

Surveillance of Emergency Department Antimicrobial Stewardship Practices in Sherwood Park, Alberta, Canada: a Closer Look at Respiratory Tract Infection Prescribing Patterns in Primary Care

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Background

➤ Concerns exist regarding antimicrobial prescribing for respiratory tract infections (RTIs) due to potential adverse reactions, avoidable drug costs, and the development of antimicrobial resistance.

➤ Most respiratory infections are self-limiting, and previous literature on this subject indicates that antibiotics modify the course of most of these infections only slightly^{1,2}. In the United States, approximately 71% of patients with acute uncomplicated bronchitis still receive an antibiotic prescription³.

➤ Traditionally, RTIs have been a target for antimicrobial stewardship as they have often been improperly treated with unnecessary antimicrobials when symptomatic treatment alone would suffice.

➤ There exists a need to determine if clinical practice guidelines are being followed in practice.

Objective

To examine the incidence of guideline concordant antimicrobial prescribing rates in an urban emergency department (ED) setting based on local and national clinical practice guidelines and identify areas where education and targeted interventions could be delivered.

Methods

Patients admitted with URTI diagnosis from July – Oct 2015 at the Strathcona Community Hospital (n=282)

Pediatric (<18 years of age) exclusion (n=140)

Retrospective review of URTI patient charts (n=142)

Data collected and analysed using proportions on URTI treatment, antibiotic use, guideline* concordance, patient symptoms, and diagnostic tests

*Reference guidelines include Towards Optimized Practice Community Acquired Pneumonia 2006 Guidelines, AECOPD Chest 2012 Guidelines, and Bugs and Drugs 2012.

Results

Table 1. Patient Characteristics (n=142)

Patient Characteristic	Median (Min – Max)	Proportion of RTI Patients
Age (years)	37 (18-97)	--
Gender (female)	--	64%
Respiratory rate (per minute) (normal range 12-20)	18 (14-25)	--
Febrile (temperature >37.4°C)	--	3%
WBC (4.0-11.0 x10 ⁹ /L)	9.0 (4.0-17.2)	--

Primary Outcome: proportion of RTI patients with guideline concordant management

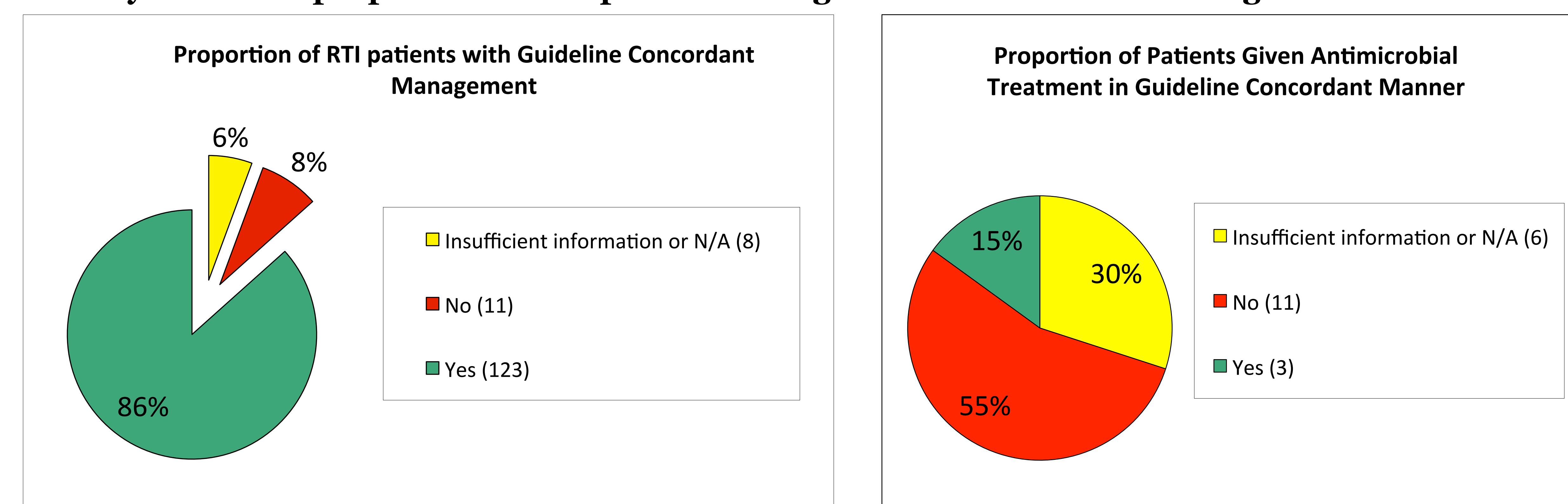


Figure 1. Proportion of RTI patients with guideline concordant management

Proportion of Patients Given Antimicrobial Treatment in Guideline Concordant Manner

