Describing the Appropriate Use of Proton Pump Inhibitors Among the Geriatric Population in an Outpatient Clinic Based Setting

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Background

- Proton pump inhibitors (PPIs) are the second most common medication class and most common potentially inappropriate medication (PIM) class prescribed to Canadian seniors
- PPI's are identified as a PIM class in the geriatric population by Beers Criteria and STOPP/START criteria (strong recommendation, high-quality evidence) due to short and long term adverse effects
- These adverse effects include falls and fractures, infections including *Clostridioides difficile* and community acquired pneumonia (CAP), and acute interstitial nephritis (AIN).
- While it is well documented that PPI use has been increasing in seniors, little is known about the appropriateness of PPI use in the geriatric outpatient population

Methods

Design & Location

- Retrospective cross-sectional chart review at Central Okanagan Senior Health and Wellness Center (SHWC)

Inclusion criteria

- Patients referred to SHWC with a best-possible medication history (BPMH) completed between Oct 4, 2017 and Mar 11, 2021
- Documented use of a PPI on clinic BPMH

Exclusion criteria

- For patients referred to SHWC more than once during the study period, only the first referral was included

Definition

"Appropriate PPI"

- A PPI prescribed at the correct dose for one of the following indications: GERD with refractory symptoms upon discontinuation, GERD with inadequate control with an H2RA, erosive esophagitis, current peptic ulcer disease (PUD) treatment or past PUD with risk factors for recurrence (NSAID, anticoagulant, dual antiplatelet therapy or corticosteroid use)

Purpose

- To assess the appropriateness of PPI therapy in a population of ambulatory geriatric patients and the impact of an interdisciplinary clinic on their use

Objectives

Primary objective

- To determine the proportion of PPI use that is appropriate in an outpatient geriatric population

Secondary objectives

- To determine the proportion of patients taking inappropriate PPIs that underwent deprescribing between clinic admission and discharge
- To describe the proportion of patients taking PPIs that have risk factors for adverse effects from long term PPI use
- To describe the 1-year hospitalization rate for PPI-related adverse effects in clinic patients taking PPIs

Patient Characteristics

Characteristic	N = 280
Mean age, years (SD)	79.6 (7.7)
Mean number of medications (SD)	7.8 (3.3)
Female (%)	168 (60%)
Median Rockwood clinical frailty score[a]	5 (IQR 4,5)
Patients that had risk factors for adverse effects with long term PPI use:	
• Falls	165 (58.9%)
• Osteoporosis	86 (30.7)
• Fragility fractures	80 (28.6%)
• Infection - CAP	29 (10.4%)
• Infection - *C. difficile*	4 (1.4%)
• Acute interstitial nephritis	1 (0.4%)
PPI duration of use • Under 8 weeks • Over 8 weeks • Not documented	 13 (4.6%) 172 (61.4%) 95 (33.9%)

[a] Rockwood clinical frailty score: 4-5 is classified as mildly frail, 6 moderately frail and 7-9 severely frail.

Results

Primary Outcome (n = 280)		
	N	%
PPI use determined to be appropriate	94	33.6
Secondary Outcome – Appropriate PPIs (n = 94)		
Appropriate indications for PPI use:		
• Refractory GERD upon discontinuation of PPI	45	47.9
• GERD with inadequate control using an H2RA	2	2.1
• Erosive esophagitis (Barrett's or unspecified)	20	21.2
• Peptic ulcer disease (PUD) treatment	4	4.2
• PUD with current NSAID use	16	17
• PUD with anticoagulant use	9	9.6
• PUD with corticosteroid or dual antiplatelet use	3	3.2
Secondary Outcome – PPI Deprescribing (n = 186)		
Inappropriate PPIs that underwent dose reduction or discontinuation with the clinic	76	40.9
Secondary Outcome – Hospitalizations (n = 280)		
Patients hospitalized one year post-BPMH • PPI related[1]	52	18.6
Patients hospitalized one year post-BPMH • All	121	43.2

[1] Falls, fractures, AKI, acute interstitial nephritis, CAP, *C. difficile*

Limitations

- Inherent limitations of retrospective chart review design, including missing information and inability to ascertain if changes were implemented
- Small sample size
- Only captured data from health records within a local geriatric clinic

Conclusions

- In the SHWC outpatient geriatric clinic, approximately 1/3 of PPIs were determined to be appropriate
- The SHWC healthcare team intervened on approximately 40% of inappropriate PPIs through dose reduction or discontinuation
- Overall, 43% (52/121) of hospitalizations one year post-BPMH were for reasons associated with PPI adverse effects
- The outpatient geriatric population should be a priority target for dose reductions or discontinuation of inappropriate PPIs
- Future initiatives are required to determine the most effective methods of discontinuation

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