

# Appropriate prescribing and deprescribing of proton pump inhibitors

## New Choosing Wisely Canada toolkit

Elaine Bland BM CCFP(PC) FCFP Sander Veldhuyzen van Zanten MD PhD FRCPC Wade Thompson PharmD PhD

### Clinical question

How can I prescribe proton pump inhibitors (PPIs) most effectively in my patients? What is the likely diagnosis that requires PPIs, and how should patients be treated?

### Bottom line

PPIs are among the most prescribed drugs in Canada, yet 30% to 40% of PPI prescriptions lack an ongoing indication.<sup>1,2</sup> Family physicians are well placed to reduce prescribing of PPIs since they write 75% of PPI prescriptions,<sup>3</sup> but other members of the care team, including pharmacists, patients, and gastroenterologists, also play important roles. Reducing PPI overuse involves the following: prescribing PPIs only for evidence-based indications and with the appropriate dose and duration; regular consideration of deprescribing (stopping or dose reduction); and knowing and documenting reasons for patients to continue taking PPIs long term.

### Case

A 59-year-old woman is complaining of a burning sensation behind her sternum. She has been experiencing this most days of the week and it is interfering with her sleep. Antacids have been helping “a bit.” She does not take any other medications.

### Evidence

Rates of PPI use vary depending on the population and setting. In Alberta, 11% of the general population receive at least 1 PPI prescription each year while around 30% of Canadians 65 years and older take PPIs.<sup>3,4</sup> It is estimated that 30% to 40% of patients taking PPIs over the long term potentially lack an indication for long-term use.<sup>1,2</sup> While PPIs provide symptom relief in gastroesophageal reflux disease (GERD) and dyspepsia, the response rate for GERD is higher, with up to 80% of patients having symptom resolution in 8 weeks.<sup>5-7</sup> The initial recommended treatment duration for PPIs is typically up to 8 weeks.<sup>5,7</sup> Some patients will have an indication to continue a PPI long term (eg, Barrett esophagus, patients with high gastrointestinal [GI] bleed risk who require a nonsteroidal anti-inflammatory drug [NSAID]). In patients who have been treated long term (eg, >1 year) whose symptoms have resolved and have no indication for ongoing use, it is reasonable to consider a trial of

deprescribing the PPI.<sup>8</sup> Sometimes PPIs may have been started for indications where there is lack of evidence for benefit (eg, chronic cough).<sup>9</sup> Consideration of deprescribing is also warranted in these cases.

Options for deprescribing long-term PPIs include tapering or taking them on demand (as needed until symptoms resolve) or lowering to a dose and frequency that prevents symptoms from recurring.<sup>8,10,11</sup> Abruptly stopping PPIs in those who have taken them long term has a higher risk of temporary rebound acid hypersecretion and symptom relapse and is generally not recommended.<sup>10,11</sup>

Adverse effects of long-term PPI use have been extensively researched but most studies have weak designs.<sup>12</sup> Most purported long-term adverse effects are unlikely to be causally related to PPIs.<sup>13</sup> Rare established adverse effects include a small increased risk of enteric infections, low magnesium levels, and diarrhea.<sup>13</sup> Despite their safety, unnecessary long-term PPI use contributes to pill burden, drug costs, and potential drug interactions, and thus remains an important target for deprescribing in appropriate patients.

### Approach

In all patients it is important to determine whether lifestyle issues, such as smoking, obesity, and unhealthy diet, have contributed to symptoms. When a prescription for a PPI is initiated, patients should have an appropriate indication for its use, be started on the right dose, and receive instructions on the correct duration of treatment. **Table 1** provides further details on these 3 points.<sup>14-18</sup> The table highlights principles of appropriate PPI prescribing for the most common primary care indications (eg, symptomatic GERD, dyspepsia, preventing GI bleeding), and indications based on gastroenterology specialist assessment.

