

# Evaluation of a clinical decision support system and an automated electronic health record alert on outpatient prescribing of cefdinir

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## Background

- Acute otitis media, pharyngitis, and sinusitis are among the most common indications for antibiotics in pediatrics, and it is estimated that one-third of outpatient prescriptions are inappropriate.<sup>2,3,5</sup>
- Cefdinir is commonly used in pediatrics, however, there are no evidence-based guidelines recommending it as a first-line agent.<sup>10,11</sup>
- Clinical decision support systems (e.g., pathways and order sets) have demonstrated sustained improvements in provider prescribing.<sup>6,12</sup> Best practice advisory alerts are commonly used in the inpatient setting, but there are little data on their use in the outpatient setting.<sup>1,8,9</sup>

## Methods

- Retrospective, single-center, quasi-experimental study of oral antibiotic prescriptions for acute otitis media, pharyngitis, and sinusitis in general pediatric clinics from April 2018 to February 2023
- The intervention was a best practice advisory alert targeting cefdinir use in nonpenicillin allergic patients which was linked to an order-set based on our local acute upper respiratory infection guidelines (Figure 1 & 2).
- The primary outcome was rate of first-line prescribing.
- Pre- and post-intervention groups were compared using  $\chi^2$ . Interrupted time series analysis was performed using a segmented regression model. All data was abstracted using Epic Slicer Dicer.

## Results

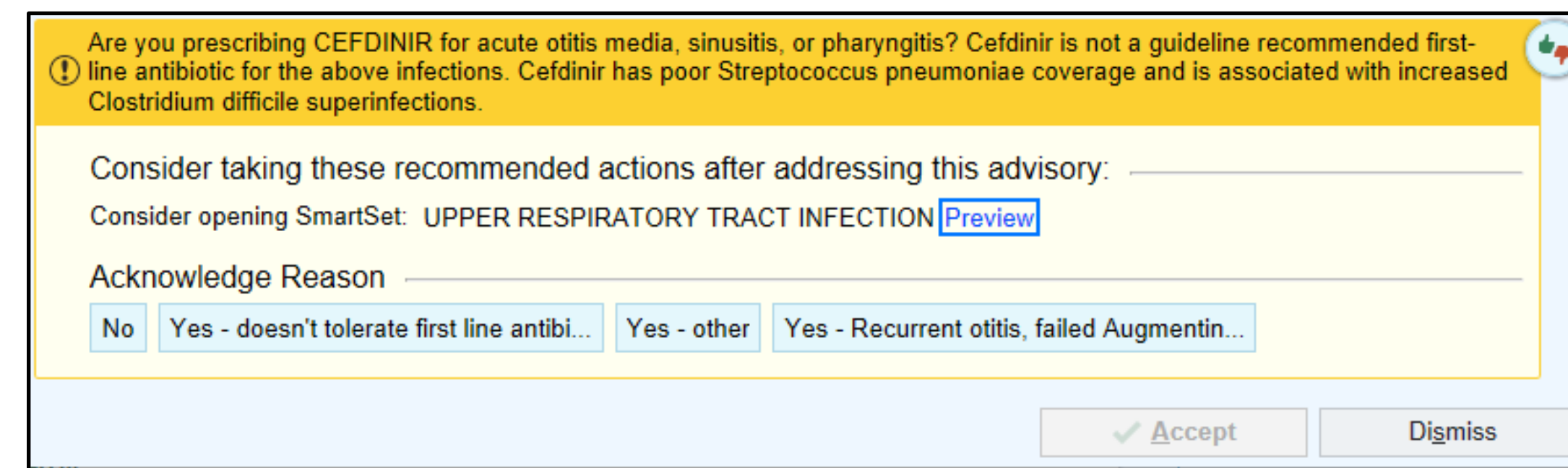


Figure 1: Best practice advisory alert targeting cefdinir use in non-penicillin allergic patients<sup>4,7</sup>

