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# Setting a Threshold for Discharge Antibiotics in Children with Perforated Appendicitis: A Study Update

Kayla B. Briggs
*Children's Mercy Hospital*

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Kayla B. Briggs MD, Wendy Jo Svetanoff MD MPH, James A. Fraser MD, Janelle R. Noel-MacDonnell PhD, Shawn D. St Peter MD, Tolulope A. Oyetunji MD MPH

Children's Mercy Kansas City

## Introduction

- Duration of antibiotic use in perforated appendicitis has been questioned
  - Balancing risk of intraabdominal abscess vs. antibiotic overutilitization
- Previously, oral antibiotics were continued at discharge in children with abnormal white blood cell count (WBC) for age
- Retrospective review suggested decreasing the threshold for discharge antibiotics to <10 x $10^3$ mcL (see Table and Figure 1) may result in fewer intraabdominal abscesses (IAA)

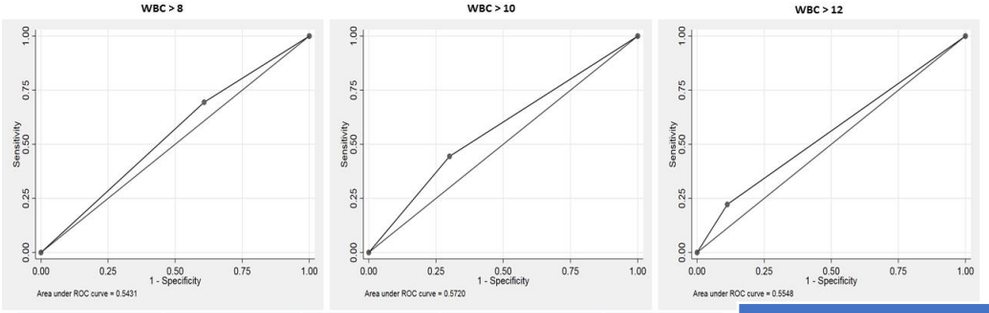
## Methods

- Children with perforated appendicitis
- PRE cohort: children not discharged with antibiotics due to normal WBC for age (see Table 2)
- POST cohort: children not discharged with antibiotics due to WBC <10
- Primary outcome: development of IAA

## Results

- 752 patients
  - 552 PRE cohort, 200 in the POST cohort
- Post-operative IAA rate in PRE cohort 6.5% vs. 4% POST cohort (0.22)

Figure 1: ROC Analysis of Various DC WBC Thresholds




| WBC Cutoff | Sensitivity | Specificity | OR (95% CI) | p-value |
|---|---|---|---|---|
| 8 | 69% | 39% | 1.46 (0.71-3.0) | 0.31 |
| 10 | 44% | 70% | 1.86 (0.95-3.65) | 0.07 |
| 12 | 22% | 89% | 2.25 (1.0-5.09) | 0.06 |

Table 1. Sensitivity and specificity analyses on PRE cohort suggesting new discharge WBC count threshold should be <10.

| Age | WBC count (x$10^3$ mcL) range |
|---|---|
| 0-1 day | 9.0 – 30.0 |
| 0-3 days | 9.4 – 38.0 |
| 3-14 days | 5.0 – 21.0 |
| 14 days – 1 month | 5.5 – 19.5 |
| 1 – 3 months | 5.5 – 17.5 |
| 3 months – 2 years | 6.0 – 17.5 |
| 2 – 6 years | 5.5 – 15.5 |
| 6 – 12 years | 4.5 – 14.5 |
| >12 years | 4.5 – 11.0 |

Table 2. Institutional normal WBC count for age

| | PRE cohort (n = 552) | POST cohort (n = 200) | p-value |
|---|---|---|---|
| Gender (%) | | | |
| Male | 60.9 (n=336) | 52.0 (n=104) | 0.04 |
| Race/Ethnicity (%) | | | |
| Caucasian | 61.1 | 62.5 | 0.36 |
| Clinical Characteristics (Median [IQR]) | | | |
| Age (years) | 9 [7,12] | 11 [8,13] | <0.0001 |
| BMI (kg/$m^2$) | 18.3 [15.5,21.9] | 18.7 [16.0,22.4] | 0.17 |
| Weight (kg) | 33.5 [23.2,52] | 39.1 [26.8,54.9] | 0.009 |
| Days of Symptoms | 2 [1,4] | 2 [1,3] | <0.0001 |
| Admission WBC (x$10^3$mcL) | 13.4 [8.8,18] | 16.6 [13.5,20] | <0.0001 |
| Operative Time (min) | 33 [26,45] | 34 [25,44] | 0.77 |
| WBC at Discharge (x$10^3$mcL) | 8.7 [7.2,10.4] | 7.9 [6.7,8.9] | <0.0001 |
| Length of Stay (hr) | 95 [73,118.5] | 72 [52,90.5] | <0.0001 |
| Development of IAA (%) | 6.5 (n=36) | 4 (n=8) | 0.22 |

Table 3. Baseline demographics and clinical characteristics of children in the PRE and POST cohorts

## Conclusion

While not statistically significant, discharge WBC <10 as a threshold for additional antibiotic usage in perforated appendicitis resulted in fewer post-operative IAA.

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