Review of the Diseases of the Upper GI Tract

AAFP

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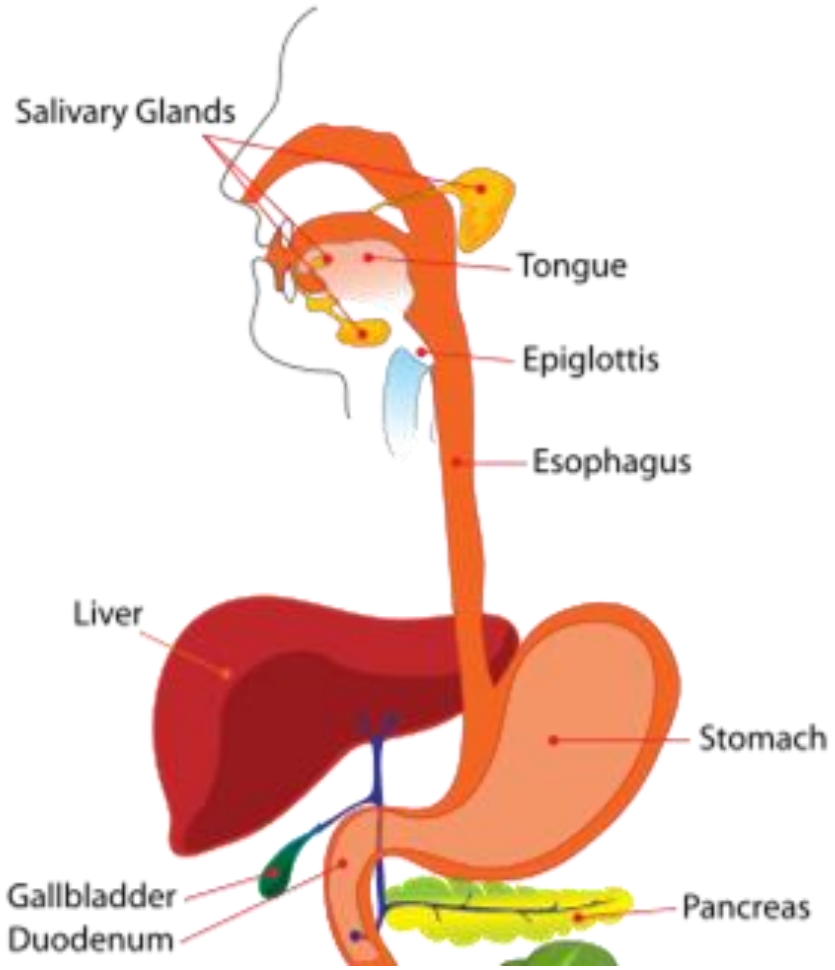
Learning Objectives

1. Determine the approach to the patient with dyspepsia.
2. Discuss the common disorders of the esophagus: motility and GERD.
3. Describe the diagnosis and treatment of PUD and *Helicobacter pylori.*

Esophageal Disorders



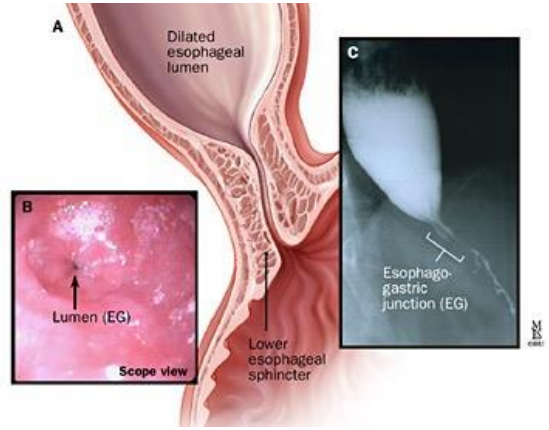
- Disorders of Motility
- Gastro-esophageal Reflux Disease
- Inflammatory Diseases
- Tumors of the Esophagus

Symptoms from the Esophagus
History

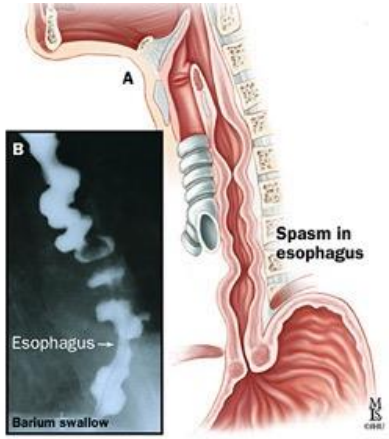
- Swallowing difficulties – dysphagia
- Pain – heartburn, odynophagia, chest pain
- Regurgitation – effortless appearance of gastric or esophageal contents in the oral cavity

Esophageal Motility Disorders

- Achalasia
- Spasm
  - —Diffuse
  - —Localized – “nutcracker” esophagus
- Scleroderma



A, Anatomic findings in achalasia; B, endoscopic image; C, radiographic image.



A. Diffuse esophageal spasm; B. barium swallow x-ray.

1. Which of the following is an indicated treatment for achalasia?

A. Beta blockers

B. Alpha blockers

C. Calcium channel blockers

D. H_2 blockers

Motility Disorders

Disorder	Clinical	Diagnosis	Treatment
Achalasia *(Absence of peristaltic progression)*	Dysphagia – solids and liquids, increased risk of SCC	Barium swallow, manometry	Long-acting nitrates, Ca channel blockers, pneumatic dilatation of LES
Diffuse Esophageal Spasm *(Spastic Motor Disorder)*	Heartburn, chest pain, or dysphagia; often swallow-induced – always exclude CAD.	Barium swallow	Long-acting nitrates, Ca channel blockers
Scleroderma Esophagus *(90% of patients with scleroderma have esophagus involved.)*	None to severe reflux; often with strictures, motility abnormalities	Barium swallow, manometry	Manage reflux; treat esophagitis with H2 blockers, PPIs, prokinetic drugs.

GERD: Incidence and Prevalence

- Peak prevalence at ages 30-60 years, more common in women
- Prevalence 10-20% in the Western world (lower prevalence in Asia)
- Most common GI-related diagnosis in the U.S.
- 14% of U.S. population has *frequent* GERD symptoms

Arch Intern Med 2001 Jan 8;161(1):45
Am J Gastroenterol 2006 Sep;101(9):2128
Am J Gastroenterol 2013; 108:308 – 328

GERD
Symptoms

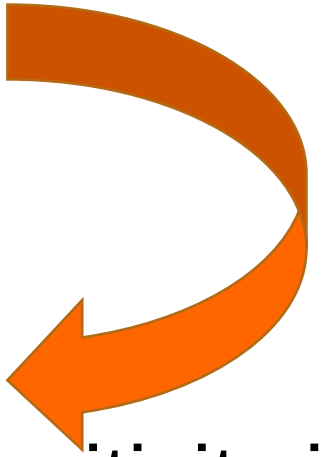
- Typical Symptoms: heartburn, acid regurgitation
- **Atypical Symptoms:** wheezing, hoarseness, atypical chest pain
- Diagnosis usually based on history and physical, and trial of empiric therapy

2. Which of the following diagnostic tests is recommended in the patient with GERD refractory to maximum PPI therapy?

A. Esophageal manometry
B. 24 hour pH monitoring
C. Barium radiology
D. Urea Breath Test

GERD
Diagnosis

- No *gold* standard; EGD is to assess complications (SOR: A).
  - Erosive esophagitis
  - Stricture
  - Barrett's esophagus
  - Cancer
- EGD lacks adequate sensitivity in determining pathologic reflux (SOR B)



Diagnostic testing

- Esophageal manometry is NOT recommended in the diagnosis of GERD
- Esophageal manometry IS recommended in the pre-operative evaluation, e.g. Nissen fundoplication (SOR: C)
- **24-hour pH monitoring IS recommended in patients refractory to PPI therapy OR when the diagnosis is in question (SOR: C)**
- 24-hour pH monitoring is NOT recommended in the routine diagnosis of GERD and is NOT required in the presence of Barrett's esophagus (SOR: B)
- Barium radiology: Limited usefulness; not recommended (SOR: A)

Am J Gastroenterol. 2013; 108:308–328

Diagnostic testing

- Screening for *Helicobacter pylori* infection is NOT recommended (SOR: C)
- Eradication of *H. pylori* is not routinely required as part of antireflux therapy
- FDA concluded that there was insufficient evidence to recommend testing of all patients on long-term PPI therapy
- Controversial: European recommendation in favor of screening all patients for *H. pylori*

Am J Gastroenterol. 2013; 108:308–328.
Gut. 2007;56:772- 81.

