Gastroesophageal Reflux

Subhankar Chakraborty, M.D., Ph.D.
Assistant Professor, Division of Gastroenterology, Hepatology & Nutrition
Department of Internal Medicine
The Ohio State University Wexner Medical Center

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Objectives

1. Describe the epidemiology, pathophysiology, and risk factors for GERD
2. Recognize the typical and atypical clinical presentations of GERD
3. Apply a stepwise diagnostic approach to GERD
4. Discuss how to manage GERD
5. Explain the risks and benefits of long-term PPI therapy
6. Identify complications of chronic GERD

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Case-1

A 45-year-old woman presents with a 6-month history of **burning retrosternal discomfort** occurring after meals and at night. She reports occasional regurgitation but denies dysphagia, odynophagia, weight loss, anorexia, vomiting, or gastrointestinal bleeding. She has tried over-the-counter antacids with minimal relief. Physical examination is unremarkable. What is the **most appropriate next step in management**?

A) Upper endoscopy
B) Ambulatory pH monitoring
C) Empirical trial of a proton-pump inhibitor (PPI) for 2 months
D) Barium swallow
E) Esophageal manometry

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Case-2

A 54-year-old man presents with a 6-month history of **heartburn and regurgitation**. He reports new-onset dysphagia and unintentional weight loss of 10 pounds over the past two months. He has no prior history of gastrointestinal disease and has not tried acid suppression therapy. Physical examination reveals no acute findings.

Which of the following is the **most appropriate next step in management**?

A) Empirical trial of a proton-pump inhibitor
B) Ambulatory pH monitoring
C) Esophageal manometry
D) Esophagogastroduodenoscopy (EGD)
E) Barium swallow

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Case-3

A 60-year-old White man with a BMI of 32 kg/m^2 and a 12-year history of chronic **heartburn and regurgitation** presents for routine follow-up. He is a current smoker and has a family history of esophageal adenocarcinoma. He denies dysphagia, weight loss, or gastrointestinal bleeding. Which of the following is the most appropriate next step?

A) Empirical trial of a proton-pump inhibitor
B) Ambulatory pH monitoring
C) Upper endoscopy to screen for Barrett's esophagus
D) Esophageal manometry
E) Barium swallow

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What is Gastroesophageal Reflux Disease (GERD)

GERD is a chronic disease characterized by

- **Symptoms** from regurgitation of gastric contents into the esophagus
- Supported by **objective evidence** of acid regurgitation

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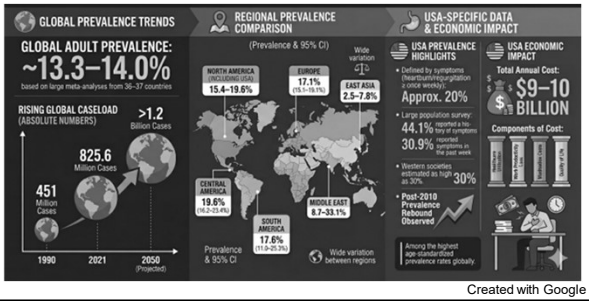
Understanding GERD: Prevalence and Economic Impact



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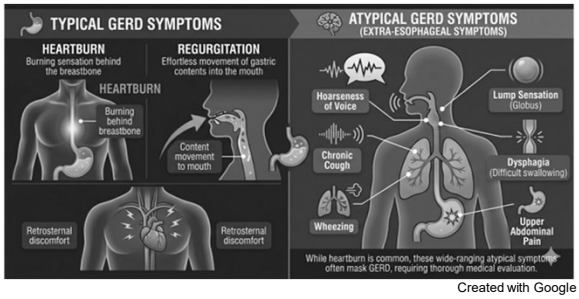
Typical and Atypical Symptoms of GERD



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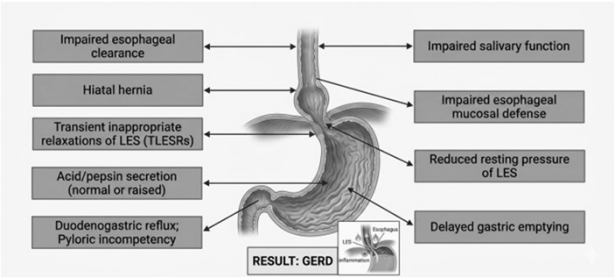
What causes GERD



