Proton pump inhibitors (PPIs): when to take them, and when to taper off

Proton pump inhibitors - **PPIs** - are among the most commonly prescribed drugs in Denmark and worldwide. **Omeprazole, esomeprazole, pantoprazole and lansoprazole** work by shutting down the small acid pumps in the stomach lining. The result is a strong, sustained drop in gastric acid that lets inflamed tissue heal and calms the pain of reflux and peptic ulcers.

PPIs are effective, cheap and generally safe. The problem starts when a short course becomes years of use without a clear reason. Systematic reviews suggest that **between 25 % and 60 % of patients on PPIs have no active medical indication** for staying on them [1,4]. This article explains when PPIs are the right choice, what the risks of long-term use look like, and how to taper off safely.

When are PPIs the right choice?

PPIs are typically prescribed for 4-8 weeks in the following conditions:

- **GERD (acid reflux)** with documented oesophagitis or daily symptoms that don't respond to lifestyle changes and antacids.
- **Peptic ulcer disease** (gastric or duodenal), alone or as part of Helicobacter pylori eradication.
- **Barrett's oesophagus** - usually long-term maintenance.
- **Gastric protection** alongside NSAIDs (ibuprofen, diclofenac), aspirin or anticoagulants in patients >65 or with a previous ulcer.
- **Zollinger-Ellison syndrome** and other rare hypersecretory states.

For mild, occasional symptoms, the first line should be **lifestyle** (weight loss, raised head of the bed, less coffee and alcohol, no large late-evening meals) and **antacids or alginates** as needed. PPIs are best reserved for patients with a real indication.

What do we know about long-term use?

When gastric acid is suppressed for months or years, the absorption of certain nutrients changes and the gut's defence against bacteria weakens. The numbers below come from large cohort studies and meta-analyses and are reported as **relative risk increases** - not as the absolute risk for any individual. For most patients the absolute risk remains low.

Adverse outcome	Statistical risk	Mechanism
B12 and calcium deficiency	12-18 % drop in serum B12 over 12 months. Up to 20 % deficiency in chronic users [3].	Gastric acid releases B12 from protein and dissolves calcium. Long-term suppression reduces absorption.
Clostridioides difficile infection	OR ~1.7-2.3 [1].	Gastric acid is a barrier against gut pathogens. Low acid lets bacteria pass intact into the bowel.
Bone fractures (hip, spine)	35-55 % increase in relative risk with 2-6+ years of high-dose use, mainly in older adults [1,3].	Reduced calcium absorption and elevated parathyroid hormone over time.
Chronic kidney disease	Slightly elevated relative risk after several years of use [5].	Rare allergic interstitial nephritis that can become chronic if missed.
Magnesium deficiency	Uncommon but may cause cramps, arrhythmias and fatigue.	Reduced intestinal absorption after years of use.

These numbers should be weighed against the alternative: untreated reflux oesophagitis can lead to **stricture, Barrett's oesophagus and rarely adenocarcinoma**, and an untreated peptic ulcer can bleed or perforate. PPIs remain the right choice for many. The point is that the treatment must be **reviewed regularly**, not renewed on autopilot.

Deprescribing

Once the original reason is gone - the ulcer has healed, GERD symptoms have settled, the NSAID course is finished - PPIs should be tapered, not stopped abruptly. Sudden withdrawal often triggers **rebound acid hypersecretion**: the stomach produces a surge of extra acid for 2-8 weeks and symptoms return. Many patients interpret this as "I needed the drug after all" and keep going unnecessarily.

A typical taper looks like this:

1. **Halve the dose** for 2-4 weeks (for example from 40 mg to 20 mg omeprazole).
2. **Switch to alternate days** for another 2-4 weeks.
3. **Stop completely**, with antacids or an alginate on hand for any initial breakthrough symptoms.
4. Use lifestyle measures actively throughout the taper.

Patients with Barrett's oesophagus, recurrent severe ulcers or confirmed severe reflux oesophagitis should remain on PPIs, ideally at the lowest effective dose.

What to watch for

- **Don't take PPIs without a reason.** Short, low-dose over-the-counter PPIs are fine for occasional heartburn, but daily use beyond 2-4 weeks should be discussed with a doctor.
- **Don't stop abruptly after months of use.** Taper over 4-8 weeks.
- **Take alarm symptoms seriously.** Black tarry stool, haematemesis, weight loss, swallowing difficulty or iron deficiency need investigation, not more PPI.
- **Check nutrients on long-term therapy.** B12, ferritin, calcium and magnesium can be measured with a simple blood test.
- **Don't combine acid suppressants.** PPI plus H2 blocker rarely adds benefit but adds side effects.

Assessment and follow-up at Kirurgen.dk

If you've been on a PPI for more than six months without clear follow-up, or your symptoms persist despite treatment, we can help. We offer outpatient **oral and nasal gastroscopy** with biopsy and direct CLO testing for Helicobacter pylori, typically within 1-2 weeks. With a clear diagnosis you and your doctor can decide whether the PPI should continue, be adjusted or be tapered off.

See also: GERD reflux, peptic ulcer disease, Helicobacter pylori, Barrett's oesophagus, black stool.

References

1. Andrawes M. *Proton Pump Inhibitors (PPIs) - An Evidence-Based Review of Indications, Efficacy, Harms, and Deprescribing.* 2025.
2. Kim SY, Lee KJ. *Potential Risks Associated With Long-term Use of Proton Pump Inhibitors and the Maintenance Treatment Modality for Patients With Mild GERD.* J Neurogastroenterol Motil 2024;30(4):407-420.
3. Shahid MS, et al. *A Systematic Review of Long-Term Use of PPIs in Older Adults on Polypharmacy: Do PPIs Deplete Nutrients?* Cureus 2025;17(8):e90888.
4. Shanika LGT, et al. *Proton pump inhibitor use: systematic review of global trends and practices.* Eur J Clin Pharmacol 2023;79(9):1159-1172.
5. Maideen NMP. *Adverse Effects Associated with Long-Term Use of Proton Pump Inhibitors.* Chonnam Med J 2023;59(2):115-123.