PPIs are very effective and well-tolerated drugs for dyspeptic symptoms resulting from gastro-oesophageal reflux disease (GORD) or peptic ulcer disease.

Most guidelines for the management of GORD\(^1\)-\(^5\) recommend:
- an initial 4–8 week course of standard-dose PPI for moderate to severe GORD to rapidly control symptoms and heal oesophagitis, then
- ‘step-down’ to the minimum PPI dose that maintains symptom control following initial course. Step-down options include low dose PPIs and intermittent, symptom-driven therapy.

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Establish whether ongoing PPI therapy is necessary for each patient

The goal of initial therapy may have been to:
- aid diagnosis of GORD
- relieve reflux-induced or dyspepsia symptoms
- heal oesophagitis
- heal peptic ulcers
- prevent NSAID or other drug-induced peptic ulcers or symptoms.\(^1\)

Following the initial therapy, review the success of treatment for each patient with a view to reducing or ceasing PPIs as appropriate.\(^1,4\)

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Tips for when to review PPI therapy

- After 4 weeks initial therapy at standard-dose for GORD, ulcer healing or oesophagitis.\(^1,2\)
- After 8 weeks where initial therapy was continued for a further 4 weeks for GORD, ulcer healing or oesophagitis.\(^1,2\)
- For patients whose PPI was initiated during hospitalisation where there is not a clear indication.
- Regularly where co-prescribed medications may induce reflux/dyspepsia symptoms.
- Whenever repeat prescriptions are requested.
### Comparative information for proton pump inhibitors

<table>
<thead>
<tr>
<th>Indications</th>
<th>Omeprazole (Acimax, Losec, Probid) tablet, capsule</th>
<th>Lansoprazole (Zoton) capsule, granules (for suspension)</th>
<th>Pantoprazole (Somac) tablet</th>
<th>Rabeprozole (Pariet) tablet</th>
<th>Esomeprazole (Nexium) tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptic ulcer</td>
<td>- initially 20–40 mg, day then 20 mg/day</td>
<td>- initially 30 mg/day then 15–30 mg/day</td>
<td>- initially 40 mg/day</td>
<td>- initially 20 mg/day</td>
<td>-</td>
</tr>
<tr>
<td>GORD – initially</td>
<td>- 20mg/day</td>
<td>- 30mg/day</td>
<td>- 40mg/day</td>
<td>- 40mg/day</td>
<td>- 40mg/day</td>
</tr>
<tr>
<td>GORD – initially if complications present</td>
<td>- 10mg twice/day</td>
<td>- reduce to minimum dose required</td>
<td>- reduce to minimum dose required</td>
<td>- reduce to minimum dose required</td>
<td>- reduce to minimum dose required*</td>
</tr>
<tr>
<td>GORD – maintenance</td>
<td>- 20mg twice/day</td>
<td>- 30mg twice/day</td>
<td>- 40mg twice/day</td>
<td>- 20mg twice/day</td>
<td>- 20mg twice/day</td>
</tr>
<tr>
<td>Scleroderma oesophagus</td>
<td>- seek specialist advice</td>
<td>- seek specialist advice</td>
<td>- seek specialist advice</td>
<td>- seek specialist advice</td>
<td>-</td>
</tr>
<tr>
<td>Zollinger-Ellison (Z-E) syndrome</td>
<td>- up to 120 mg/day</td>
<td>- up to 180 mg/day</td>
<td>- up to 240 mg/day</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Treatment and prophylaxis of ulcers and erosion associated with NSAID use</td>
<td>- treatment: 20–40 mg/day 4–8 weeks prophylaxis: 20 mg/day</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>H. pylori eradication (in combination with dual antibiotic therapy for 1 week)</td>
<td>- 20mg twice/day</td>
<td>- 30mg twice/day</td>
<td>- 40mg twice/day</td>
<td>- 20mg twice/day</td>
<td>- 20 mg twice/day</td>
</tr>
<tr>
<td>Higher strength products</td>
<td>- 20mg</td>
<td>- 30mg</td>
<td>- 40mg</td>
<td>- 20mg</td>
<td>- 40mg</td>
</tr>
<tr>
<td>Lower strength products</td>
<td>- 10mg</td>
<td>- 15mg</td>
<td>- 20mg</td>
<td>- 10mg</td>
<td>- 20mg*</td>
</tr>
<tr>
<td>Dose frequency</td>
<td>- Once or twice daily, swallowed whole; do not chew or crush. Tablet may be dispersed in water or fruit juice and taken within 30 minutes. Give doses &gt; 80 mg/day as 2 divided doses.</td>
<td>- Once or twice daily. Take half an hour before food. Swallow capsule whole; do not open, crush or chew. Give doses &gt; 120 mg/day as 2 divided doses.</td>
<td>- Once, twice, or three times daily. Swallow tablet whole; do not crush or chew. May be taken with or without food. Give doses &gt; 160 mg/day as 2 or 3 divided doses.</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### All PPIs are very effective in controlling GORD symptoms and are clinically equivalent in most patients

