

Pharmacoepidemiology of Antibiotic Prescribing Among 135,000 Adult Outpatient Encounters in Northeast Ohio

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Background

- Nearly 154 million ambulatory encounters in the United States result in an outpatient antibiotic prescription annually, 30% of which are unnecessary.¹
- The remaining 70% of prescriptions may benefit from optimization in antibiotic selection, in accordance with clinical practice guideline recommendations.
- The CDC Core Elements of Outpatient Antibiotic Stewardship recommend tracking and reporting prescribing practices, particularly for high-priority diagnoses.²
- Cleveland Clinic Health System has developed an institutional report which tracks prescription issuance rate and assessment of antibiotic selection for 4 common infectious diagnoses.

Objectives

- Calculate the percent of outpatient encounters that resulted in issuance of ≥ 1 antibiotic prescription for diagnoses of otitis media, pharyngitis, sinusitis, and urinary tract infection (UTI).
- Of outpatient encounters in which a prescription was issued, calculate the percent of guideline-concordant versus guideline-discordant antibiotic selection.

Methods

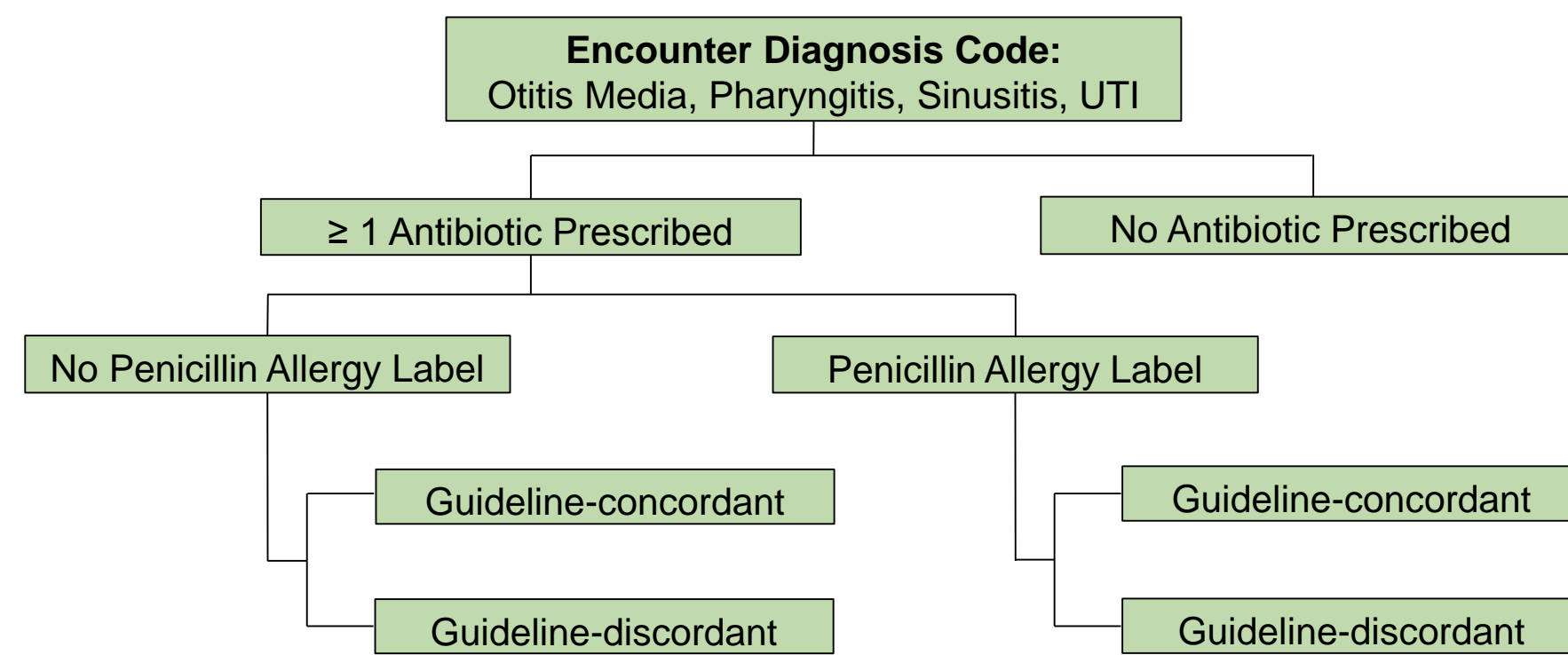
Study Design

- Observational pharmacoepidemiologic study from January 1, 2016 – March 1, 2017
- Outpatient prescribing data from 33 care institutes, 106 ambulatory sites, and 1,400 Cleveland Clinic-affiliated prescribers in Northeast Ohio.