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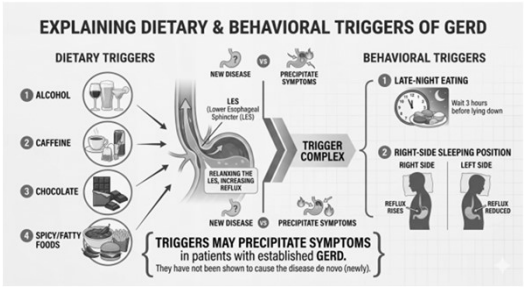
Dietary and Behavioral Factors Causing GERD



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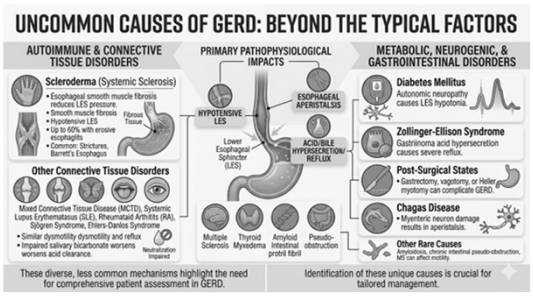
Uncommon and Rare Causes of GERD



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Diagnosing GERD

- Endoscopy:
  - Inflammation or esophagitis
  - Barrett's esophagus
  - Peptic stricture
- Esophageal pH monitoring test
  - High acid levels in distal esophagus

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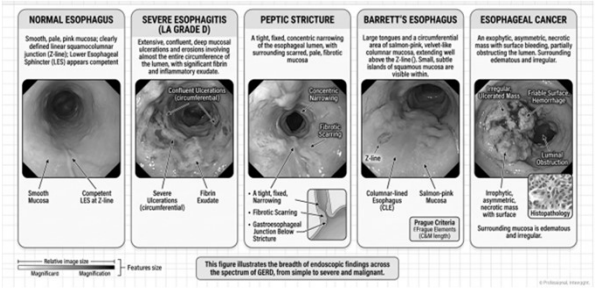
The Endoscopic Spectrum of GERD



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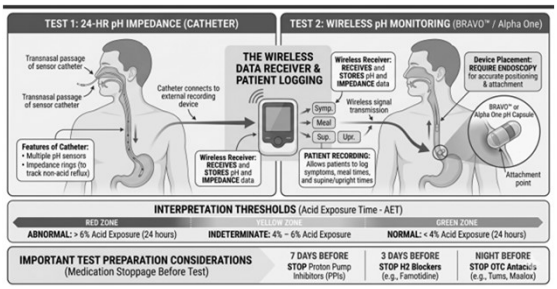
Diagnosing GERD: Objective Tests for Acid Reflux



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When to consider objective testing for GERD

- Symptoms uncontrolled by empiric treatment
- Atypical symptoms
- When considering surgery to treat GERD
- Alarm symptoms
  - Dysphagia
  - Unintentional weight loss
  - Symptoms of upper GI bleeding

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Management of GERD

Goals of therapy

- Control symptoms
- Prevent or treat complications
  - **Peptic stricture** → Dysphagia
  - **Barrett's esophagus** → Esophageal adenocarcinoma
  - **Esophageal ulcer** → Odynophagia and GI bleeding

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Controlling Symptoms of GERD

- Lifestyle measures
- Medications
- Surgery

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Lifestyle Measures to Control GERD

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Proton Pump Inhibitors

- Highly effective in healing esophagitis: 84% heal within 3 months compared to 52% for H2-blockers (e.g. Famotidine)
- Duration
  - **Short-term PPI (4-8 weeks):** Uncomplicated GERD
  - **Long-term PPI:**
    - Barrett's esophagus
    - Severe esophagitis
    - Complicated GERD
  - **On-demand PPI:** episodic heartburn and GERD symptoms without inflammation

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Proton Pump Inhibitors

- **Administration:** 30-45 mins before 1st meal of the day or before the evening meal if taking BID
- **Duration:** At least 4-8 weeks for patients without alarm symptoms
- **Discontinuation:** If symptoms improve, decrease the dose and ultimately discontinue
- Any PPI will do- no one is superior to another

