Overutilization of Proton Pump Inhibitors (PPIs) in a Community-Based Hospital: A QI Initiative

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Introduction: Proton pump inhibitors (PPIs) are indicated for GERD, erosive esophagitis, and prophylactic use in patients at high risk for stress ulcerations. Long-term PPI therapy is associated with increased incidence of C. diff infections and community- and hospital-acquired pneumonia. Discontinuation of stress ulcer prophylaxis upon discharge and reevaluation of continued therapy will help reduce chronic, inappropriate treatment, which predisposes patients to adverse side effects.

Aim: We sought to reform the process of inpatient PPI prescriptions based on clinical indications of therapy in order to reduce use and associated costs of PPIs by 30% over 6 months.

Model for Improvement: We obtained an IRB exemption for a retrospective chart review study and collected pre-intervention data from 200 patients who had received PPI therapy between July-Aug 2022. Of these, 186 met inclusion criteria. We identified PPT overuse among all inpatient admissions, including those admitted under teaching services. Evaluating the timing of PPI initiation after admission, we found that a majority (83.8%) were started upon admission; 28.5% required PPIs throughout; and 25.2% of orders were placed within 1 day of discharge. The average duration of therapy was 3.9 ± 2.59 days. On average, 50.5% of patients had a prior diagnosis of GERD, gastritis, or erosive esophagitis, justifying initiation of PPI therapy. However, almost a third (32.8%) met the criteria for stress ulcer prophylaxis. 17% of the cohort developed an adverse side effect, and almost 53% of patients were discharged with a new prescription for PPI.

Measures: Root cause analysis revealed a lack of knowledge regarding adverse PPI effects leading to longer hospital stays. During the first PDSA, we conducted a session on “Use of PPI Inhibitors: Indications for Inpatient Prescriptions and Stress Ulcer Prophylaxis” in April 2023, educating Internal Medicine and Family Medicine resident teaching services about PPI therapy indications, contraindications, and adverse effects.

Results: After our educational intervention, we collected and analyzed data from May 2023 to August 2023 and found 301 patients who met inclusion criteria. Their average age was 73.29 years. 169 patients (56%) had pre-existing diagnoses (GERD or erosive esophagitis), justifying initiation of Protonix. Of the remaining 132 without pre-existing conditions, 44 (35%) met criteria for starting stress ulcer prophylaxis. This was a 3% increase in appropriate utilization when compared to our pre-intervention data. 181 patients were discharged with a prescription for pantoprazole, of which 46 were PPI-naïve prior to admission.

Conclusion: We found a decrease in inappropriate inpatient PPI administration by 3% after education. Although the post-intervention sample size was larger, the education resulted in a positive response in 1 month. The next PDSA cycle will alter the EMR order to provide only 3 orders for pantoprazole – one oral, one IV, and one for infusion, and orders will also require the selection of indication.