatment and/or have no structural abnormality at endoscopy should be reassessed for an alternative cause of dyspepsia (e.g. biliary or pancreatic disease) or functional dyspepsia
- Advantages - ability to biopsy lesions suspicious for malignancy and to perform invasive tests for Helicobacter pylori infection

## H.Pylori Testing and Therapy

- A 'test and treat' approach is more cost effective when H.pylori prevalence is > 10% and uncertain at prevalence rates 5-10% [15,16](#)
- The <sup>13</sup>C-urea breath test is 95% sensitive and specific for H pylori; however, it is not universally available. H pylori serology is widely available but is considerably less sensitive and specific (85% and 79%, respectively). [7](#) In populations with a high prevalence of H pylori, H pylori serology is a reasonable first-line test
- Patients who test negative for H.pylori may be treated symptomatically [17](#)
- Patients with positive H.pylori testing may be treated with Helicobacter pylori eradication therapy or may be investigated endoscopically [11,12](#)
- H.pylori eradication has the potential, although by no means proven, to prevent the formation of chronic gastritis and hence gastric carcinoma. [15,18](#) There is a suggestion with more recent studies that the eradication of H.pylori in concert with weight loss and/or better glycaemic control may decrease the risk of gastric cancer [19,20,21,22](#)

## Trial of Anti-Secretory Therapy

- Younger patients who do not display "warning" features have a very low risk of gastric malignancy and may be investigated for Helicobacter pylori by serology/breath test or treated empirically with anti-secretory medication
- Empirical treatment is more cost-effective when the prevalence of H.pylori infection is low (<5%) [15,16](#)
- Antisecretory therapies are composed of drug groups like H2-receptor antagonists (e.g. ranitidine) and PPIs (e.g. omeprazole)

## H.Pylori Prevalence

- The prevalence of H.pylori infection in a developed country is variable. Risk factors known to be associated with a higher risk of infection include older age, male gender, lower socio-economic status and smoking [23](#)
- Patients with risk factors should be tested for H.pylori infection and treated appropriately. Those with few risk factors should undergo a trial of proton-pump inhibitor therapy first

## Clinical Review of Symptoms +/- Trial of Anti-Secretory Medications

- Patients who test negative for H.pylori but whose symptoms persist should be reviewed. Alternative diagnosis such as gall-bladder pathology, pancreatitis, coeliac disease, irritable bowel syndrome and an anxiety syndrome should be considered
- Following this, a short course of Proton Pump Inhibitor (PPI) therapy should be offered. The patient should be reviewed after one month and if symptoms have resolved, therapy should be discontinued [15](#)
- Management of ongoing symptoms is difficult. One should consider gastroscopy, though be mindful of the low yield for positive findings in this context [15](#)

## Clinical Review of Symptoms +/- Testing for H.Pylori and Eradication

- Patients whose symptoms do not improve after one month of empiric therapy with PPI should be reviewed. Alternative diagnosis such as gall-bladder pathology, pancreatitis, coeliac disease, irritable bowel syndrome and an anxiety syndrome should be considered
- Following this H.pylori detection as discussed elsewhere should be considered. Eradication of positive cases and review of symptoms are the initial steps [15](#)
- Patients who fail to respond to this course of management should be considered for endoscopy, though the yield for a positive finding in this context is low [15](#)

## Warning Features

- Prompt investigation is recommended for patients with "warning" features although the overall predictive value of these symptoms is limited. These "warning" features include [24](#)
  1. Age >55 yrs and recent onset of symptoms
  2. Daily constant pain
  3. Weight loss
  4. NSAID use
  5. Vomiting
  6. Past history of gastric ulcer or gastric surgery
  7. Anaemia
  8. Dysphagia
  9. Bleeding
  10. Epigastric mass
- Younger patients without alarm features (see below) have a very low risk of gastric malignancy and may be investigated with H pylori serology or breath test ('test and treat') or treated empirically with anti-secretory medication

## References

**Date of literature search: July 2014**

The search methodology is available on request. [Email](#)

References are graded from Level I to V according to the Oxford Centre for Evidence-Based Medicine, Levels of Evidence. [Download the document](#)