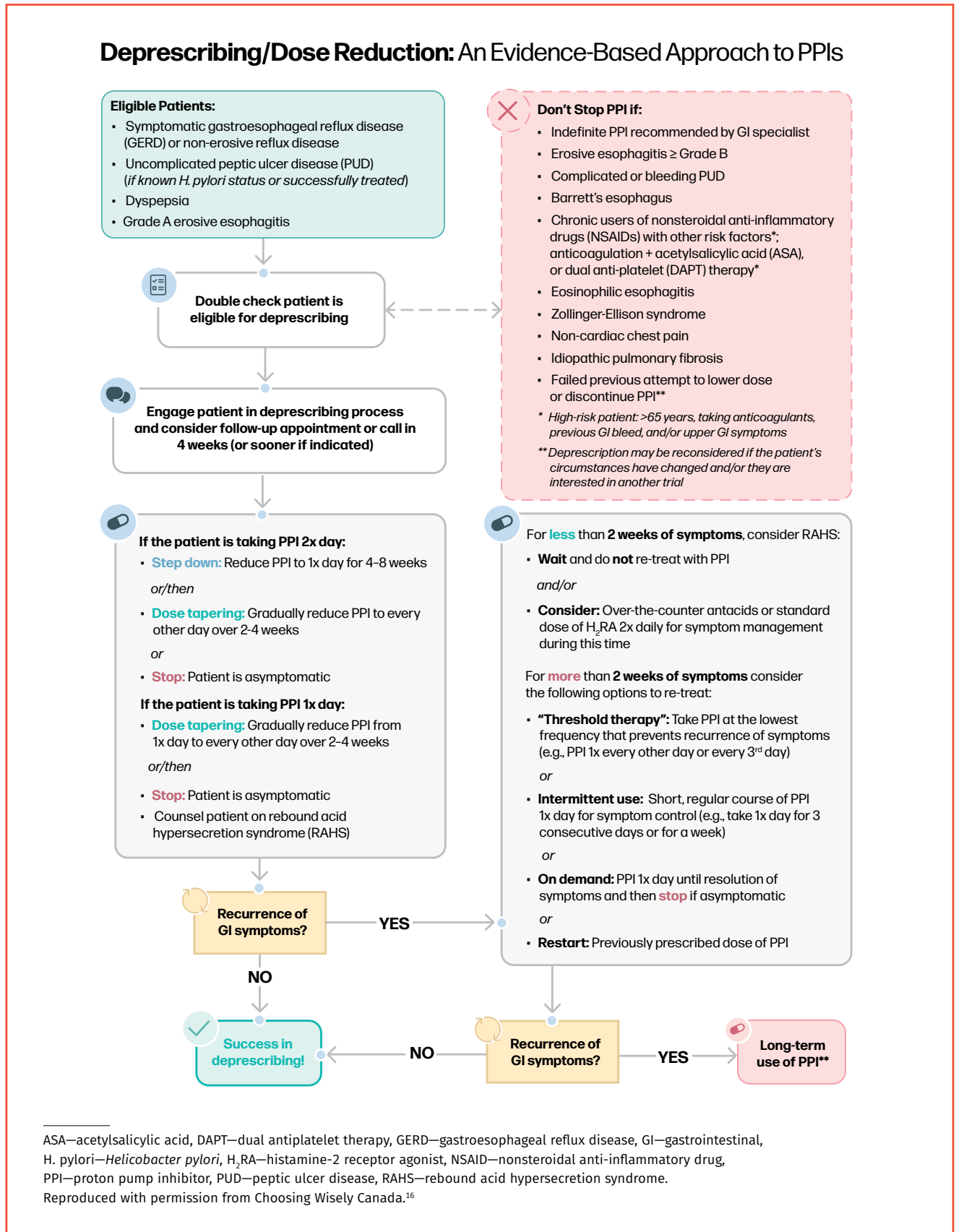
In primary care, a diagnosis of GERD can be made when patients present with dominant symptoms of heartburn or regurgitation.<sup>5,19</sup> In dyspepsia, epigastric pain or discomfort is the dominant symptom but heartburn can be present as an associated symptom.<sup>19</sup> Overlap between these 2 entities is common. In Canada, GERD is more common than dyspepsia.<sup>20</sup> For most indications the starting dose of PPI is once daily in the morning before breakfast. The main indications for a twice-daily starting dose are treatment of GI bleeding and anti-*Helicobacter pylori* therapy (for the duration of antibiotic therapy). A useful clinical pearl is that PPIs are effective in ulcer-like dyspepsia (where the main symptom is epigastric pain)

