1466. Antibiotic utilization reports may reduce prescribing practices for Upper Respiratory Infections

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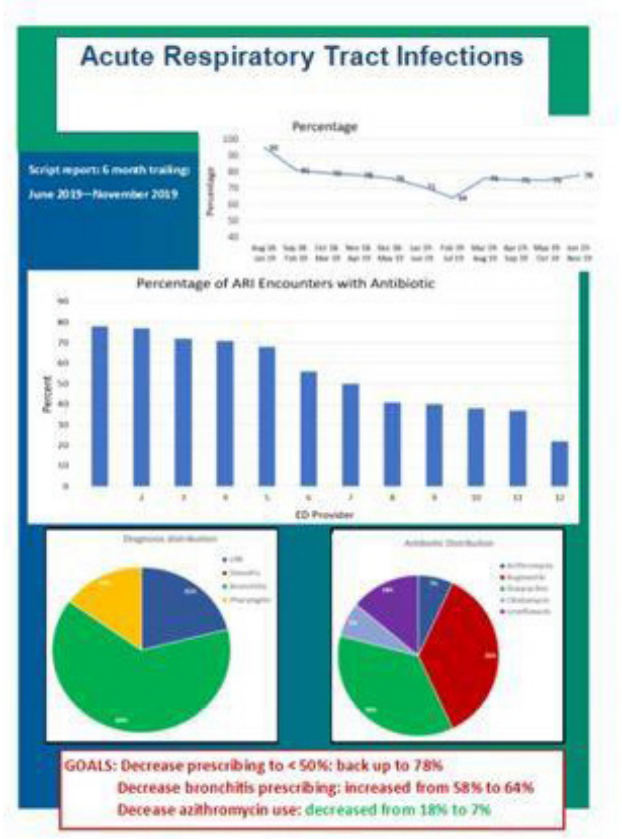
Session: P-67. Respiratory Infections - Bacterial

Background. More than 90% of Upper respiratory tract infections (URI) have a viral etiology; nonetheless, these represent the most common reason for ambulatory antibiotic prescription. This translates in higher risk of antibiotic-related adverse events and promotion of antimicrobial resistance.

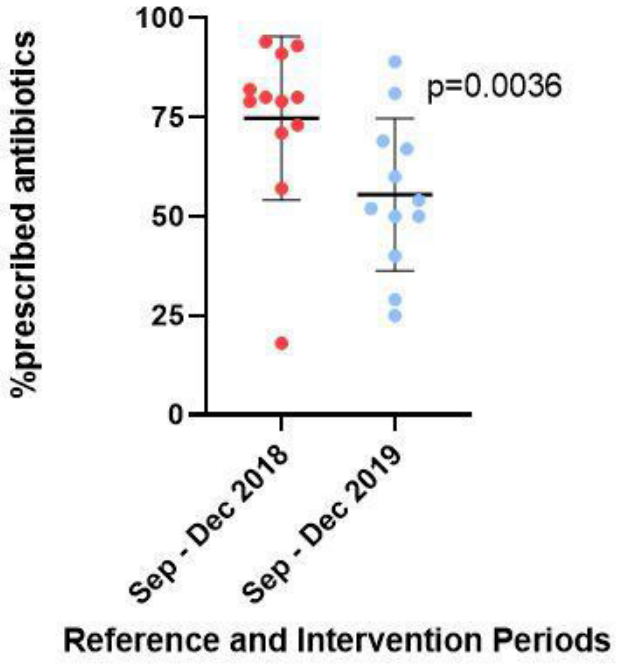
Methods. A prospective single-center intervention surveying and providing individual, face-to-face comparative reports of antibiotic utilization, for any of the 4 diagnostic entities that constitute upper respiratory tract infection (common cold, pharyngitis, acute rhinosinusitis and acute bronchitis), was performed in our Emergency Department.

Example of monthly provider reports used which included general and individualized goals.

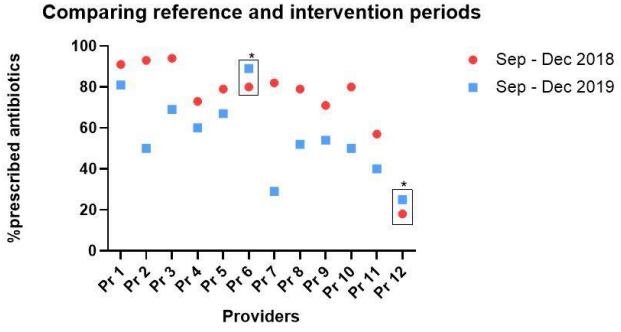


Results: A total of 12 health care providers were followed for 12 months. Education, prescribing reports and individual goals were provided. The pre-intervention prescription rate from September to December 2018 averaged 74.75% (SD 20.59, 95% CI 61.6-87.8), with a post-intervention rate of 55.5% from September to December of 2019 (SD 19.20, 95% CI 43.3-67.7) that was statistically significant (p=0.0036). A higher use of antibiotic was observed in physicians when compared to non-physician providers in both pre and post intervention stages (reduction of 16.6% vs 23% after intervention respectively), with no statistical difference between the two groups (CI 95% of -38.82 to 2.395, p=0.0773). A proposed target of 50% or less was observed in 5 of 12 providers (41.6%), and 2 out of 12 (16.7%) had increase in their antibiotic utilization rate.