1. Shaw PC, van Romunde LK, Griffioen G, Janssens AR, Kreuning J, Eilers GA. **Peptic ulcer and gastric carcinoma: diagnosis with biphasic radiography compared with fiberoptic endoscopy.** *Radiology.* 1987;163(1):39-42. (Level II evidence). [View the reference](#)
2. Low VH, Levine MS, Rubesin SE, Laufer I, Herlinger H. **Diagnosis of gastric carcinoma: sensitivity of double-contrast barium studies.** *AJR Am J Roentgenol.* 1994;162:329-34. (Level IV evidence). [View the reference](#)
3. Dooley CP, Larson AW, Stace NH, Renner IG, Valenzuela JE, Eliasoph J, et al. **Double-contrast barium meal and upper gastrointestinal endoscopy. A comparative study.** *Ann Intern Med.* 1984 101(4):538-45. (Level I evidence). [View the reference](#)
4. **Dyspepsia: Managing Dyspepsia in Adults in Primary Care.** Newcastle upon Tyne UK: Crown 2004. [View the reference](#)
5. Ford AC, Moayyedi P. **Dyspepsia.** *Curr Opin Gastroenterol.* 2013;29(6):662-8. (Review article). [View the reference](#)
6. **Guidelines--Rome III Diagnostic Criteria for Functional Gastrointestinal Disorders.** *J Gastrointest Liver Dis.* 2006;15(3):307-12. (Practice guidelines). [View the reference](#)
7. Zagari RM, Fuccio L, Bazzoli F. **Investigating dyspepsia.** *BMJ.* 2008;337:a1400. (Review article). [View the reference](#)
8. Ford AC, Marwaha A, Lim A, Moayyedi P. **What is the prevalence of clinically significant endoscopic findings in subjects with dyspepsia? Systematic review and meta-analysis.** *Clin Gastroenterol Hepatol.* 2010;8(10):830-7, 7 e1-2. (Level I evidence). [View the reference](#)
9. Faintuch JJ, Silva FM, Navarro-Rodriguez T, Barbuti RC, Hashimoto CL, Rossini AR, et al. **Endoscopic findings in uninvestigated dyspepsia.** *BMC Gastroenterol.* 2014;14:19. (Level II evidence). [View the reference](#)
10. Ford AC, Moayyedi P, Jarbol DE, Logan RF, Delaney BC. Meta-analysis: **Helicobacter pylori 'test and treat' compared with empirical acid suppression for managing dyspepsia.** *Aliment Pharmacol Ther.* 2008;28(5):534-44. (Level I evidence). [View the reference](#)
11. Heaney A, Collins JS, Watson RG, McFarland RJ, Bamford KB, Tham TC. **A prospective randomised trial of a "test and treat" policy versus endoscopy based management in young Helicobacter pylori positive patients with ulcer-like dyspepsia, referred to a hospital clinic.** *Gut.* 1999;45(2):186-90. (Level I evidence). [View the reference](#)
12. Lassen AT, Pedersen FM, Bytzer P, Schaffalitzky de Muckadell OB. **Helicobacter pylori test-and-eradicate versus prompt endoscopy for management of dyspeptic patients: a randomised trial.** *Lancet.* 2000;356(9228):455-60. (Level I evidence). [View the reference](#)
13. Ford AC, Qume M, Moayyedi P, Arents NL, Lassen AT, Logan RF, et al. **Helicobacter pylori "test and treat" or endoscopy for managing dyspepsia: an individual patient data meta-analysis.** *Gastroenterology.* 2005;128(7):1838-44. (Level I evidence). [View the reference](#)
14. Heikkinen MT, Pikkarainen PH, Takala JK, Rasanen HT, Eskelinen MJ, Julkunen RJ. **Diagnostic methods in dyspepsia: the usefulness of upper abdominal ultrasound and gastroscopy.** *Scand J Prim Health Care.* 1997;15(2):82-6. (Level II evidence). [View the reference](#)
15. Talley NJ, Vakil NB, Moayyedi P. **American gastroenterological association technical review on the evaluation of dyspepsia.** *Gastroenterology.* 2005;129:1756-80. (Review article). [View the reference](#)
16. Talley NJ. **American Gastroenterological Association medical position statement: evaluation of dyspepsia.** *Gastroenterology.* 2005;129(5):1753-5. (Review article). [View the reference](#)
17. Asante MA, Mendall M, Patel P, Ballam L, Northfield TC. **A randomized trial of endoscopy vs no endoscopy in the management of seronegative Helicobacter pylori dyspepsia.** *Eur J Gastroenterol Hepatol.* 1998;10(12):983-9. (Level I evidence). [View the reference](#)
18. Wong BC, Lam SK, Wong WM, Chen JS, Zheng TT, Feng RE, et al. **Helicobacter pylori eradication to prevent gastric cancer in a high-risk region of China: a randomized controlled trial.** *JAMA.* 2004;291(2):187-94. (Level IV evidence). [View the reference](#)
19. Cho Y, Lee DH, Oh HS, Seo JY, Lee DH, Kim N, et al. **Higher prevalence of obesity in gastric**



- cardia adenocarcinoma compared to gastric non-cardia adenocarcinoma.** Dig Dis Sci. 2012 Oct;57(10):2687-92. (Level III evidence). [View the reference](#)
20. Li Q, Zhang J, Zhou Y, Qiao L. **Obesity and gastric cancer.** Front Biosci (Landmark Ed). 2012;17:2383-90. (Review article). [View the reference](#)
21. Ikeda F, Doi Y, Yonemoto K, Ninomiya T, Kubo M, Shikata K, et al. **Hyperglycemia increases risk of gastric cancer posed by Helicobacter pylori infection: a population-based cohort study.** Gastroenterology. 2009;136(4):1234-41. (Level II evidence). [View the reference](#)
22. Bhandari A, Crowe SE. **Helicobacter pylori in gastric malignancies.** Curr Gastroenterol Rep. 2012;14(6):489-96. (Review article). [View the reference](#)
23. Murray LJ, McCrum EE, Evans AE, Bamford KB. **Epidemiology of Helicobacter pylori infection among 4742 randomly selected subjects from Northern Ireland.** Int J Epidemiol. 1997;26(4):880-7. (Level II evidence). [View the reference](#)
24. Voutilainen M, Mantynen T, Kunnamo I, Juhola M, Mecklin JP, Farkkila M. **Impact of clinical symptoms and referral volume on endoscopy for detecting peptic ulcer and gastric neoplasms.** Scand J Gastroenterol. 2003;38(1):109-13. (Level II evidence). [View the reference](#)

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