Evaluation of an antibiotic feedback intervention in diagnosis and prescribing patterns for bacterial sinusitis by primary care providers

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Introduction: Acute rhinosinusitis is a nasal infection and inflammation lasting 4 weeks or less. Symptoms include purulent discharge, facial pressure, and nasal congestion. Although most etiologies of sinusitis are viral, oftentimes antibiotics are inappropriately prescribed, contributing more than 5 billion dollars in cost to the US healthcare system annually. Interventions to reduce inappropriate antibiotic prescription in acute sinusitis can reduce antimicrobial resistance and improve patient outcomes.

Methods: Antibiotic prescriptions by URMC Primary Care Network (PCN) clinicians between 9/1 – 11/31/2022 and 12/1/2023 – 2/29/2024 were extracted as part of a network-wide feedback intervention on 1) each provider's rate of overall antibiotic prescriptions per 100 in-person office/telemedicine visits and 2) each provider's percentage of guideline concordant therapy for sinusitis. Guideline concordance was defined from local antibiograms and national guidelines. Five hundred prescriptions (250 from pre- and post-intervention) were randomly selected for chart review. Primary outcomes were guideline concordant 1) application of criteria for diagnosis of acute bacterial sinusitis, 2) antibiotic selection, and 3) treatment duration. Data were analyzed in GraphPad and Microsoft Excel.

Results: Prior to the intervention, 52.8% of providers accurately diagnosed acute sinusitis based on diagnostic criteria compared to 63.6% of providers after the intervention (p-value < 0.01). At baseline, 71.6% of providers prescribed an appropriate antibiotic for sinusitis in comparison to 85.6% of providers afterwards (p-value < 0.01). Selection of appropriate antibiotic duration was similar at 74% and 74.4% (p-value = 0.8854), and average 7.1 and 7.3 days being prescribed pre- and post-intervention, respectively. Baseline data consisted of 49.6% of providers with complete antibiotic concordance in regards to both antibiotic choice and duration vs 60.8% of providers after feedback was provided (p-value < 0.01). Overall, the intervention resulted in a 10.8% absolute and 20.4% relative increase in appropriate diagnosis of sinusitis, with 63.6% of prescriptions meeting diagnostic criteria for sinusitis post intervention.

Conclusion: After the intervention, the percentage of antibiotics that were prescribed for appropriate indications and the percentage of concordant antibiotics were significantly higher compared to prior. Targeted feedback to primary care providers is an effective way to improve both diagnosis of and appropriate antibiotic treatment of acute sinusitis. However, prior to the intervention, nearly half of antibiotics dispensed for acute bacterial sinusitis were inappropriate prescriptions. Although this improved after feedback, 36.4% of antibiotics were incorrectly prescribed for sinusitis post-intervention. Continued education and feedback should be provided to primary care physicians to increase the rate of appropriate acute sinusitis diagnosis and antibiotic treatment.