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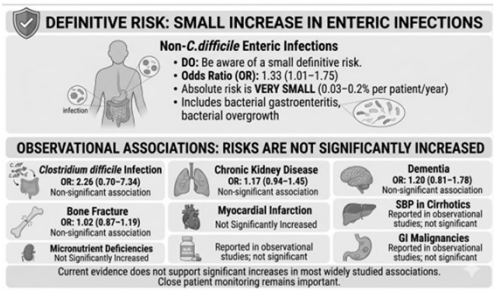
Long-Term Risks of PPI Use



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Short Term Side Effects of PPIs

Most Common Adverse Reactions

Mild and resolve with discontinuation, may be PPI preparation specific

- Headache
- Abdominal pain
- Nausea or vomiting
- Diarrhea or Constipation
- Flatulence

Rebound Acid Hypersecretion

- Upon PPI discontinuation
- Due to PPI-induced hyperplasia of gastric enterochromaffin-like cells that release gastrin
- Can be mitigated by gradual tapering of PPI dose

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Other Side Effects of PPIs

- Acute interstitial Nephritis
- Hypomagnesemia
- Fundic gland polyps

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Other Side Effects of PPIs

- **Acute interstitial Nephritis**
  - Can occur at any time and at any dose
  - Suspect if unexplained rise in serum creatinine, particularly if nonoliguric
  - Stop PPI immediately
- Hypomagnesemia
- Fundic gland polyps

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Other Side Effects of PPIs

- Acute interstitial Nephritis
- **Hypomagnesemia**
  - Risk factors:
    - high dose PPI
    - concomitant diuretics
    - low dietary magnesium
    - Females
    - Diabetics
    - CKD
- Fundic gland polyps

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Other Side Effects of PPIs

- Acute interstitial Nephritis
- Hypomagnesemia
- **Fundic gland polyps**
  - More likely with longer duration of PPI use
  - Very low risk of dysplasia (1%) compared to FGPs associated with Familial Adenomatous Polyposis (25-46% dysplasia)
  - Routine endoscopic surveillance not recommended
  - Solitary polyps and large FGPs should be resected

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Potassium Competitive Acid Blockers

- **Vonoprozan**- available in USA
- **Administration:** Before or After meals
- **Efficacy in healing inflammation:** More than 80%
- **Duration:** At least 4-8 weeks for patients without alarm symptoms
- **Discontinuation:** If symptoms improve, can discontinue
- **Risks:** Similar to PPIs

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Histamine-2 Receptor Antagonists

- **Famotidine**- available in the USA
- **Administration:** before or after meals
- **Efficacy in healing inflammation:** Less effective
- **Duration:** As needed for patients without alarm symptoms
- **Risks:** Tachyphylaxis

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Antacids, Alignates and Mucosal Protectants

- Provide short-term symptomatic relief
- Useful for nocturnal or post-meal symptoms
- Used as adjuncts to PPIs in those with erosive esophagitis
- **Antacids**: Calcium carbonate
- **Alginates**: Reflux Gourmet™, Gaviscon Advance™
- **Mucosal protectant**: Sucralfate (tablet or Suspension)

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Baclofen

- **Mechanism:** Reduces the frequency of transient lower esophageal sphincter relaxation
- **Application:** Adjunct in regurgitation predominant GERD or Belching
- **Side effects:** Dizziness, fatigue, sleepiness

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Surgery For Reflux

- When:
  - Refractory symptoms despite optimum medical therapy
  - Patient's desire to avoid long term medications
  - Large hiatal hernias
- What
  - Fundoplication
  - Transoral Incisionless Fundoplication (TIF)
  - Magnetic sphincter augmentation
  - Roux-en Y gastric bypass

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Surgery For Reflux

- When not to recommend surgery:
  - Patient well controlled on medical therapy
  - To prevent esophageal cancer in those with Barrett's esophagus

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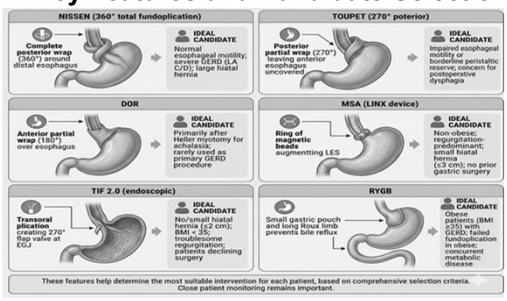
Anti-Reflux Interventions: Key Features and Candidate Selection