**Table 1. Appropriate prescribing of proton pump inhibitors: A) Evidence-based indications and duration for proton pump inhibitors, and B) indications for proton pump inhibitors based on gastrointestinal specialist advice.**

A)					
MAIN SYMPTOMS	EVIDENCE-BASED INDICATION	HELICOBACTER PYLORI TESTING*	INITIAL PRESCRIBING†	LONG-TERM TREATMENT	DEPRESCRIBING AND TOOLS
Heartburn or regurgitation dominant  If symptoms are mild or worse for 2 days a week <sup>14</sup>	Symptomatic GERD <sup>15</sup>	Not routinely	SD: PPI once a day for 4 to 8 weeks, then reassess symptoms  If response is equivocal give PPIs 2 times a day for 4 to 8 weeks, then decide on possible long-term maintenance treatment	Some patients will require PPIs once a day or may need to step up to 2 times a day to maintain symptom control	Yes— <b>Figure 1</b> <sup>16</sup>
Epigastric pain or discomfort is dominant  Heartburn or regurgitation not dominant but may be present	Dyspepsia <sup>17</sup>	Consider testing	SD: PPI once a day for 4 to 8 weeks, then reassess symptoms  If response is equivocal give PPIs 2 times a day for 4 to 8 weeks, then decide on possible long-term maintenance treatment	Some patients will require PPIs once a day or may need to step up to 2 times a day to maintain symptom control	Yes— <b>Figure 1</b> <sup>16</sup>
Chronic users of NSAIDs with other risk factors‡: anticoagulation and ASA, or DAPT		NA	Consider upper GI bleeding prophylaxis: PPI once a day	Depends on indication and patient risk factor profile	Yes, once medications requiring PPI prophylaxis are discontinued ( <b>Figure 1</b> <sup>16</sup> ). No, if high-risk patient†
B)					
EVIDENCE-BASED INDICATIONS	H PYLORI TESTING*	INITIAL PRESCRIBING†	LONG-TERM TREATMENT	DEPRESCRIBING OPPORTUNITY	
Erosive esophagitis (confirmed by gastroscopy)	Not routinely	SD PPI once a day for 4 to 8 weeks, then reassess symptoms	Many patients will need to step up to PPI 2 times a day for symptom control	Yes, if grade A  No, if ≥ grade B	
Peptic ulcer disease, duodenal or gastric ulcer	Recommended: often done during diagnostic gastroscopy (consider ordering if not done)	Uncomplicated ulcer: SD PPI once a day for 8 to 16 weeks Bleeding ulcer: PPI 2 times a day	Yes, but not always. Bleeding ulcers need longer than 4 to 8 weeks of treatment	No, not routinely. If considered, may require GI specialist	
Barrett esophagus	No	SD PPI 1 or 2 times a day	Yes	No, lifelong PPI	
Eosinophilic esophagitis	No	SD PPI once a day or 2 times a day	Often yes	No, not routinely. If considered, may require GI specialist	
<b>Rare conditions</b>					
Hypersecretory conditions like Zollinger-Ellison syndrome	No	SD PPI once a day or 2 times a day	Yes, dose recommendation by GI specialist	No, lifelong PPI	
Non-cardiac chest pain—presumed to be induced by GERD	Not routinely. Requires gastroscopy, cardiac workup, and often esophageal motility testing, confirming there is no other cause explaining symptoms	PPI 2 times a day	Yes	Yes, may require GI specialist ( <b>Figure 1</b> ) <sup>16</sup>	

