

GERD · Gastroesophageal Reflux Disease

Stomach acid splashes up into your food tube (esophagus), and that tube has no armor against acid — so it burns.

THE ONE-LINE TRUTH

Stomach acid flows backward into the food tube, burning it over and over.

The chain — how it unfolds

1. The lower esophageal sphincter (LES) relaxes when it should not, or loses its grip strength. — why: The vagus nerve sends mistimed relax signals, smooth muscle weakens, or a hiatal hernia pulls the stomach up so the diaphragm cannot help pinch the door shut.
2. Stomach acid flows backward into the esophagus. — why: Without a tight one-way door, acid escapes upward — especially after meals, when lying flat, or when abdominal pressure (obesity, pregnancy) squeezes the stomach.
3. You feel burning behind your breastbone (heartburn). — why: Acid touching the unprotected lining of the esophagus activates pain nerves (nociceptors) that send a burning signal to your brain.
4. Acid may reach your throat and voice box (larynx), causing a sour taste, cough, hoarseness, or wheezing. — why: Reflux that climbs high enough irritates the larynx and can spill tiny drops into the airways (microaspiration), triggering cough and asthma-like symptoms.
5. Repeated acid baths inflame and erode the esophageal lining (esophagitis). — why: Hydrochloric acid and pepsin digest the surface cells just as they would digest food, leaving raw, bleeding spots (erosions or ulcers).
6. Scar tissue forms and tightens the tube (stricture). — why: Chronic inflammation triggers collagen deposition (fibrosis). Scar tissue shrinks as it matures, narrowing the esophagus and making swallowing hard (dysphagia).
7. The lining may change to Barrett's esophagus (intestinal metaplasia). — why: Constant acid damage kills the normal flat (squamous) cells, and the body replaces them with tougher, stomach-like (columnar) cells to survive the acid environment.

8. Barrett's esophagus carries a small but real risk of turning into cancer (esophageal adenocarcinoma). — why: Metaplastic cells are more prone to DNA mutations. Over years, some cells pick up enough mutations to become dysplastic (pre-cancer) and then invasive cancer.

Spot it — what you see, and why

- Burning feeling in the chest (heartburn): Stomach acid backs up into the esophagus (the food tube between your mouth and stomach). The lining of the esophagus is thin and not built to handle acid the way the stomach is, so the acid irritates it and causes a burning ache.
- Sour or bitter taste in the mouth (regurgitation): The valve at the bottom of the esophagus (the lower esophageal sphincter) doesn't close all the way, so stomach acid and partly digested food wash back up into the throat and mouth.
- Trouble swallowing (dysphagia): Years of acid burning the esophagus can cause swelling and scarring, which narrows the tube and makes it harder for food to slide down smoothly.
- Chest pain (non-cardiac chest pain): Acid irritating the esophagus can trigger sharp or squeezing chest pain that feels like heart pain but comes from the food tube instead. The nerves in the esophagus and heart share similar pathways, so the brain sometimes confuses the signals.
- Chronic cough or throat clearing: Tiny drops of stomach acid can spray up into the throat and airway (laryngopharyngeal reflux). This irritates the voice box and windpipe, triggering a protective cough reflex to clear the acid.
- Hoarse voice or sore throat: Acid reaching the voice box (larynx) inflames the vocal cords, making them swollen and stiff. Swollen cords vibrate differently, so the voice sounds raspy or weak.

Red flags — act now

- Trouble swallowing or pain when swallowing
- Unintended weight loss
- Vomiting blood or passing black, tarry stools
- New reflux symptoms starting after age 60
- Anemia (low red blood cell count) without an obvious cause

Treat it — in this order

1. Proton pump inhibitor (PPI) once daily 30–60 minutes before breakfast for 8 weeks (e.g. omeprazole 20 mg, esomeprazole 40 mg, pantoprazole 40 mg) → PPIs block the H⁺/K⁺-ATPase pump (the final step in acid production) in the stomach's parietal cells, cutting acid secretion by > 90 %. Less acid means less burning, and the esophageal lining can heal. Heals erosive esophagitis in 80–90 % of patients in 8 weeks (ACG, AGA guidelines).
2. Lifestyle modification: lose weight if BMI > 25, elevate head of bed 6–8 inches, avoid meals 2–3 hours before lying down → Weight loss reduces intra-abdominal pressure that pushes acid upward. Elevation uses gravity to keep acid in the stomach at night. Not eating before bed keeps the stomach empty so there is less volume to reflux. These changes lower acid exposure time and reduce nighttime symptoms.
3. Avoid trigger foods and substances: caffeine, alcohol, chocolate, peppermint, fatty or spicy foods, smoking cessation → Caffeine, alcohol, chocolate, and peppermint directly relax the lower esophageal sphincter. Fatty foods slow gastric emptying, leaving more acid sitting in the stomach. Smoking reduces sphincter tone and saliva (which neutralizes acid). Avoiding these reduces reflux episodes.
4. H₂-receptor antagonist at bedtime if breakthrough nighttime symptoms (e.g. famotidine 20 mg) → H₂ blockers (famotidine, ranitidine) block histamine type-2 receptors on parietal cells, a second pathway for acid secretion. Adding one at night can cover the window when PPI levels drop and nocturnal acid secretion peaks.
5. Alginate-antacid combination after meals (e.g. Gaviscon) → Alginate forms a physical foam raft that floats on top of stomach contents and blocks acid from splashing upward during the postprandial (after-meal) period. Provides mechanical barrier for 30–60 minutes.

Your top priorities at the bedside

1. Check for alarm signs - trouble swallowing, painful swallowing, weight loss, bleeding, age over 60 with new symptoms, or frequent vomiting - and notify provider immediately if present — why: These red flags suggest cancer, stricture (narrowing), or severe ulcers in the esophagus (food tube) that need urgent endoscopy (camera test) before starting treatment
2. Teach patient to take PPI medicine 30 to 60 minutes before breakfast on an empty stomach every day — why: Proton pump inhibitors (PPIs) block acid pumps in stomach cells but only work when pumps are active during eating; taking before meals gives maximum acid suppression
3. Educate patient to stop eating 2 to 3 hours before bedtime and avoid lying flat after meals — why: Gravity helps keep stomach acid down; lying down allows acid to flow backward into the esophagus causing mucosal (lining) damage and symptoms