



## **BYE-BYE, PPI**

**A toolkit for deprescribing proton pump inhibitors  
in EMR-enabled primary care settings**

**Don't maintain long-term Proton Pump Inhibitor (PPI) therapy for gastrointestinal symptoms without an attempt to stop / reduce PPI at least once per year in most patients.**

Canadian Association of Gastroenterology,  
Choosing Wisely Canada recommendation #1

**Don't renew long-term proton pump inhibitor (PPI) therapy for gastrointestinal symptoms without an attempt to stop or reduce (taper) therapy at least once per year for most patients.**

Canadian Pharmacists Association  
Choosing Wisely Canada recommendation #4

**Don't continue a proton pump inhibitor at discharge unless there is a compelling reason to continue therapy.**

Canadian Society of Hospital Pharmacists  
Choosing Wisely Canada recommendation #3



## Inspiration for this Toolkit

Proton pump inhibitors (PPIs) are often used inappropriately, without an indication, or for longer durations than recommended. At the Toronto Western Hospital Family Health Team, primary care providers of adults taking a PPI for 8 weeks with an upcoming periodic health examination were reminded to reassess therapy via electronic medical record (EMR) messaging. A PPI deprescribing tool was uploaded into the EMR as a second reminder and to guide reassessment and deprescribing where indicated. Using this strategy, 43 of 46 patients on PPIs (93%) had their PPI reassessed, resulting in 11 patients (26%) having their PPI deprescribed.

Reference:

Walsh K, et al. Deprescribing in a Family Health Team: A Study of Chronic Proton Pump Inhibitor Use. *J Prim Health Care* 8 (2), 164-171. 6 2016.

This toolkit was inspired by the work of the Toronto Western Hospital Family Health Team and the following individuals: Kate Walsh, Debbie Kwan, Patricia Marr, Christine Papoushek, W Kirk Lyon and Maria Cino



## Introduction

This toolkit was created to support the implementation of interventions to reduce long-term prescription of proton pump inhibitors (PPI) where an indication is lacking. It can be used by physicians in community practice or by long-term care organizations to help achieve improvements in patient safety related to over-prescribing.



## Make sure this toolkit is right for you

This toolkit is well suited for your institution if you suspect that you have patients who are using PPIs on a continual basis and there has been no attempt to reduce their dosage or stop PPI use.



## Key ingredients of this intervention

This toolkit may help you reduce PPI overuse in your clinical setting by introducing the following changes:

- Shared and enhanced understanding among clinicians of indications and risks of long-term PPI use
- Pro-active identification of patients taking current PPI longer than a specified duration
- Enhanced, standardized documentation for patients with a solid indication for long-term PPI use
- Standardized tapering, reduction and / or deprescribing of PPI for a percentage of patients who lack indication for ongoing use

## 1. Achieving clinician consensus regarding appropriate indications for long-term PPI use

This is an important place to start. Evidence-informed criteria should be consulted such as, 'Approaches for stopping or dose reduction of PPIs in those who may not need lifelong treatment' by the RxFiles<sup>1</sup> or CMAJ Decisions article 'Potential harms of proton pump inhibitor therapy: rare adverse effects of commonly used drugs'.<sup>2</sup>

### Appropriate indications for PPI use > 8 weeks' duration

- Prior GI bleed
- Barrett's esophagus
- Los Angeles Grade D (severe) esophagitis
- Ongoing NSAID use
- Dual antiplatelet therapy (with prior UGIB, or one other risk factor)
- Ongoing hypersecretory conditions

Evidence-informed information outlining risks and adverse events associated with long-term PPI use is also important for the clinical team to understand.<sup>1,2</sup>

### Risks of long-term PPI use

- Enteric infections (C. difficile, Campylobacter, Salmonella)
- Fractures
- Pneumonia (hospital or community acquired)
- Spontaneous Bacterial Peritonitis in cirrhosis patients
- Hypomagnesemia
- Acute Interstitial Nephritis
- Vitamin B12 deficiency

The goal is to achieve consensus among all physicians / nurse practitioners (NP) in your clinic before proceeding to the next step.

## **2. Engaging allied health providers in deprescribing initiative**

In team settings, nurses, pharmacists or physician assistants often have contact with patients around chronic disease management and/or health promotion. They typically have positive working relationships with patients, and are well positioned to deliver or reinforce the message about risks of ongoing PPI use and the potential impact on individual patient safety. They can provide telephone or in-person follow-up after a specified duration of time, to see how the deprescribing effort is going, and to help patients troubleshoot rebound symptoms.