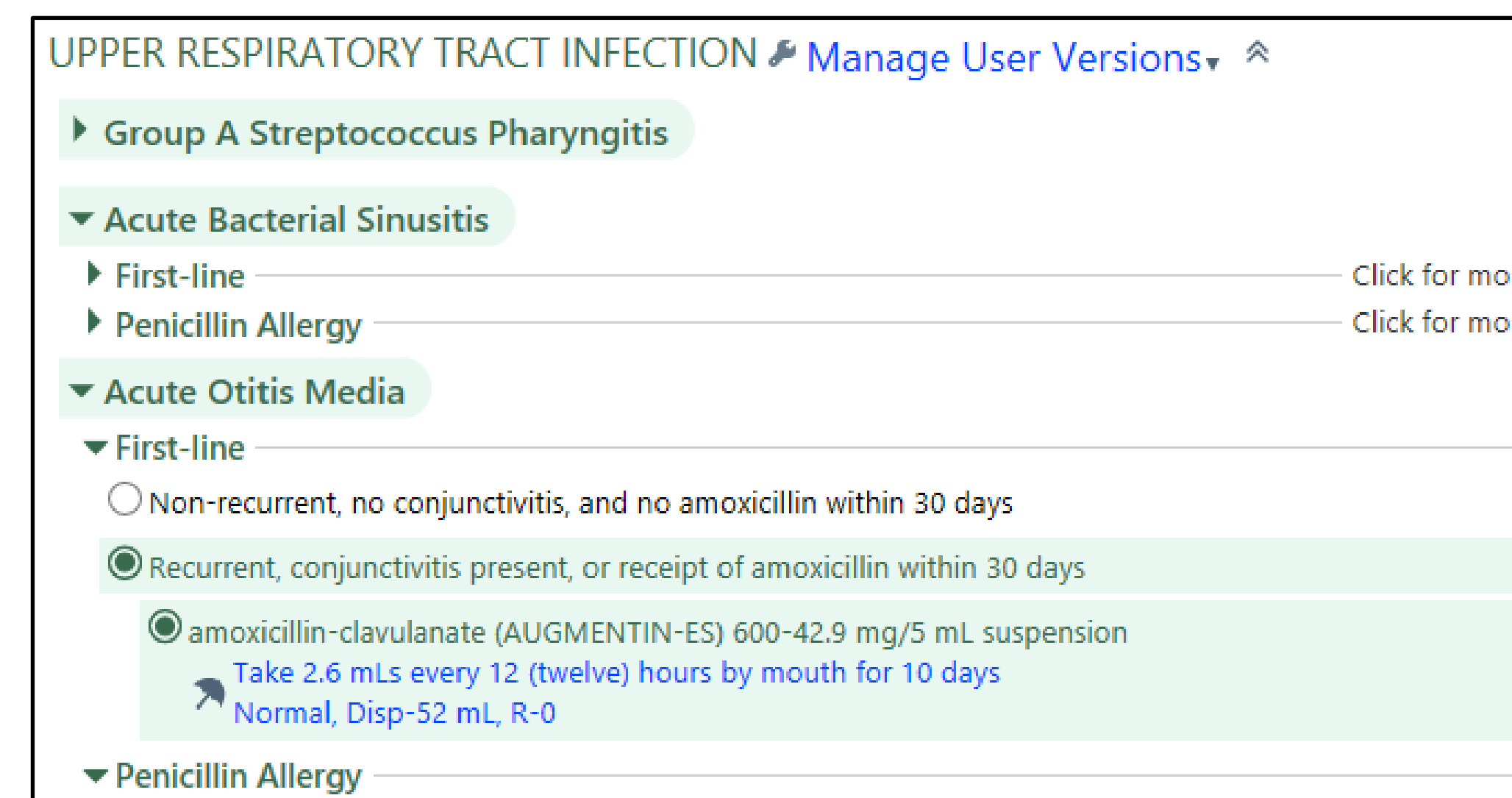


Figure 2: Order set based on local acute upper respiratory infection guidelines

Variable	Pre-Intervention Period (n=36578)	Post-Intervention Period (n=15262)	P Value
Diagnosis			<0.001
Acute Otitis Media	23684 (64.7)	10393 (68.1)	
Sinusitis	7012 (19.2)	3012 (19.7)	
Pharyngitis	5882 (16.1)	1857 (12.2)	
Sex			0.132
Male	19020 (52.0)	8030 (52.6)	
Female	17558 (48.0)	7231 (47.4)	
Race/Ethnicity			<0.001
White	20468 (56.0)	8167 (53.5)	
Black	9275 (25.4)	3885 (25.5)	
Hispanic	3108 (8.5)	1596 (10.5)	
Other	3727 (10.2)	1614 (10.6)	
Clinic Location			<0.001
Academic	857 (2.3)	438 (2.9)	
Non-Academic	35721 (97.7)	14824 (97.1)	

