

# Patient and Prescriber Characteristics Associated with Inappropriately Long Antibiotic Duration for Skin and Soft Tissue Infections



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## Background

- Infections of the skin, soft tissue, and mucosal surfaces represent the second most common group of indications for antibiotic treatment in ambulatory pediatrics
- National (IDSA) guidelines suggest 5-7 days of antibiotic therapy for uncomplicated skin and soft tissue infections
- Despite the available data and guidelines, clinicians often prescribe courses of antibiotics which exceed national guidelines by three to five days
- For other infections, prior studies have found that more seasoned providers more commonly write these longer (inappropriately long) antibiotic durations

## Objective

Identify patient and prescriber factors which influence antibiotic prescription duration for skin and soft tissue infections (SSTIs)

## Methods

Retrospective analysis of Nationwide Children's Hospital (NCH) primary care clinic patients up to 21 years of age who were prescribed enteral antibiotics over the previous two years for the following conditions: cellulitis, abscess, impetigo, other (folliculitis, skin infection, pustule) analyzed in respect to guideline-recommended duration:

- 5 days: cellulitis, drained abscess
- 7 days: impetigo, undrained abscess, folliculitis

Demographic and clinical data were collected for each encounter, prescription, and prescriber.

Antibiotics were analyzed by:

- Preferred antibiotics: Cephalexin, Clindamycin, Trimethoprim-sulfamethoxazole (TMP-SMX)
- Others: Amoxicillin, Amoxicillin-Clavulanate (AC), Others not recommended in national SSTI guidelines

Multivariate analysis performed to account for repeated measures (single provider writing for multiple prescriptions)

## Results

Descriptive Analysis:

- Patients: age 11 days to 20.9 years, similar in sex, insurance (private vs public)
- Prescribers: 110 providers wrote for the 1033 Enteral Prescriptions
- 92 MD/DO; 18 Nurse Practitioners
- Median Provider years out of training was 10.5 years (IQR: 4-15)

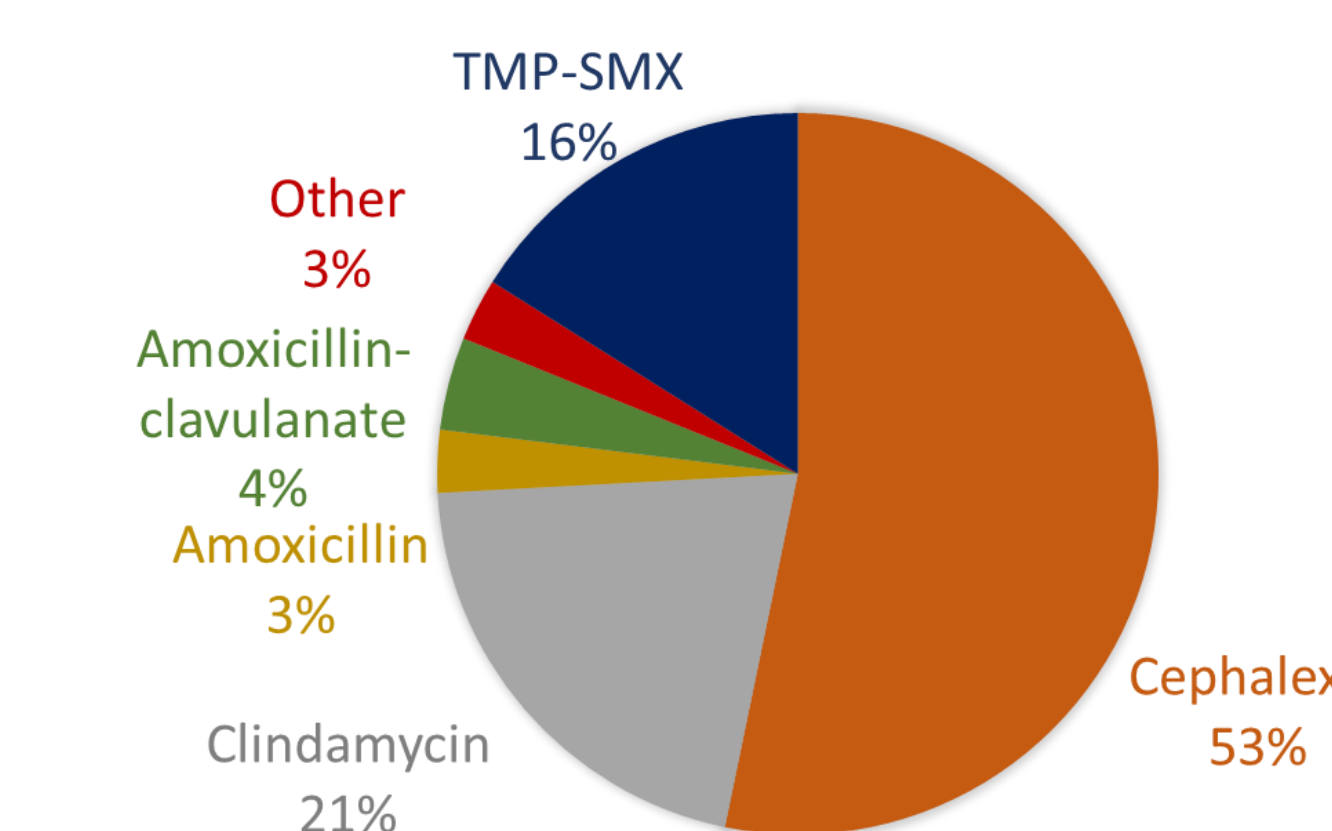
	Guideline-Concordant Duration (N=449)	Inappropriately Long Duration (N= 584)	P-value
<b>Patient Factors</b>			
Age, median years (IQR)	5.5 (2.3-11.9)	6.0 (2.3-12.3)	0.592†
Female, n (%)	239 (53.2)	314 (53.8)	0.864*
Insurance Type, n (%)			0.099*
Commercial	34 (7.6)	67 (11.5)	
Public	397 (88.4)	491 (84.1)	
Unknown	18 (4.0)	26 (4.5)	
Diagnosis, n (%)			<0.001*
Impetigo	193 (43.0)	114 (19.5)	
Cellulitis	44 (9.8)	167 (28.6)	
Abscess	95 (21.2)	161 (27.6)	
Other	117 (26.1)	142 (24.3)	
Antibiotic, n (%)			<0.0001*
Cephalexin	295 (65.7)	255 (43.7)	
Clindamycin	69 (15.4)	147 (25.2)	
TMP-SMX	59 (13.1)	108 (18.5)	
Amoxicillin	7 (1.6)	22 (3.7)	
Amox-clav	7 (1.6)	36 (6.2)	
Other	13 (2.9)	16 (2.7)	