GERD
Diagnosis

- An empiric trial of acid suppression therapy BID for 4-8 weeks can identify patients with GERD who do not have alarm symptoms (SOR: A)

- *Obtain upper endoscopy in patients with alarm symptoms or those at high risk for complications (SOR: B)*

- Alarm symptoms
  - Black or bloody stools
  - Choking
  - Chronic cough
  - Dysphagia
  - Early satiety
  - Hematemesis
  - Hoarseness
  - Iron deficiency anemia
  - Odynophagia
  - Weight loss

Summary of diagnostic testing for GERD

Diagnostic test	Indication	Highest level of evidence	Recommendation
PPI trial	Classic symptoms and no red flags	Meta-analysis	Negative trial does not rule out GERD
Barium swallow	Not for GERD, use for dysphagia	Case-control	Not recommended for GERD diagnosis
Upper endoscopy	Alarm symptoms or screening of high-risk patients	RCT	Those at risk for Barrett's, non-cardiac CP, unresponsive to PPI
Esophageal manometry	Pre-operative evaluation	Observational	Not recommended for GERD diagnosis
24-hour pH monitoring	Refractory symptoms or question GERD diagnosis	Observational	Not recommended for GERD diagnosis

Slide courtesy of Thad Wilkins, MD, with permission

Am J Gastroenterol 2013; 108:308 – 328

Treatment

- H_2RA less effective than PPIs (less expensive than PPIs)
- PPIs are more effective for relieving heartburn than H_2RA or prokinetic agents (SOR: A)
- Different PPIs have similar efficacy at standard doses (SOR: A)
- Long-term PPI use may increase fracture risk, but inconsistent evidence regarding hip fracture (SOR: C)

3. In discussing the initiation of a patient on a proton pump inhibitor (PPI), which of the following is a potential risk of therapy that should be reviewed with the patient?

A. Decreased risk of community acquired pneumonia
B. Decreased risk for *Clostridium difficile* infection
C. Increased risk of Vitamin B_{12} deficiency
D. Increased risk of iron deficiency anemia

Potential risks associated with PPIs

- Patients with known osteoporosis can remain on PPI therapy (SOR: C)
- Increased risk of hypomagnesemia
- Increased risk of vitamin B_{12} deficiency
- Increased risk for *Clostridium difficile* infection
- PPI use may increase risk for community acquired pneumonia
  - 27% increase in the risk of pneumonia, with higher risks for specific classes of acid-suppressive drugs
- PPI therapy does not need to be altered in concomitant clopidogrel (Plavix) users (SOR: B)

Am J Gastroenterol 2013; 108:308 – 328

Treatment

- Limited evidence regarding lifestyle measures for GERD
  - Weight loss if overweight or obese (SOR: C)
  - Avoiding large meals
  - Avoiding alcohol, citrus juice and tomato-based products, peppermint, coffee, and the “onion family"
- Elevate head of bed (8 inches) if regurgitation or heartburn when lying down (SOR: C)
  - Waiting 3 hours after meal before lying down

Gastroenterology 2008 Oct;135(4):1383
Am J Gastroenterol 2013; 108:308–328

Treatment Guidelines

American College of Gastroenterology – 2005 Volume 135, Issue 4; 1383-1391.e5, October 2008

Step 1
Mild symptoms

- Dietary modifications
- Lifestyle modification *(SOR C)*
- Trial of patient-directed therapy with antacids or OTC H_2 antagonists

Step 2
Non-responders
Non-erosive disease

- Continue lifestyle/dietary modification.
- H_2 antagonists *(SOR A)*
- Proton pump inhibitor (PPI)* *(SOR A)*
- Pro-motility agent *(SOR A)*
- 8-12 weeks of therapy

Step 3
Severe symptoms
Erosive disease

- Continue with lifestyle measures.
- Endoscopy
- High-dose H_2 antagonists
- Higher dose PPI

** PPI should be taken 30-60 minutes prior to a meal (the first meal of the day) to optimize effectiveness (SOR: B).*

AGA- 2022

- Patients with erosive esophagitis should be biopsied when concern of dysplasia or malignancy exists. A repeat endoscopy should be performed after 8 weeks of twice a day proton pump inhibitor therapy.

Muthusamy et. al., ACG Clinical Practice Update on New Technology and Innovation for Surveillance and Screening in Barrett's Esophagus: Expert Review. Clinical Gastro Hepato 2022. DOI:https://doi.org/10.1016/j.cgh.2022.06.003

AGA

- *For pharmacological treatment of patients with gastroesophageal reflux disease (GERD), long-term acid suppression therapy (proton pump inhibitors or histamine$_2$ receptor antagonists) should be titrated to the lowest effective dose needed to achieve therapeutic goals.*

https://www.choosingwisely.org/clinician-lists/american-gastroenterological-association-treating-gerd/

Deprescribing chronic use of PPI medications

- Deprescribing is recommended for patients with gastroesophageal reflux disease (GERD) who are low risk and are symptom-free after four weeks of PPI therapy.

Recommendation	SOR
Several deprescribing methods may provide limited success. Some patients may have a return of symptoms with abrupt discontinuation.	B
Changing the PPI prescription to as-needed dosing results in fewer pills being used (by about four pills per week), but with lower patient satisfaction and less symptom control.	A
Taking a PPI as needed decreases use in two-thirds of patients.	B
Adding a rescue histamine H_2 blocker may reduce the risk of restarting a PPI by about 80%.	

- AGA – 2022
  - Patients who discontinue long-term PPI therapy should be advised that they may develop transient upper gastrointestinal symptoms due to rebound acid hypersecretion.
  - When de-prescribing PPIs, **either** dose tapering or abrupt discontinuation can be considered
    - One published trial that compared abrupt discontinuation of PPIs with a **tapered dosing regimen over 3 weeks (PPI daily to PPI every other day for 3 weeks, then discontinuing),** no significant difference between the 2 study arms in the likelihood of remaining off PPIs and symptom free at 6 months (31% vs 22% for tapered vs abrupt discontinuation).

4. Risk factors for esophageal intestinal metaplasia (Barrett's Esophagus) include which one of the following characteristics?

