

Gastroesophageal Reflux Disease (GERD)

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Epidemiology

GERD is one of the most prevalent gastrointestinal disorders worldwide.

- Global prevalence: 8–30%
- Western countries: 10–20%
- Increasing prevalence in Asia and Middle East
- More common in obese
- Incidence continues to rise
- Annual healthcare costs exceed billions of dollars

Why Does GERD Matter?

GERD is associated with:

- Reduced quality of life
- Sleep disturbance
- Work productivity loss
- Increased healthcare utilization
- Barrett's esophagus
- Esophageal adenocarcinoma

Definition

Gastroesophageal Reflux (GER)

- Passage of gastric contents into the esophagus.
- This may occur in healthy individuals.

Gastroesophageal Reflux Disease (GERD)

- Symptoms and/or complications resulting from reflux that impair quality of life.
(Montreal Definition)

GERD Phenotypes

Entity	definition	Endoscopy	Acid Exposure Time (AET)	Symptom association
Erosive GERD (ERD)	Typical reflux symptoms with endoscopic evidence of erosive gastritis	Erosive esophagitis (LA A–D)	Usually abnormal	Maybe positive or negative
Non-Erosive reflux disease (NERD)	Typical reflux symptoms with normal endoscopy but objective evidence of pathological reflux	Normal	Abnormal (AET>6%)	Maybe positive or negative
Reflux hyper sensitivity	Typicaly reflux symptoms despite normal reflux burden, due to esophageal hyper sensitivity to reflux events.	Normal	Normal (AET<4%)	Positive (SI = 50% or more and/or SAP > 95 % or more)
Functional Reflux	Heart burn with no evidence of pathological reflux	Normal	Normal (AET<4%)	Negative

Anti-Reflux Barrier

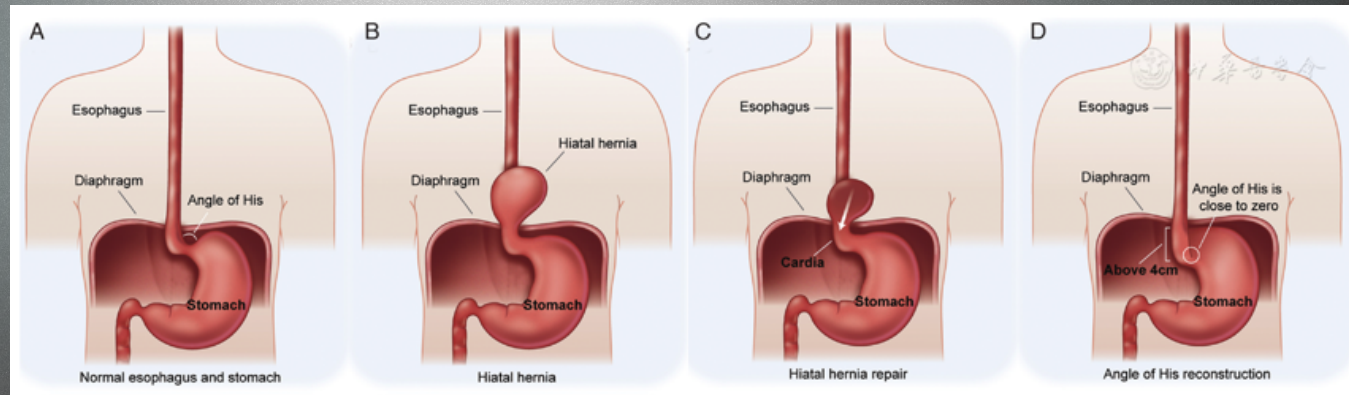
Lower esophageal sphincter

Crural diaphragm

Angle of His

Phrenoesophageal ligament

Intra-abdominal esophagus



Pathophysiology

GERD develops because of failure of the anti-reflux barrier

Major mechanisms:

- Transient LES relaxation (most common Reflux cause in most patient)
- Low resting LES pressure
- Hiatal hernia
- Delayed gastric emptying
- Impaired esophageal clearance
- Increased abdominal pressure

Risk Factors

Strong evidence

- Obesity
- Hiatal hernia
- Pregnancy
- Smoking
- Older age

Possible contributors

- High-fat diet
- Coffee
- Chocolate
- Carbonated beverages
- Alcohol

Clinical Presentation

Typical Symptoms

- Heartburn
- Acid regurgitation

Atypical Symptoms

- Non-cardiac chest pain
- Epigastric pain
- Nausea
- Belching

Extra-esophageal Symptoms

- Chronic cough
- Hoarseness
- Asthma
- Laryngitis
- Dental erosion

Alarm Symptoms

Patients with any of the following should undergo upper endoscopy:

- Dysphagia
- Odynophagia
- Weight loss
- Gastrointestinal bleeding
- Iron deficiency anemia
- Persistent vomiting
- Family history of upper GI malignancy
- Age >40 years with new-onset symptoms (depending on regional risk)

Initial Diagnostic Approach (AGC)

Typical GERD Symptoms



No alarm symptoms



8-week once-daily PPI trial



Symptoms resolved?