IQR, interquartile range, MD, Doctor of Medicine, DO, Doctor of Osteopathic Medicine, NP, Nurse Practitioner  
†Mann Whitney \*Chi-square

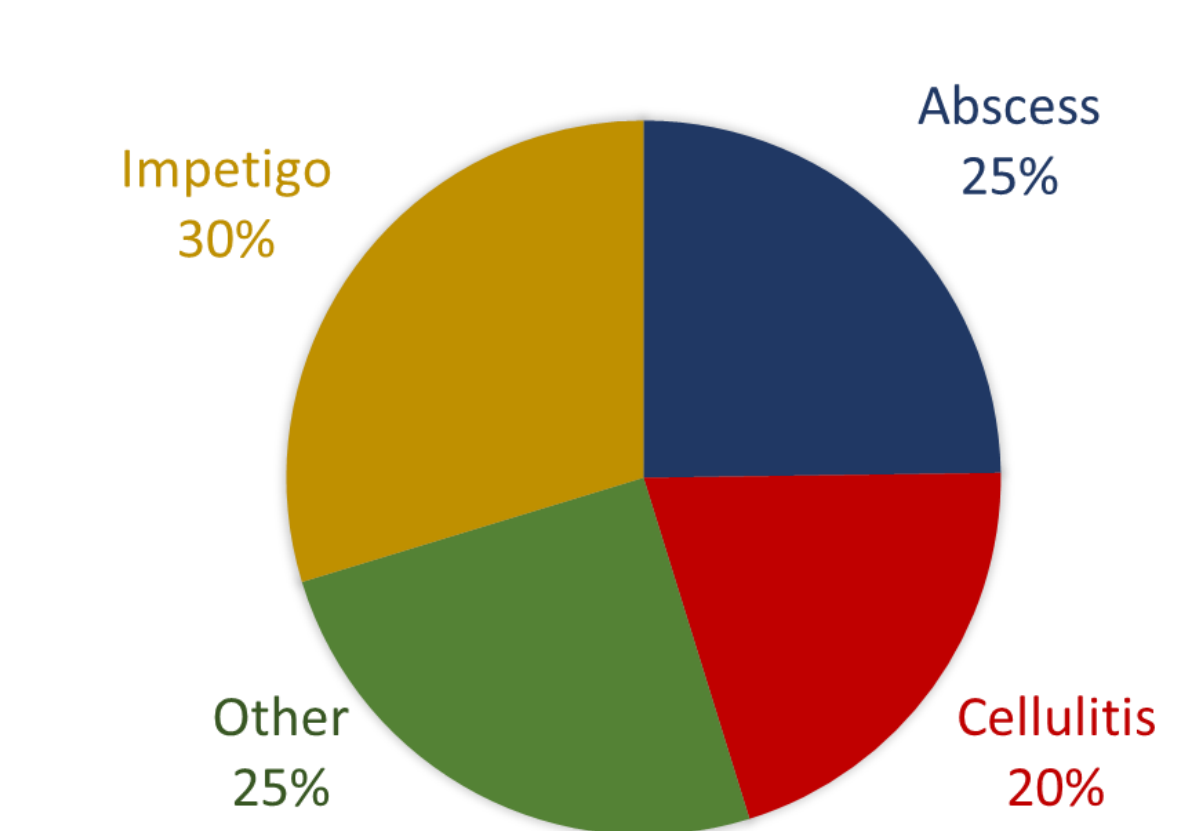
	Estimated Proportion of Inappropriately Long Antibiotic Duration	95% LB	95% UB	Overall p-value
<b>Provider Factors</b>				
YOT				0.957
Less than 5 years	0.55	0.49	0.61	
5 to <10 years	0.59	0.49	0.68	
10 to <15 years	0.54	0.45	0.63	
15 to <20 years	0.56	0.45	0.66	
More than 20 years	0.54	0.44	0.64	
Degree Type, n (%)				0.455
MD/DO	0.55	0.50	0.59	
NP	0.58	0.51	0.65	