Data Collected

Encounter location and date	Penicillin allergy label (Y/N)
Encounter diagnosis (otitis, pharyngitis, sinusitis, UTI)	Antibiotic prescription issued (Y/N)
Encounter type (office/telephone)	Antibiotic selected
Age grouping, years (0-19, 20-64, 65+)	Prescriber and associated department

Report Structure



Data in report may be filtered by indication, age group, practice site, department, or individual provider.

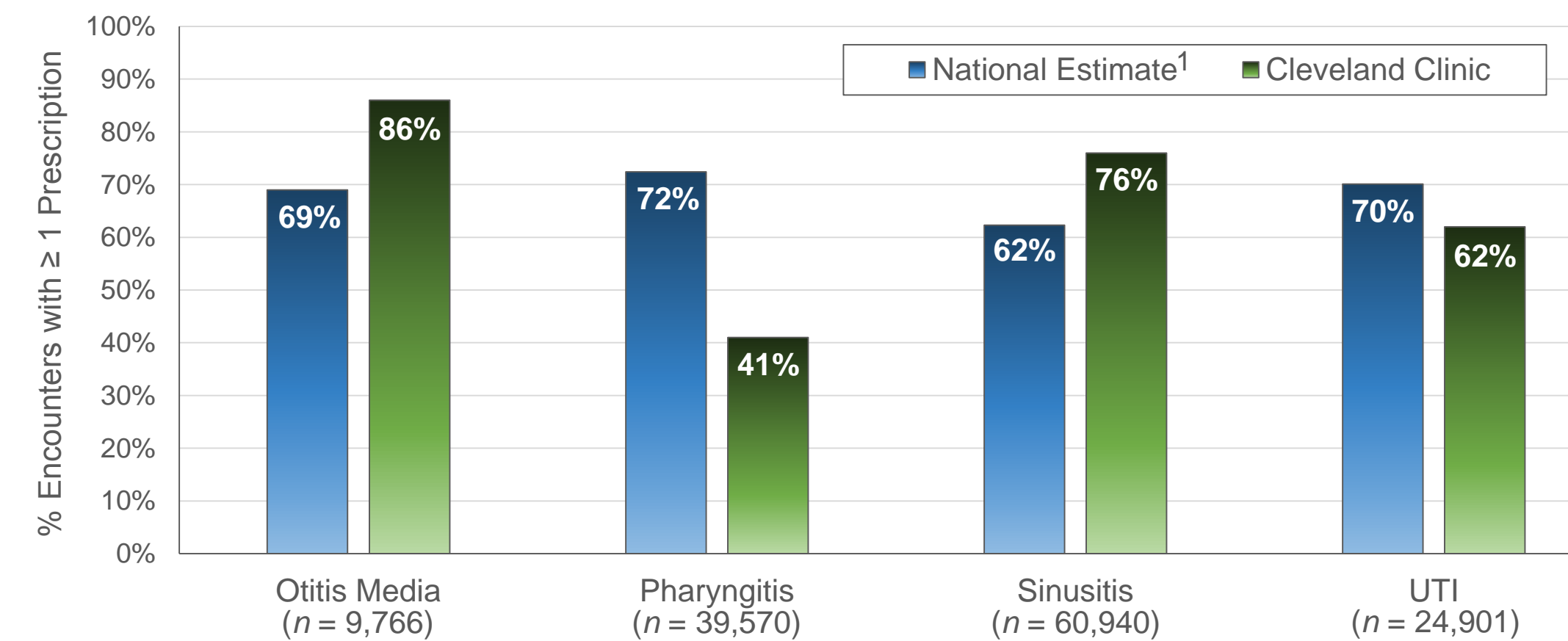
Definition of Guideline-Concordant Therapy

	Otitis Media	Pharyngitis	Sinusitis	UTI
No PCN ^a Allergy	Amoxicillin	Amoxicillin Penicillin	Amoxicillin Amoxicillin-clavulanate	Nitrofurantoin TMP/SMX ^b
PCN ^a Allergy Label	Cephalosporin ^c Clindamycin	Cephalosporin ^c Clindamycin Macrolide	Doxycycline Fluoroquinolone	Nitrofurantoin TMP/SMX ^b

