

Drugs and Therapeutics Backgrounder

Proton Pump Inhibitor Deprescribing (PPI)

BOTTOM LINE: PPIs are commonly used without a valid indication and for longer durations than recommended. PPI use should be continuously evaluated for appropriateness of therapy with subsequent tapering and discontinuation if continued therapy is not indicated.

Background:

Proton pump inhibitors (PPIs) are one of the most commonly prescribed medications in Canada.¹ They are effective in the management of a variety of conditions such as gastroesophageal reflux disease, dyspepsia, Barrett's esophagus, esophagitis and Helicobacter pylori associated gastric and peptic ulcers. Even though many indications require short term therapy there is growing concern about the overuse of PPI's and the risks and adverse events associated with long term use.²

From April 1st 2019 to March 31st 2020 approximately 2.25 million PPI doses were dispensed in Alberta Health Services to patients admitted to acute and long term care (LTC) facilities. This calculates to 6160 doses each day.*³ Studies assessing PPI use report up to 60% of patients taking a PPI may not have a proper indication for long term use.⁴ An opportunity for intervention exists to avoid unnecessary medication use and its related costs. Actively screening inpatients admitted on PPI therapy will allow identification of those patients suitable for deprescribing.⁵

*This utilization is presented in Defined Daily Dose (DDD) which is the assumed average maintenance dose per day for a drug used for its main indication in adults²⁰

As per the Choosing Wisely Canada guidelines an attempt should be made to stop/reduce PPIs in most patients on therapy for gastrointestinal symptoms at least once a year as they are often used inappropriately without an indication and for longer durations than recommended.¹⁷

Safety:

While PPIs are generally considered safe medications,⁶ several studies have suggested the following potential harmful conditions with chronic PPI therapy:

Causal

- Diarrhea due to microscopic colitis^{7,25}
- Enteric infections including *Clostridioides difficile*^{13,14}
- Micronutrient deficiencies (i.e., hypomagnesemia, vitamin B12 deficiency, iron deficiency)^{10,11,12}

Associated

- Bone fractures^{8,26}
- Pneumonia^{9,25}
- Chronic kidney disease^{21,23}
- Dementia^{15,25}
- Spontaneous bacterial peritonitis in cirrhosis patients¹⁶
- Small intestinal bacterial overgrowth⁶

Deprescribing PPIs

Deprescribing is the planned and supervised process of dose reduction or stopping a medication that might be causing harm or no longer providing benefit.^{2,22} The goal of deprescribing is to reduce medication burden while maintaining or improving quality of life. In collaboration with the [AHS Digestive Health Strategic Clinical Network \(DHSCN\)](#), AHS Pharmacy Services has developed an inpatient proton pump inhibitor (PPI) deprescribing tool for use in patients admitted to acute and LTC facilities in Alberta.

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Exemptions from PPI deprescribing:

- Patient with biopsy proven Barrett's esophagus²
- Patient with endoscopic evidence of severe esophagitis (Los Angeles Grade C or D)²
- Patient with frequent symptoms of GERD (2 times per week or more) and/ or prolonged symptoms that have a significant effect on daily activities with or without endoscopic esophagitis²⁴
- Patients with a documented history of gastrointestinal bleeding from peptic ulcer disease for which a cause (e.g. *Helicobacter pylori* or NSAID use) has not been identified or addressed
- Patients using NSAIDs who are at risk for the development of peptic ulcer disease. Patients at risk for peptic ulcers include those with a history of peptic ulcer (e.g. especially those with complications such as bleeding) or ≥ 2 of the following risk factors: age older than 65, regular use of NSAIDs, concurrent use corticosteroids, anticoagulants and those who are using aspirin **and concurrently** an anti-platelet agent or those who are using aspirin **and concurrently** a NSAID
- Patients with ongoing hypersecretory conditions¹⁷

All other patients who do not meet the exemption criteria can be considered for a deprescribing PPI trial if they are symptom free and have received appropriate treatment including duration of therapy

When deprescribing or lowering the dose of a PPI, ensure patients (and/or caregivers) are educated on the following:

- Rebound hypersecretion may occur 1 to 2 weeks after PPI deprescribing and patients may experience mild temporary dyspepsia symptoms but it should not be an immediate reason to re-start PPIs.
- A structured stopping of the PPI, dose tapering and on-demand therapy are all safe and effective.² Patients should be able to choose which method works best for them.
- Interim management may include over-the-counter antacids or H₂-receptor blockers as needed
- ☑ **Stop** once-a-day use of PPI or decrease twice-daily dose to once-a-day dose. In many patients on once-daily PPI, the PPI can be stopped completely. If patients have a rebound hypersecretion of acid beyond two weeks they likely will require long term PPI. In that case titrate to the lowest dose of PPI which controls symptoms (see on demand strategy).
- ☑ **Tapering** can be achieved by reducing twice-daily to once-daily, halving the once-daily dose, or decreasing a once-daily dose to a dose every second day. The aim is to reduce the frequency of PPI dosing to a threshold whereby symptoms are still well controlled.
- ☑ **On-demand** therapy is using a PPI for a period sufficient to achieve symptom resolution followed by discontinuation until symptoms recur.¹⁹ This is effective in patients with mild GERD. Importantly, one should use the lowest frequency of dosing that prevents recurrence rather than wait until the symptoms recur.

The majority of GERD patients only require **ONCE-DAILY PPI** for adequate symptom control. Up to 30 per cent of patients with GERD may need to increase their PPI dose over time from once a day to twice a day for effective symptom control.¹⁸ Patients who have persistently recurrent symptoms and have failed previous deprescribing attempts may need PPI therapy long term, however, many patients diagnosed with GERD will not require chronic PPI therapy.

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