A. Female sex

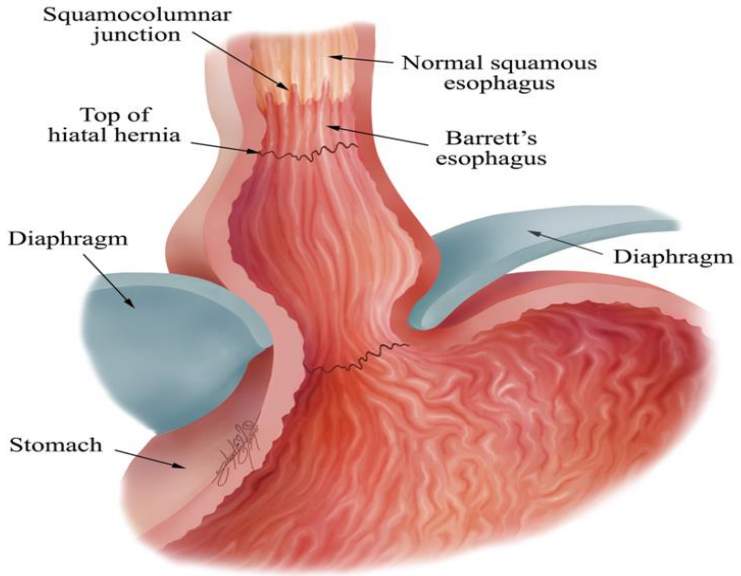
B. African American race

C. Alcohol dependence

D. Obesity

Barrett's Esophagus

- Risk of intestinal metaplasia (Barrett's) and adenocarcinoma increases with GERD symptom severity, duration, and frequency.
- Endoscopic surveillance for dysplasia is indicated in Barrett's esophagus - ???
  - Surveillance of known Barrett's esophagus is controversial, because **adenocarcinoma of the esophagus is rare** in the US (6000-7000 cases/yr) and GERD/Barrett's occurs in 0.4%-0.8% of the population
  - Risk of developing esophageal adenocarcinoma in patients with Barrett's esophagus is **less than 1%**



AGA Position Statement on Screening for Barrett's Esophagus (BE) *2022*

- Screening with standard upper endoscopy may be considered in individuals with **at least 3** established risk factors for Barrett's esophagus (BE) and esophageal adenocarcinoma

Muthusamy et. al., ACG Clinical Practice Update on New Technology and Innovation for Surveillance and Screening in Barrett's Esophagus: Expert Review. Clinical Gastro Hepato 2022. DOI:https://doi.org/10.1016/j.cgh.2022.06.003

Risk Factors for Barrett's Esophagus (BE)

- Male
- Non-Hispanic white
- Age > 50 years
- Chronic GERD
- Obesity
- Current or past history of smoking
- Confirmed family history of BE or esophageal adenocarcinoma (in a first degree relative)

Muthusamy et. al., ACG Clinical Practice Update on New Technology and Innovation for Surveillance and Screening in Barrett's Esophagus: Expert Review. Clinical Gastro Hepato 2022. DOI:https://doi.org/10.1016/j.cgh.2022.06.003

Follow-up, 2022

- Patients with BE-related neoplasia should be referred to endoscopists with expertise in advanced imaging, resection, and ablation
- All patients with BE should be placed on at least daily proton pump inhibitor therapy
- Patients with nondysplastic BE should undergo surveillance endoscopy in 3 to 5 years

Muthusamy et. al., ACG Clinical Practice Update on New Technology and Innovation for Surveillance and Screening in Barrett's Esophagus: Expert Review. Clinical Gastro Hepato 2022. DOI:https://doi.org/10.1016/j.cgh.2022.06.003

AGA - 2012

Choosing Wisely®
An initiative of the ABIM Foundation

- *For a patient who is diagnosed with Barrett's esophagus, who has undergone a second endoscopy that confirms the absence of dysplasia on biopsy, a follow-up surveillance examination should not be performed in less than three years as per published guidelines.*

Medical versus Surgical Treatment

- Medical treatment as effective as surgery (SOR:B)
- Surgery
  - Laparoscopic fundoplication increases quality of life in patients with GERD but many patients still require medication after surgery (SOR: B)
- Endoscopic Procedures
  - May reduce symptoms in patients with GERD

Summary of GERD Treatment Recommendations

Recommendation	SOR
Obtain upper endoscopy in patients with alarm symptoms or those at high risk for complications	B
Strong evidence supports association of GERD and esophageal adenocarcinoma with Barrett esophagus as precursor lesion	A
Chronic reflux has been suspected to play a major role in the development of Barrett's esophagus, yet it is unknown if outcomes can be improved through surveillance and medical treatment	C
PPIs are more effective for relieving heartburn in short term than H_2RA or prokinetic agents	A
Different PPIs have similar efficacy at standard doses	A
Patients with known osteoporosis can remain on PPI therapy	C
Concomitant use of PPIs and clopidogrel appears safe	B
If symptoms remain unchanged in a patient with a prior normal EGD, repeating EGD is *not* recommended	C
Anti-secretory therapy has *not* been shown to reduce the need for recurrent dilation from esophageal stricture formation	A

Summary of GERD Treatment Recommendations

Recommendation	SOR
There are no significant differences among equivalent doses of PPIs for the treatment of nonerosive GERD	A
Anti-reflux surgery should generally be reserved for patients with contraindications to PPI therapy or when PPI therapy alone is insufficient to control symptoms	C
Screening for Barrett esophagus is NOT routinely recommended in patients with GERD, but it may be considered in white men 50 years or older who have had GERD symptoms for at least five years	C
Endoscopy should be limited to patients who have alarm symptoms or persistent GERD symptoms after an adequate trial of PPI therapy	C
Testing for *Helicobacter pylori* in patients with GERD is NOT recommended	A

Anderson et. al., Am Fam Physician. 2015;91(10):692-697

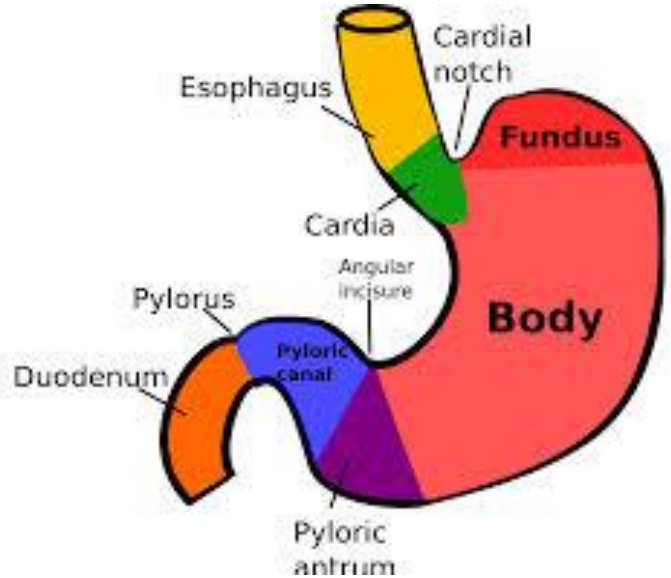
Inflammatory Disorders
Esophagitis

Disorder	Offending "Agents"
Pill-induced	Doxycycline, NSAIDs, steroids
Infective* • Viral • Fungal	 HSV, CMV Candida
Corrosive	Alkalis or acids
Eosinophilic: *pronounced eosinophilic infiltration*	Allergic or idiopathic; Tx – steroids, diet, anti-allergy medications
	**Mostly in immunosuppressed patients*

Esophageal Tumors

- **90% are cancer**
  - Much more common in males; 10% 5-yr survival rate overall (treatment improving)
  - Equal numbers in Caucasians and African Americans
  - Dx – endoscopy and radiography
- **Squamous cell carcinoma**
  - Accounts for < half of esophageal cancers; **declining incidence**
  - Predominant esophageal cancer in African Americans
  - ***More common with heavy alcohol and tobacco use***
- **Adenocarcinoma**
  - Arise from columnar epithelium in cardia or from Barrett's
  - Recall that the lower esophagus is lined by specialized intestinal epithelium.
  - Predominant esophageal cancer in Caucasians
  - ***GERD is a risk factor as well as obesity and tobacco use.***

Source: Wikimedia



Diseases of the Stomach

- Acid Peptic Disorders of the Stomach and Duodenum
- Infections
- Motor Disorders
- Cancer

5. A 49 yo female presents with a 4 week history of epigastric pain. She reports the pain gets a bit better when she eats but worse within an hour of eating. She has been using an over the counter liquid antacid which she reports decreases her symptoms. She denies weight loss, hematemesis, melena, or hematochezia. With the exception of midepigastric tenderness, her exam is unremarkable. Her only medication is periodic acetaminophen which she uses for headaches. Which of the following diagnostic tests would you recommend in your evaluation?

