Assessing Appropriateness of Antibiotics Administered as Surgical Prophylaxis at Mercy Hospital Southeast

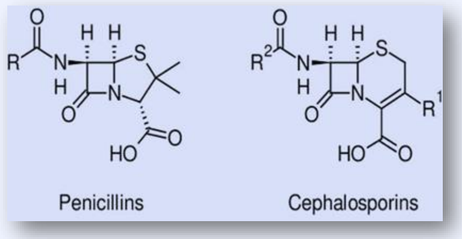
Alyssa Moore PharmD Candidate; Hannah Crum PharmD, BCIDP, AAHIVP

SOUTHERN ILLINOIS UNIVERSITY EDWARDSVILLE

Introduction

Surgical site infections (SSIs) remain a major source of postoperative morbidity, mortality, and healthcare cost.[3]

- The ASHP Clinical Practice Guidelines for Antimicrobial Prophylaxis in Surgery recommend cefazolin as first-line prophylaxis for most surgical procedure.[1]
- ~ 10% of patient reports a penicillin allergy label (PAL), yet <5% represent a true allergy.[3]
- Concern for cross reactivity led to clinicians to avoid cefazolin, but modern evidence cross-reactivity <1% due to cefazolin's unique side chain.[3]



- Avoidance of cefazolin is associated with:[3,5]
  - Increased SSI rates
  - Higher healthcare costs
  - Use of less effective alternatives

Antimicrobial stewardship initiatives at Mercy Hospital Southeast have recently focused on targeted education of cefazolin and PAL.

Objectives

- **Primary Outcomes**: Guidelines adherence in five domains; antibiotic selection, dose, timing, intraoperative dosing, re-dose timing.
- **Secondary Outcome**: evaluate antibiotic selection in patients with documented B-lactam allergy

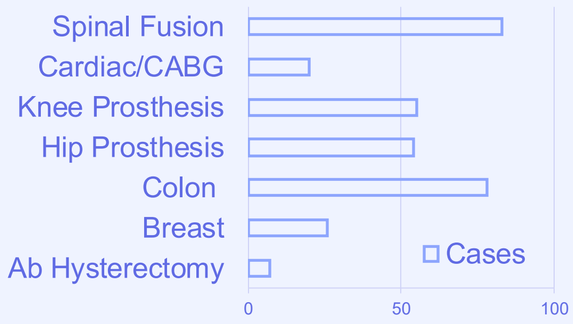
Methods

- **Study Design**: Retrospective observational study
- **Study Site:** Mercy Hospital Southeast Cape Girardeau, MO
- **Study Period:** 1/1/25 – 4/30/25
- **Inclusion Criteria:** Adult patients (>18yo) undergoing any of the following surgeries; spinal fusion, hip or knee prosthesis, abdominal hysterectomy, cardiac, breast, or colon surgery.
- **Analysis:** Data was collected via the EHR and descriptive statistics were used to evaluate concordance.

Results

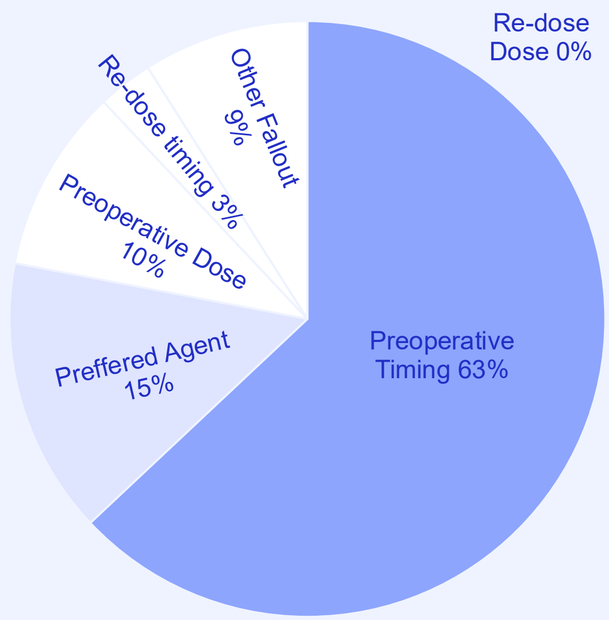
Baseline Characteristics

- Study population: 323 surgical cases
- Average age: 66 years old



Guidelines Fallout Findings

- 97% of cases utilized first line agent
- 21% of cases were not adherent to guidelines in at least one domain.



Timing of Administration Fallout

Timing	%	Avg
Appropriate (-60-0 min)	79%	-15 min
Too Early (<-60 min)	2%	-119 min
Too Late (after incision)	16%	35 min

B-Lactam Allergy Findings

- 16% of patients reported PAL
- 96% of PAL still received first line agent or cefazolin.

Discussion

- This hospital shows strong adherence to guidelines-recommended antibiotic selection
- Providers frequently used cefazolin despite PAL, consistent with current evidence.
- Preoperative antibiotic timing was most common deviation. Suggestive of workflow breakdown rather than knowledge gap.
- Many of antibiotic timing fallouts were administered after the incision.

Limitations

- Single center study
- Retrospective design
- Reliant on EHR accuracy
- Descriptive analysis without clinical outcome assessment

Conclusion

This hospital follows guidelines on antibiotic selection and cefazolin use in B-lactam allergy patient but could improve in timing of antibiotic administration. Targeted workflow intervention/educations and antimicrobial stewardship efforts may improve guidelines adherence.

Resources

[1]ASHP Therapeutic Guidelines on Antimicrobial Prophylaxis in Surgery. (2010). American Journal of Health-System Pharmacy, 67(3), 734–776.
[2]Romano, A., Valluzzi, R. L., Caruso, C., Zaffiro, A., Quaratino, D., & Gaeta, F. (2020). Tolerability of Cefazolin and Ceftibuten in Patients with IgE-Mediated Aminopenicillin Allergy. The Journal of Allergy and Clinical Immunology: In Practice, 8(6), 1989-1993.e2.
[3]Sexton, M. E., & Kuruvilla, M. E. (2024). Management of Penicillin Allergy in the Perioperative Setting. Antibiotics, 13(2), 157.
[4]Sousa-Pinto, B., Blumenthal, K. G., Courtney, L., et al. (2021). Assessment of the Frequency of Dual Allergy to Penicillins and Cefazolin: A Systematic Review and Meta-analysis. JAMA Surgery, 156(4), e210021.
[5]VanderVelde, K. A., Suppes, S. L., Gibbs, K. A., Latz, K. H., Vanderpool, A. C., El Feghaly, R. E., & Goldman, J. L. (2023). Increasing cefazolin use for surgical prophylaxis in penicillin-allergy-labeled patients. Antimicrobial Stewardship & Healthcare Epidemiology