

# Nationwide Trends in Antibiotic Selection for the Treatment of Pediatric Acute Sinusitis, 2003-2020

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### Introduction

- Acute sinusitis is a frequent outpatient diagnosis for pediatric patients, and is associated with high rates of antibiotic prescribing
- IDSA (2012) guidelines recommended amoxicillin with clavulanate as first line<sup>1</sup>
- AAP (2013) guidelines recommend amoxicillin with or without clavulanate as first line<sup>2</sup>
- IDSA guidelines recommend 10-14 days of empiric treatment
- Nationwide trends in antibiotic prescribing have not been reported since publication of these guidelines
- Evaluating prescribing patterns can identify areas for future research and antibiotic stewardship interventions

### Methods

- Data source: Marketscan Commercial Claims and Encounters Database, January 1, 2003 to December 31, 2020
- Inclusion criteria: commercially insured, <18 years old, 6 months of continuous enrollment prior to diagnosis
- Inclusion criteria: Outpatient encounter with ICD-9 (461.x) or ICD-10 (J01.x0) code and same-day PO antibiotic dispensation
- Exclusion criteria: cystic fibrosis, acute, recurrent, or chronic sinusitis in preceding 6 months
- Exclusion criteria: same-day ICD code for acute otitis media, cellulitis/abscess, community acquired pneumonia, Streptococcal pharyngitis, UTI
- Analysis: interrupted time series using Newey-West method and 2012 (publication of IDSA guidelines) as intervention point
- Software: Aetion Evidence Platform and STATA
- Brigham and Women's Hospital Institutional Review Board waived the need for informed consent

### Results

- 3.19 million subjects met the inclusion and exclusion criteria
- Publication of the IDSA guidelines was associated with significant increases in the proportion of patients prescribed amoxicillin (1.39% per year [95% CI: 0.85%, 0.92%]) and amoxicillin-clavulanate (1.05% per year [95% CI: 0.85%, 1.25%]) in the post-intervention period relative to the pre-intervention period
- There were statistically significant decreases in the proportion of patients prescribed azithromycin (-2.19% per year [95% CI: -2.56%, -1.83%]) and cefdinir (-0.70% per year [95% CI: -1.10%, -0.29%]) in the post-intervention period relative to the pre-intervention period.
- 94% are prescribed antibiotics for 10 days or more at their initial visit

### Conclusions

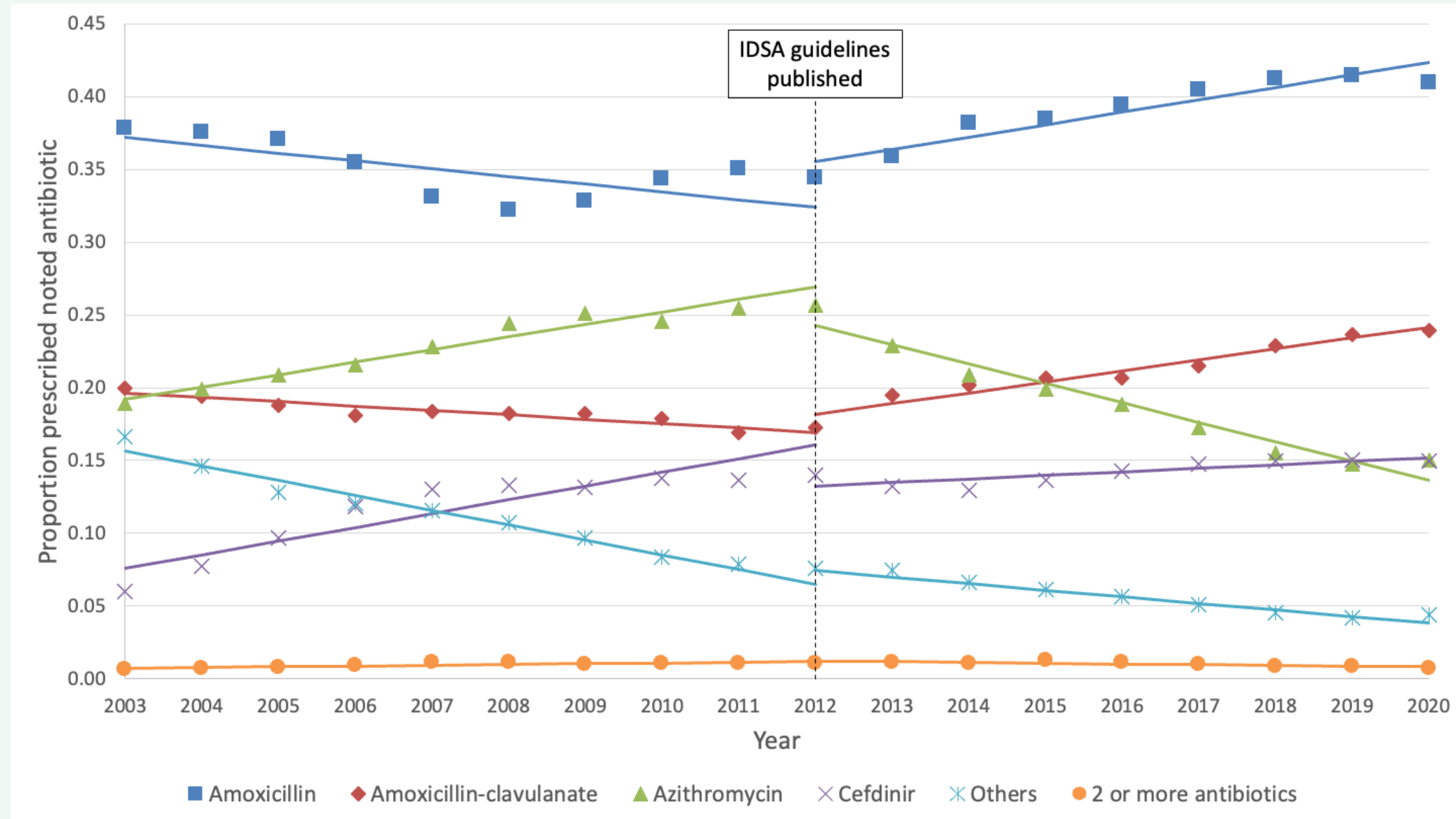
- The proportion of patients prescribed amoxicillin and amoxicillin-clavulanate increased after publication of IDSA guidelines and now account for 65% of all prescriptions for acute bacterial sinusitis in children
- 30% of prescriptions are for azithromycin and cefdinir
- 94% of pediatric patients are prescribed the guideline concordant 10-14 days
- With 65 antibiotic prescriptions for sinusitis per 1000 pediatric population<sup>3</sup>, and 74 million people younger than 18 years in the US<sup>4</sup>, 14 to 24 million days of antibiotics could be avoided if all pediatric patients in the US were prescribed 5-7 days of treatment<sup>5</sup> rather than current prescribing patterns
- High quality studies are needed to compare short to long duration treatment of acute bacterial sinusitis in pediatric patients

## 14 to 24 million days of antibiotics could be avoided every year if pediatric patients were prescribed 5 – 7 days for acute bacterial sinusitis

### References

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### Amoxicillin and amoxicillin-clavulanate use increased after guideline publication and account for 65% of prescriptions for acute sinusitis in children



### 94% of children are prescribed 10 days or more for an initial diagnosis of acute bacterial sinusitis

