Impact of a Clinical Practice Guideline on Antibiotic Use for Pediatric Tonsillectomy

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Results

Background

• Tonsillectomy is the 2nd most common pediatric surgery in the US (approximately 500,000/year)
• In 2011 the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) recommended against antibiotic use in a practice guideline
• This guideline included a recommendation for dexamethasone use

Objective

• Assess the impact of this recommendation on practice at US Children’s hospitals

Methods

DATA SOURCE
• The Pediatric Health Information System, a database of freestanding children’s hospitals, was used
• 34 hospitals were included in the analysis INCLUSION/EXCLUSION CRITERIA
• Inclusion: Patients >1 and <19 years old with tonsillectomy between 2009 and 2013
• Exclusion: high risk conditions, additional surgery, or admission from the emergency department
• Antibiotic and dexamethasone use defined as billing charge on day of surgery
• Longitudinal piecewise logistic regression model with a knot at Q1 2011 (AAO-HNS guideline)
• Marginal standardization used for adjustment of patient demographics, comorbid conditions, indication for surgery
• Standard errors adjusted for clustering by hospital

Results

• 121,918 patients met inclusion criteria
• Antibiotics use dropped from 26.2% prior to the guideline to 14.0% afterward (Table 1)
• Antibiotic use was declining before the guideline and the rate of decline was similar afterward (p=0.96) (Figure 1)
• Immediately following guideline publication, there was a drop in antibiotic use that was not statistically significant (p=0.11)

Table 1. Prescribing of antibiotics and dexamethasone before and after guideline publication

<table>
<thead>
<tr>
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<th>Standardized Proportion (95% CI)</th>
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<tbody>
<tr>
<td>Antibiotics</td>
<td>Before: 26.2 (15.1-37.4)</td>
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<tr>
<td></td>
<td>After: 14.0 (8.0-20.0)</td>
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<tr>
<td>Dexamethasone</td>
<td>Before: 70.1 (57.7-82.5)</td>
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<tr>
<td></td>
<td>After: 75.5 (64.2-86.8)</td>
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Figure 1. Prescribing of perioperative antibiotics and dexamethasone for tonsillectomy in children over time

• At 29 of 34 hospitals, use was lower in the study period after publication compared to before (average percentage point change -16%, range -1% to -87%).
• Three hospitals increased use (percentage point change 6%, 6% and 41%).
• Dexamethasone use was increasing across the study period with an increased slope after the guideline that was not statistically significant (p=0.19)

Conclusion

• The 2011 AAO-HNS guideline did not significantly reduce antibiotic use with pediatric tonsillectomy at free-standing children’s hospitals in the US
• Most children do not receive perioperative antibiotics
• This remains an important target for antimicrobial stewardship

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