AHS—Alberta Health Services, ASA—acetylsalicylic acid, DAPT—dual antiplatelet therapy, GERD—gastroesophageal reflux disease, GI—gastrointestinal, NA—not applicable, NSAID—nonsteroidal anti-inflammatory drug, PPI—proton pump inhibitor, SD—standard dose.  
 \**H pylori* testing using *H pylori* stool antigen test or urea breath test. Treatment: antibiotics and PPI 2 times a day for 10 to 14 days. Many patients will still need long-term PPIs after *H pylori* treatment. For more information see the AHS *H pylori* pathway.<sup>18</sup>  
 †Initial prescribing: For SDs, PPIs are considered therapeutically equivalent: pantoprazole, 40 mg; esomeprazole, 40 mg; lansoprazole, 30 mg; dexlansoprazole, 30 mg; omeprazole, 20 mg; rabeprazole, 20 mg.  
 ‡Risk factors include age >65 y, taking anticoagulants, previous GI bleed, and upper GI symptoms.  
 Reproduced with permission from Choosing Wisely Canada.<sup>16</sup>

Figure 1. Deprescribing algorithm



and reflux-like dyspepsia (heartburn also present) but not in dysmotility-like dyspepsia (where upper abdominal bloating is the dominant symptom).<sup>21</sup>

The recommended duration of initial therapy is 4 to 8 weeks. After this time, patients should be reassessed to see if symptoms have improved. Sometimes it may be necessary to continue therapy for a longer period (another 4 to 8 weeks) or give a trial of twice-daily PPIs if the symptom response was equivocal, and then follow up to assess symptoms. **Table 1** gives guidance as to whether patients should be tested for *H pylori*.<sup>14-18</sup> Testing and treating for *H pylori* provides long-term benefit in some but not all patients who experience dyspepsia.<sup>22</sup> In contrast, the clinical course of GERD (ongoing symptoms, need for PPI) is not altered by *H pylori* treatment.<sup>23</sup> The decision to start patients on long-term (maintenance) PPI therapy for GERD or dyspepsia is based on recurrence of symptoms once the PPI is stopped. Some patients will need long-term therapy or, over time, need twice-daily PPIs to maintain control of their symptoms.<sup>24</sup> **Table 1** lists the indications for long-term maintenance therapy, including patients with indications based on endoscopy findings such as Barrett esophagus.<sup>14-18</sup>

Overall, it is best practice to review a patient's medication list at regular intervals, which includes assessing whether discontinuation or dose reduction of a medication is possible (deprescribing). Reasons for deprescribing PPIs include lack of ongoing indication (eg, patient is no longer taking NSAIDs), the medication is no longer required (eg, GERD symptoms have resolved), the dose can be lowered, or no clinical benefit is evident (dysmotility-like dyspepsia, chronic cough).

**Figure 1** shows several evidence-based strategies to approach PPI tapering.<sup>16</sup> Some patients will report a brief period of symptom recurrence when a long-term PPI is stopped. This is thought to be due to rebound acid hypersecretion and is temporary, typically lasting for 1 to 2 weeks.<sup>25</sup> Patients should be warned about this, as it is not an immediate reason to restart the PPI. Short-term use of over-the-counter antacids is often sufficient to control these symptoms. The Choosing Wisely Canada toolkit provides several approaches that encourage active patient engagement and empowerment (<https://choosingwiselycanada.org/toolkit/ask-why-ppis>) including patient handouts with practical information on PPIs and on GERD treatment.<sup>16</sup>

## Implementation

Prescription refill requests, and medication reconciliation at admission to and discharge from hospital, are opportunities to review the indication for a PPI and discuss deprescribing where appropriate. Other strategies for identifying opportunities for deprescribing may include reviewing all patients taking twice-daily PPIs or focusing on patients who are taking more than 5 medications (eg, using electronic medical record reports). Patient

education strategies and academic detailing may also be promising approaches.<sup>26</sup> It is important to document the indication for long-term use for patients who require it; this is often done with input from the gastroenterologist or endoscopist. Patients should be involved in the decision and plan to deprescribe and made aware if they need to continue to take a PPI long term. Pharmacists can play a key role in discussing deprescribing opportunities with patients.