When doing clinician education, make sure to include these team members, and outline the important role they can play in improving patient safety. Consider making two or four-week telephone follow-up a standard part of the intervention, provided by a non-physician team member.

Where possible, include data managers and quality leads in your quality improvement initiatives. These experts hold a wealth of knowledge that will be important as you consider implementing interventions and accessing data.

## **3. Selecting an approach to capturing patients**

Once physician consensus has been reached and team members have been engaged, you are ready to deploy a specific intervention to promote PPI deprescribing for patients lacking an indication.

### **Flag charts of patients booked for upcoming periodic health exams:**

This strategy was used by Toronto Western Family Health Team in 2015 <sup>3</sup>. They used EMR messaging to alert the clinicians of adults taking a PPI for  $\geq 8$  weeks with an upcoming periodic health exam, and reassessed with the guidance of a standardized tool. This strategy resulted in 26% of patients having their PPI deprescribed.

Steps to implementation:

- 1) Create EMR search to identify patients on PPI with upcoming periodic health exam.
- 2) Send standardized EMR message to clinicians.
- 3) Consider standardized EMR message to AHP from physician or nurse practitioner to follow up by phone in two to four weeks.
- 4) Provide mechanism for feedback to implementation team regarding outcome of efforts. This could be a searchable form in the EMR, or a message so that the implementation team can tabulate results.

## EMR reminder:

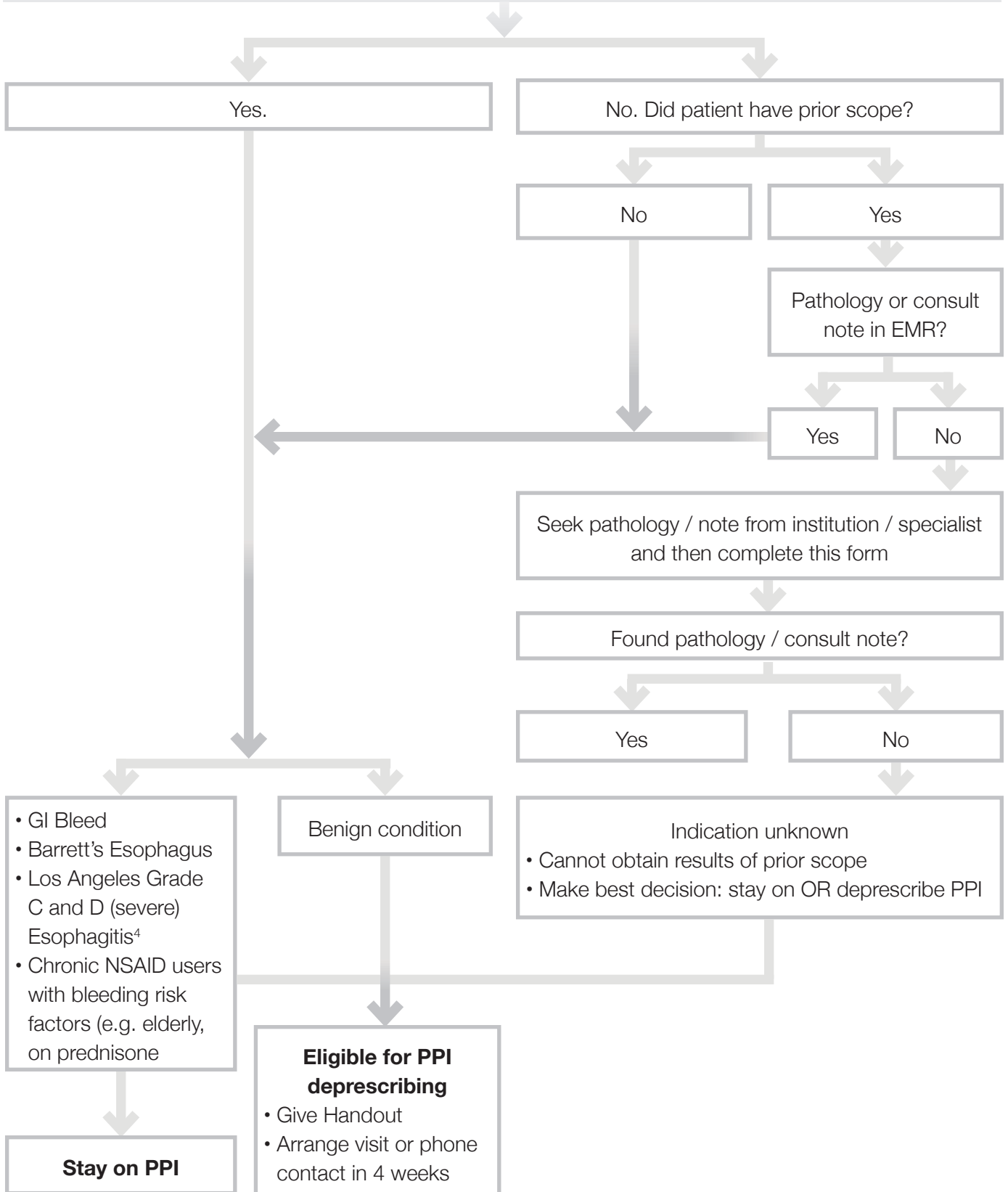
Most EMRs can flag all charts with specified criteria. For example, a reminder stating “Consider deprescribing PPI” could easily be placed into all charts of active patients (visit within past 3 years) who had a PPI in the current medication list, where that PPI had been prescribed for > 8 weeks.

