Outcomes from an inpatient proton pump inhibitor stewardship program

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Background

Rationale
• Proton Pump Inhibitors (PPIs) are overused and studies have found over 36% of patients on a PPI did not have an indication for long term therapy
• Long term use of PPIs can result in increase risk of pneumonia, fractures, hypomagnesemia, Clostridium difficile infections, and spontaneous bacterial peritonitis

Development of a PPI Stewardship Program
• Inpatient criteria determined by interdisciplinary team and implemented in March 2016
• The criteria for inpatient PPI continuation:
  o Upper GI bleed, erosive esophagitis, or ulcer in the last 2 months or with persistent dyspeptic symptoms
  o Barrett’s esophagus
  o Esophageal strictures secondary to acid reflux
  o Zollinger-Ellison syndrome
  o Gastric malignancy or previous esophageal or gastric surgery (minus total gastrectomy)
  o PPI prescribed by a VA gastroenterologist
  o Treatment for Helicobacter pylori
  o Previous failed attempt to discontinue a PPI
• Patients received as needed (PRN) Acid Suppression Therapy (AST) in place of their discontinued PPI
  o AlOH/MgOH/Simeth Xtra strength suspension
  o Ranitidine 150mg tab

Study Objectives
Primary Objective
To determine the percentage of patients requiring resumption of their home PPI during hospitalization
Secondary Objectives
To determine risk factors for the resumption of the PPI and the percentages of patients requiring the use of inpatient AST

Methods

Study Design
• Retrospective cohort study
• Institutional Review Board (IRB) approval

Study Population
• Inclusion criteria:
  o All Veterans admitted to an internal medicine service between 3/14/16 to 8/9/16
  o Active outpatient PPI prescription
• Exclusion Criteria:
  o Chronic Kidney Disease (CKD) Stages 4&5
  o Active cancer treatment

Results

Primary Objective
To determine the percentage of patients requiring resumption of their home PPI during hospitalization

Secondary Objectives
To determine risk factors for the resumption of the PPI and the percentages of patients requiring the use of inpatient AST

Of the 1179 patients admitted during this time, 526 (44.6%) met the inclusion criteria for the stewardship program and 216 (18.3%) did not meet criteria for inpatient PPI continuation

Results

Table 1
Risk Factors for Unsuccessful PPI Discontinuation

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Successful</th>
<th>Unsuccessful</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>71.5</td>
<td>68.5</td>
<td>0.52</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>29.5</td>
<td>33.5</td>
<td>0.10</td>
</tr>
<tr>
<td>Duration of PPI Use (years)</td>
<td>6.5</td>
<td>6.0</td>
<td>0.84</td>
</tr>
<tr>
<td>Daily Outpatient PPI Dose (mg)</td>
<td>32.0</td>
<td>47.5</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Conclusion
• An inpatient PPI stewardship program at one institution resulted in successful PPI discontinuation in 96% of patients
• 85% of patients did not require any ‘as needed’ acid suppression therapy (AST) to control symptoms of rebound hyperacidity after PPI discontinuation
• Higher outpatient dose was identified as a risk factor for unsuccessful PPI discontinuation
• Trend towards higher BMI as a risk factor for PPI resumption

References

Heidelbaugh, J., Goldberg, K., & Inadomi, J. (2010). Magnitude and economic effect of overuse of antisecretory therapy in the ambulatory care setting. The American Journal of Managed Care, 16(9), E228-34.

Disclaimer
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