

Outpatient Antibiotic Stewardship: Acute Otitis Media and Community-Acquired Pneumonia

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Disclosures

- None

Background

- Acute otitis media and community-acquired pneumonia are common reasons for outpatient antibiotic prescriptions
- Evidence-based treatment guidelines are available
- Significant practice variation in antibiotic prescriptions
 - Per a recent Canadian study of pediatric community-acquired pneumonia, prescriptions were only 27% guideline-consistent, with 97% of unnecessary prescribing due to excess duration

Saatchi et al. *BMC Pediatrics* (2023) 23:542
<https://doi.org/10.1186/s12887-023-04355-w>

BMC Pediatrics

RESEARCH

Open Access

Quality of antibiotic prescribing for pediatric community-acquired Pneumonia in outpatient care



Ariana Saatchi¹, Manon R. Haverkate¹, Jennifer N. Reid², Salimah Z. Shariff², Marcus Povitz³, David M. Patrick^{4,5}, Michael Silverman⁶, Andrew M. Morris⁷, James McCormack¹ and Fawziah Marra^{1*}

1. Gerber et al, 2014
2. Saatchi et al, 2023
3. Handy et al, 2017

Trend towards shorter antibiotic durations

- Shorter antibiotic courses are increasingly supported for common infections
- Multiple benefits of reducing antibiotic overuse
 - Improved patient outcomes
 - Decreased antibiotic adverse effects
 - Decreased antimicrobial resistance
 - Decreased healthcare-associated expenditures

Recent literature – Acute otitis media

World Journal of Pediatrics (2024) 20:219–229
<https://doi.org/10.1007/s12519-023-00716-8>

META-ANALYSIS



Comparative efficacy and optimal duration of first-line antibiotic regimens for acute otitis media in children and adolescents: a systematic review and network meta-analysis of 89 randomized clinical trials

Min Seo Kim¹ · Jae Han Kim² · Seohyun Ryu² · Seung Won Lee³ · Dong Keon Yon⁴ · Eunyoung Kim⁵ · Ai Koyanagi^{6,7} · Elena Dragioti^{8,11} · Jae Il Shin⁹ · Lee Smith¹⁰



Cochrane Database of Systematic Reviews

Short-course antibiotics for acute otitis media (Review)

Kozyrskyj AL, Klassen TP, Moffatt M, Harvey K

A prospective observational study of 5-, 7-, and 10-day antibiotic treatment for acute otitis media

MICHAEL E. PICHICHERO, MD, STEVEN M. MARSOCCI, MD, MARIE LYND MURPHY, MD, WILLIAM HOEGER, MD, ANNE B. FRANCIS, MD, and JOHN L. GREEN, MD, Rochester, New York

1. Pichichero et al, 2001
2. Kozyrskyj et al, 2010
3. Kim et al, 2024

Recent literature – Community-acquired pneumonia

Original Investigation

March 8, 2021

Short-Course Antimicrobial Therapy for Pediatric Community-Acquired Pneumonia The SAFER Randomized Clinical Trial

Jeffrey M. Pernica, MD^{1,2}; Stuart Harman, MD^{2,3}; April J. Kam, MD^{2,4}; [et al](#)

Original Investigation

January 18, 2022

Short- vs Standard-Course Outpatient Antibiotic Therapy for Community-Acquired Pneumonia in Children

The SCOUT-CAP Randomized Clinical Trial

Derek J. Williams, MD, MPH¹; C. Buddy Creech, MD, MPH¹; Emmanuel B. Walter, MD, MPH²; [et al](#)

[» Author Affiliations](#) | [Article Information](#)

JAMA Pediatr. 2022;176(3):253-261. doi:10.1001/jamapediatrics.2021.5547

Shorter Versus Longer-term Antibiotic Treatments for Community-Acquired Pneumonia in Children: A Meta-analysis

Ya Gao, PhD,^{a,b} Ming Liu, PhD,^{a,b} Kelu Yang, PhD,^c Yunli Zhao, MD,^{a,d} Jinhui Tian, PhD,^{a,e} Jeffrey M Pernica, MD,^{a,f} Gordon Guyatt, MD, PhD^{a,g}

1. Pernica et al, 2021
2. Williams et al, 2022
3. Gao et al, 2023

Current guideline recommendations



Appropriate duration of antimicrobial therapy for AOM

Five days of antimicrobial treatment with oral amoxicillin has been shown to be at least as effective as 10 days of therapy in most children ≥2 years of age with uncomplicated disease.