Most clinical studies show that all PPIs have similar efficacy in the treatment of acid-related gastrointestinal disorders. Some studies have shown small differences but these studies have not always used equivalent doses. Healing rates at 8 weeks in erosive oesophagitis for example are in excess of 80%:
- omeprazole 20 mg vs esomeprazole 20 mg (87% vs 90%)  
- lansoprazole 30 mg vs esomeprazole 40 mg (89% vs 93%)  
- pantoprazole 20 mg vs esomeprazole 40 mg (84% vs 94%), or 87% vs 94%  
- Maintaining remission in healed erosive oesophagitis ranges from 74% to 83% after 6 months maintenance treatment with lansoprazole 15 mg or esomeprazole 20 mg daily. Efficacy and adverse effects may vary between patients. Failure of therapy or an adverse effect with one PPI should not preclude a trial with another. Decrease PPI use to low doses or intermittent, symptom-driven therapy once GORD symptoms are controlled.

### Step-down options

- **Low-dose PPIs**: 70–80% patients with GORD can control their symptoms on low doses of PPIs e.g. omeprazole 10 mg or equivalent.

- **Intermittent, symptom-driven use**: patients with GORD take a PPI on days when symptoms occur e.g. omeprazole 10–20 mg or equivalent 2–3 days per week.

- **Ceasing PPIs**: a trial of withdrawal of PPI is recommended after the initial successful treatment course. Many people with milder disease can manage symptoms with lifestyle changes, antacids and H2-antagonists if needed. If transient rebound hypersecretion occurs following cessation, consider H2-antagonists or antacids to reduce discomfort. Cessing PPIs is not appropriate in patients with severe oesophagitis or other complications such as strictures, scleroderma, Zollinger-Ellison syndrome or Barrett’s oesophagus. These patients will require ongoing full or double-dose PPI therapy. However regular review for efficacy, drug interactions and adverse effects is recommended.

### Adverse effects

- All PPIs have a similar adverse effect profile and no contra-indications for most users.

- Common adverse effects (incidence > 1%): headache, nausea, diarrhoea, abdominal pain, dizziness and fatigue.

- Although individual risk of a serious adverse effect to a PPI is low, the high prevalence of use may lead to a higher burden of adverse effects.

### Interactions

- Omeprazole and esomeprazole inhibit cytochrome P450 and may increase phenytoin concentration and anticoagulation effects of warfarin. See Australian Medicines Handbook for other interactions.

### Hepatic/renal impairment

- No dosage adjustment necessary for renal or mild/moderate hepatic impairment. Reduce PPI to the lowest dose possible in severe hepatic impairment.

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*The lowest available tablet strength of esomeprazole in Australia is 20 mg. Clinical trials have not always used equivalent doses when comparing PPIs.*

**Source**: This table is based on materials developed by the Drug and Therapeutics Information Service (DATIS), and information from: references 2, 3, 7, and 8.

### Key:
- ✔️ Indicated for use
- ❌ Not indicated

**Note**: Prescribing PPI for indications other than restricted benefits on the PBS should be by private prescription.
Consider testing for and treating *Helicobacter pylori* in people with uninvestigated dyspepsia or who are using PPIs long term

Test for *H. pylori* in people

✓ with uninvestigated dyspepsia.

‘Test and treat’ approach may improve symptoms and reduce rates of referral for endoscopy more than empiric PPI therapy.

Refer candidates who are over 45–50 years of age and present with uninvestigated, persistent dyspepsia (GORD excluded), or with ALARM symptoms for endoscopy and specialist management.

✓ on long-term PPIs (e.g. 12 months or more). This approach may reduce the risk that long-term acid suppression in the presence of *H. pylori* may lead to atrophic gastritis and ultimately gastric cancer.

Those whose *H. pylori* test is:

- **positive** should receive eradication therapy (Klacid Hp7, Losec Hp7 or Nexium Hp7)
- **negative** and who have uninvestigated dyspepsia may benefit from a short course of a PPI.

### H. pylori tests

<table>
<thead>
<tr>
<th>When to use and limitations</th>
<th>13C/14C–Urea Breath Test (C-UBT)</th>
<th>Faecal Antigen Test (FAT)</th>
<th>Serology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use to detect presence of <em>H. pylori</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Use to confirm eradication of <em>H. pylori</em> a minimum of 4 weeks after eradication therapy</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Interference by PPI (withhold for 2 weeks prior to test)¹</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Interference by antibiotics (withhold for 4 weeks prior to test)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Test in candidates who meet all of the following:

- Aged < 45–50 years
- Dyspepsia lasting > 4 weeks
- Dyspepsia not previously investigated
- No ALARM symptoms
- Not an NSAID user
- GORD has been excluded

### ALARM (or ALARMS) symptoms

A – Anaemia

L – Loss of weight

A – Anorexia, early satiety

R – Recurrent symptoms or previous gastric ulcer or gastric surgery

M – Mass/Melaena

S – Swallowing difficulties, recurrent vomiting or vomiting up blood

### References