✓ Yes → GERD likely

✗ No → Further evaluation

Upper Endoscopy Indications

- Alarm symptoms
- Persistent symptoms after 8 weeks of therapy or recurrent symptoms after discontinuation PPIs
- Barrett's esophagus screening
- Preoperative evaluation
- Long-standing (≥ 5 years), frequent GERD symptoms in patients with multiple risk factors for Barrett's esophagus. Alternative diagnoses

What should be assessed?

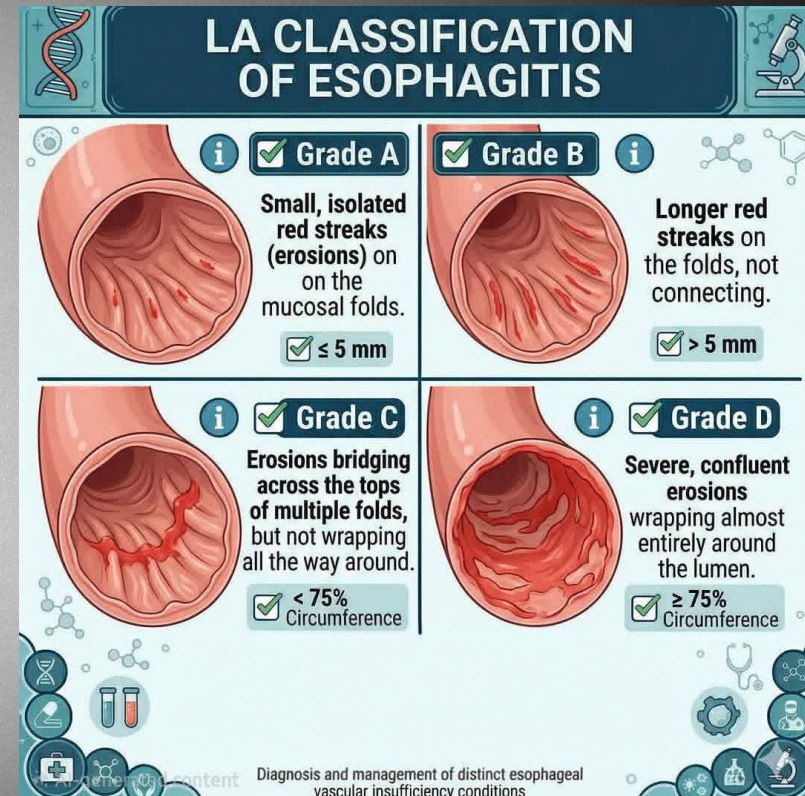
- Esophagitis
- Barrett's esophagus
- Peptic stricture
- Hiatal hernia
- Alternative diagnoses

Barretts major risk factors

- Male sex
- Age more than 50 years
- Central obesity
- Current or past smoking
- Family history of barrette or esophageal adenocarcinoma

Los Angeles GERD Classification

Grade	Description
A	5mm mucosal break or less
B	5mm mucosal break ore more
C	Continuous between folds (<75%)
D	>75% circumference or more



Refractory GERD (AGC2022)

- Persistent symptoms despite twice-daily PPI
- For 8-12 weeks
- Appropriate timing (30-60 min before meals)
- Good adherence
- Approximately 30-40% of patients report an incomplete response to PPI therapy, but only a minority have true refractory GERD.

Refractory GERD diagnostic approach

- Step 1: confirm compliance and correct timing
- Step 2: upper GI endoscopy
- Step 3: ambulatory reflux monitoring off PPI (over 24 to 36 hours)
- Step 4: high resolution manometry on PPI (if it is normal we must rule out functional causes)

Management of refractory GERD

Optimize PPI

- Correct timing
- Twice-daily dosing
- Consider switching PPI

Adjunctive therapy

- Alginate
- Bed time H2RA
- Baclofen

Refractory heartburn: common final diagnosis

diagnosis	Approximate frequency
Functional heart burn	40-50%
Reflux hyper sensitivity	30-40%
Persistent GERD	20-30%

GERD in Pregnancy

Why does GERD increase?

- Increased progesterone
- Reduced LES pressure
- Increased intra-abdominal pressure
- Delayed gastric emptying

Treatment

- Lifestyle modification
- Calcium carbonate antacids
- Alginates
- H2 receptor antagonists
- PPIs if symptoms persist (e.g., omeprazole, pantoprazole)

GERD in Obesity

Why?