## Case resolution

Based on our patient's presentation with dominant symptoms of heartburn, GERD is the diagnosis. She was prescribed a PPI once daily for 8 weeks. She was informed that treatment was expected to be short term and her symptoms should resolve after 8 weeks. Her symptoms did resolve after 8 weeks, and she was able to stop the PPI at that time. Two months later she had a recurrence of symptoms requiring a further course of PPI for 8 weeks, which again resolved symptoms. After managing to quit smoking and avoid dietary triggers, she has remained symptom free.

## Conclusion

The new Choosing Wisely Canada toolkit "Ask Why for PPIs" is a useful document to help physicians to appropriately prescribe, judiciously use, and, where appropriate, deprescribe PPIs (<https://choosingwiselycanada.org/toolkit/ask-why-ppis>).<sup>16</sup>

**Dr Elaine Bland** is Clinical Lecturer in the Department of Family Medicine in the Cumming School of Medicine at the University of Calgary in Alberta. **Dr Sander Veldhuyzen van Zanten** is Professor in the Division of Gastroenterology at the University of Alberta in Edmonton. **Dr Wade Thompson** is Assistant Professor in the Department of Anesthesiology, Pharmacology, and Therapeutics in the Faculty of Medicine at the University of British Columbia in Vancouver.

### Competing interests

None declared

### References

- Targownik L. Discontinuing Long-Term PPI Therapy: Why, With Whom, and How? *Am J Gastroenterol*. 2018 Apr;113(4):519-28. doi: 10.1038/ajg.2018.29. Epub 2018 Mar 20.
- Naunton M, Peterson GM, Deeks LS, Young H, et al. We have had a gutful: The need for deprescribing proton pump inhibitors. *J Clin Pharm Ther*. 2018 Feb;43(1):65-72. doi: 10.1111/jcpt.12613. Epub 2017 Sep 11.
- Veldhuyzen Van Zanten S, Jelinski S, Kaplan GG, Reeb L, et al. A79 Provincial data in Alberta reveal a clear need to address overprescribing of proton pump inhibitors. *J Can Assoc Gastroenterol*. 2021 Mar;4(Supplement\_1):46-8. doi: 10.1093/jcag/gwab002.077.
- Canadian Institute for Health Information (CIHI). Drug Use Among Seniors in Canada [Internet]. CIHI; 2022 [cited 2023 Apr 1]. Available from: <https://www.cihi.ca/en/drug-use-among-seniors-in-canada>.
- Katz PO, Dunbar KB, Schnoll-Sussman FH, Greer KB, et al. ACG Clinical Guideline for the Diagnosis and Management of Gastroesophageal Reflux Disease. *Am J Gastroenterol*. 2022 Jan 1;117(1):27-56. doi: 10.14309/ajg.0000000000001538.
- Bytzer P, van Zanten SV, Mattsson H, Wernersson B. Partial symptom-response to proton pump inhibitors in patients with non-erosive reflux disease or reflux oesophagitis - a post hoc analysis of 5796 patients. *Aliment Pharmacol Ther*. 2012 Oct;36(7):635-43. doi: 10.1111/apt.12007. Epub 2012 Aug 1.
- Moayyedi P, Lacy BE, Andrews CN, Enns RA, et al. ACG and CAG Clinical Guideline: Management of Dyspepsia. *Am J Gastroenterol*. 2017 Jul;112(7):988-1013. doi: 10.1038/ajg.2017.154. Epub 2017 Jun 20. Erratum in: *Am J Gastroenterol*. 2017 Sep;112(9):1484. doi: 10.1038/ajg.2017.238.
- Targownik LE, Fisher DA, Saini SD. AGA Clinical Practice Update on De-Prescribing of Proton Pump Inhibitors: Expert Review. *Gastroenterology*. 2022 Apr;162(4):1334-42. doi: 10.1053/j.gastro.2021.12.247. Epub 2022 Feb 17.
- O'Hara J, Stocken DD, Watson GC, Fouweather T, et al. Use of proton pump inhibitors to treat persistent throat symptoms: multicentre, double blind, randomised, placebo controlled trial. *BMJ*. 2021 Jan 7;372:m4903. doi: 10.1136/bmj.m4903.
- Farrell B, Lass E, Moayyedi P, Ward D, et al. Reduce unnecessary use of proton pump inhibitors. *BMJ*. 2022 Oct 24;379:e069211. doi: 10.1136/bmj-2021-069211.
- Farrell B, Pottie K, Thompson W, Boghossian T, et al. Deprescribing proton pump inhibitors: Evidence-based clinical practice guideline. *Can Fam Physician*. 2017 May;63(5):354-64.

