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

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

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Introduction

- Duration of antibiotic use in perforated appendicitis has been questioned
 - Balancing risk of intraabdominal abscess vs. antibiotic overutilization
- 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 $<10 \times 10^3$ mCL (see Table and Figure 1) may result in fewer intraabdominal abscesses (IAA)

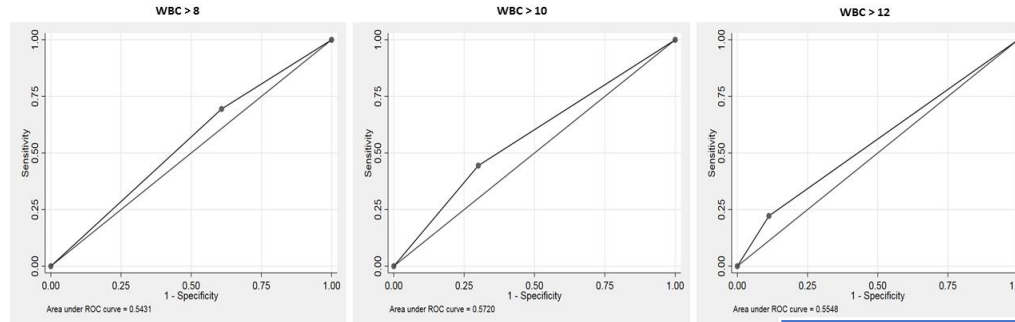
Methods

- 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 ($\times 10^3$ 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 ($\times 10^3$ 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 ($\times 10^3$ 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.