Reducing Outpatient Antibiotic Prescribing for Adult Patients with Acute Respiratory Infections

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Background

Antibiotic resistance is a major public health threat that leads to an estimated 2 million infections and 23,000 deaths per year in the US.[1] Approximately 30 percent of outpatient antibiotic use in the United States is unnecessary, with many prescriptions written for respiratory conditions, such as acute bronchitis, for which antibiotics are generally not indicated.[2] The unnecessary use of antibiotics contributes to the growing global problem of antibiotic resistance.

Aim

Improve appropriate outpatient antibiotic prescribing for adults (> 18 years) with acute respiratory infections (ARIs) by assessing antibiotic prescribing practices and implementing antibiotic stewardship interventions.

Project Design

United Hospital Fund (UHF), a non-profit organization working to build a more effective health care system for all New Yorkers, developed a grant initiative to support a learning collaborative aimed at creating outpatient antibiotic stewardship interventions and decreasing inappropriate prescribing; grant funding for this initiative totaled over $650,000.

Seven New York City area hospitals and their 34 hospital-owned practices participated in an assessment of antibiotic prescribing and implemented antibiotic stewardship interventions using the Centers for Disease Control and Prevention's core elements of outpatient antibiotic stewardship as a framework.[3]

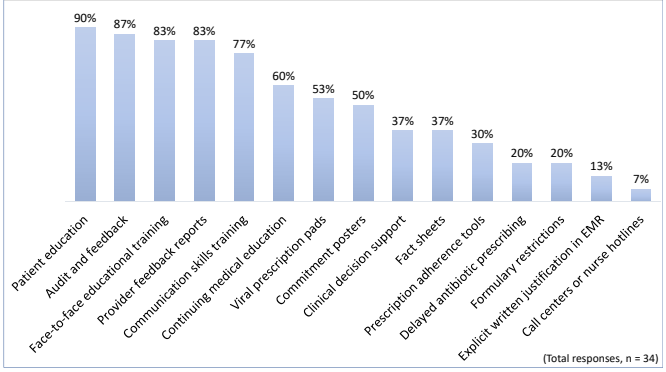
Multidisciplinary project teams participated in collaborative in-person learning sessions and webinars which enabled them to share activities and best practices. Pre- and post- intervention data collection and collaborative activities allowed the outpatient practices to test, develop, implement and evaluate interventions. The teams used the following tools to gather information on antibiotic prescribing:

Tool	Description
Assessment of Current Antibiotic Stewardship Practices	Evaluated the practice's involvement in managing antibiotic use in adult patients.
Chart Abstraction	Assessed antibiotic use via a structured format to guide chart review. Practices reviewed a minimum of 30 randomly selected charts for patients with ARIs.
Survey of Antibiotic Prescribers	Gathered prescribers' knowledge of antibiotic utilization, with a focus on decisions to prescribe and antibiotic selection, dose, and duration.
Patient Survey	Gathered patients' knowledge about antibiotic resistance and assessed provider-patient communication via a survey translated into 6 languages.

Interventions

After collecting and reviewing antibiotic prescribing data during the baseline period, teams developed an antibiotic stewardship action plan which outlined several types of interventions to pilot and implement.

Figure 1. Percent of Practices Implementing Antibiotic Stewardship Interventions to Improve Prescribing

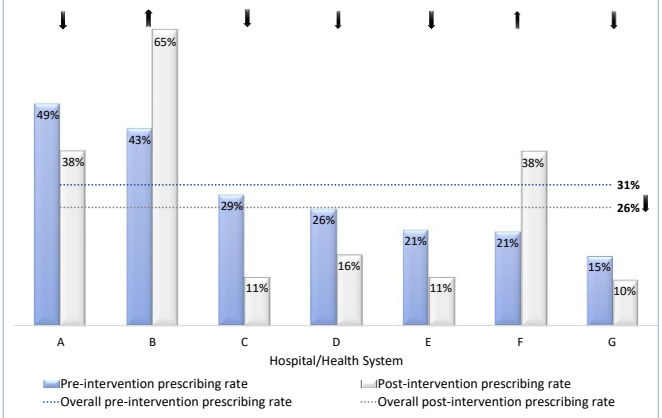


(Total responses, n = 34)

Results

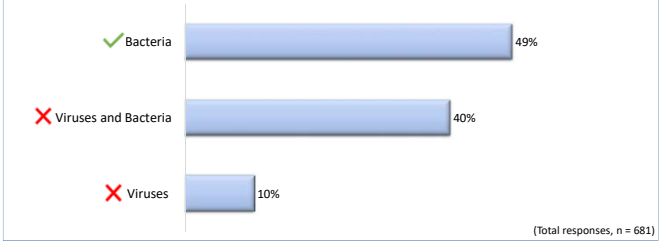
- Overall antibiotic prescribing decreased from 31% to 26% ($p < 0.05$)
- Five of seven hospitals/health systems decreased antibiotic prescribing for ARIs following implementation of antibiotic stewardship interventions
- A large decrease in prescribing for bronchitis, not specified (19 percentage points) and acute sinusitis (10 percentage points)
- A decrease in prescribing was observed for macrolides, which are typically not the first-line agent for most of the ARI diagnoses that were reviewed
- Gaps remain in patients' understanding about antibiotic use – which conditions require antibiotics and appropriate use of antibiotics

Figure 2. Change in Antibiotic Prescribing Rates for ARIs Pre- and Post-Intervention (by Hospital/Health System)



(Total responses: overall pre-intervention, n = 991 and overall post-intervention, n=902)

Figure 3. Patient Survey Results: Antibiotics Fight Infections Caused By



(Total responses, n = 681)

Lessons Learned

- Leadership support, actively engaged clinical champions, and multidisciplinary teams played a key role in the establishment of antibiotic stewardship interventions.
- Considerations about clinic workflow, staffing, and resources were important and led to tailored interventions at each outpatient practice
- For hospitals/health systems that drove large decreases in prescribing, a majority of their practices implemented:
  - Provider feedback reports
  - Face-to-face educational training
  - Communications skills training
  - Patient education interventions
- Next steps to address gaps in knowledge for patients and providers – practices plan to continue educational sessions, focus on patient education especially during flu season, recruit more clinical champions, use clinical decision support and guidelines, and implement provider feedback reports and incorporate them into the existing QI infrastructure.

References

1. U.S. Centers for Disease Control and Prevention, "Antibiotic Resistance Threats in the United States, 2013," https://www.cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdf.
2. Fleming-Dutra KE, Hersh AL, Shapiro DJ, et al. Prevalence of inappropriate antibiotic prescriptions among US ambulatory care visits, 2010-2011. *JAMA* 2016;315:1864-1873.
3. U.S. Centers for Disease Control and Prevention, "Core Elements of Hospital Antibiotic Stewardship Programs," Atlanta, GA: US Department of Health and Human Services, CDC; 2014. http://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html.

For more information on our baseline assessment results, please review our paper:

Guzik J, et al. (2018). Antibiotic prescribing for acute respiratory infections in New York City: A model for collaboration. *Infection Control & Hospital Epidemiology* 2018, 1–7.
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