A. Serum gastrin

B. *Helicobacter pylori* serology

C. Esophagogastroduodenoscopy

D. Urea Breath Test

Definitions

- Dyspepsia – epigastric pain, discomfort, or burning sensation
- Peptic ulcer disease (PUD) – includes gastric and duodenal ulcers
- PUD most commonly caused by *H. Pylori* or use of NSAIDs

Why Do Acid Peptic Disorders Develop?

- Current theory
  - PUD is an imbalance between protective and aggressive factors.

Protective factors	Aggressive factors
• Surface epithelial cells with mucus and bicarbonate secretions • Apical surface membrane of gastric mucosal cells • Prostaglandins E1 and E2	• Production of gastric acid • NSAIDs • Corticosteroids • Smoking • Alcohol consumption • Probably *not* diet • ? Psychological stress

Rome IV Diagnostic Criteria for Functional Dyspepsia

Presence of at least one of the following:

- Postprandial fullness (3 days per week
- Early satiety (3 days per week)
- Epigastric pain (1 day per week)
- Epigastric burning (1 day per week

and

- No evidence of structural disease

- Use in patients with recurrent upper GI symptoms on average once weekly in the last 3 months with symptom onset ≥6 months ago and NO abnormalities on diagnostic testing, including upper endoscopy

- Do NOT use in patients with alarm symptoms such as GI bleeding, unexplained iron deficiency anemia, unintentional weight loss, palpable abdominal mass, family history of colon cancer or symptom onset ≥50 years of age and not yet screened for colon cancer, or sudden/acute onset of new change in bowel habit

Gastroenterology. 2016;150(6):1380-1392.

Etiology

- 25% have underlying organic cause, 75% have **functional dyspepsia**

- Peptic ulcer disease
- Gastroesophageal reflux disease (GERD)
- Biliary pain
- Chronic abdominal wall pain
- Gastric or esophageal cancer
- Gastroparesis
- Pancreatitis
- Carbohydrate malabsorption
- Medications
- Infiltrative diseases of the stomach (eg, Crohn disease, sarcoidosis)
- Metabolic disturbances (hypercalcemia, hyperkalemia)
- Hepatocellular carcinoma
- Ischemic bowel disease, celiac artery compression syndrome, superior mesenteric artery syndrome
- Systemic disorders (diabetes mellitus, thyroid and parathyroid disorders, connective tissue disease)
- Intestinal parasites (Giardia, Strongyloides)
- Abdominal cancer, especially pancreatic cancer

N Engl J Med 1998; 339:1376.

Medications Associated with Dyspepsia

- Acarbose (Precose)
- Antibiotics
- Bisphosphonates
- Corticosteroids
- Herbs (e.g., chaste tree berry, feverfew, garlic, ginkgo, saw palmetto, white willow bark)
- Iron
- Metformin
- Miglitol (Glyset)
- NSAIDs
- Opiates
- Orlistat (Xenical)
- Potassium chloride
- Theophylline

Am Fam Physician. 2020;101(2): 84-88.

Clinical Indications Associated with Possible Etiologies of Dyspepsia

Clinical Indications	Possible etiologies
Age 60 or older; severe or multiple alarm features (e.g., dysphagia, weight loss, anemia); epigastric mass; enlarged supraclavicular lymph node	Malignancy
Pain radiating to the back, right upper quadrant pain, vomiting, jaundice	Biliary or pancreatic processes
Vomiting, severe nausea	Gastroparesis

Am Fam Physician. 2020;101(2): 84-88.

Diagnostic Approach

- History, physical examination, and laboratory evaluation
- Ask about ASA, NSAIDS, warning signs, exacerbating and relieving factors, nausea, and vomiting
- Physical examination is usually normal, except for epigastric tenderness
- **Laboratory tests** — Routine blood counts and blood chemistry including liver function tests, and lipase, should be performed to identify patients with alarm features

Am J Gastroenterol. 2017;112(7):988. Epub 2017 Jun 20.
Clin Gastroenterol Hepatol. 2010;8(10):830.

Alarm Features in Dyspepsia

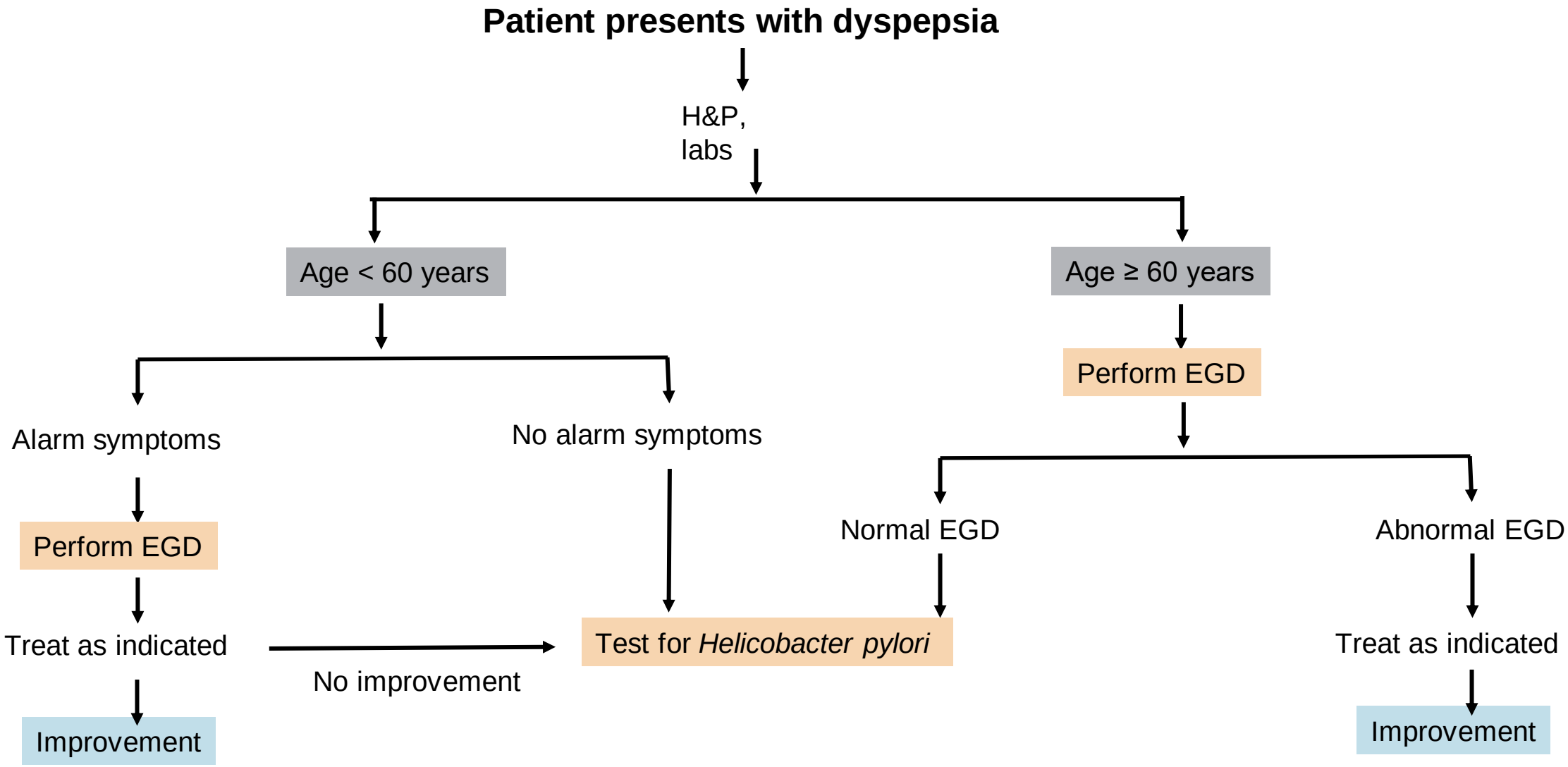
- Unintentional weight loss
- Dysphagia
- Odynophagia
- Unexplained iron deficiency anemia
- Persistent vomiting
- Palpable mass or lymphadenopathy
- Family history of upper gastrointestinal cancer

