SSI Antibiotic Tracking of Selection, Dose, and Timing

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Problem

- Surgical site infections (SSIs) are a common post procedure complication that may be prevented by adhering to established recommendations, including appropriate administration of preoperative antibiotic prophylaxis.
- Beta-lactam antibiotics are often a first-line therapy for the prevention of SSIs due to their efficacy, spectrum of activity, and tolerability. Unfortunately, many patients report having a beta-lactam allergy, despite >90% of these patients not truly being allergic and could safely receive beta-lactam antibiotics.
- A retrospective study of surgery patients at UChicago Medicine found that beta-lactam allergy labels were frequently misinterpreted and many patients with a beta-lactam allergy label could have received first-line therapy, as their reported allergies were non-severe (e.g., diarrhea, headache).
- Additionally, vancomycin has been associated with timing delays due to the prolonged infusion rate required to minimize infusion reactions.

Goal

- Track and optimize antibiotic prophylaxis (selection, dose, and timing) among surgical patients

Intervention Design

TRACK

- SSI Antibiotic dashboards were built in Tableau evaluating hysterectomy, colon, cardiac, hip and knee replacement surgeries (Figure 1)
- Antibiotics are evaluated by three measures:
  - Selection: the correct antibiotics were given based on the type of surgery, beta-lactam allergy, and MRSA risk factors
  - Dose: the correct dosage was by weight
  - Time: antibiotics were administered at the correct time in relation to first incision
- The data are shown for each of the above groups with a trend over time

OPTIMIZE

- Access to the SSI Antibiotic Dashboard was given to stakeholders and screenshots are emailed to surgeons monthly. SSI Antibiotic dashboards are also regularly discussed at the monthly SSI Taskforce meeting.
- Multidisciplinary efforts with the Antimicrobial Stewardship Program, Department of Allergy & Immunology, and Department of Pharmacy are ongoing to develop processes and resources to optimize antibiotic prophylaxis.

Results to Date

ANTIBIOTIC SELECTION

- Patients with non-severe beta-lactam allergies are less likely to receive the appropriate antibiotic regimen (Figure 2)
- Improvements in antibiotic selection for patients with non-severe beta-lactam allergies have been made over time (Figure 3)

ANTIBIOTIC TIMING

- Vancomycin is less likely to be infused at the appropriate time compared to other antibiotics (Figure 4)

Next Steps

- The SSI Antibiotic Dashboard uncovered several areas of opportunity to optimize antibiotic prophylaxis across various surgical services and allows us to continually monitor the impact of various multidisciplinary initiatives
- Next steps include:
  - Building SSI Antibiotic Dashboards for other surgical services
  - Incorporating an evaluation of intraoperative redosing

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