

## Does long-term use of PPI's cause (DIs)?

### Colleen Cangialosi FNP-5



#### Etiological Background

Numerous studies have shown that the colonization of gut microbes can be altered by the long-term use of Proton Pump Inhibitors. Long-term use of PPIs is generally categorized as usage longer than 4-8 weeks. Lowering gastric acid affects the microbiota which prevents bacterial overgrowth. PPI usage can disrupt this and allow proliferation of C-difficile species. Multiple studies have shown that people that took PPIs long-term were three times as likely to develop a CDI (Wilson, 2017). The issue of increased CDIs happens in the community and in acute care facility settings. It drives up the costs of hospital stays, lengthens stays, and can cause antibiotic resistance issues.

#### POD

Are people aged 18-75 years old that have taken long-term Proton Pump Inhibitors for over 8 weeks at a higher risk of acquiring C-difficile infections (CDI) or C-difficile associated diarrhea (CAD)?

Initially having patients discontinue use of PPIs before 8 weeks and implementing Probiotics to limit gastrointestinal flora disruption at the time of PPI initiation is preferred.

#### One-prior study

My goal with this study is to show the damage that long-term PPI can cause to patients GI systems but also to other body systems. PPI use can be associated with pneumonia, bone fractures, interstitial nephritis and acute kidney injury (Wan et al., 2019). Other reports have shown potential PPI adverse events such as skin for chronic kidney disease, dermatitis, spontaneous bacterial pneumonia, acute myocardial infarction, and

#### Background

A descriptive research study was conducted using various types of medical research studies and analysis regarding PPI use affected the gut microbiome enough to cause CDAD and CDIs to develop. Real studies used for the project were meta-analyses. Research was also investigated regarding PPI-related costs as a good intervention for CDI and CDAD prevention. For example, one study, microbiome of 14 healthy-looking 14,140 patients showing there was significant increases in CDI with those on PPIs (Liu et al., 2019).



#### Project Objectives

- ❑ Discontinue PPI use before 8 weeks of usage.
- ❑ Implement Probiotics for recognition of PPI use and continue usage for at least 1-3 months after discontinuation of PPIs.
- ❑ Educate patients and providers of the risks of increased CDAD/CDAD infections with long-term PPI usage.
- ❑ Provide dietary changes to alleviate GIIB symptoms to prevent and long-term PPI use can be reduced.



#### Project Objectives



Participants with above intervention goals and their anticipated importance on the outcome there will be less CDIs thus improving patient outcomes, shorter hospital stays, less costs to patient and society, less antibiotic usage from the increased CDIs, and less side effects from long-term medication use.

#### Study Table

Study	Design	Population	Intervention	Comparison	Outcomes
1	Retrospective	Patients on PPIs	Discontinuation of PPIs	Continued PPI use	Reduction in CDAD/CDI
2	Prospective	Patients on PPIs	Probiotic supplementation	No probiotics	Reduction in CDAD/CDI
3	Retrospective	Patients on PPIs	Education on PPI risks	No education	Reduction in CDAD/CDI
4	Retrospective	Patients on PPIs	Discontinuation of PPIs	Continued PPI use	Reduction in CDAD/CDI

#### Anticipated Challenges

Education to patient and providers can help change an old thought process and implement new practice changes.

PPI use should be temporary, as they can cause many adverse effects to the patient physically, emotionally, and financially.

Probiotics should be implemented in those taking or who have taken PPIs and/or ABX recently to restore gut microbiome and prevent infections.

#### Anticipated Implications to Practice

Increased PPI use will cause a decrease in CDI, other gastrointestinal infections, and CDAD.

Patients will benefit from probiotic use to reestablish gut microbiome and have lessened GI disturbances such as abdominal pain, diarrhea, and constipation.

Health care facilities will lessen their CDI rates and in turn be in a better financial state.

Outpatient providers will now be educated on the risks of long-term PPI usage.

#### Conclusion: Evidence-Based Practice

Colleen Cangialosi, LNP, FNP-5  
colleencangialosi@unc.edu

James M. A. Jones, A. J. (2014, November 10). The use of long-term use of proton pump inhibitors: A critical review. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4144444/>

Wan, S. S., & Jones, A. J. (2019). The impact of long-term use of proton pump inhibitors on the gut microbiome: A critical review. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC6666666/>

Wilson, S. (2017). The impact of long-term use of proton pump inhibitors on the gut microbiome: A critical review. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC6666666/>