Gastroenterology 2005; 129:1756.

Diagnostic Approach

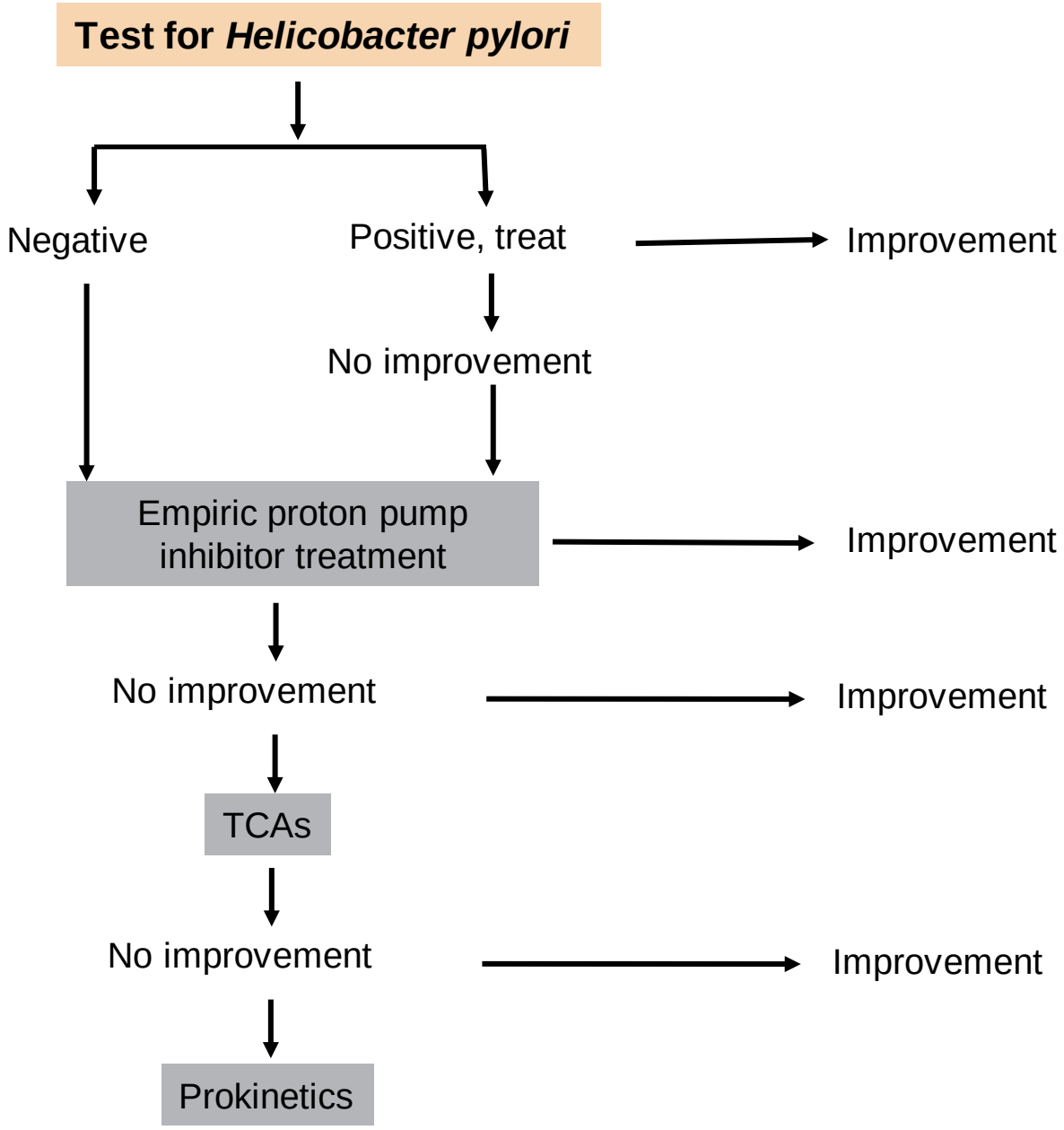
- Based on the clinical presentation, the patient's age, and the presence of alarm features
- Patients ≥60 years
  - EGD with biopsies to rule out *H. pylori*
  - A meta-analysis of nine studies with 5389 patients found that the most prevalent findings in patients with dyspepsia were erosive esophagitis (6%) and peptic ulcer disease (8%)
- Patients <60 years
  - Should be tested and treated for *H. pylori*, and upper endoscopy should be performed selectively
    - Clinically significant weight loss
    - Overt gastrointestinal bleeding
    - >1 other alarm feature
    - Rapidly progressive alarm features

Gastroenterology. 2005;129(5):1756.
Clin Gastroenterol Hepatol. 2010;8(10):830.
Gastroenterology. 2004;127(5):1329.



Most patients with a normal upper endoscopy and routine laboratory tests have functional dyspepsia

Am Fam Physician. 2020;101(2): 84-88.



Am Fam Physician. 2020;101(2): 84-88.

H. Pylori Eradication

- A meta-analysis of 23 studies found that *H. pylori* eradication resulted in symptom improvement at 1 year but not at 6 months
- An RCT comparing *H. pylori* eradication with placebo found a 50% reduction in dyspepsia symptoms (NNT = 8)
- Patients who test negative for *H. pylori* or continue to have symptoms after treatment should be started on a PPI

Am J Gastroenterol. 2017;112(7): 988-1013.
World J Gastroenterol. 2016;22(12): 3486-3495.
Arch Intern Med. 2011;171(21):1929-1936.