Steps to implementation:

- 1) Design a reminder. The reminder should have a built-in mechanism that automatically turns it off once any of the following occurs:
  - a) Printing of educational handout that is given to the patient (see Patient Resources section for sample handouts); or
  - b) Loading of an EMR template with searchable fields that track which patients were/were not eligible for PPI deprescribing (see example below)
- 2) Test EMR reminder on test patients for workability, then apply to charts
- 3) In the first two weeks, seek feedback from clinicians about what works and what does not work; adjust if needed.

Sample of searchable EMR form for evaluating suitability for deprescribing long-term PPI

Does patient have indication for long-term PPI use?



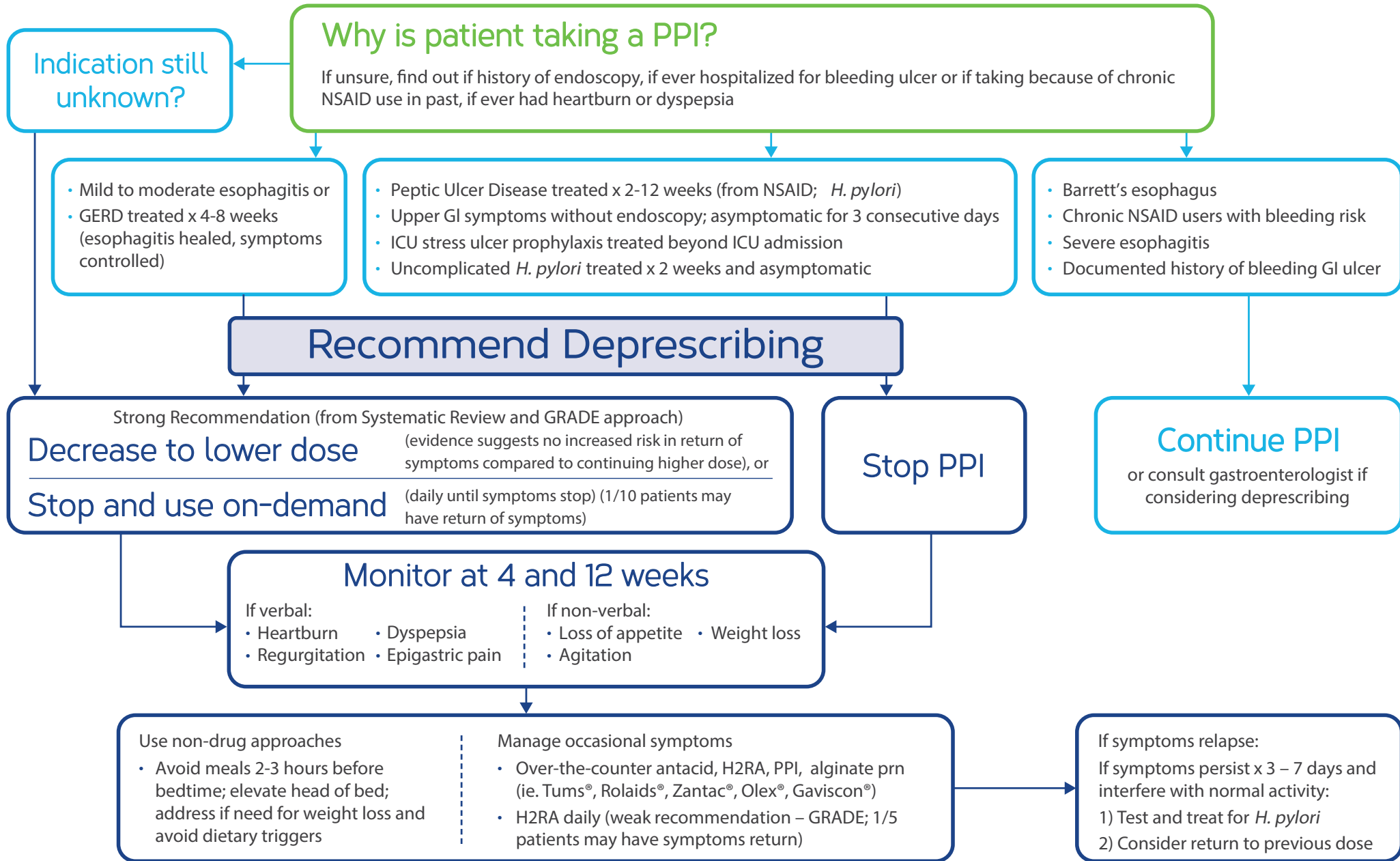


#### 4. Deprescribing PPIs among eligible patients

Tapering or deprescribing is the first step to reducing inappropriate PPI use. Doctors, nurse practitioners or pharmacists can help to decide on the best approach to using less PPIs. They can advise on how to reduce the dose, whether to stop it altogether, or how to make lifestyle changes that can prevent heartburn symptoms from returning. Occasional use of medications like Antacids or H2 RA blockers may be appropriate and are safer than PPIs.

Reducing the dose might involve taking the PPI once daily instead of twice daily, lowering the number of milligrams (e.g. from 30 mg to 15 mg, or 40mg to 20mg, or 20mg to 10mg depending on the drug), or taking the PPI every second day for some time before stopping.

Some patients will have rebound symptoms. Patients need to be forewarned about this, and they need coping strategies. Clinical algorithms, such as the one below, can be used in a health care setting as a reassessment tool. The PPI Deprescribing Algorithm from [deprescribing.org](http://deprescribing.org) includes follow up recommendations for patients whose PPI dosage could be lowered or discontinued and used on an 'as needed' basis.<sup>4</sup>



