

# Proton-pump inhibitor step-down therapy

## Key Messages from the National Prescribing Service<sup>1, 2</sup>:

- A four to eight week course of standard-dose PPI therapy can be used to control symptoms of GORD
- After this time, patients should be decreased to the lowest dose and frequency of PPI that is effective (except those with the specific conditions on the flowchart)
- Prescribers and pharmacists should review the need for ongoing maintenance therapy to minimise the risks of long-term PPI side-effects
- Patients can modify their lifestyle to help reduce the need for PPI therapy

## Why target PPIs?

- Many people are still being treated for reflux symptoms that they no longer have (estimated to be up to 46% in a 2005 study<sup>3</sup>)
- Long-term risks of continuous PPI treatment that are emerging include an increased incidence in fractures, enteric infections, community-acquired pneumonia, interstitial nephritis and vitamin B<sub>12</sub> malabsorption in long-term PPI users<sup>4-12</sup>
- PPIs cost the Australian government approximately \$405 million in 2007 with over 12.7 million prescriptions written<sup>13</sup>

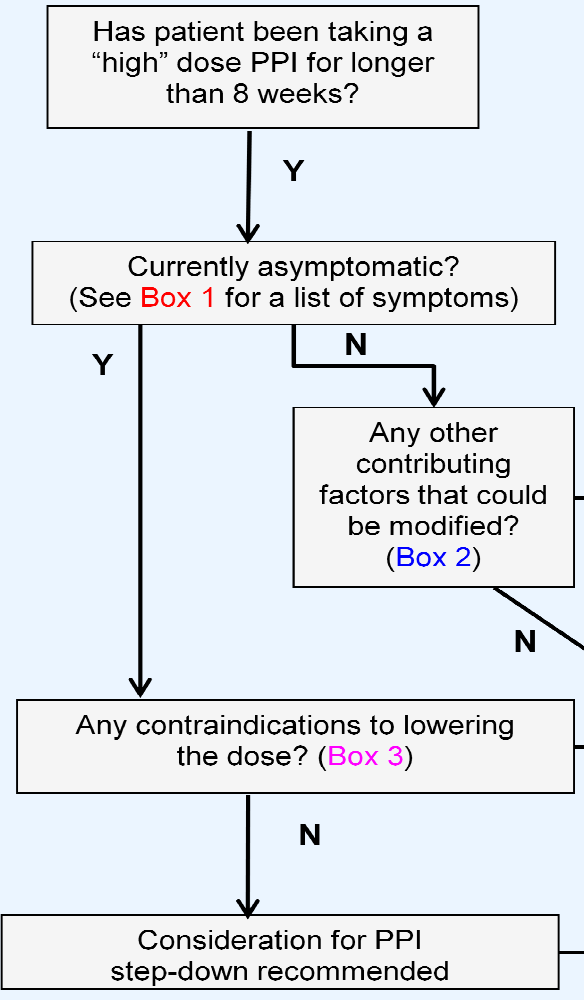
## What can doctors and community pharmacists do?

- Determine if the patient is taking any medications that could be causing or exacerbating their reflux symptoms (see flowchart for a list of medications)
- Encourage the patient to modify their lifestyle to decrease any factors that could be contributing to their symptoms
- Follow the steps in the flowchart and encourage eligible patients to talk to their doctor about decreasing their dose or frequency of use