12. Nehra AK, Alexander JA, Loftus CG, Nehra V. Proton Pump Inhibitors: Review of Emerging Concerns. *Mayo Clin Proc.* 2018 Feb;93(2):240-6. doi: [10.1016/j.mayocp.2017.10.022](https://doi.org/10.1016/j.mayocp.2017.10.022).
13. Vaezi MF, Yang YX, Howden CW. Complications of Proton Pump Inhibitor Therapy. *Gastroenterology.* 2017 Jul;153(1):35-48. doi: [10.1053/j.gastro.2017.04.047](https://doi.org/10.1053/j.gastro.2017.04.047). Epub 2017 May 19.
14. Junghard O, Carlsson R, Lind T. Sufficient control of heartburn in endoscopy-negative gastro-oesophageal reflux disease trials. *Scand J Gastroenterol.* 2003 Dec;38(12):1197-9. doi: [10.1080/00365520310004920](https://doi.org/10.1080/00365520310004920).
15. Alberta Health Services (AHS). Provincial GERD Primary Care Pathway [Internet]. AHS; 2025 [cited 2026 Jan 22]. Available from: <https://www.albertahealthservices.ca/assets/info/aph/if-aph-scn-dh-pathway-gerd.pdf>.
16. Choosing Wisely Canada (CWC). Ask why for PPIs. A toolkit on optimizing the use of proton pump inhibitors for adults and adolescents in a variety of health-care settings [Internet]. CWC; 2025 [cited 2026 Jan 22]. Available from: [https://choosingwiselycanada.org/wp-content/uploads/dlm\\_uploads/2025/07/CWC\\_Toolkit\\_AskWhyPPI\\_2025.pdf](https://choosingwiselycanada.org/wp-content/uploads/dlm_uploads/2025/07/CWC_Toolkit_AskWhyPPI_2025.pdf).
17. Alberta Health Services (AHS). Dyspepsia Primary Care Pathway [Internet]. AHS; 2020 [cited 2026 Jan 22]. Available from: <https://www.albertahealthservices.ca/assets/info/hp/arp/if-hp-arp-dh-dyspepsia-pathway-adult-gi.pdf>.
18. Alberta Health Services (AHS). *Helicobacter Pylori (H. pylori)* Primary Care Pathway [Internet]. AHS; 2021 [cited 2026 Jan 22]. Available from: <https://www.albertahealthservices.ca/assets/about/scn/ahs-scn-dh-pathway-hpylori.pdf>.
19. Veldhuyzen van Zanten SJ, Flook N, Chiba N, Armstrong D, et al. An evidence-based approach to the management of uninvestigated dyspepsia in the era of *Helicobacter pylori*. *Canadian Dyspepsia Working Group. CMAJ.* 2000 Jun 13;162(12 Suppl):S3-23.
20. Thomson AB, Barkun AN, Armstrong D, Chiba N, et al. The prevalence of clinically significant endoscopic findings in primary care patients with uninvestigated dyspepsia: the Canadian Adult Dyspepsia Empiric Treatment - Prompt Endoscopy (CADET-PE) study. *Aliment Pharmacol Ther.* 2003 Jun 15;17(12):1481-91. doi: [10.1046/j.1365-2036.2003.01646.x](https://doi.org/10.1046/j.1365-2036.2003.01646.x). Erratum in: *Aliment Pharmacol Ther.* 2004 Sep 15;20(6):702.
21. Moayyedi P, Delaney BC, Vakil N, Forman D, et al. The efficacy of proton pump inhibitors in nonulcer dyspepsia: a systematic review and economic analysis. *Gastroenterology.* 2004 Nov;127(5):1329-37. doi: [10.1053/j.gastro.2004.08.026](https://doi.org/10.1053/j.gastro.2004.08.026).