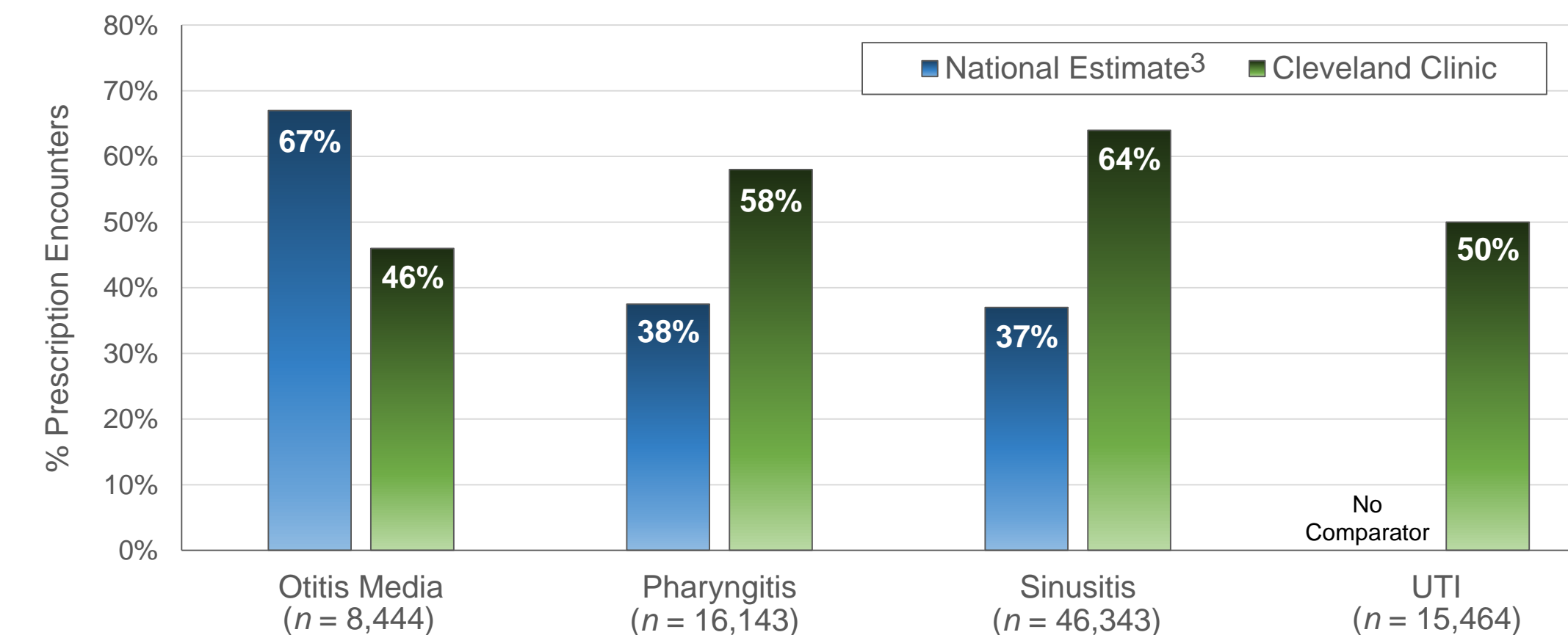
^aPenicillin; ^bTrimethoprim/Sulfamethoxazole; ^c1st – 3rd Generation Cephalosporin

Results

Prescription Rate by Coded Diagnosis (n = 135,177 encounters)



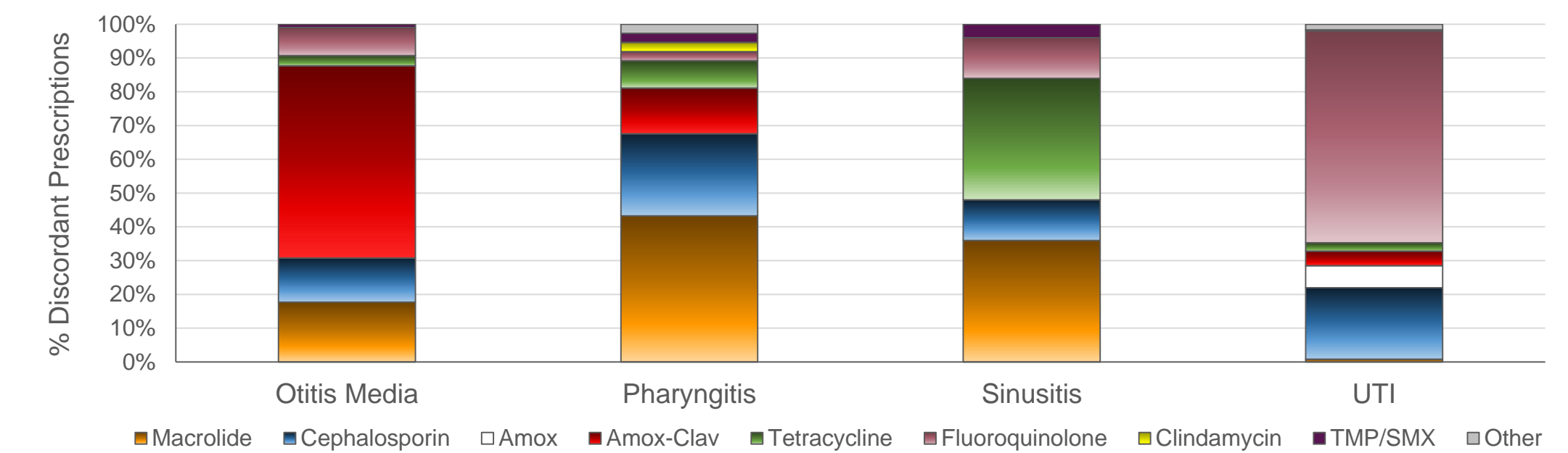
Guideline-Concordant Antibiotic Selection (n = 86,394 encounters)



