

# Effect of an Outpatient Antimicrobial Stewardship Intervention on Broad-Spectrum Antibiotic Prescribing by Primary Care Pediatricians: A Randomized Trial

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**IMPORTANCE:** Antimicrobial stewardship programs have been effective for inpatients, often through prescribing audit and feedback. However, most antimicrobial use occurs in outpatients with acute respiratory tract infections (ARTIs).

**OBJECTIVE:** To evaluate the effect of an antimicrobial stewardship intervention on antibiotic prescribing for pediatric outpatients.

**DESIGN:** Cluster randomized trial of outpatient antimicrobial stewardship comparing prescribing between intervention and control practices using a common electronic health record. After excluding children with chronic medical conditions, antibiotic allergies, and prior antibiotic use, we estimated prescribing rates for targeted ARTIs standardized for age, sex, race, and insurance from 20 months before the intervention to 12 months afterward (October 2008-June 2011).

**SETTING AND PARTICIPANTS:** A network of 25 pediatric primary care practices in Pennsylvania and New Jersey; 18 practices (162 clinicians) participated.

**INTERVENTIONS:** One 1-hour on-site clinician education session (June 2010) followed by 1 year of personalized, quarterly audit and feedback of prescribing for bacterial and viral ARTIs or usual practice.

**MAIN OUTCOMES AND MEASURES:** Rates of broad-spectrum (off-guideline) antibiotic prescribing for bacterial ARTIs and antibiotics for viral ARTIs for 1 year after the intervention.

**RESULTS:** Broad-spectrum antibiotic prescribing decreased from 26.8% to 14.3% (absolute difference, 12.5%) among intervention practices vs from 28.4% to 22.6% (absolute difference, 5.8%) in controls (difference of differences [DOD], 6.7%;  $P = .01$  for differences in trajectories). Off-guideline prescribing for children with pneumonia decreased from 15.7% to 4.2% among intervention practices compared with 17.1% to 16.3% in controls (DOD, 10.7%;  $P < .001$ ) and for acute sinusitis from 38.9% to 18.8% in intervention practices and from 40.0% to 33.9% in controls (DOD, 14.0%;  $P = .12$ ). Off-guideline prescribing was uncommon at baseline and changed little for streptococcal pharyngitis (intervention, from 4.4% to 3.4%; control, from 5.6% to 3.5%; DOD, -1.1%;  $P = .82$ ) and for viral infections (intervention, from 7.9% to 7.7%; control, from 6.4% to 4.5%; DOD, -1.7%;  $P = .93$ ).

**CONCLUSIONS AND RELEVANCE:** In this large pediatric primary care network, clinician education coupled with audit and feedback, compared with usual practice, improved adherence to prescribing guidelines for common bacterial ARTIs, and the intervention did not affect antibiotic prescribing for viral infections. Future studies should examine the drivers of these effects, as well as the generalizability, sustainability, and clinical outcomes of outpatient antimicrobial stewardship.

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