Collaborative Care Network
Expert Clinical Recommendation

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Deprescribing Proton Pump Inhibitors (PPI)

Concern for proton pump inhibitor (PPI) overuse has been growing recently. It is estimated that between **25% to 86%** of older individuals taking a PPI have been **overprescribed**, meaning they do not have an appropriate indication or duration of therapy. PPI use amongst the U.S. population increased from 5.7% in 2002-2003 to 6.73% in 2016-2017, representing an **18.07%** overall increase in PPI use**.** A recent study evaluating inappropriate use of PPIs during hospital admission and after discharge revealed that among all study patients, **50.6%** were inappropriately prescribed PPIs, of which, **79.1%** resulted from invalid indications.

Deprescribing is defined as a process of stopping or reducing a medication that might cause harm or does not provide any benefit to the patient. **PPIs represent an excellent opportunity for deprescribing in daily practice.**

The main adverse effect associated with long-term use of PPIs includes enteric infections such as Clostridium difficile diarrhea as cited by this large, 2019 trial. This double-blinded, randomized placebo trial showed that the only notable adverse association is with C. dificile.

PPI Deprescribing in 4 steps:

Step 1: Review the Patient's Indication for PPI Use

Indication	Duration of therapy
Uncomplicated *H. pylori*	2 weeks
Mild to moderate esophagitis or GERD	4 – 8 weeks
Documented history of bleeding GI ulcer	6 – 8 weeks
Peptic Ulcer Disease (PUD)	2 – 12 weeks
Severe esophagitis	12 weeks

Step 2: Assess for Opportunities to Deprescribe

Yes

- Heartburn, mild-moderate GERD or esophagitis treated for 4 - 8 weeks
- Uncomplicated PUD treated for 4 - 12 weeks
- Complicated/bleeding ulcer treated for 8 weeks
- Upper GI symptoms without endoscopy (with symptoms resolved)
- Uncomplicated *H.pylori* treated for 2 weeks
- Historical medication (no indication on a patient's problem list)
- Prescribed during hospitalization/stress ulcer prophylaxis

No

- Barrett's esophagitis
- Chronic oral steroid use
- Chronic NSAID use
- Severe esophagitis
- History of recurrent GI bleeding

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Step 3: Provide a Patient-Centered Plan

stop/taper therapy > step-down therapy > reduce overall use

- **STOP** abruptly or by tapering. Example: reduce PPI dose by 50% by taking alternative days for 2 weeks and then discontinue.
- **STEP-DOWN** from a PPI to any appropriately dosed histamine-2 receptor antagonist (H2RA). The PPI may be stopped abruptly or tapered. Example: transition from pantoprazole 40 mg daily to famotidine 20 mg twice daily
- **REDUCE OVERALL USE**. Examples:
    a. Intermittent use: for a predefined, finite period (usually 2 to 8 weeks) to resolve condition/symptom after a relapse.
    b. On-demand use: or daily intake until condition/symptom resolve, at which time the medication is discontinued. Daily use is resumed if or when condition/symptoms recur and discontinued upon resolution.
    c. Simply lower the dose: transition to a lower maintenance after a treatment period.

Step 4: Provide education and Follow-Up

- Reiterate non-pharmacological interventions: avoiding triggers (i.e. caffeine, alcohol, spicy food, chocolate), lose weight, elevate the head of the bed, quit smoking
- Recommend over the counter (OTC) drugs (i.e., Tums, Histamine H2 Antagonist, Gaviscon)
- Provide patient with resources (printable informational pamphlets)
- Make a plan for follow-up if symptoms persists after 3 to 7 days or if it interferes with daily activities
- Incorporate pharmacists to help optimize PPI usage

Cost Considerations for PPIs

PPI availability	Treatment dose (once daily)	Maintenance dose (once daily)	Generic?	ARP/30 day supply
Dexlansoprazole (Dexilant)	30[1] or 60[2] mg	30 mg	No	$361
Esomeprazole (Nexium) – OTC	20[3] or 40[4] mg	20 mg	Yes	$249
Lansoprazole (Prevacid) – OTC	30 mg	15 mg	Yes	$193
Omeprazole (Prilosec) – OTC	20 mg	10 mg	Yes	$17
Pantoprazole (Protonix)	40 mg	20 mg	Yes	$63
Rabeprazole (AcipHex)	20 mg	10 mg	Yes	$315

ARP – Average Retail Price (price obtained from 4/27/21); 1 – symptomatic non-erosive GERD; 2 – healing of erosive esophagitis; 3 – non-erosive GERD; 4 – reflux esophagitis

A recent study estimates that the cost of PPI use for 2005 was approximately $14 million in the U.S. alone. Dexlansoprazole (Dexilant) is the only PPI without a generic alternative and represents a significantly higher cost as compared to all other generic PPIs. Over the past year (2020), **approximately $1,389,000 worth of dexlansoprazole was prescribed by the providers within the collaborative care network** (CCN). Available evidence indicates that it is similar in terms of efficacy to other generic PPIs, which are more cost-effective.

If PPI therapy is still warranted for your patient(s), recommend cost-effective alternatives (i.e. pantoprazole, omeprazole) as compared to dexlansoprazole (reserved for severe conditions i.e. erosive esophagitis). In addition, recommend constant re-evaluation of symptoms to reduce the dose and frequency of PPI therapy.