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Presentation Type:

Oral Presentation

VA Antibiotic Stewardship Intervention to Improve Outpatient Antibiotic Use for ARIs: A Cost-Effectiveness Analysis

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Background: The *Core Elements of Outpatient Antibiotic Stewardship* provide a framework to improve antibiotic use, but cost-effectiveness data on interventions to improve antibiotic use are limited. Beginning in September 2017, an antibiotic stewardship intervention was launched in within 10 outpatient Veterans Healthcare Administration clinics. The intervention was based on the Core Elements and used an academic detailing (AD) and an audit and feedback (AF) approach to encourage appropriate use of antibiotics. The objective of this analysis was to evaluate the cost-effectiveness of the intervention among patients with uncomplicated acute respiratory tract infections (ARI). **Methods:** We developed an economic simulation model from the VA's perspective for patients presenting for an index outpatient clinic visit with an ARI (Fig. 1). Effectiveness was measured as quality-adjusted life-years (QALYs). Cost and utility parameters for antibiotic treatment, adverse drug reactions (ADRs), and healthcare utilization were obtained from the published literature. Probability parameters for antibiotic treatment, appropriateness of treatment, antibiotic ADRs, hospitalization, and return ARI visits were estimated using VA Corporate Data Warehouse data from a total of 22,137 patients in the 10 clinics during 2014–2019 before and after the intervention. Detailed cost data on the development of the AD and AF materials and electronically captured time and effort for the National AD Service activities by specific providers from a national ARI campaign were used as a proxy for the cost estimate of similar activities conducted in this intervention. We performed 1-way and probabilistic sensitivity analyses (PSAs) using 10,000 second-order Monte Carlo simulations on costs and utility values using their means and standard deviations.

Figure 1: Decision analytic model

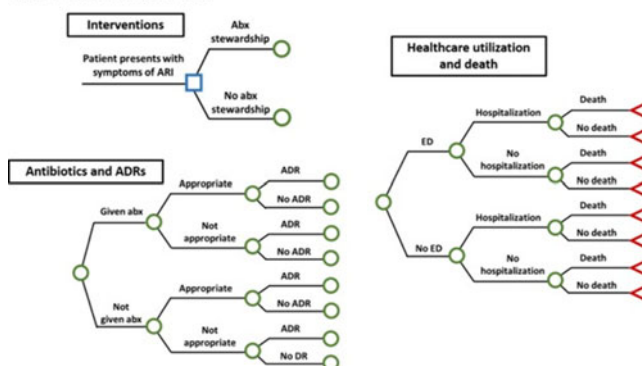


Fig. 1.

Figure 2: Scatterplot of results from probabilistic sensitivity analysis

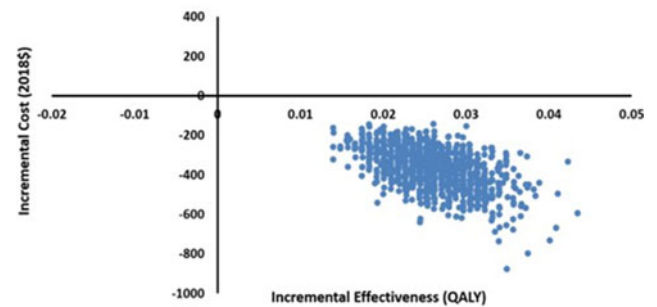


Fig. 2.

Results: The proportion of uncomplicated ARI visits with antibiotics prescribed (59% vs 40%) was lower and appropriate treatment was higher (24% vs 32%) after the intervention. The intervention was estimated to cost \$110,846 (2018 USD) over a 2-year period. Compared to no intervention, the intervention had lower mean costs (\$880 vs \$517) and higher mean QALYs (0.837 vs 0.863) per patient because of reduced inappropriate treatment, ADRs, and subsequent healthcare utilization, including hospitalization. In threshold analyses, the antibiotic stewardship strategy was no longer dominant if intervention cost was > \$64,415,000 or the number of patients cared for was <3,672. In the PSA, the antibiotic stewardship intervention was dominant in 100% of the 10,000 Monte Carlo iterations (Fig. 2). **Conclusions:** In every scenario, the VA outpatient AD and AF antibiotic stewardship intervention was a dominant strategy compared to no intervention.

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Validation of a Surgical Site Infection Detection Algorithm for Use in Cardiac and Orthopedic Surgery Research

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Background: Studies of interventions to decrease rates of surgical site infections (SSIs) must include thousands of patients to be statistically powered to demonstrate a significant reduction. Therefore, it is important to develop methodology to extract data available in the electronic medical record (EMR) to accurately measure SSI rates. Prior studies have created tools that optimize sensitivity to prioritize chart review for infection control purposes. However, for research studies, positive predictive value (PPV) with