Clostridium Difficile infection on an inpatient rehabilitation unit. Quality Improvement Project.

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Introduction

• Our Continuous Quality Improvement (CQI) project was focused on modifiable risk factors associated with Clostridium difficile infection (CDI) within the inpatient rehabilitation unit (IMR).
• The incidence of C. Diff on the rehabilitation unit was 7 case per year leading up to the start of the project in 2014.
• Our project included three major interventions: education, appropriate antibiotic prescription and minimizing proton pump inhibitor use.

Background

• Health care-associated Clostridium difficile infection is the most common cause of infectious diarrhea in acute care settings and may lead to pseudomembranous colitis and toxic megacolon.
• CDI is associated with significant morbidity/mortality, increased length of stay and cost.

Education

• Multiple educational sessions were held for IMR providers/staff since 11/19/2014 (last educational session was on 05/11/2016). Focus was made on the following topics:
  - Optimization of Antimicrobials use and promotion of concurrent use of probiotics
  - Appropriate proton pump inhibitor (PPI) utilization
  - Re-enforcement of standard principles of hand hygiene
  - Ancillary staff baseline knowledge was evaluated with a questionnaire to determine if there was a gap in understanding on C. Diff precautions/hand hygiene. It revealed staff was well educated on precautions and hand hygiene, even using excessive precautions such as soap and water + alcohol
  - Incorporation of innovative educational methods including using a Dr. Seuss theme to make our educational points more memorable and fun to learn. We discover that many IMR providers including residents were not aware of this association

Appropriate Antibiotic Use

GOALS:
- To optimize the use of Antimicrobials for urinary tract infection (UTI) treatment on IMR given this is the most common condition that requires antibiotic prescription on IMR.
- Minimizing the use of Antibiotics associated with a high CDI risk and encouraging utilization of broad spectrum antibiotics
- Discouraging treatment of asymptomatic bacteriuria and sending cultures that are collected poorly
- Discouraging excess duration of antimicrobial treatment

A guideline was developed on UTI diagnosis and treatment for Inpatient Medical Rehabilitation:
- Based on IMR Antibiogram data (2011-2014; Figure 1) IMR UTI guideline was presented to Pharmacy and Therapeutics committee and approved on 06/2015
- IMR UTI guideline was posted on Pulse (06/2015)
- Pocket guideline printed and distributed on IMR (08/2015)
- EPIC order set was built specifically for IMR UTI guideline (“UTI IMR”)

Our intervention resulted in decreased use of Fluoroquinolones and increased use of Nitrofurantoin and Bactrim DS across the IMR (Figure 2)

Proton Pump Inhibitors

• Educated IMR providers on PPI utilization and associated risk of CDI (Figure 3). Special emphasis was made on importance of discontinuation of PPI for the patients who are no longer considered to be critically ill and those who completed steroids of Fluoroquinolones
• Implementation of Thera-Doc alerts system for IMR pharmacists. Pharmacist to review time of PPI initiation and current clinical indication. Pharmacist to promote discontinuation of PPI unless the use is clinically indicated
• Development of guideline for IMR providers on evidence based PPI utilization (work in progress)

Conclusion

• Development of IMR UTI guideline resulted in a significant reduction of utilization of Fluoroquinolones on the IMR (high-risk antibiotics for CDI) and promoted use of more appropriate empiric antibiotics based on IMR Antibiogram.
• Preliminary data is suggestive of a trend in discontinuation of PPI on IMR, which is likely attributed to our educational intervention as well as implementation of Thera-Doc alerts system. Development of PPI guideline for IMR is pending.