- Increased intra-abdominal pressure
- More transient LES relaxations
- Larger hiatal hernia
- Higher acid exposure
- Chronic inflammation

Clinical Importance

- More severe esophagitis
- More Barrett's esophagus
- Higher recurrence rate

Treatment

- Weight loss is the most effective lifestyle intervention.

Treatment Overview

Goals of Therapy

- Relieve symptoms
- Heal erosive esophagitis
- Prevent recurrence
- Prevent complications
- Improve quality of life

Treatment Options

- Lifestyle modification
- Medical therapy
- Endoscopic therapy
- Anti-reflux surgery

Lifestyle Modification

Evidence-Based Recommendations

- Weight loss in overweight/obese patients
- Avoid meals within 2–3 hours before bedtime
- Elevate the head of the bed (15–20 cm)
- Sleep in the left lateral decubitus position (selected patients)

Individualized Recommendations

- Coffee or tea
- Chocolate
- Citrus
- Spicy food
- Carbonated beverages
- Alcohol
- Cigarette

Only if symptoms are triggered.

Proton Pump Inhibitors (PPIs)

Mechanism

- Irreversible inhibition of the $H^+/K^+-ATPase$ proton pump, so Profound suppression of gastric acid secretion.

Available PPIs

- Omeprazole
- Esomeprazole
- Pantoprazole
- Lansoprazole
- Rabeprazole
- Dexlansoprazole

How Should PPIs Be Taken?

- 30–60 minutes before breakfast

If BID:

Before breakfast

Before dinner

- Initial therapy:

8 weeks

- Maintenance Therapy

- Lowest effective dose.

- **Incorrect timing is one of the most common causes of apparent treatment failure.**

Healing Rates of PPIs

Disease	Healing rate
LA grade A/B	>90%
LA grade C	80-90%
LA grade D	70-80%
Symptomes response: heart burn improves in approximately 80-90% of patients	

Potassium-Competitive Acid Blockers (P-CABs)

Vonoprazan

Advantages

- No need to fasting
- Rapid onset
- Strong acid suppression
- Effective in severe erosive esophagitis
- Better nocturnal acid control

- Limited long-term data in some populations
- Availability varies by country
- Cost

Adjunctive Medical Therapy

H2-Receptor Antagonists

- Bedtime use for nocturnal acid breakthrough
- Tachyphylaxis limits long-term use

Alginates

- Form a mechanical raft barrier
- Effective for post-prandial symptoms
- Patient with acid pocket

Baclofen

- Reduces transient LES relaxations
- Useful in selected patients with troublesome regurgitation

Adverse Effects of Baclofen

- Drowsiness
- Dizziness
- Fatigue

Long-Term PPI Therapy

Indications

- LA Grade C/D esophagitis
- Barrett's esophagus
- Peptic stricture
- Chronic GERD with relapse after discontinuation

Deprescribing

- Attempt step-down therapy in patients without complications once symptoms are controlled.
- Current evidence does not support routine discontinuation of PPIs because of unproven adverse effects when there is a clear indication.



Procedure	Mechanism	Candidate	advantage
Transoral incisionless fundoplication (TIF)	Endoscopic reconstruction of the gastroesophageal valve	Hiatal hernia 2cm or less, LA Grade A/B, normal esophageal motility	Incisionless, improves regurgitation, reduce PPI use
Radiofrequency therapy (Seretta)	Radiofrequency energy delivered to the LES and gastric cardia	Not routinely recommended by many guidelines because of inconsistent efficacy	Improve in symptoms in some studies
Anti reflux mucosectomy (ARMS)	Endoscopic mucosal resection at the gastroesophageal junction for fibrosis tightness the EGJ		Minimally invasive, no implanted device need
Anti reflux mucosal ablation (ARMA)	Thermal ablation of mucosa around the gastroesophageal junction for strengthens the anti reflux barrier by fibrosis		Promising early result

Take-Home Messages

- GERD is heterogeneous.
- Objective testing should guide difficult cases.
- PPIs remain first-line therapy.
- Endoscopy is not required for every patient.
- Refractory GERD requires systematic evaluation.
- Treatment should be individualized.

Ten Clinical Pearls

- GERD is a clinical syndrome, not simply acid reflux.
- Typical symptoms respond well to empirical PPI therapy.
- Alarm symptoms mandate endoscopy.
- Correct timing of PPI is critical.
- Functional heartburn is common in refractory cases.
- Impedance-pH monitoring is the best test for persistent symptoms on PPI.
- Weight loss has the strongest evidence among lifestyle measures.



Thank you for your attention