Education Initiative Improves Antibiotic Prescribing in Respiratory Tract Infections in Rural Primary Care

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Session Title:  
Antibiotic Stewardship
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8:20 AM

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References:


**Abstract Summary:**
With the rise of antibiotic resistance, practicing antibiotic stewardship is of increasing importance, yet remains a significant practice challenge. This study examines a nurse practitioner-lead initiative that demonstrates improved guideline adherence and decreased antibiotic prescribing in respiratory tract infections is possible through evidence-based patient and provider educational interventions.

**Learning Activity:**

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<thead>
<tr>
<th>LEARNING OBJECTIVES</th>
<th>EXPANDED CONTENT OUTLINE</th>
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<td>The learner will be able to identify clinical practice guideline recommendations for the management of respiratory tract infections (RTIs) in primary care (PC).</td>
<td>I. Clinical practice guidelines on respiratory tract infection (RTI) management in primary care (PC), for those not at high risk for complications age 3 months through 65 years of age, recommend: a. Combined approach of prescribing strategy and patient education actively administered by provider during visit. b. Prescribing Strategy: a. No antibiotic prescription: i. Antibiotics not indicated in RTI. Don’t result in cure or resolution of symptoms compared to placebo. Associated with significantly higher risk of adverse reaction b. Delayed antibiotic prescription: Recommending no antibiotics but offering a prescription for antibiotic to take or pick up in a few days, if symptoms worsen. When combined with patient education, successfully reduces antibiotic use in RTIs, as well as future visits for RTI, without decreasing patient satisfaction.</td>
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<td>The learner will be able to describe educational interventions that are effective in decreasing antibiotic prescribing in respiratory tract infections and integrate these into practice.</td>
<td>1. Combined patient and provider education interventions. a. Providers educated on strategies that are effective in decreasing antibiotic prescribing in respiratory tract infections: i. No or delayed antibiotic prescriptions ii. along with actively educating patients during exam on respiratory tract infection iii. Patients respond best to education provided to them actively by provider during exam. iv. Handouts are effective in educating patients, especially if specifically designed to...</td>
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The learner will be able to explain the key components of the patient education that all patients with respiratory tract infection should receive, according to practice guidelines.

Patient education, to be actively provided by Primary Care Provider (PCP) during patient consultation, key components, according to clinical practice guidelines: a. Natural history of illness, including how long illness is likely to last. b. Symptomatic treatment c. Antibiotics are not needed, are not likely to help, and may cause potential side effects. d. Symptoms (worse or prolonged) to watch for and when to return for re-evaluation. e. Patients given delayed antibiotic prescriptions need instructions on taking only if symptoms aren’t following expected natural course of illness or if symptoms worsen.

