

Prophylactic Antibiotics in Appendicitis: Are We Getting the Timing Right?

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Introduction

Appendicitis has been found to be amongst the top 4 conditions accounting for the highest antibiotic use in pediatric patients and therefore represents an attractive target for antimicrobial stewardship programs.¹ All patients presenting with appendicitis should receive prophylactic antibiotics (PAs) prior to surgery.

The Infectious Diseases Society of America (IDSA) recommends that PAs be administered within 60 minutes of skin incision to achieve adequate therapeutic levels and reduce the risk of postoperative surgical site infection (SSI).²

Objective

The objective of this study was to determine the compliance rate of pediatric surgeons with the IDSA recommendations regarding the timing of administration of PAs for appendectomies at our institution.

Methods

- Alberta Children's Hospital is a 141 bed tertiary care hospital in Calgary, Alberta, Canada. Approximately 350 cases of appendicitis are seen each year



- Retrospective chart review of all appendectomies (Nov 2014 - Mar 2015)
- Patient outcomes assessed at 30 days post-op including: return to Emergency department/surgery clinic or readmission for management of SSI (no formal SSI surveillance in place for appendectomies)
- Compliance with IDSA recommendations regarding timing of PA administration assessed
- Descriptive statistics were performed

Results

Demographics

Total charts reviewed	114
Male : Female	1.5 : 1
Median age in years (range)	12.1 (3.8 - 17.9)

Figure 1: Proportion of Perforated Cases

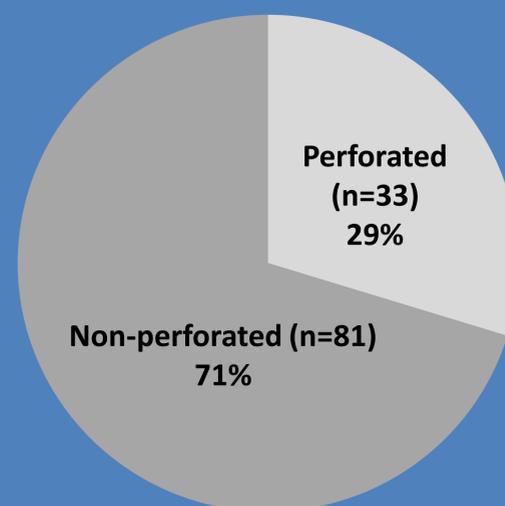
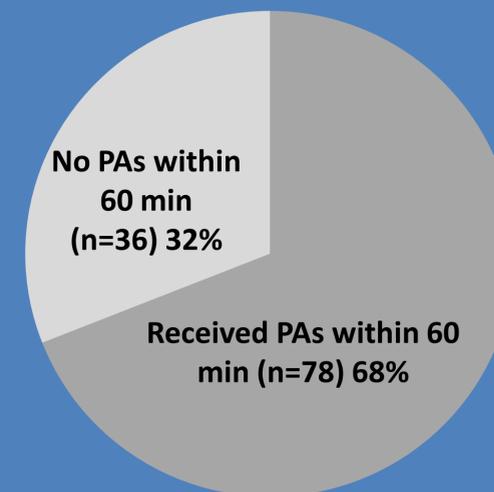


Figure 2: Timing of PAs



- The most commonly prescribed regimen for pre-operative prophylaxis was cefazolin + metronidazole

Surgical site infections:

- Ten patients presented to the ED or surgery clinic for management of SSIs (3/10 received inappropriately timed PAs).
- Five of these patients were re-admitted to hospital within 30 days of surgery for management of deep SSIs (all had perforated appendicitis and 2/5 received inappropriately timed PAs).
- One patient underwent drainage of a deep SSI during their original admission.

Summary

Approximately 1/3 of children undergoing appendectomy at our institution did not receive PAs within 60 minutes of skin incision as recommended by the IDSA.

Conclusions

Despite the availability of surgical prophylaxis recommendations and preoperative checklists, many patients are still failing to receive appropriately timed PAs before undergoing appendectomy.

An intensive antimicrobial stewardship program with ongoing education, monitoring, and feedback to surgeons may improve compliance with established recommendations.

Future Research

The reasons for failing to provide appropriately timed PAs requires further study.

Specific interventions targeted at optimizing the timing of administration of PAs must be developed and studied.

References

1. Gerber JS et al. Identifying Targets for Antimicrobial Stewardship in Children's Hospitals. *ICHE* 2013; 34: 1252-8
2. Bratzler DW et al. Clinical practice guidelines for antimicrobial prophylaxis in surgery. *Am J Health-Syst Pharm* 2013; 70: 195-283.

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