Antibiotic Prescribing Strategy for Acute Respiratory Tract Infections in the Emergency Department
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Introduction
- Acute RTI accounts for 14 million visits to the emergency department annually.
- Only 5-15% of RTI cases are attributable to bacterial infection.
- Evidence shows that practitioners are choosing more broad-spectrum antibiotics for treatment.
- Current ACCP and CDC guidelines recommend against the use of antibiotics to treat RTI with non-bacterial etiology.
- However, the frequency of prescriptions for antibiotics for acute bronchitis has decreased only modestly, from approximately 75 to 60% in the past decade.
- Aim of the current study is to reduce unnecessary antibiotic prescribing for RTI focusing on common cold and acute bronchitis.

Background and Significance
- Approximately 55% of all money spent in the outpatient environment is attributed to antibiotics.
- Antibiotic resistance adds $1383 to the cost of treating a patient with bacterial infection.
- Antibiotic resistance has an estimated national cost of $2.2 billion annually.
- 35,000 people in the U.S, and 700,000 worldwide die each year as a result of antibiotic-resistant infections.
- By 2050 annual global mortality rate will increase to 10,000,000 people.
- Healthy People 2020: eliminate antibiotic prescribing for the sole diagnosis of common cold and acute bronchitis.

Clinical Pathway
HPI
- Cough, with or without sputum >5days/3wks in most cases.
- Medical history
  - Vaccination history, Travel history, and cigarette smoking
- Differentiate from comorbid conditions e.g GERD, asthma
Physical exam
- Fever suggests either influenza or pneumonia
- Focal consolidation, egophony, rales or fremitus on chest exam
- HR>100, RR>24, SaO2<95% and Age > 65yr
Diagnosis Test
- No role for routine chest x-ray, viral culture, serological essay, sputum culture, Gram stain or pulmonary function testing/spirometry
- Recommend specific symptomatic therapy: Cough suppressant, antihistamine, decongestant

Ideas Concerns Expectations Method
- Ideas: Ask the patient about their ideas regarding diagnosis, treatment and prognosis.
- Concerns: Ask the patient about their fears and worries
- Expectation: Ask what the patient wants

Methods
Design
- Quality improvement project with pre- and post-intervention comparison
Study participants
- 15 physicians, 5 nurse practitioners, and 3 physician assistants.
Setting
- Emergency room of a 451-bed, acute-care not-for-profit hospital in northern New Jersey
Outcomes
- Antibiotic prescribing rate for RTI pre- and post-intervention, using patient records for visits with matching ICD codes for common cold and acute bronchitis during the study period n = 100.
- 5 item Likert-type questionnaire to measure the attitudes of ED providers regarding the clinical pathway and ICE method.

Data Analysis
- Microsoft Excel and SAS statistical package Red Hat 64
- Non-parametric descriptive statistics to describe frequencies
- Chi squared test used to compare the frequencies of antibiotic prescribing between pre- and post-intervention periods.
- A p-value of less than 0.05 was considered statistically significant

Results
- Pre-intervention 42 patients were treated for RTIs compared to 48 post-intervention.
- Statistically significant decrease in antibiotic prescribing from 30.95% pre-intervention to 12.50% post-intervention (p=0.03)
- Amoxicillin/Clavulanate was prescribed most frequently, followed by Azithromycin and Cefuroxime.
- Reduction in utilization of labs and diagnostic tests, although not statistically significant (p> 0.07)
- 83% of participants agreed and 16% strongly agreed that ICE method should be a standard approach to patients with RTIS

Conclusions and Implications
Conclusions
- Statistically significant reduction in antibiotic prescribing following the implementation of a clinical pathway and the ICE method.
- Future studies should aim to replicate similar methods with larger sample size and follow-up to assess long-term effect.

Implications
- Practice: Training of the ICE method should be implemented on a regular basis. The study provides data to assess the performance of the Emergency Department in meeting guideline objectives regarding the diagnosis and treatment of RTIs.
- Patient care: Practical approach of using shared decision making to improve patient’s outcomes.
- Policy: Organizations may use this data to develop broad policies to guide practice.
- Economy: Potential cost benefit to the patients and healthcare institutions.

References