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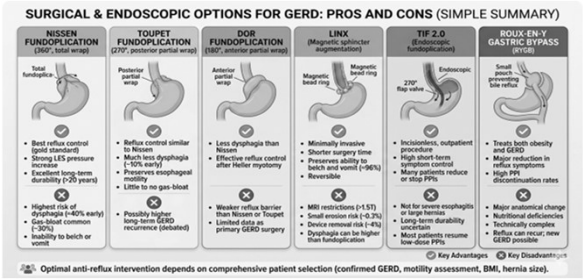
Anti-Reflux Interventions: Key Advantages and Disadvantages



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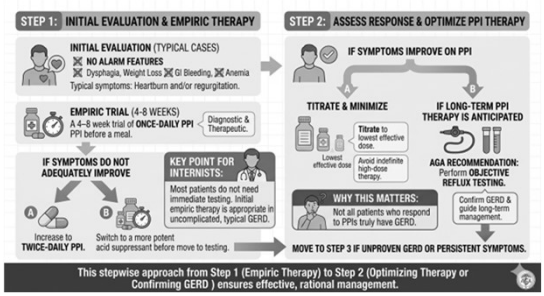
Management of GERD



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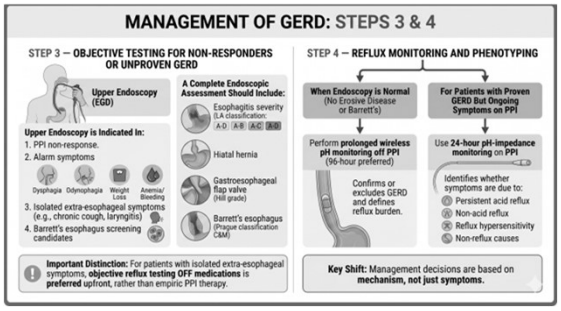
Management of GERD



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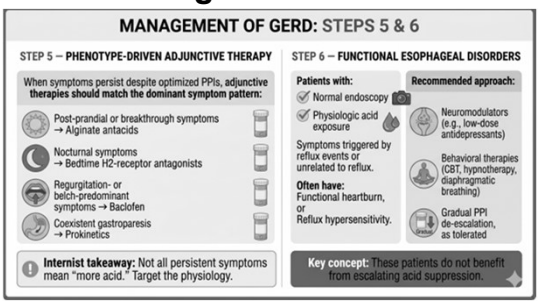
Management of GERD



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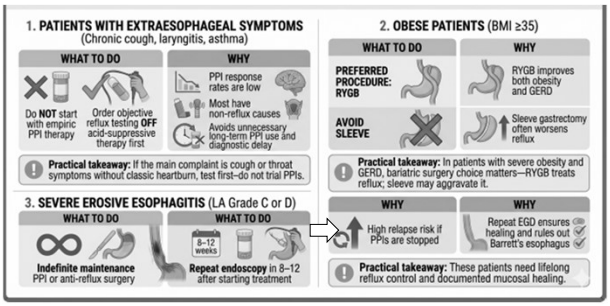
GERD Management in Special Populations



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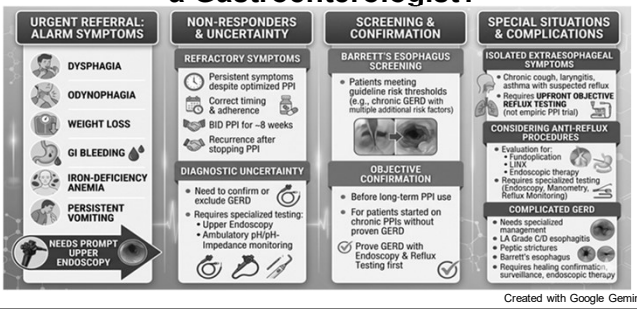
When Should You Refer GERD Patients to a Gastroenterologist?