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Farrell B, Pottie K, Thompson W, Boghossian T, Pizzola L, Rashid FJ, et al. Deprescribing proton pump inhibitors. Evidence-based clinical practice guideline. *Can Fam Physician* 2017;63:354-64 (Eng), e253-65 (Fr).





## PPI Availability

PPI	Standard dose (healing) (once daily)*	Low dose (maintenance) (once daily)
Omeprazole (Losec <sup>®</sup> ) - Capsule	20 mg <sup>+</sup>	10 mg <sup>+</sup>
Esomeprazole (Nexium <sup>®</sup> ) - Tablet	20 <sup>a</sup> or 40 <sup>b</sup> mg	20 mg
Lansoprazole (Prevacid <sup>®</sup> ) - Capsule	30 mg <sup>+</sup>	15 mg <sup>+</sup>
Dexlansoprazole (Dexilant <sup>®</sup> ) - Tablet	30 <sup>c</sup> or 60 <sup>d</sup> mg	30 mg
Pantoprazole (Tecta <sup>®</sup> , Pantoloc <sup>®</sup> ) - Tablet	40 mg	20 mg
Rabeprazole (Pariet <sup>®</sup> ) - Tablet	20 mg	10 mg

## Legend

- a Non-erosive reflux disease
- b Reflux esophagitis
- c Symptomatic non-erosive gastroesophageal reflux disease
- d Healing of erosive esophagitis
- + Can be sprinkled on food

\* Standard dose PPI taken BID only indicated in treatment of peptic ulcer caused by *H. pylori*; PPI should generally be stopped once eradication therapy is complete unless risk factors warrant continuing PPI (see guideline for details)

## Key

- GERD = gastroesophageal reflux disease
- NSAID = nonsteroidal anti-inflammatory drugs
- H2RA = H2 receptor antagonist

SR = systematic review  
GRADE = Grading of Recommendations Assessment, Development and Evaluation

## Engaging patients and caregivers

Patients and/or caregivers may be more likely to engage if they understand the rationale for deprescribing (risks of continued PPI use; long-term therapy may not be necessary), and the deprescribing process

## PPI side effects

- When an ongoing indication is unclear, the risk of side effects may outweigh the chance of benefit
- PPIs are associated with higher risk of fractures, *C. difficile* infections and diarrhea, community-acquired pneumonia, vitamin B12 deficiency and hypomagnesemia
- Common side effects include headache, nausea, diarrhea and rash