Duration of antimicrobial therapy for CAP

In Canada, children hospitalized for bacterial pneumonia are usually treated for 7 to 10 days. Recent evidence from clinical trials and meta-analysis suggests that children with non-severe pneumonia in ambulatory settings can be treated for 5 days.

Current guideline recommendations

Official Journal of the Association of Medical Microbiology and Infectious Disease Canada

Volume 6, Issue 3, September 2021, Pages 181-197
<https://doi.org/10.3138/jammi-2021-04-29>

JAMMI

PRACTICE POINT

Duration of antibiotic therapy for common infections

Jennifer Grant, MDCM FRCPC¹, and Nicole Le Saux, MD FRCPC² members of the Antimicrobial Stewardship and Resistance Committee (ASRC) of the Association of Medical Microbiology and Infectious Disease (AMMI) Canada

AMMI Canada recommendations

Duration of therapy for bacterial acute otitis media is 10 days in children under 2 years of age and 5 days in children over 2 years of age.

AMMI Canada recommendations

The duration of therapy for acute uncomplicated community-acquired pneumonia in adults should be a minimum of 5 days, provided there is clinical stability for 48 to 72 hours. Duration can be extended to 7 days if there is slower resolution or pathogens such as *S. aureus* or *Pseudomonas* are identified.

Since viral infections are more common in children, clinicians should use clinical and radiological criteria to distinguish bacterial pneumonia from bronchiolitis in younger children and infants. Duration of therapy should be 5–7 days for uncomplicated pneumonia in children who have clinically improved and have normal vital signs.

Local prescribing practices

Antibiotic prescribing practices for acute otitis media and community-acquired pneumonia in a pediatric emergency department

Dara Simcha Petel MDCM, FRCPC¹, Leo Cheong MD², Gregory Harvey MD, FRCPC^{2,3}, Olivia Ostrow MD, FAAP^{2,3}, Kathryn Timberlake PharmD, FCSHP⁴, Michelle Science MD, MSc^{1,2,5}

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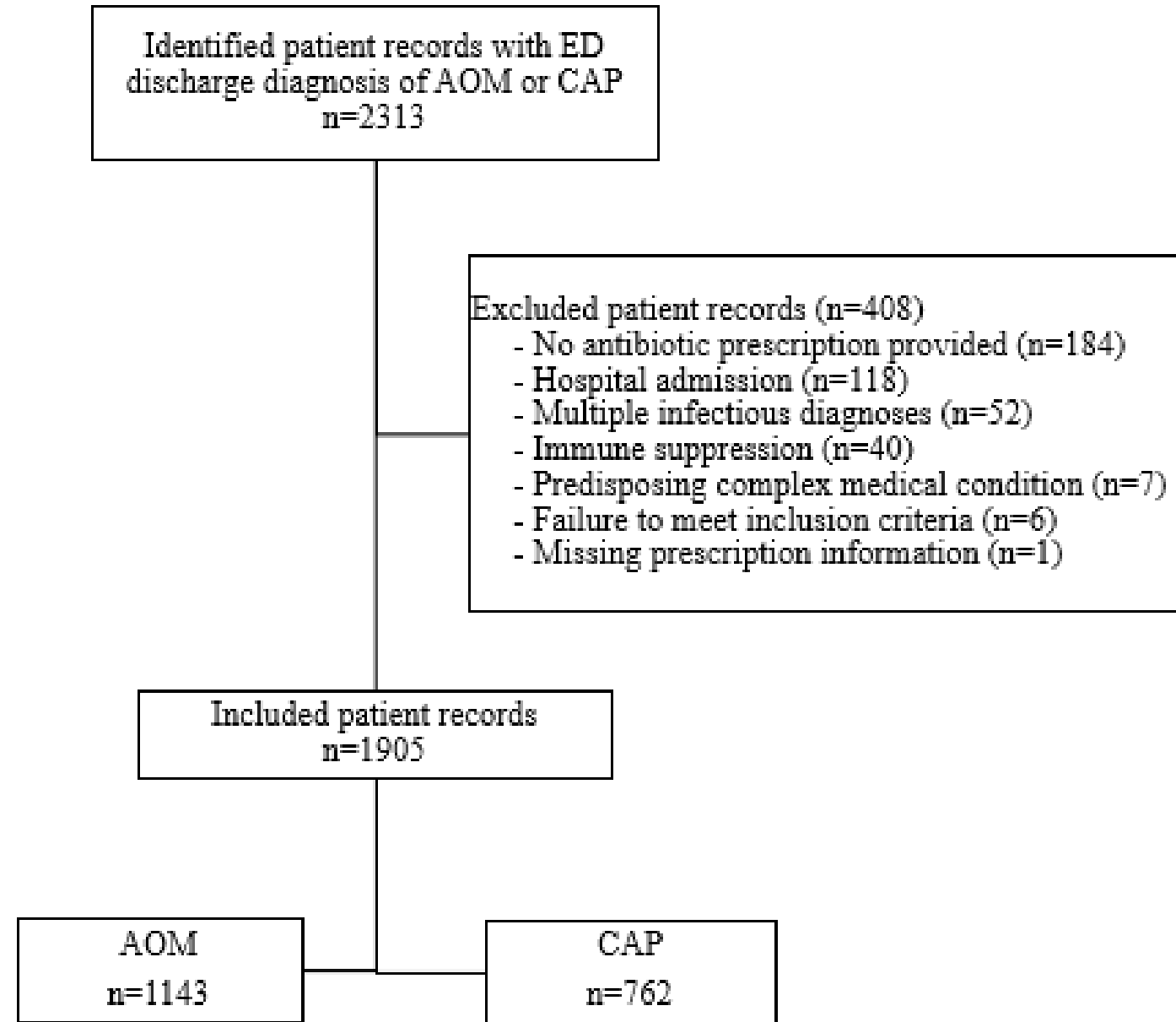
Study objectives