Acid Suppression

- A meta-analysis found standard daily dosages of PPIs taken over two to eight weeks to be superior to placebo for the reduction of functional dyspepsia symptoms (NNT = 14)
- Long term PPIs associated with chronic kidney disease, bone fracture, *Clostridioides difficile* (formerly *Clostridium difficile*) infection, and community-acquired pneumonia (NNH > 1000)
- Twelve RCTs compared H2 antagonists with placebo and showed a relative risk reduction of 23% in symptoms of dyspepsia (NNT = 7)
- A systematic review of 7 RCTs comparing H2 antagonists with PPIs found no statistically significant difference
  - 4 of 7 RCTs found PPIs superior leading ACG to recommend PPIs as first-line treatment

Clin Gastroenterol Hepatol. 2007;5(2):178-185.
Nat Rev Gastroenterol Hepatol. 2016;13(5):253-254.
JAMA. 2006;295(13): 1566-1576.
Cochrane Database Syst Rev. 2006;(4):CD001960.

Prokinetics

- A review of 29 trials comparing prokinetics (predominantly cisapride) to placebo found a significant reduction in global symptoms of functional dyspepsia (NNT = 7)
- Metoclopramide (Reglan) is the only available prokinetic in the United States
- Metoclopramide has not been evaluated for the treatment of functional dyspepsia, the ACG recommends it as a treatment option

Am J Gastroenterol. 2017;112(7): 988-1013.
Am J Gastroenterol. 2019;114(2):233-243.

PUD and *H. pylori*

Disorder	*H. pylori* (+)	Associated *H. pylori* gastritis	Treatment
Duodenal ulcer	90%	70%	▪ Eradication of infection markedly decreases recurrences of DU. ▪ A 1-2 week course of *H. pylori* eradication therapy is an effective treatment for *H. pylori* (+) PUD.
Gastric ulcer	70%	60%-80%	

Peptic Ulcer Disease

Diagnosis

History

- Persistent pain relieved by food and antacids
  - Pain in upper abdomen or back
  - Hematemesis, melena, or hematochezia
  - Cannot usually separate GU from DU by history

On exam

- Mid-epigastric tenderness

Laboratory

- Limited usefulness, **except *H. pylori* tests**
- Consider serum gastrin (gastronoma, Zollinger-Ellison; especially if recurrent ulcer disease, multiple ulcers)
- Hematocrit
- Stool guaiac

- Endoscopy (SOR: A)
  - 90% sensitivity and specificity

Tests for *H. Pylori* Infection

Tests	Sensitivity	Specificity	Advantages	Disadvantages
Urea Breath Test	97	100	Used for initial test and test of cure	Expensive and inconvenient, nothing by mouth x6 hours
Stool Antigen Test	92	94	Lower cost, easily available	-
† Biopsy Urease Test	95	100	Rapid, Inexpensive	Sensitivity is low in treated patients
† Histology	94	99	-	Expensive
† Culture	NR	100	Allows for susceptibility testing	Not widely available, expensive

Note: Because of the higher pretest probability of infection, patients with documented PUD represent a rare group, where it is acceptable to utilize an IgG H. pylori antibody test

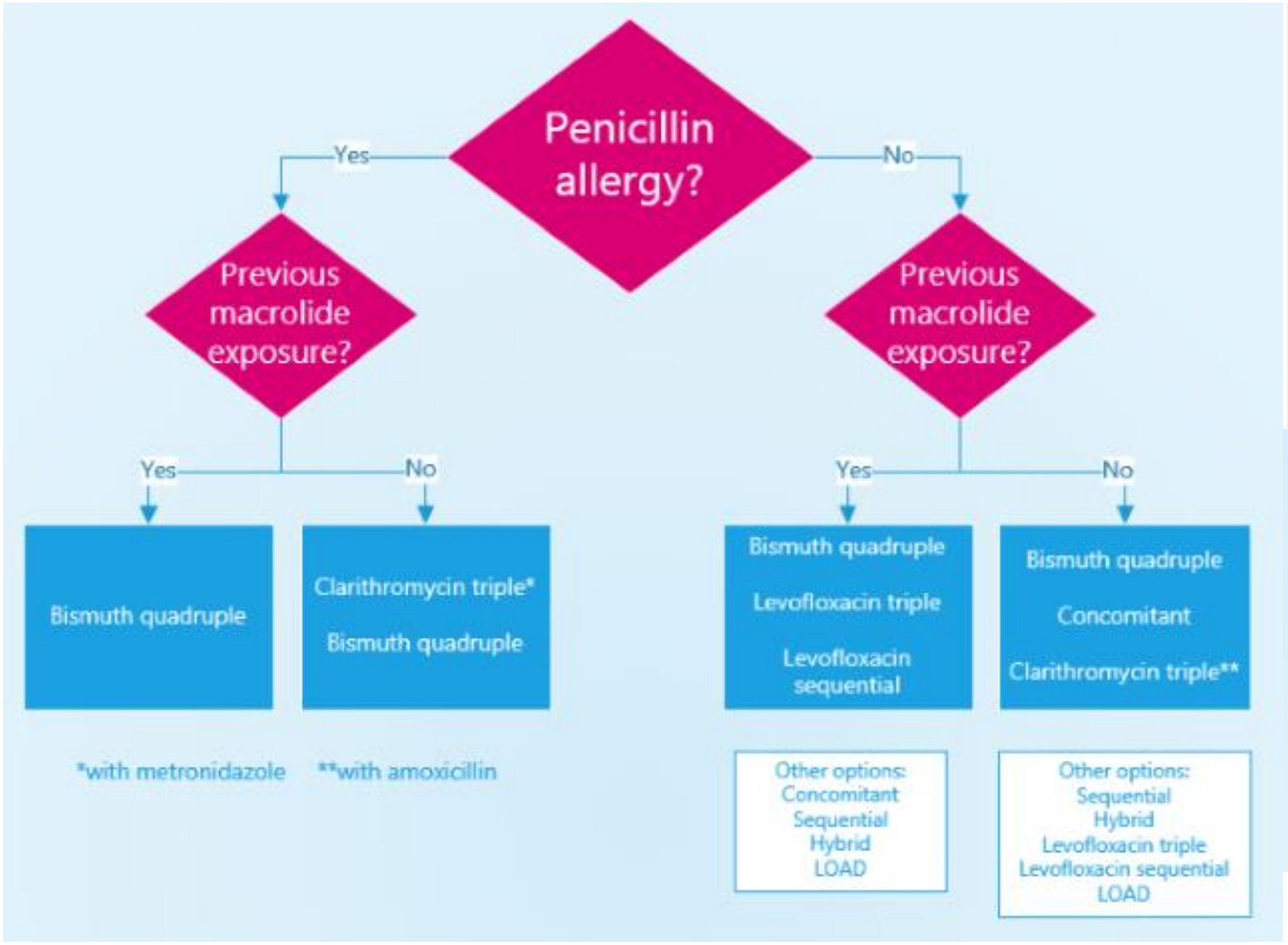
† Requires upper endoscopy

Am Fam Physician. 2015;91(4):236-242.
Am J Gastroenterol 2017; 112:212–238

H. pylori Eradication

- First-line therapy choices for H. pylori are numerous, and the choice of therapy should be individualized
- Consider previous antibiotic exposure(s), allergies, and local resistance patterns
- A test of cure is recommended at least four weeks after the completion of antibiotics and 1-2 weeks after completion of PPI therapy
- Probiotics - may have an inhibitory effect on *H. pylori,* may improve compliance with treatment by reducing antibiotic side effects

The American journal of gastroenterology. 2018;113(7):1102.