Comparative use of antimicrobials in the pre (September-December 2018) and post (September-December 2019) - intervention periods.



Average individual antimicrobial use rate before and after intervention.



Conclusion: Routine face-to-face utilization reports may constitute an effective approach in reducing antibiotic prescription practices in the Emergency Department, and potentially, in other outpatient healthcare settings.

Disclosures. **All Authors**: No reported disclosures

1467. Association between Pathogen Load in the Upper Respiratory Tract and Severe Acute Respiratory Infections in Guatemalan Adults: Haemophilus influenzae, Staphylococcus aureus, Moraxella catarrhalis, Streptococcus pneumoniae, Klebsiella pneumoniae

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Session: P-67. Respiratory Infections - Bacterial

Background. The causal attribution of bacterial pathogens to severe acute respiratory infections (SARI) is challenging because many bacteria are frequently detected in the upper respiratory tract of asymptomatic persons. Quantification of pathogen load may help differentiate asymptomatic pathogen carriage from clinically significant infection. We aimed to determine whether real-time PCR (rt-PCR) cycle threshold (Ct) values, as a proxy for bacterial load, differ between adults with SARI and asymptomatic adults.

Methods. Adults with SARI (acute onset of fever and cough, requiring hospitalization) were frequency matched to asymptomatic adults (enrolled from trauma and orthopedic inpatient wards) by age group, catchment area, and enrollment date at three surveillance sites in Guatemala. Nasopharyngeal and oropharyngeal specimens were collected from all participants and tested for pathogens using rt-PCR. Using the Wilcoxon rank sum test, we compared the distributions and median Ct values between ill and asymptomatic adults in whom *Haemophilus influenzae, Staphylococcus aureus, Moraxella catarrhalis, Streptococcus pneumoniae,* and *Klebsiella pneumoniae* were detected.

Results. Between October 2013 and October 2015, 304 adults with SARI and 174 asymptomatic adults were enrolled (Table). *M. catarrhalis, S. aureus*, and *S. pneumoniae* were detected with similar frequency in both groups. *H. influenzae* and *K. pneumoniae* were detected more frequently in asymptomatic adults. We found the greatest difference in Ct value distributions between ill (median Ct=30.8) and asymptomatic adults (median Ct=35.6) with *S. pneumoniae* detections (p< 0.01) (Figure). Median Ct values of *H. influenzae* (29.3 vs 31.1, p=0.04) and *M. catarrhalis* (29.2 vs 31.5, p=0.05) were also lower among adults with SARI.

Frequency of select bacterial pathogen detection among adults with SARI and among asymptomatic adults, Guatemala, 2013-2015

Bacteria	Adults with SARI, n (%) (n = 304)	Asymptomatic adults, n (%) (n = 174)
H. influenzae –all types	60 (19.7%)	49 (28.2%)
S. aureus	36 (11.8%)	24 (13.8%)
M. catarrhalis	38 (12.5%)	19 (10.9%)
S. pneumoniae	75 (24.7%)	45 (25.9%)
K. pneumoniae	17 (5.6%)	18 (10.3%)

Distributions of Ct values among adults with SARI and asymptomatic adults in whom a given bacterial pathogen was detected

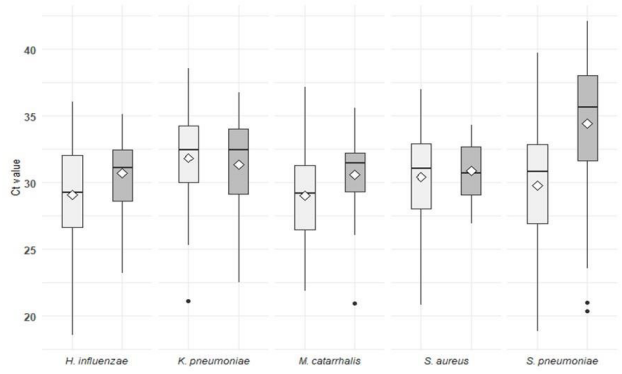

Figure. Distributions of Ct values among adults with SARI (light grey) and asymptomatic adults (dark grey) in whom a given bacterial pathogen was detected. Lower Ct values indicate higher bacterial load. Horizontal lines through boxes indicate group medians and diamonds indicate group means. Boxes show the interquartile range (IQR). Whiskers extend from the hinge to the largest or smallest value at most 1.5xIQR from the hinge. Outlying data points beyond the end of the whiskers are plotted individually.

Conclusion: Pathogen loads of *S. pneumoniae, H. influenzae,* and *M. catarrhalis* were higher among adults with SARI than among asymptomatic adults, suggesting that Ct values may provide insight into SARI etiology for some pathogens, despite the similar frequency of detection among both ill and asymptomatic adults. Future work will normalize Ct values to account for variation in testing and analysis and explore the use of Ct values to estimate population attributable fractions of respiratory infections.