- Assess guideline-consistency of antibiotic prescriptions for acute otitis media and community-acquired pneumonia
- Identify opportunities to improve antibiotic prescribing

Methods

- Retrospective review
- Patients 0-18 years old
- Emergency department discharge diagnosis of acute otitis media or community-acquired pneumonia
- Study period September 2022 – September 2023

Results



Results

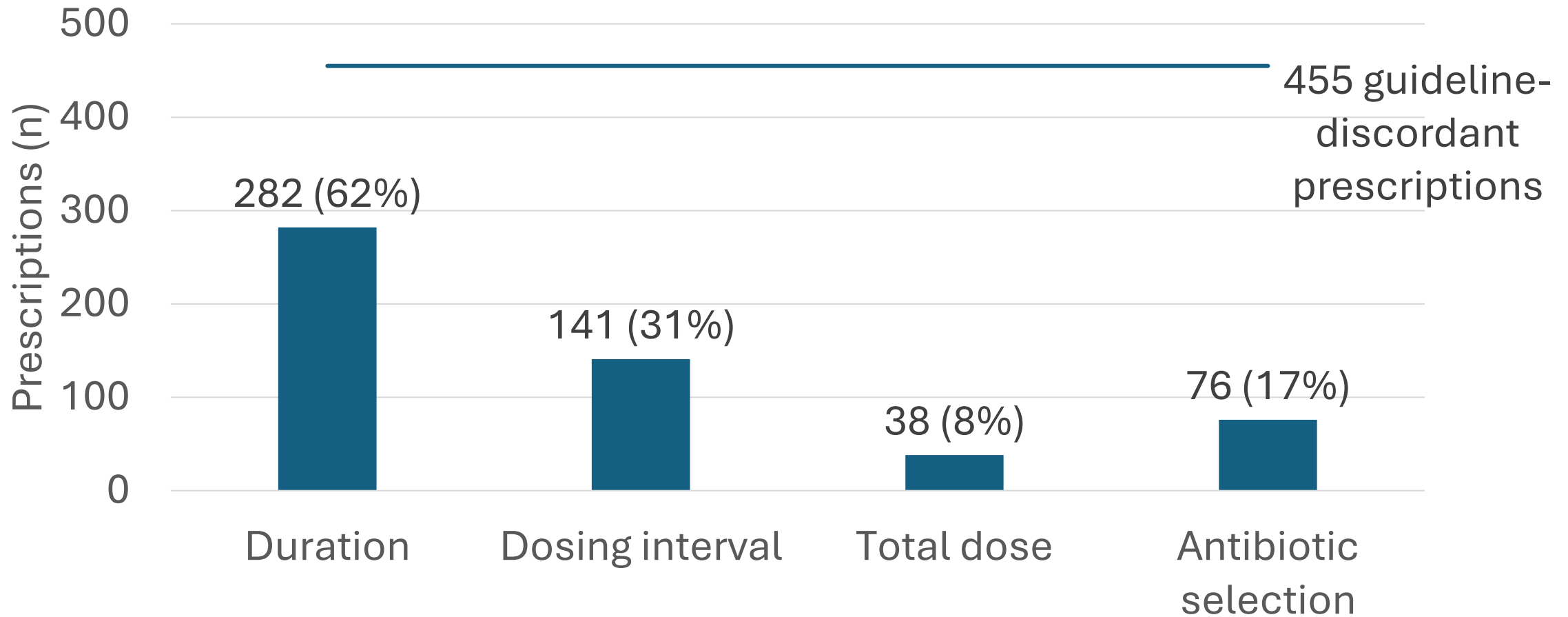
Demographics	Acute otitis media	Community-acquired pneumonia
Age in years (mean +/- SD)	3.3 +/- 2.6	3.8 +/- 3.0
Male sex (n (%))	638 (55.8)	421 (55.2)
Underlying medical condition (n (%))	293 (25.6)	278 (36.5)
Immunizations up to date (n (%))	1083 (94.8)	714 (93.7)