**Abstract Text:**

*Background:* With the continued rise of antibiotic resistance, practicing antibiotic stewardship is of increasing importance. Yet, antibiotic stewardship in respiratory tract infections remains a significant challenge for practitioners in primary care (PC) settings. Antibiotics are not indicated in respiratory tract infection (RTI) and are associated with a significantly higher risk of adverse reaction (Kenealy & Arroll, 2013; Llor & Bjerrum, 2014). Why, then, are they still prescribed so often in RTI? Primary care providers (PCPs) indicate that patient demand is one of the main reasons for prescribing antibiotics in RTI (Lopez-Vazquez, Vazquez-Lago, & Figueiras, 2012). This patient demand stems from a lack of knowledge about the appropriate use of antibiotics, the appropriate treatment for viral illness, the effective self-care regimen in RTI, and the potential dangers of inappropriate antibiotic overuse (Matthys, 2013). Despite believing they are not indicated, PCPs report prescribing antibiotics for RTI for the following reasons: satisfying the patient, keeping the patient in the practice, lacking the energy to resist the demand, and believing that patients who really want antibiotics will obtain them anyway (Lopez-Vazquez et al., 2012). PCPs lack knowledge and comfort in utilizing strategies that are effective in reducing antibiotic prescribing in RTI. Review of the literature reveals that patient education decreases antibiotic prescribing in PC patients with RTI (Bont, Alink, Falkenberg, Dinant, & Cals, 2015), while PCP educational interventions alone do not (Vodicka et al., 2013). Patient education is much more effective when actively used by the PCP during the patient consultation (Bont et al., 2015; Vodicka et al., 2013). Systematic reviews demonstrate that the most effective educational intervention in reducing antibiotic prescribing for RTIs in PC is a combination of patient and PCP education (Bont et al., 2015; Meeker et al., 2014; Spurling, Del Mar, Dooley, Foxlee, & Farley, 2013; Vodicka et al., 2013). For patients that are not at high risk of developing complications, clinical practice guidelines on RTI management recommend that patient education be implemented by the PCP and that either no antibiotics or delayed antibiotics be prescribed (National Guideline Clearinghouse (NGC), 2008). Delayed antibiotic prescribing combined with patient education successfully reduces antibiotic use in RTIs, as well as future visits for RTIs, without decreasing patient satisfaction (Kenealy & Arroll, 2013). Can evidence-based practice educational interventions improve antibiotic prescribing in RTI, even in settings that seem more challenging, like a rural primary care setting?
Aim: In the “Walk-in” portion of a rural primary care (PC) practice in north central Kentucky, a combination patient and provider education program was implemented to assess its effects on reduction in antibiotic prescribing in respiratory tract infections (RTIs), specifically examining changes in immediate antibiotic prescribing practices for RTI (prescription given during visit to start taking immediately), starting one-year after full implementation of the education program (March 1, 2015- February 28, 2016).

Methods: The educational program was implemented over one-year. A printed patient educational handout was created as part of the patient education intervention. The handout was created in accordance with the clinical practice guideline recommendations on the education that all RTI patients should receive and was tailored to the specific needs of the clinic patients. Posters from the Center for Disease Control and Prevention’s “Get Smart: Know When Antibiotics Work” campaign (2015) were obtained and displayed in all three involved participating patient rooms at the PC practice. The participating “Walk-in” care providers were educated on actively teaching patients about RTI and appropriate antibiotic use during the patient visit and utilization of no or delayed antibiotic prescriptions, according to clinical practice guidelines (NGC, 2008). Utilizing a quasi-experimental pretest-posttest design, a retrospective electronic medical record review was conducted to determine if an antibiotic (immediate or delayed) was prescribed during the visit for RTI for 207 randomly selected patients who were evaluated by a full-time “Walk-in” care provider during the established evaluation time periods.

Results: A total of 1,943 patients met initial inclusion and exclusion criteria. Through a random selection process, 207 patients (103 in the pre-intervention group and 104 in the post-intervention group) were included in the study. In the pre-intervention group, 58 were prescribed antibiotics, for an antibiotic prescription rate of 56.3%. Over 50% (32) of those 58 antibiotic prescriptions were immediate. In the post-intervention group, antibiotics were prescribed in 30 of the 104 encounters, for a prescription rate of 28.8%. A chi-square test of association was used to determine if there was a difference in the number of antibiotics prescribed after the intervention. There was a significant decrease in the number of antibiotics prescribed after the implementation of the intervention, \( p < .001 \). Of those 30 antibiotics prescribed in the post-intervention group, 46.7% (14) were immediate. The number of immediate antibiotic prescriptions written during the initial visit were less in the post-intervention group than in the pre-intervention group; however, the chi-square test of association was used to analyze the relationship and the reduction was not statistically significant, \( p = .54 \).

Recommendations: Although a statistically significant reduction in immediate antibiotic prescriptions was not observed, overall antibiotic prescriptions in RTI decreased significantly. Changing antibiotic prescribing involves changing beliefs and behavior of patients and providers, which can seem daunting and unachievable. The importance of this study is that it demonstrates to practitioners that changes in antibiotic prescribing are possible, through educational interventions, even in settings that may seem challenging due to patient knowledge and established provider prescribing patterns. Simple, low cost interventions, such as posters, patient handouts, and delayed antibiotic prescriptions can make a difference. For practitioners, the key is to be reminded that antibiotic stewardship is possible and to take that first step toward making a change.