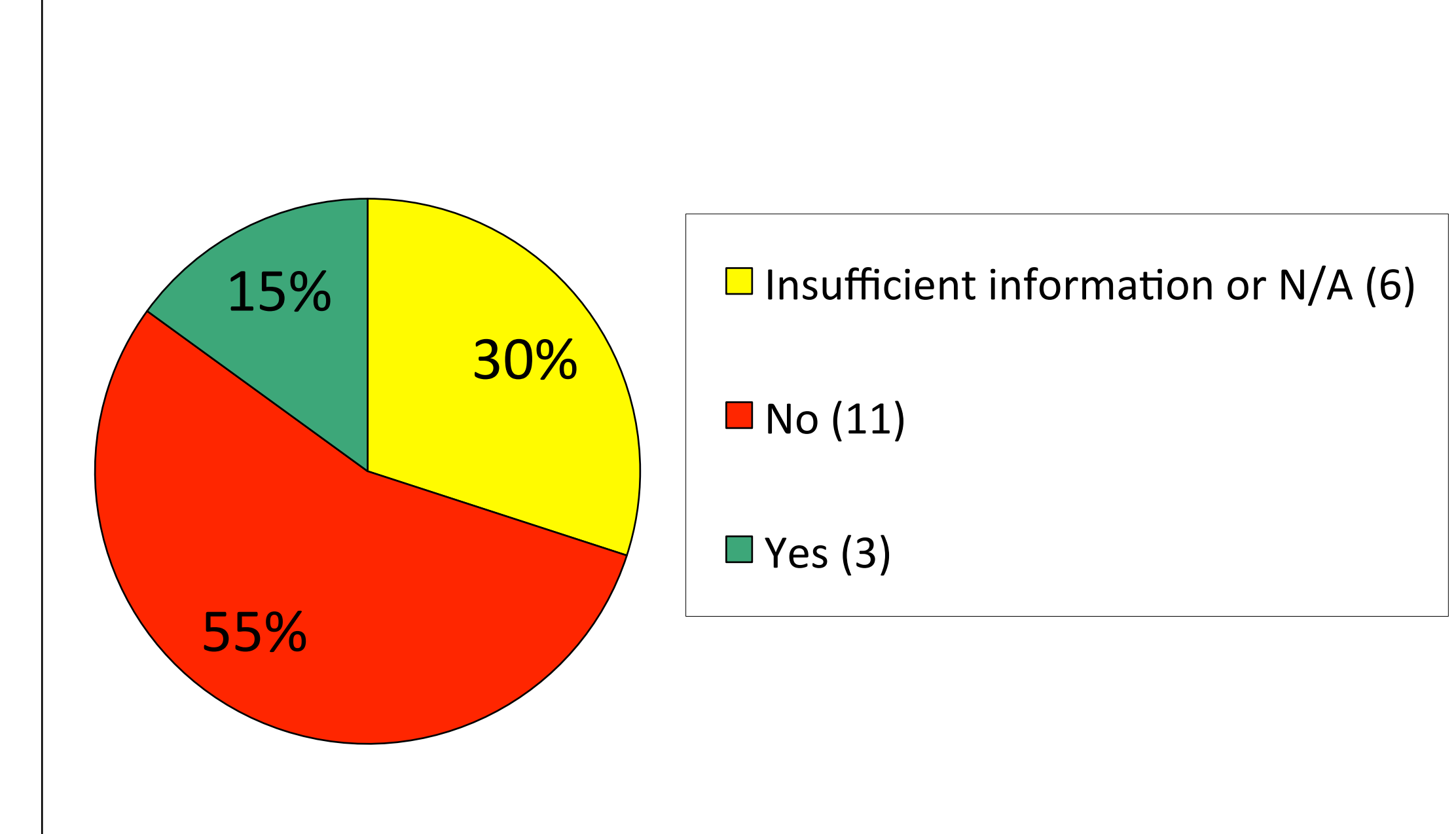


Figure 2. Proportion of patients given antimicrobial treatment in guideline concordant manner

Of the 142 admissions analyzed, 20 resulted in an antimicrobial being dispensed (see figure 2). The most popular antimicrobials prescribed were azithromycin (30%) and amoxicillin (20%). The most common diagnosis was viral URTI (53%), for which only one patient received antimicrobial treatment.

Secondary Outcomes: classes and volumes of antibiotics prescribed, reasons for non-concordance