Table 1: Comparison of pre- and post-intervention group characteristics

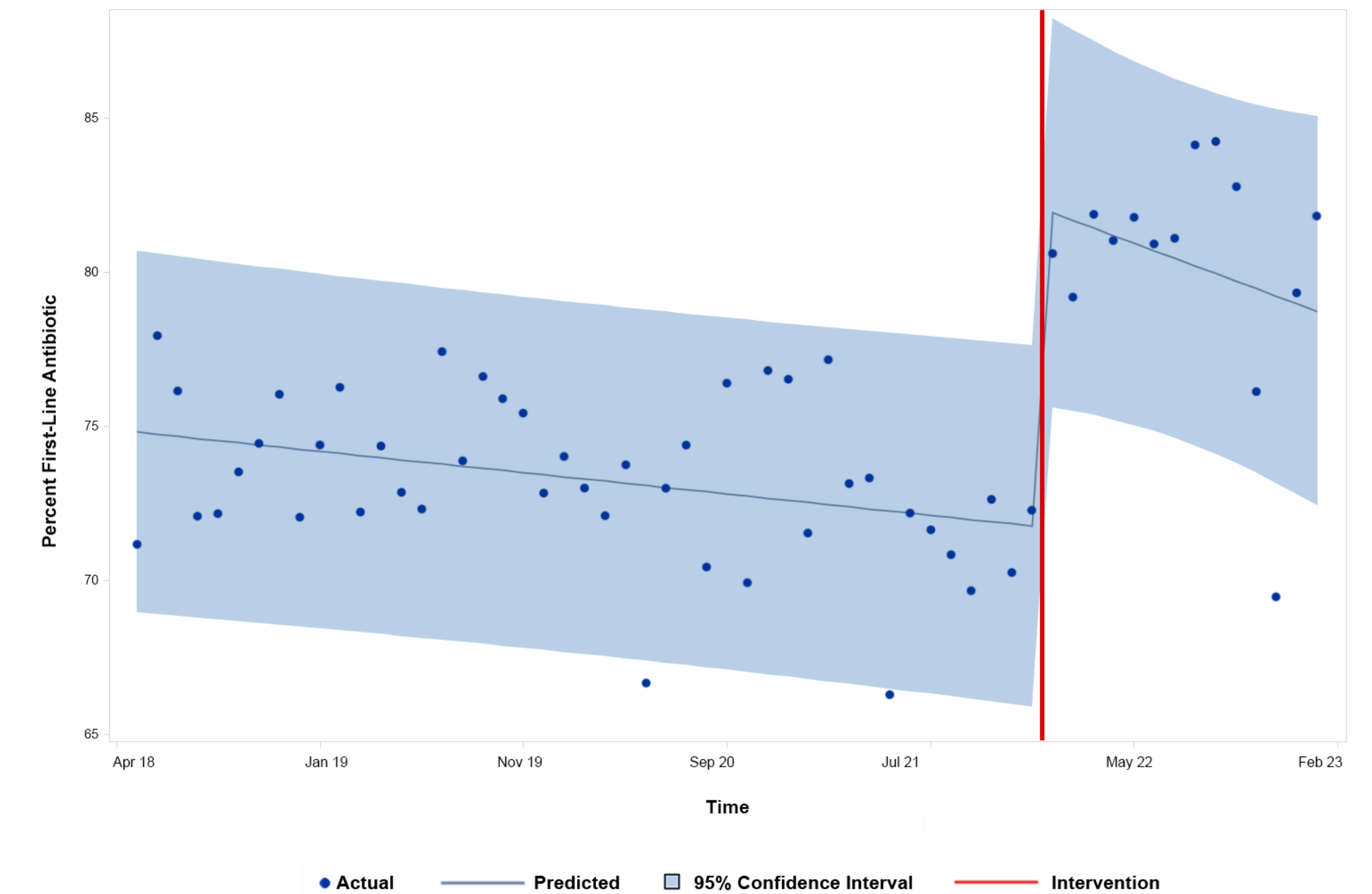


Figure 3: Monthly percent of first-line versus non-first-line prescriptions. Our intervention was associated with an immediate 10.4% increase in first-line prescribing ( $p < 0.0001$ ). There was a decline in the post-intervention period, but this was not statistically significant ( $p = 0.3561$ ).

## Conclusions

- Our intervention was associated with a 10.4% increase in first-line antibiotic prescribing.
- ASP's should consider implementation of best practice advisory alerts in the outpatient setting as a more sustainable intervention for inappropriate prescribing.

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