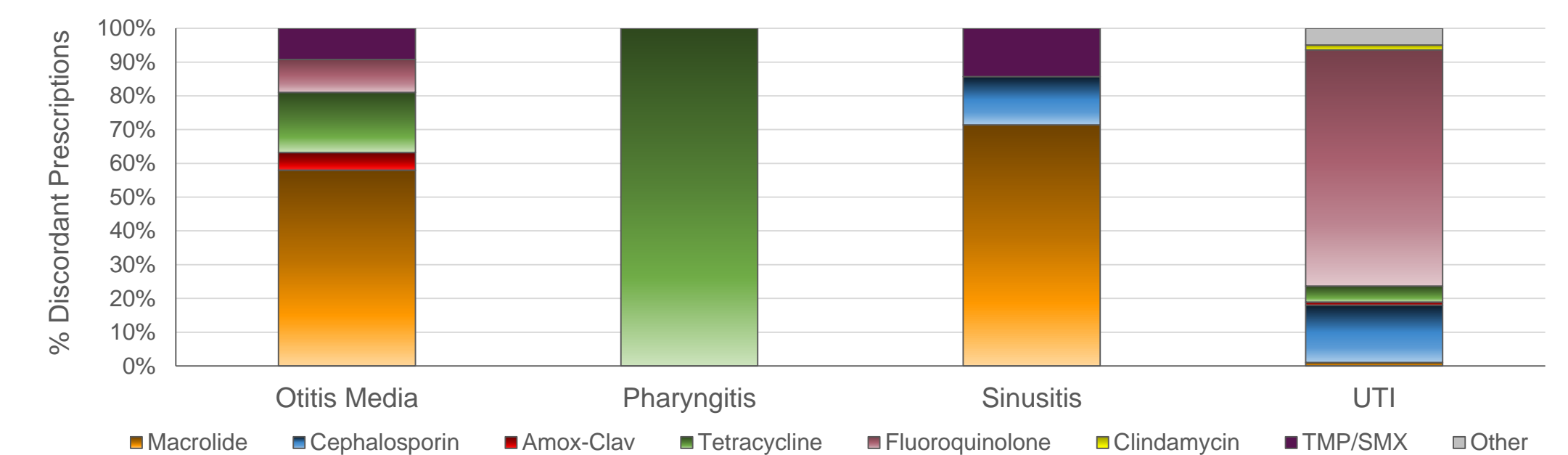
Guideline-Concordant Antibiotic Selection by Allergy Status

Diagnosis	No Penicillin Allergy	Penicillin Allergy Label
Otitis media	3354/6451 (52%)	678/1993 (34%)
Pharyngitis	7014/12753 (55%)	2848/3390 (84%)
Sinusitis	24492/34989 (70%)	7039/11354 (62%)
UTI	5884/11768 (50%)	1885/3696 (51%)

Guideline-Discordant Prescriptions: No Penicillin Allergy



Guideline-Discordant Prescriptions: Penicillin Allergy Label



Conclusion

- Tracking of outpatient prescribing data revealed a high antibiotic prescription rate for four common diagnoses.
- Use of guideline-discordant antibiotics was also prevalent and commonly consisted of macrolides, fluoroquinolones, tetracyclines, and cephalosporins.
- These data provide an important baseline that underscores the need for outpatient stewardship and facilitates implementation of targeted prospective interventions.

References

- Fleming-Dutra KE, et al. Prevalence of inappropriate antibiotic prescriptions among U.S. ambulatory care visits. *JAMA* 2016;315:1864-73.
- Sanchez GV, et al. Core Elements of Outpatient Antibiotic Stewardship. *MMWR Recomm Rep* 2016;65(No. RR-6):1-12.
- Hersh AL, et al. Frequency of first-line antibiotic selection among US ambulatory care visits. *JAMA Intern Med* 2016;176(12):1870-2.