Bismuth Quadruple†
10-14 days
PPI standard dose BID
bismuth 4x daily
tetracycline 500mg 4x daily
metronidazole 250-500mg 3-4x daily

Levofloxacin sequential††
10-14 days total
PPI standard dose BID AND
amoxicillin 1g BID 5-7 days
Then 5-7 more days of above with levofloxacin 500mg daily
AND metronidazole 500mg BID

Clarithromycin triple†
14 days & FDA approved
PPI standard or double dose BID
clarithromycin 500mg BID
amoxicillin 1gm OR
metronidazole 500mg TID

Levofloxacin triple††
5-7 days
PPI standard dose BID
levofloxacin 500mg daily
amoxicillin 1gm BID

Hybrid††
14 days
PPI standard dose BID AND
amoxicillin 1g BID 7 days
Then 7 more days of above with
clarithromycin 500mg BID AND
metronidazole 500mg BID

Concomitant†
10-14 days
PPI standard dose BID
amoxicillin 1g BID
clarithromycin 500mg BID
metronidazole 500mg BID

LOAD
7-10 days
PPI double dose once daily
levofloxacin 250mg qday
nitazoxanide 500mg BID
doxycycline 100mg qday

Sequential††
10-14 days
PPI standard dose BID AND
amoxicillin 1g BID 5-7 days
Then 5-7 more days of PPI with
clarithromycin 500mg BID AND
metronidazole 500mg BID

† Recommended
‡ Suggested

The American journal of gastroenterology. 2018;113(7):1102.

Treatment

- Eradicate *H. pylori*
- Discontinue NSAIDs
- All patients should receive PPI therapy
  - A prospective study of 541 patients with NSAID-induced ulcers were treated with either omeprazole or ranitidine
  - The ulcer healing rate was significantly higher in omeprazole compared to ranitidine (80% versus 63%)

Aliment Pharmacol Ther. 2001 Dec;15(12):1949-58.
N Engl J Med. 1998;338(11):719.

Duration of PPI Therapy

- *H. pylori*-positive ulcer
  - Uncomplicated – PPI given twice daily along with antibiotic treatment is usually adequate (14 days)
  - Complicated – Initial therapy with IV PPI, then switch to oral PPI at high-dose twice daily for 4 weeks, then change to once daily (total duration 8 to 12 weeks)
- NSAID-induced ulcer
  - Treated with a PPI for 4 to 8 weeks based on the size and location of the ulcer
  - PPI therapy for 4 weeks for DUs and 8 weeks for GU
- Non-*H. pylori*, non-NSAID ulcer
  - Consider long-term PPI treatment (higher rates of recurrence)

N Engl J Med. 1998;338(11):719.
Gut. 1997;41(1):43.
N Engl J Med. 1995;332(3):139.

PPI Therapy

Drug	Dose (adult)
Dexlansoprazole	30 to 60 mg
Esomeprazole	20 to 40 mg
Lansoprazole	30 mg
Omeprazole	20 to 40 mg
Pantoprazole	40 mg
Rabeprazole	20 mg

As a general rule, active duodenal ulcers should be treated for four weeks and gastric ulcers for eight weeks

Gastroenterology 2000; 118:S9.

6. In considering NSAID-induced ulcers, which of the following statements is true?

A. Peptic ulcers are less common in patients taking NSAIDS who are *H. pylori* (+) compared with those who are (-)
B. Eradicating *H. pylori* in NSAID users reduces the likelihood of peptic ulcer by about one-half
C. The use of a maintenance PPI is less effective than *H. pylori* eradication therapy for preventing NSAID-related ulcers
D. Patients who will be on long term NSAID therapy should be empirically treated for *H. pylori*

NSAID Ulcers

- **Risk factors**
  - Prior adverse GI event (ulcer, hemorrhage)
  - Age > 60 (Older age)
  - High-dose NSAID (> twice normal)
  - Use of
    - Glucocorticoid use
    - Anticoagulant use
    - Aspirin
- Risk for NSAID-induced GI toxicity 9% at 6 months with multiple risk factors present
- In naïve NSAID users, *H. pylori* is significant risk factor for complicated ulcer disease – screening may be indicated.

Recommendations for *Prevention* of NSAID-Related Ulcer Complications

Cardiovascular Risk	Gastrointestinal Risk	ACG Recommendation (2009)
Low	Low (No risk factors)	NSAID
	Moderate (1 or 2 risk factors)	NSAID plus PPI or misoprostol
	High (> 2 risk factors)	Alternative therapy IF POSSOBLE, or COX-2 inhibitor plus PPI or misoprostol
High	Low	Naproxen plus PPI or misoprostol
	Moderate	Naproxen plus PPI or misoprostol
	High	Avoid NSAID and COX-2 inhibitor; alternative therapy

Lanza FL, Chan FK, Quigley EM; Practice Parameters Committee of the American College of Gastroenterology. Guidelines for prevention of NSAID-related ulcer complications. *Am J Gastroenterol*. 2009;104(3):728-738.

NSAID Users: *Medical Treatment of Peptic Ulcer Practice Guidelines*

- Treatment of NSAID ulcers
  - D/C NSAIDs
  - PPIs superior to H_2 receptor antagonists
- The ACG guideline recommends that patients who will be on long-term NSAID therapy be tested for *H. pylori* infection and eradication therapy given if (+)

NEJM. 1998;338:727.
Primary Care. September, 2001:28(3):487-503.
Am J Gastrolenterol. 2009;104(3) :728-738

Conclusion

- For patients who have multiple risk factors for NSAID-related gastroduodenal toxicity --- FDA approved options include:
  - COX-2 selective inhibitor or
  - Nonselective NSAID in combination with a proton pump inhibitor (PPI) or misoprostol. High dose H_2 receptor antagonists are a reasonable alternative to a PPI or misoprostol
    - Approved doses of these drugs: Misoprostol (200 mcg QID), Lansoprazole (15 or 30 mg daily), and esomeprazole (20 or 40 mg daily).

Treatment
Non–*H. pylori* PUD

- Withdrawal of potential offending or contributing agents
  —NSAIDs, cigarettes, excess ETOH
- No firm dietary recommendations – avoid foods that precipitate dyspepsia.
- Address psychosocial issues and comorbidities – no firm evidence, but *may* have deleterious health consequences.

Risk Factors for Ulcer Complications

- Previous history of complications
- Prior refractory or protracted course
- Big ulcers (> 2 cm)
- Deformed ulcer bed or dense fibrosis

Complications of PUD

- Bleeding
  - Most common complication and leading cause of death (4%-9% mortality rate)
  - Occurs in 10%-20%
  - Patients with 1 episode of bleeding more likely to re-bleed
  - 90% stop without specific treatment.
  - Increased morbidity with associated portal hypertension*

* *Am J Gastro 1998;93:336*

Complications of PUD

- Gastric outlet obstruction
  - Usually mechanical obstruction due to edema or scar
  - Most due to DU
  - Rare: 2% of ulcer patients
- Perforation and penetration
  - 2%-10% of ulcers perforate.
  - Average duration of Sx prior to perforation: 5 years
- NOTE: Complicated ulcer disease less likely to involve *H. pylori*

PUD
Surgical Treatment/Management

- Dramatically declined over past two decades
- Indications
  - Hemorrhage not responsive to medical therapy
  - Gastric outlet obstruction not reversed by medical treatment
  - Perforation
  - Malignancy

KEY RECOMMENDATIONS FOR PRACTICE

Clinical Recommendation	Evidence rating	Comments
Endoscopy should be performed for all patients 60 years and older with at least one month of dyspepsia symptoms	**C**	Expert opinion
For patients younger than 60 years, a *Helicobacter pylori* test and treat strategy before acid suppression is effective	**A**	Meta-analysis of 25 RCTs and one high-quality RCT
Proton pump inhibitor therapy is more effective than placebo for symptom relief in patients with dyspepsia	**A**	Meta-analysis of seven high-quality RCTs

