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

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IRB Number: 17080475

Describe role of Submitting/Presenting Trainee in this project (limit 150 words):

Kayla Briggs was responsible for data collection, data analysis, and abstract preparation.

Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words

Background: To address concerns of antibiotic overutilization, normal white blood cell count (WBC) for age was previous criteria for discontinuing antibiotics at discharge in perforated appendicitis. Retrospective review suggested a decrease in threshold for additional antibiotic administration to a discharge WBC <10 would result in fewer postoperative intraabdominal abscesses (IAA).

Objectives/Goal: The purpose of our study is to determine if lowering the threshold for additional antibiotic administration decreased the rate of IAA after laparoscopic appendectomy for perforated appendicitis in children who were not discharged with additional antibiotics.

Methods/Design: Following IRB approval, prospective data was retrospectively reviewed. Children with perforated appendicitis identified during laparoscopic appendectomy at our institution between August 2011-July 2017 (PRE) and November 2017-June 2020 (POST) were included. Patients not discharged with an additional 4-day course of oral antibiotics were classified according to whether they returned with a postoperative abscess. Demographic data and clinical details were abstracted from patient medical records. Analysis was performed using STATA®; a p-value of <0.05 was significant.

Results: A total of 752 children were included, 552 in the PRE cohort and 200 in the POST cohort. The POST cohort had fewer males ($p=0.04$) but was older (<0.001) and thus weighed more ($p=0.009$) at admission (Table 1). The lower threshold resulted in more antibiotic prescriptions at discharge (PRE 23% vs. POST 43%, $p<0.001$). 7% of children in the PRE cohort discharged without antibiotics returned with

IAA compared to 4% in the POST cohort ($p=0.22$), a 45% reduction. Despite the higher rate of antibiotic prescribing, there were no cases of antibiotic-related readmissions documented in the POST cohort.

Conclusions: While not statistically significant, the rate of intraabdominal abscess decreased using a white blood cell count <10 at discharge to determine need for additional oral antibiotics. The higher rate of antibiotic prescribing did not have any meaningful clinical impact.

Table 1. Patient demographics and clinical characteristics.

| | PRE cohort (n=552) | POST cohort (n=200) | p-value |
|--|-------------------------------|--------------------------------|-------------------|
| Demographics | | | |
| Male (%) | 60.9 (n=336) | 52.0 (n=104) | 0.04 |
| Race/ethnicity (%) | | | |
| Caucasian | 61.1 (n=337) | 62.5 (n=125) | 0.36 |
| Hispanic | 23.6 (n=130) | 22.0 (n=44) | |
| African American | 5.6 (n=31) | 4.5 (n=9) | |
| Asian | 2.2 (n=12) | 3.5 (n=7) | |
| Other/multiracial | 6.0 (n=33) | 7.5 (n=15) | |
| Declined to answer | 1.6 (n=9) | 0 | |
| Clinical Characteristics (Median [IQR]) | | | |
| Age (years) | 9 [7,12] | 11 [8,13] | <0.0001 |
| Weight (kg) | 18.3 [15.5,21.9] | 18.7 [16.0,22.4] | 0.17 |
| Days of symptoms | 33.5 [23.2,52] | 39.1 [26.8,54.9] | 0.009 |
| Admission WBC ($\times 10^3$ mcL) | 2 [1,4] | 2 [1,3] | <0.0001 |
| Operative time (min) | 13.4 [8.8,18] | 16.6 [13.5,20] | <0.0001 |
| WBC at discharge ($\times 10^3$ mcL) | 33 [26,45] | 34 [25,44] | 0.77 |
| Length of stay (hrs) | 95 [73,118.5] | 72 [52,90.5] | <0.0001 |
| Development of IAA (%) | 7 (n=36) | 4 (n=8) | 0.22 |