Results

- Guideline-consistent prescriptions
 - Acute otitis media: 60% (688/1143)
 - Community-acquired pneumonia: 19% (145/762)

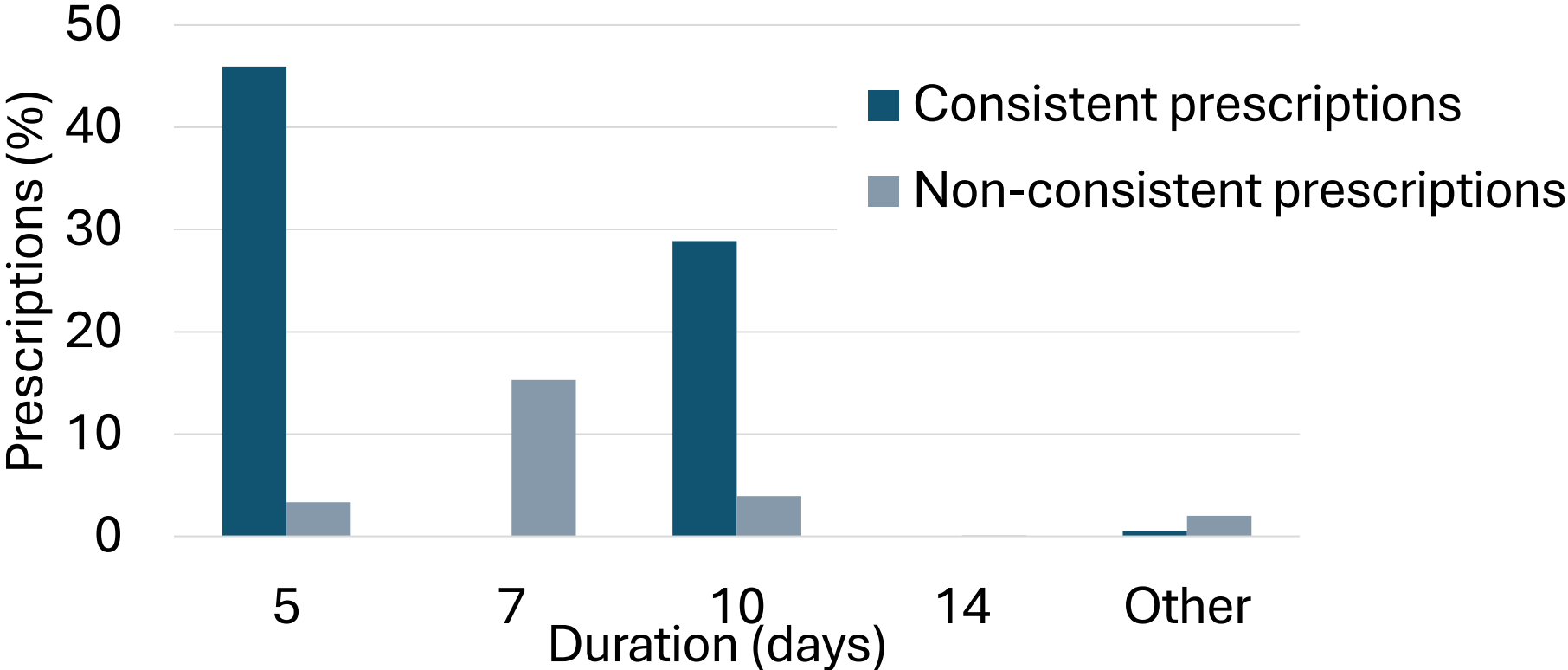
Acute otitis media

Reasons for guideline-discordant prescriptions



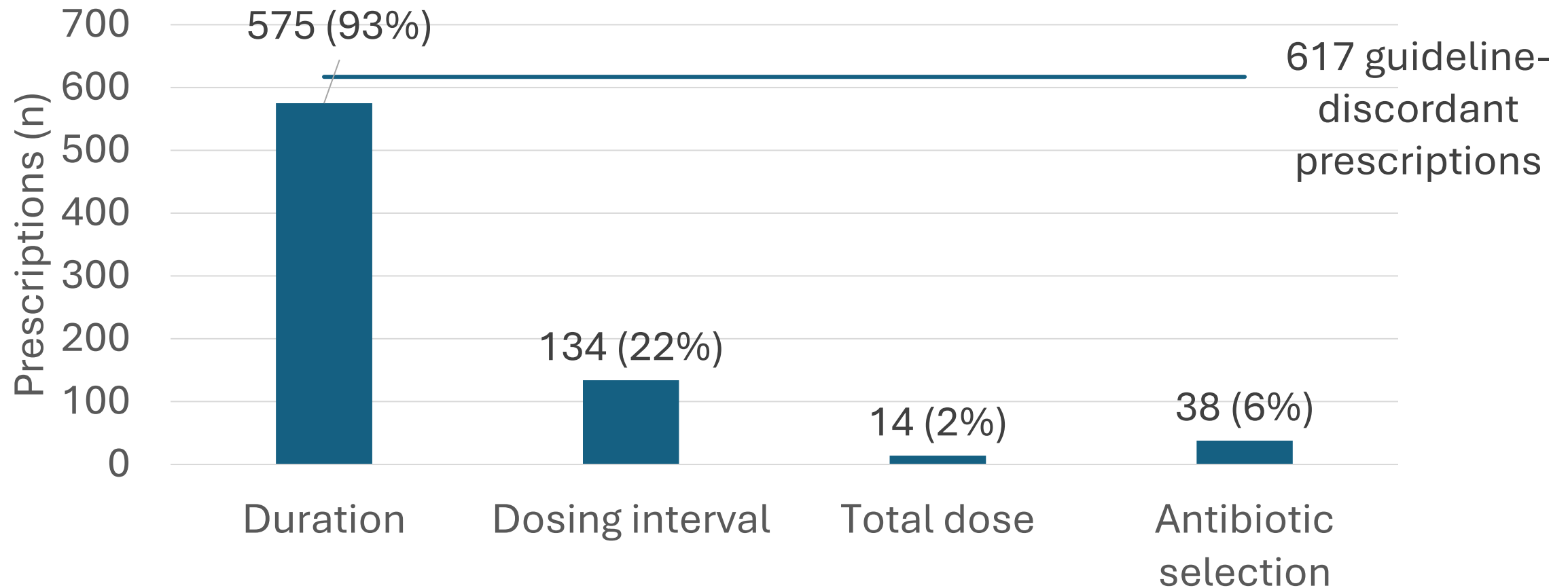
Acute otitis media

Prescription duration

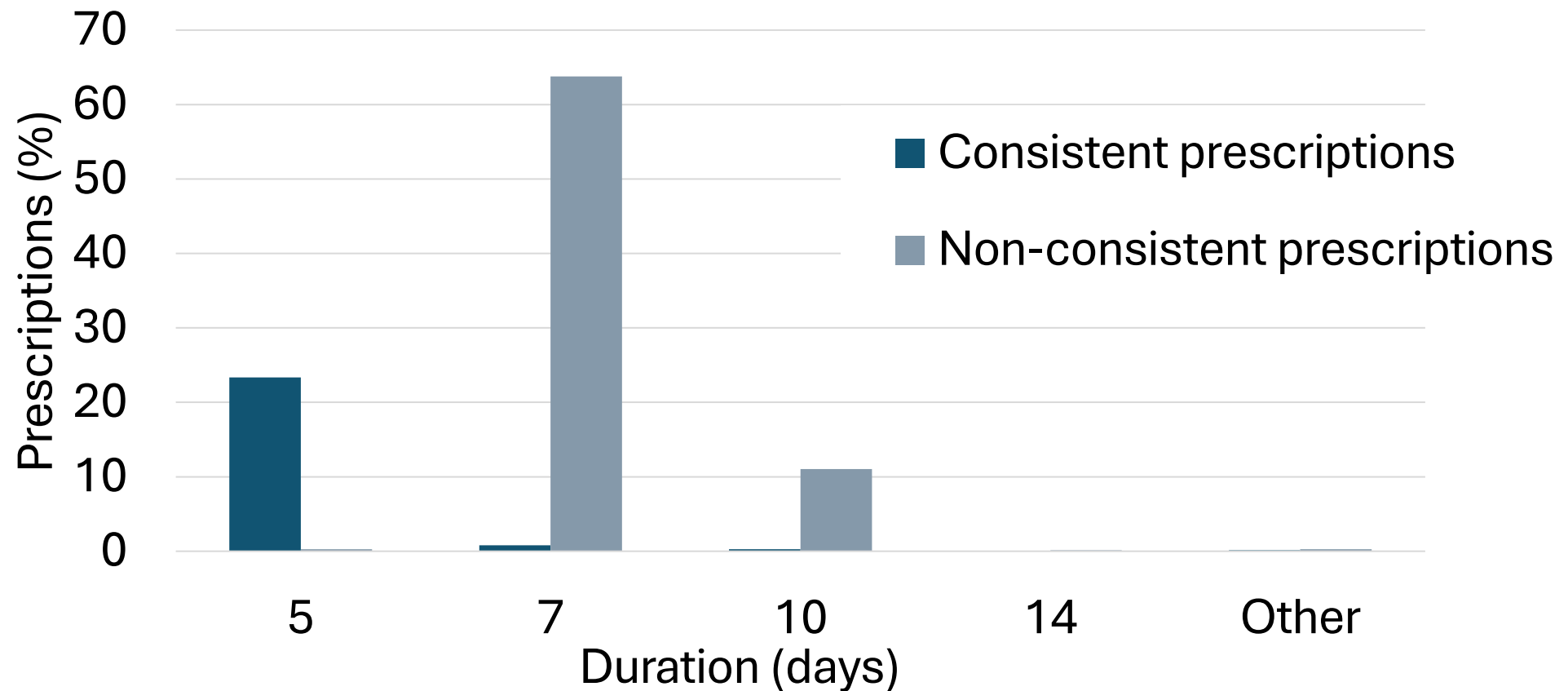


Community-acquired pneumonia

Reasons for guideline-discordant prescriptions



Community-acquired pneumonia Prescription duration



Key takeaways

- Tremendous opportunity for improvement in guideline-consistent antibiotic prescribing for acute otitis media and community-acquired pneumonia
 - Antibiotic duration was the major contributor to guideline-discordant prescriptions
- Ensuring guideline-consistent antibiotic durations is an impactful antimicrobial stewardship target with potential to dramatically reduce antibiotic consumption at a population level

Future directions

- Quality Improvement studies
 - Inform root causes of guideline discordance
 - Implement targeted interventions
- Expansion to additional outpatient settings both in the hospital and in the community
- Leverage EMR-based solutions integrated into workflows
- Applying to become an initiative on the hospital's Choosing Wisely program

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- Leo Cheong

Thank you!

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