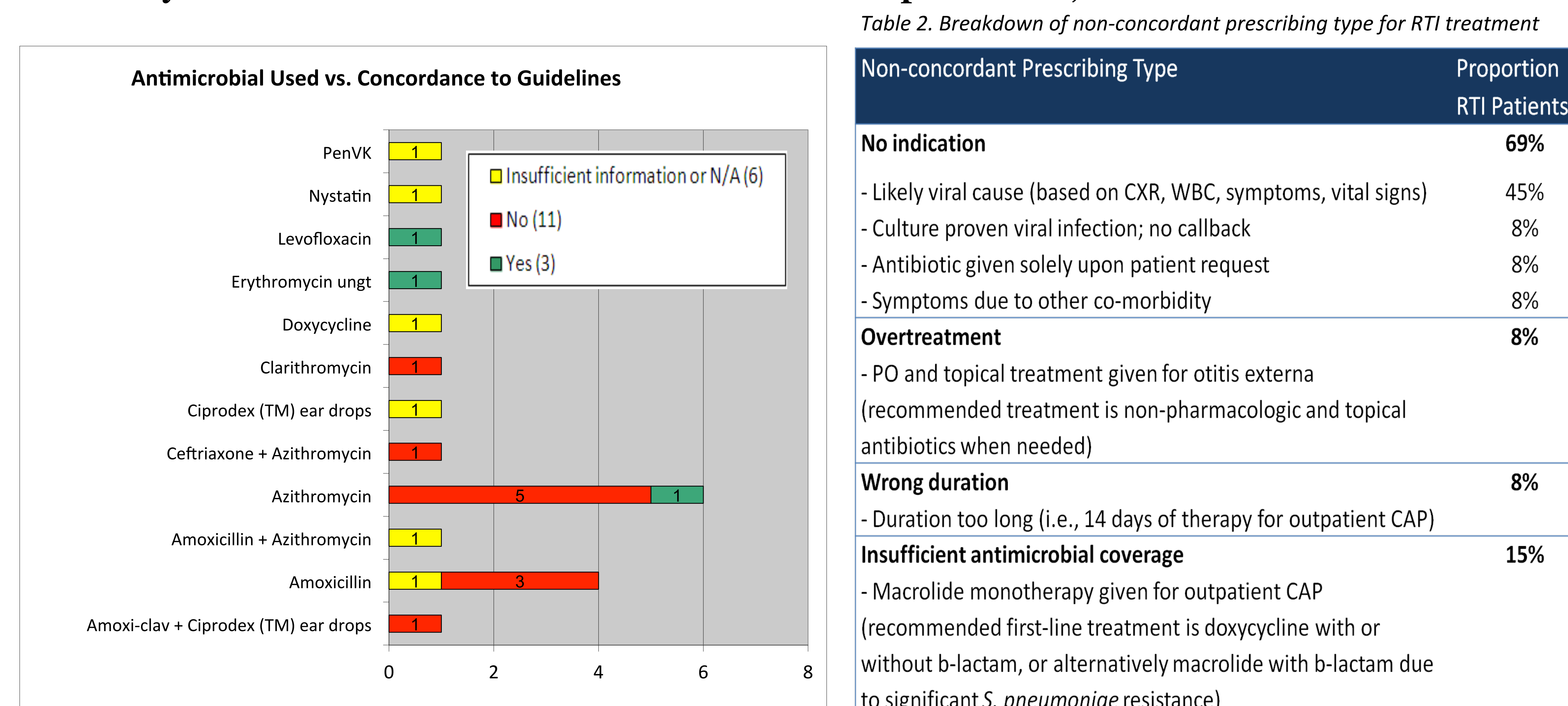


Figure 3. Breakdown of antimicrobial used vs. concordance to guidelines

Table 2. Breakdown of non-concordant prescribing type for RTI treatment

Non-concordant Prescribing Type	Proportion of RTI Patients
No indication	69%
- Likely viral cause (based on CXR, WBC, symptoms, vital signs)	45%
- Culture proven viral infection; no callback	8%
- Antibiotic given solely upon patient request	8%
- Symptoms due to other co-morbidity	8%
Overtreatment	8%
- PO and topical treatment given for otitis externa (recommended treatment is non-pharmacologic and topical antibiotics when needed)	
Wrong duration	8%
- Duration too long (i.e., 14 days of therapy for outpatient CAP)	
Insufficient antimicrobial coverage	15%
- Macrolide monotherapy given for outpatient CAP (recommended first-line treatment is doxycycline with or without b-lactam, or alternatively macrolide with b-lactam due to significant <i>S. pneumoniae</i> resistance)	

Discussion

At a guideline concordance rate of 86% being driven by appropriate treatment of viral illness (symptomatic relief only), it is clear that the ED staff at this location do not require further educational initiatives regarding inappropriate antimicrobial treatment in viral illness. Instead, positive feedback and reinforcement of appropriate identification and treatment of viral URTIs should be praised and disseminated.

Within antimicrobial treatment however, exists a gap between current practice and guideline recommended management of community acquired pneumonia (CAP), where there was the highest incidence of non-concordance (23%).

➤ Reasons included wrong duration (duration too long) and insufficient antimicrobial coverage (according to local antibiogram data as well as clinical practice guidelines).

➤ A brief educational seminar of appropriate antimicrobial coverage of outpatient CAP may be of use in the future, should pneumonia become a more prevalent diagnosis at this site.

Project strengths: reflects real-world practice, specific patient population and site allows for targeted reflection and feedback

Project limitations: data collection greatly limited by chart documentation, inclusion dates capture one month of "flu season", subjective symptom classification

Conclusion

➤ There is sufficient practice of providing only symptomatic relief for viral RTI; however, there still exists a gap between ideal use of antimicrobials in respiratory infection and current practice.

➤ This project has identified some areas where key educational initiatives and stewardship interventions could be of use, and provides a baseline for future comparison.

Future Directions

➤ Possibility for a repeat surveillance project in the next year (winter 2017) to monitor for any change in trends, investigate the uptake of site recommendations, and identify any need for further initiatives.

References

Available upon request

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