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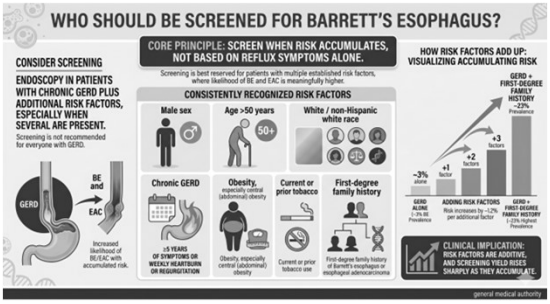
Screening for Barrett's Esophagus



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Case-1

A 45-year-old woman presents with a 6-month history of **burning retrosternal discomfort** occurring after meals and at night. She reports occasional regurgitation but denies dysphagia, odynophagia, weight loss, anorexia, vomiting, or gastrointestinal bleeding. She has tried over-the-counter antacids with minimal relief. Physical examination is unremarkable. What is the most appropriate next step in management?

A) Upper endoscopy

B) Ambulatory pH monitoring

C) **Empirical trial of a proton-pump inhibitor (PPI) for 2 months**

D) Barium swallow

E) Esophageal manometry

Answer: **Empirical trial of a proton-pump inhibitor (PPI) for 2 months**.

Rationale: In the absence of alarm symptoms (such as dysphagia, odynophagia, weight loss, anorexia, vomiting, or gastrointestinal bleeding), an empirical course of PPI therapy is a reasonable initial diagnostic and therapeutic approach for patients with typical GERD symptoms. This strategy is supported by evidence showing that a short course of high-dose PPI has a pooled sensitivity of 79% for GERD diagnosis in patients with typical symptoms and no alarm features. Upper endoscopy is reserved for patients with alarm symptoms or those at risk for Barrett's esophagus.

Fass R., New England Journal of Medicine Volume 387 • Number 13 • September 29, 2022; Pages: 1207-1216

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Case-2

A 54-year-old man presents with a 6-month history of heartburn and regurgitation. He reports new-onset dysphagia and unintentional weight loss of 10 pounds over the past two months. He has no prior history of gastrointestinal disease and has not tried acid suppression therapy. Physical examination reveals no acute findings.

Which of the following is the most appropriate next step in management?

A) Empirical trial of a proton-pump inhibitor

B) Ambulatory pH monitoring

C) Esophageal manometry

D) **Esophagogastroduodenoscopy (EGD)**

E) Barium swallow

Answer: Esophagogastroduodenoscopy (EGD).

Rationale: Upper endoscopy is indicated in patients with GERD symptoms who present with alarm features such as dysphagia or weight loss, as these may signal underlying complications including malignancy or strictures. EGD allows direct visualization and biopsy of the esophageal mucosa to evaluate for erosive esophagitis, Barrett's esophagus, or other pathology.

Fass R., New England Journal of Medicine Volume 387 • Number 13 • September 29, 2022; Pages: 1207-1216

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Case-3

A 60-year-old White man with a BMI of 32 and a 12-year history of chronic heartburn and regurgitation presents for routine follow-up. He is a current smoker and has a family history of esophageal adenocarcinoma. He denies dysphagia, weight loss, or gastrointestinal bleeding. Which of the following is the most appropriate next step?

A) Empirical trial of a proton-pump inhibitor

B) Ambulatory pH monitoring

C) **Upper endoscopy to screen for Barrett's esophagus**

D) Esophageal manometry

E) Barium swallow

Answer: Upper endoscopy to screen for Barrett's esophagus is indicated in patients with chronic (≥5 years) GERD symptoms and three or more of the following risk factors: male sex, age >50 years, White race, tobacco smoking, obesity, or a family history of Barrett's esophagus or esophageal adenocarcinoma. This approach is justified because these factors are associated with increased risk for Barrett's esophagus and esophageal adenocarcinoma, and targeted screening may allow for earlier detection and management of premalignant changes

Fass R., New England Journal of Medicine Volume 387 • Number 13 • September 29, 2022; Pages: 1207-1216

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Summary: Take Home Points

- Optimize PPI timing, dose, and adherence
- Many PPI nonresponders lack true GERD
- Use objective testing before long-term PPI therapy
- Titrate PPIs to the lowest effective dose
- Match adjunctive therapy to symptom phenotype
  - Alginates for postprandial breakthrough
  - Famotidine for nocturnal symptoms
  - Baclofen for regurgitation or belch-predominant symptoms.
- Confirm reflux before surgical referral
- Procedure choice depends on anatomy and BMI

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