22. Chiba N, Van Zanten SJ, Sinclair P, Ferguson RA, et al. Treating *Helicobacter pylori* infection in primary care patients with uninvestigated dyspepsia: the Canadian adult dyspepsia empiric treatment-*Helicobacter pylori* positive (CADET-Hp) randomised controlled trial. *BMJ.* 2002 Apr 27;324(7344):1012-6. doi: [10.1136/bmj.324.7344.1012](https://doi.org/10.1136/bmj.324.7344.1012).
23. Moayyedi P, Bardhan C, Young L, Dixon MF, et al. *Helicobacter pylori* eradication does not exacerbate reflux symptoms in gastroesophageal reflux disease. *Gastroenterology.* 2001 Nov;121(5):1120-6. doi: [10.1053/gast.2001.29332](https://doi.org/10.1053/gast.2001.29332).
24. DeVault KR, Castell DO; American College of Gastroenterology. Updated guidelines for the diagnosis and treatment of gastroesophageal reflux disease. *Am J Gastroenterol.* 2005 Jan;100(1):190-200. doi: [10.1111/j.1572-0241.2005.41217.x](https://doi.org/10.1111/j.1572-0241.2005.41217.x).
25. Namikawa K, Björnsson ES. Rebound Acid Hypersecretion after Withdrawal of Long-Term Proton Pump Inhibitor (PPI) Treatment-Are PPIs Addictive? *Int J Mol Sci.* 2024 May 17;25(10):5459. doi: [10.3390/ijms25105459](https://doi.org/10.3390/ijms25105459).
26. Wilsdon TD, Hendrix I, Thynne TR, Mangoni AA. Effectiveness of Interventions to Deprescribe Inappropriate Proton Pump Inhibitors in Older Adults. *Drugs Aging.* 2017 Apr;34(4):265-87. doi: [10.1007/s40266-017-0442-1](https://doi.org/10.1007/s40266-017-0442-1).

This article is eligible for Mainpro+ certified Self-Learning credits. To earn credits, go to <https://www.cfp.ca> and click on the Mainpro+ link. *Can Fam Physician.* 2026 Mar;72(3):179-83. doi: [10.46747/cfp.7203179](https://doi.org/10.46747/cfp.7203179)  
La traduction en français de cet article se trouve à <https://www.cfp.ca> dans la table des matières du numéro de mars 2026 à la page e68.



Choosing Wisely Canada is a campaign designed to help clinicians and patients engage in conversations about unnecessary tests, treatments, and procedures and to help physicians and patients make smart and effective choices to ensure high-quality care is provided. To date there have been 13 family medicine recommendations, but many of the recommendations from other specialties are relevant to family medicine. Articles produced by Choosing Wisely Canada are on topics related to family practice where tools and strategies have been used to implement one of the recommendations and to engage in shared decision-making with patients. If you are a primary care provider or trainee who has used Choosing Wisely recommendations or tools in your practice and you would like to share your experience, please contact us at [info@choosingwiselycanada.org](mailto:info@choosingwiselycanada.org).