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1468. Culture Conversion and Mortality in Patients With Mycobacterium abscessus (MAB) Lung Disease: A Systematic Literature Review

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Session: P-67. Respiratory Infections - Bacterial

Background. Prognosis for patients with MAB lung disease is poor. We sought to examine the potential association between culture conversion and outcomes (progression, mortality) in patients with MAB lung disease.

Methods. English-language MAB lung disease studies with ≥ 10 patients and reporting mortality and/or microbiological outcomes were identified from Embase, PubMed, relevant congress abstracts, and the Cochrane Library (data cutoff, September 24, 2019) using the National Institute for Health and Clinical Excellence guidance for systematic literature reviews. Two independent reviewers screened 1,551 indexed records; relevant extracted data are expressed as population-weighted means.

Results. Mean all-cause mortality across 17 studies (N=1,291) was 12.1% (range, 3%–33%); mortality attributable to MAB lung disease was 7.6% (range, 0%–27%; N=526, 9 studies). Culture conversion across 44 studies (N=2,237) was 46.7% (range, 0%–98.6%), with higher rates reported for *M. massiliense* subspecies (76.9%; N=507,15 studies) than *M. abscessus* subspecies (35.8%; N=834,18 studies). No direct comparisons were made between mortality and culture conversion; in the 13 studies (N=1,202) that reported both outcomes there was a moderate correlation between increased rate of culture conversion and decreased MAB-attributable mortality (R^2=0.60). The most common definition of progression (21 studies) was radiographic worsening supported by persistent symptoms and/or positive cultures. Across 8 studies (N=415) 57.8% patients had improvement while 35.2% progressed with treatment. A broad variance in treatment regimen and duration (range, 32 days to > 3 years) was observed. Limitations include a small number of studies, and inconsistency in methods and outcomes definitions.

Conclusion. In this systematic literature review, available data suggest that culture conversion was achieved in less than half of patients and was lower in patients with *M. abscessus* compared with *M. massiliense*. One third of patients had disease progression despite treatment. Some data suggest lower MAB-attributed mortality outcomes in studies with higher culture conversion rates, more evidence is needed to demonstrate a survival benefit associated with culture conversion.

Disclosures. Kevin L Winthrop, MD, MPH, Insmed Incorporated (Consultant, Grant/Research Support) Kevin C Mange, MD, MSCE, Insmed Incorporated (Employee) Zhanna Jumadilova, MD, Insmed Incorporated (Employee) Kristan B Cline, PhD, Insmed Incorporated (Employee) Patrick A Flume, MD, Insmed Incorporated (Grant/Research Support, Scientific Research Study Investigator, Advisor or Review Panel member)

1469. Effect of pneumonia and pneumonia hospitalization episodes on mobility in older adults: results from the Lifestyle Interventions and Independence for Elders (LIFE) Study

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Session: P-67. Respiratory Infections - Bacterial

Background. Mobility is a cornerstone of healthy aging. Pneumonia may impact mobility through damage to physiological systems as well as increased inflammation, which has been associated with reduced physical functioning. The objective of this study was to assess the impact of pneumonia on objectively measured physical functioning in a sample of older adults.

Methods. This was a post-hoc analysis of the Lifestyle Interventions and Independence for Elders (LIFE) Study provided by the National Institute on Aging's AgingResearchBiobank. Participants with pre-existing mobility concerns aged 70-89 years were randomized to physical activity or health education interventions. Outcomes included the ability to complete a 400-meter walk and gait speed (meters/second, m/s) and were assessed every 6 months from baseline up to 42 months. New health events were assessed at each visit including overall pneumonia events and pneumonia hospitalizations. Repeated measures regression models evaluated the ability to walk 400-meters and gait speed as separate outcomes controlling for age, sex, race, education, past medical history, the occurrence of other health events, and a cumulative deficit frailty index.

Results. There were 1,635 LIFE Study participants with N=9,872 follow-up measures during the study period. Among these, 174 (10.6%) had a pneumonia event which included 96 hospitalization events. Those with pneumonia events during follow-up were mostly similar to those without pneumonia events at baseline, except for higher prevalence of past hospitalizations and respiratory problems. Any pneumonia event was associated with an adjusted mean gait speed of 0.67 (0.63-0.71) m/s vs. 0.70 (0.66-0.73) m/s in those without pneumonia and 0.60 (0.55-0.64) in those with pneumonia hospitalization. Similarly, pneumonia events were associated with 84% [odds ratio = 1.84 (1.45-2.23)] and pneumonia hospitalizations with 200% [odds ratio = 3.00 (2.48-3.52)] increases in the odds of not being able to walk 400-meters compared to those without pneumonia events.

Conclusion. Pneumonia-related health events were associated with subsequent reduced mobility measured by 400-meter walk tests and gait speed. Preventing pneumonia may be an important component of maintaining physical functioning in older adults.

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1470. Epidemiology of Invasive Pneumococcal Disease (IPD) Following 18 years of Pneumococcal Conjugate Vaccine (PCV) Use in the United States

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