### References:

1. NPS PPR May 2009: Proton pump inhibitors: step-down to symptom control. Available at: [http://www.nps.org.au/\\_data/assets/pdf\\_file/0016/70711/PPR\\_45\\_PPIs.pdf](http://www.nps.org.au/_data/assets/pdf_file/0016/70711/PPR_45_PPIs.pdf) 2009.
2. NPS News 46: Proton Pump inhibitors. Available at: [http://www.nps.org.au/health\\_professionals/publications/nps\\_news/current/nps\\_news\\_46/proton\\_pump\\_inhibitors](http://www.nps.org.au/health_professionals/publications/nps_news/current/nps_news_46/proton_pump_inhibitors). 2006.
3. Hughes JD, Tanpurekul W, Keen NC, Ee HC. Reducing the cost of proton pump inhibitors by adopting best practice. *Qual Prim Care* 2009;17(1):15-21.
4. Laine L. Proton pump inhibitors and bone fractures? *Am J Gastroenterol* 2009;104(2 Suppl):S21-6.
5. Kaye JA, Jick H. Proton pump inhibitor use and risk of hip fractures in patients without major risk factors. *Pharmacotherapy* 2008;28(8):951-9.
6. Dalton BR, Lye-Maccannell T, Henderson EA, Maccannell DR, Louie TJ. Proton pump inhibitors increase significantly the risk of Clostridium difficile infection in a low-endemicity, non-outbreak hospital setting. *Aliment Pharmacol Ther* 2009;29(6):626-34.
7. Dial S, Alrasadi K, Manoukian C, Huang A, Menzies D. Risk of Clostridium difficile diarrhea among hospital inpatients prescribed proton pump inhibitors: cohort and case-control studies. *CMAJ* 2004;171(1):33-8.
8. Roughhead EE, Ramsay EN, Pratt NL, Ryan P, Gilbert AL. Proton-pump inhibitors and the risk of antibiotic use and hospitalisation for pneumonia. *Med J Aust* 2009;190(3):114-6.
9. Sarkar M, Hennessy S, Yang YX. Proton-pump inhibitor use and the risk for community-acquired pneumonia. *Ann Intern Med* 2008;149(6):391-8.
10. Vakil N. Acid inhibition and infections outside the gastrointestinal tract. *Am J Gastroenterol* 2009;104(2 Suppl):S17-20.
11. Sierra F, Suarez M, Rey M, Vela MF. Systematic review: Proton pump inhibitor-associated acute interstitial nephritis. *Aliment Pharmacol Ther* 2007;26(4):545-53.
12. Force RW, Meeker AD, Cady PS, Culbertson VL, Force WS, Kelley CM. Ambulatory care increased vitamin B12 requirement associated with chronic acid suppression therapy. *Ann Pharmacother* 2003;37(4):490-3.
13. Australian Government Department of Health and Ageing: Expenditure and Prescriptions twelve months to 30 June 2007 Report. Available at: [http://www.health.gov.au/internet/main/publishing.nsf/Content/A58720844CBFCB47CA257218000D91C7/\\$File/pbpa%20annual%20report%202007.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/A58720844CBFCB47CA257218000D91C7/$File/pbpa%20annual%20report%202007.pdf), 2009.

Procedure for pharmacist intervention in a community pharmacy setting:

Procedure for Intervention	Recommendation	Explanatory Notes
 <pre> graph TD     Q1[Has patient been taking a "high" dose PPI for longer than 8 weeks?] -- Y --&gt; Q2[Currently asymptomatic? (See Box 1 for a list of symptoms)]     Q2 -- Y --&gt; Q3[Any contraindications to lowering the dose? (Box 3)]     Q2 -- N --&gt; Q4[Any other contributing factors that could be modified? (Box 2)]     Q3 -- Y --&gt; R1[No recommendation]     Q3 -- N --&gt; R2[Consideration for PPI step-down recommended]     Q4 -- Y --&gt; R1     Q4 -- N --&gt; R2     R2 --&gt; R3[Consideration for PPI step-down recommended]           </pre> <p>Has patient been taking a "high" dose PPI for longer than 8 weeks?</p> <p>Y</p> <p>Currently asymptomatic? (See <b>Box 1</b> for a list of symptoms)</p> <p>Y</p> <p>N</p> <p>Any other contributing factors that could be modified? (<b>Box 2</b>)</p> <p>Y</p> <p>N</p> <p>Any contraindications to lowering the dose? (<b>Box 3</b>)</p> <p>Y</p> <p>N</p> <p>Consideration for PPI step-down recommended</p>	<p>Provide 'Patient Information' leaflet and advise on lifestyle modifications</p> <p>No recommendation</p> <p>Provide 'Patient Information' leaflet and recommend GP visit</p>	<p><b>Box 1. Symptoms of dyspepsia</b></p> <ul style="list-style-type: none"> <li>• Burning feeling rising up from the stomach or lower chest; typically provoked by meals, bending or lying down</li> <li>• Regurgitation and/or excess salivation</li> <li>• Atypical symptoms can include: non-cardiac chest pain, non-specific abdominal pain/discomfort, nausea, belching, bloating, hoarseness, sore throat and cough</li> <li>• If any of the following symptoms are reported, refer immediately to a GP: difficult or painful swallowing, nocturnal choking, haematemesis (vomiting bright red blood), unintentional weight loss, chest pain radiating to chin or left shoulder</li> </ul> <p><b>Box 2. Other contributing factors for possible modification</b></p> <ul style="list-style-type: none"> <li>• Excessive weight or obesity</li> <li>• Smoking</li> <li>• Diet eg. caffeine, chocolates, fats, spices, acidic foods, large meals or alcohol</li> <li>• Supine position</li> <li>• Medications e.g. nitrates, calcium channel blockers, anticholinergics, oral corticosteroids, aspirin, NSAIDs, bisphosphonates, tetracyclines, potassium chloride.</li> </ul> <p><b>Box 3. Possible contraindications to lowering PPI dose</b></p> <ul style="list-style-type: none"> <li>• Severe oesophagitis</li> <li>• Previous oesophageal stricture or scleroderma</li> <li>• Barrett's oesophagus</li> <li>• Zollinger-Ellison syndrome</li> </ul>