YOT, Years Out of Training, MD, Doctor of Medicine, DO, Doctor of Osteopathic Medicine, NP, Nurse Practitioner  
Bivariate Analysis: estimated Proportions after accounting for correlation of repeated measures within a provider

### ANTIBIOTICS PRESCRIBED

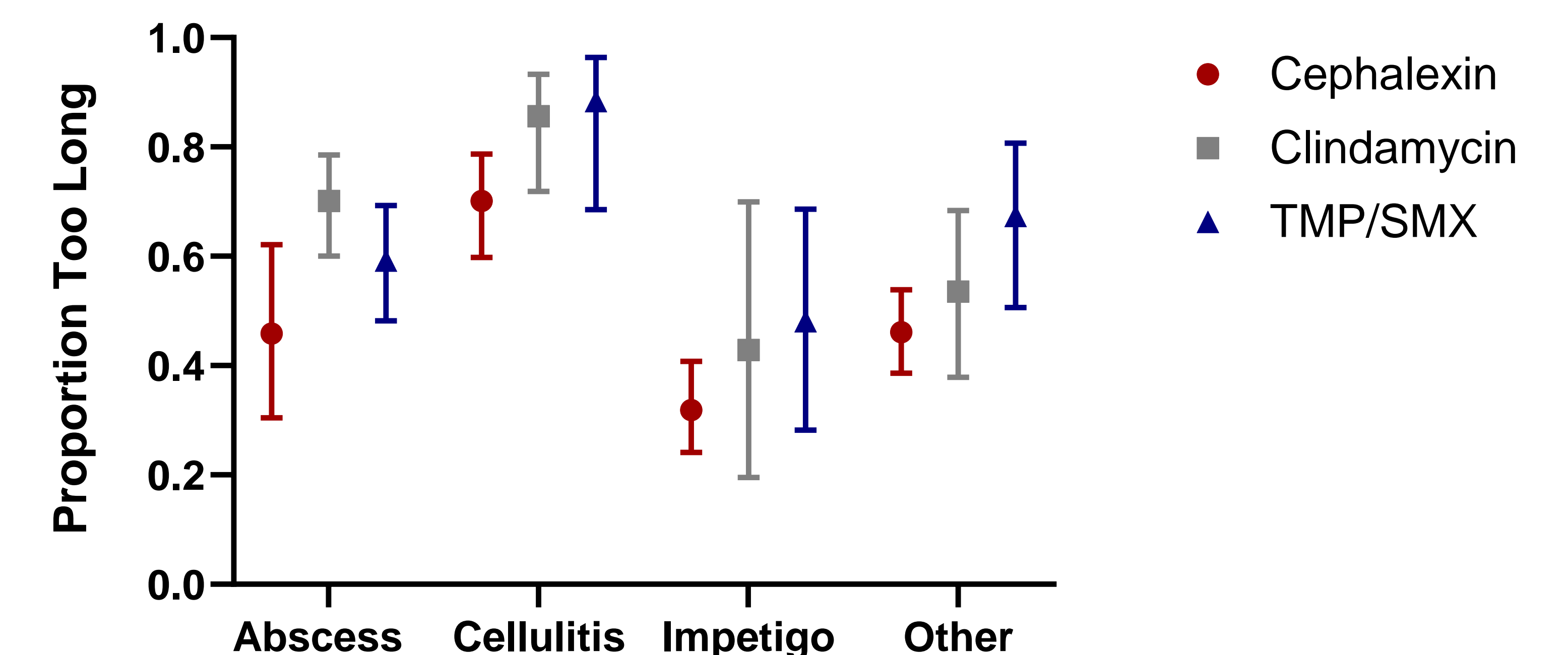


### DIAGNOSES



Other Antibiotics included cefdinir, ciprofloxacin, levofloxacin, minocycline, doxycycline

### Estimated Proportion Too Long by Diagnosis & Antibiotic



Multivariate analysis with Interaction of antibiotics by Diagnosis (excluding Amoxicillin, Amoxicillin-clavulanate (AC), and Other)

## Discussion

- Diagnosis and antibiotic prescribed in both univariate and multivariate analysis were associated with inappropriately long antibiotic prescriptions for SSTI
- Nearly 80% of patients diagnosed with cellulitis received inappropriately long prescriptions, which accounted for 683 excess antibiotic days when correcting for guideline-recommended duration
- No provider factor (degree type nor years out of training) was associated with inappropriately long antibiotic duration for SSTI, in contrast from historical studies

## Acknowledgements

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