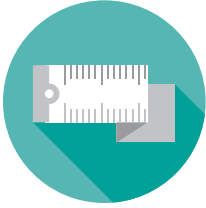
## Tapering doses

- No evidence that one tapering approach is better than another
- Lowering the PPI dose (for example, from twice daily to once daily, or halving the dose, or taking every second day) OR stopping the PPI and using it on-demand are equally recommended strong options
- Choose what is most convenient and acceptable to the patient

## On-demand definition

Daily intake of a PPI for a period sufficient to achieve resolution of the individual's reflux-related symptoms; following symptom resolution, the medication is discontinued until the individual's symptoms recur, at which point, medication is again taken daily until the symptoms resolve





## Measuring your performance

### Choose a family of measures

The following are common measures used to evaluate interventions to reduce unnecessary PPI prescription.

- 1) Outcome measures: the main improvement that you are trying to achieve.
  - a) For example: Percentage of active patients (lacking indication for ongoing PPI use), with current prescription for PPI of duration > 8 weeks.
- 2) Process measures: The measures to ensure that each aspect of the intervention is being carried out and delivered as intended.
  - a) Percentage of clinicians who received training around the intervention
  - b) Percentage of patients (whose charts were flagged) who engaged in discussion of risks of ongoing PPI use
  - c) Percentage of patients (whose charts were flagged) who were given an educational handout on risks of long-term PPI use
  - d) Percentage of patients (whose charts were flagged) who received follow-up contact at two or four weeks
- 3) Balancing measures: Any intervention may create new unintended consequences that need to be measured.
  - a) Will deprescribing require additional clinician time per patient visit? How will this additional time be measured? (If significant, consider having a nurse, registered practical nurse, pharmacist or physician assistant take on this task)
  - b) If a follow-up visit or phone contact is planned, how will this additional work be tracked? Who will do this? (Consider having a non-physician conduct this)
  - c) Could patients be required to buy over-the-counter antacids for symptomatic relief once the prescription (which may be paid by insurance) does not exist? How will this be followed, in order to see if it is a factor in success of deprescribing?

## Determine a collection method

There are many ways to identify patients on long-term PPI. Choose the one that suits your clinical setting.

A) Electronic medical record:

- a) Develop a search for active patients (those with a visit in the past 3 years) You may want to put an age restriction, eg > 18. (A)
- b) Within group (A), search patients with current PPI in medication field, of duration > 8 weeks (or longer duration if you wish, eg 6 months). (B)
- c) Percentage of active adult patients on long-term PPI =  $(B/A) \times 100\%$
- d) This audit can be repeated monthly and plotted on a graph to visualize the effect over time and response to interventions



## Sustaining early successes

Once the intervention to reduce PPI use has been implemented and refined resulting in some reduction in inappropriate long-term PPI use, there are several important ways to help sustain this performance:

- a) Indication for appropriate PPI use should become standard in the clinic. This information should be provided to all new clinicians and trainees joining the clinic. Posters listing these indications can be posted in lunchrooms or clinician office space.
- b) If a standardized phone assessment tool is developed for AHPs to use, each new AHP should learn the tool as a standard part of their orientation.



## Patient resources

*Treating heartburn and gastro-esophageal reflux (GERD)*, Choosing Wisely Canada.



## References

- 1) RxFiles Newsletter. Approaches for stopping or dose reduction of PPIs in those who may not need lifelong treatment. Access online 20 Feb, 2016 at <http://www.rxfiles.ca/rxfiles/uploads/documents/PPI-Deprescribing-Newsletter.pdf>
- 2) Benmassaoud A, McDonald E, Lee T. Potential harms of proton pump inhibitor therapy: rare adverse effects of commonly used drugs. CMAJ: Decisions. 2015 Nov 23; 1-6.
- 3) Walsh K, Kwan D, Marr P, Papoushek, Lyon KW. Deprescribing in a Family Health Team: A pilot study of chronic proton pump inhibitor (PPI) use. March 2016. Journal of Primary Health Care. In Print.
- 4) Farrell B, Pottie K, Thompson W, Boghossian T, Pizzola L, Rashid J, Rojas-Fernandez C, Walsh K, Welch V, Moayyedi P. (2015). Evidence-based clinical practice guideline for deprescribing proton pump inhibitors. Canadian Family Physician. 2017 May; 63(5):354-364.

### QI resources:

- 1) Health Quality Ontario, QI Tools & Resources  
<https://quorum.hqontario.ca/en/Home/QI-Tools-Resources/QI-Essentials>
- 1) Institute for Healthcare Improvement, Model for Improvement  
<http://www.ihl.org/resources/Pages/HowtoImprove/default.aspx>

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