SETTING THE STAGE

Why did you select this project and what methods were used to identify the need?

BACKGROUND

> Proton Pump Inhibitors (PPI) are often viewed as safe and well-tolerated medications. However, there is an increasing number of observational studies suggesting long term use increases patients risk for chronic kidney disease, bone fracture, hospital acquired pneumonia, and *Clostridium difficile* infection (CDI).

PROBLEM STATEMENT

> There is an increasing number of hospital onset CDI at Central Maine Medical Center.

> In Q3-CI4 FY17 (January 2017–June 2017) there was a mean of 56 PPI DOT per 100 patient days.

> Of the 14 hospital onset CDI cases between April 2017 and July 2017, 78.6% received concomitant antibiotic and PPI therapy prior to the development of CDI.

> Of the 13 hospital onset CDI cases between Jan 2018 and June 2018, 69.2% received concomitant antibiotic and PPI therapy prior to the development of CDI.
PROJECT DESIGN

Who was involved in the improvement effort?

Sarah Green, PharmD, BCPS; Benjamin Landry, PharmD; Michael Stadnicki, MD; and John Dickens, MD

The team recognized that there was an increasing number of hospital onset CDI at Central Maine Medical Center in Q3-Q4 FY 2017, there was a mean of 56 PPI DOT per 100 patient days.

While Proton Pump Inhibitors (PPI) are often viewed as safe and well-tolerated medications, there was an increasing number of observational studies suggesting long term use increased patients risk for CKD, bone fracture, hospital acquired pneumonia and Clostridium difficile infection (CDI). The team wanted to address this health concern for our patients.

What strategy was developed to focus on improvement?

1. Add a mandatory indication to all PPIs prescribed in the inpatient setting
2. Implementation of a protocol for PPI de-escalation in the outpatient setting.
3. Move all PPI prescribing into evidence based order sets that guides de-escalation.
4. Develop an electronic alert for providers when an ABX and PPI are ordered concomitantly. Pharmacists to monitor far appropriate concomitant use of ABX and PPI.

The onset of these tests of change started on 12/1/2017 with completion of the final task on 8/29/2018. There were several key stakeholders and departments involved, including Risk, Nursing, and IT.

Education to outpatient providers regarding the de-escalation algorithm was handled by Dr. Stadnicki. The refill protocol was reviewed and was approved by CEQS, P&T, Risk, and Nursing.

The metrics used were random audits of PPI orders for indication. PPI DOT per 10D patient days and PPI DOT per 100 patient days and Pharmacist PPI interventions.

LESSONS LEARNED AND NEXT STEPS

We have continued to have success with the reduction of inappropriate use of PPI in the healthcare system. We continue to have pharmacist support and intervention for concomitant antibiotics and PPI prescribing. These efforts have improved the overall rates of patients acquiring C-diff and improving overall quality of care for our patients. The promotion of evidence-based interventions and implementation of the guideline recommendations have strengthened the coordination and communication of care to our patients, making this project a success.