KEY RECOMMENDATIONS FOR PRACTICE

Clinical Recommendation	Evidence rating	Comments
Confirm eradication of *Helicobacter pylori* after therapy in patients with *H. pylori*	**C**	Expert opinion
All patients with PUD should receive PPI therapy to facilitate ulcer healing	**B**	Single small RCT
Patients with PUD should be tested for *H. pylori*	**A**	Meta-analysis of 24 RCTs
Patients with PUD should be advised to avoid NSAIDs	**C**	Expert opinion

Gastric Dysmotility

Gastric Dysmotility

Slow or Delayed Emptying

Trichobezoar being extracted through a gastrotomy

- **Etiology**
  - Mechanical or outlet obstruction
    - PUD, bezoar, etc.
  - Functional obstruction (gastroparesis)
    - Drugs – opiates, anticholinergics, beta and Ca channel blockers
    - Diabetes, Parkinson's, hypothyroidism, hypoparathyroidism
    - Pregnancy
    - Post-vagotomy

Gastric Dysmotility
Slow or Delayed Emptying

- **Diagnosis**
  - Nausea, vomiting, dysphagia, post-prandial abdominal pain, GERD
  - Tests: Scintigraphy, electrogastrogram (evaluate gastric myoelectrical utility), ultrasonography
- **Treatment**
  - Remove causes
  - Low-fat diet; avoid large meals
  - Metoclopramide, erythromycin, prokinetics

Gastric Dysmotility
Rapid Gastric Emptying

- **Dumping Syndrome**
  - Most commonly seen post-operatively from gastric surgery or a truncal vagotomy
- **Symptoms**
  - 15-30 minutes after eating – nausea, non-productive vomiting, sweating, flushing, abdominal cramping, diarrhea
- **Treatment**
  - 6-8 small, low-CHO meals/day; avoid excessive liquids; use of opiates and anticholinergic drugs; fiber products; possibly surgery

7. A 65-yo male smoker complains of dyspepsia, weight loss, early satiety, and occasional nausea and vomiting. *Which one of the following would be the initial diagnostic method of choice?*

A. Upper GI endoscopy

B. CT of the upper abdomen

C. Single-contrast upper GI barium swallow

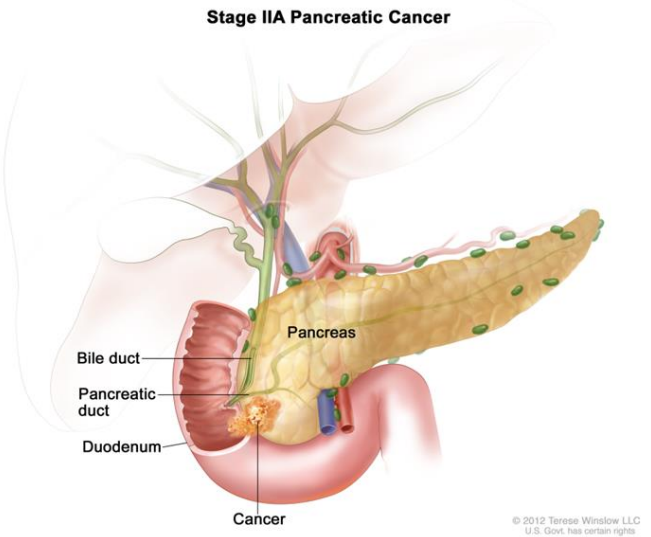
D. Endoscopic ultrasonography

Cancer of the Stomach

- One of the most common internal malignancies in the world
  - 95% are adenocarcinomas.
    - Chronic GERD is the leading cause of esophageal adenocarcinoma (68%-90%).
  - Only 10%-20% of US GI tumors – probably because of lower rates of *H. pylori* in US, due to cleaner food and water
    - *H. pylori* can cause chronic active gastritis and atrophic gastritis, early steps in the carcinogenesis sequence
    - 2x as common in ♂ as in ♀
    - 2x as common in African Americans and Hispanics as in Caucasians
- Dx: Endoscopic biopsy in patients with upper GI symptoms or high-risk or double-contrast barium swallow
- Tx: Surgical excision; 5-yr survival rate $\leq$ 10%

Pancreatic Cancer

- Fourth leading cause of cancer-related death; second only to CRC as cause of GI cancer-related death
  - Higher incidence: ♂ and African Americans
  - Risk factors: Smoking, chronic pancreatitis, diabetes, hereditary predisposition
- **History/PE**
  - Abd pain, weight loss, jaundice, pancreatitis
  - Jaundice, abdominal mass, ascites



Pancreatic Cancer

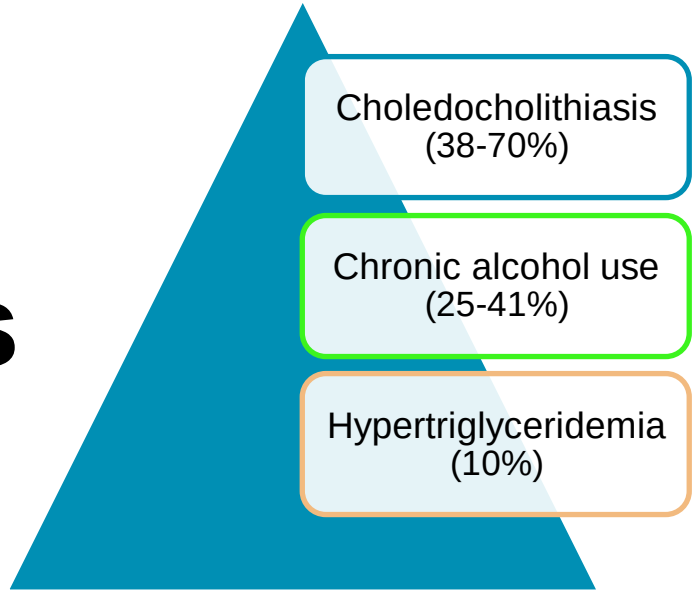
- **Diagnosis**
  - U/S, EUS CT, MRI ERCP, FNA, CA19-9
  - All sensitive and specific
- **Treatment**
  - Surgical resection only potential curable treatment
- **Prognosis** – 5-yr survival
  - Node (−) 25%-30%
  - Node (+) 10%

BEST PRACTICES IN GASTROENTEROLOGY

Recommendations From the Choosing Wisely Campaign

Recommendation	Sponsoring organization
Do not test for amylase in cases of suspected acute pancreatitis. Instead, test for lipase.	American Society for Clinical Pathology

Pancreatitis



Recommendation	SOR
Compared with parenteral nutrition, enteral feeding is associated with shorter hospitalizations and reductions in mortality, multiorgan failure, infection, and other complications in patients with acute pancreatitis	A
Early enteral feeding as tolerated is recommended over restricting oral intake in patients with acute pancreatitis	A
In the absence of infection, prophylactic antibiotics are not recommended for patients with pancreatic necrosis	B
Cholecystectomy for mild acute biliary pancreatitis should be considered during the initial admission	B

Oppenlander KE, Chadwick C, Carman K. Acute Pancreatitis: Rapid Evidence Review. Am Fam Physician. 2022 Jul;106(1):44-50. PMID: 35839366.

Thank You

References

- AGA Clinical Practice Update on De-Prescribing of Proton Pump Inhibitors: Expert Review. Targownik et. al., Gastroenterology. 2022.162(4):1334-1342.

AMERICAN ACADEMY OF FAMILY PHYSICIANS

STRONG MEDICINE FOR AMERICA