

The Key to Antibiotic Stewardship Is Combining Interventions

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More than 10 million antibiotics are unnecessarily prescribed to children in the United States every year, contributing to increasing antibiotic resistance and adverse drug events. The reasons for inappropriate antibiotic prescribing in ambulatory pediatrics are multifactorial, including patient pressures and demand, actual or perceived parental satisfaction, provider knowledge, and provider time constraints.^{1,2} An effective approach to decreasing inappropriate antibiotic prescribing must therefore address each of these contributing factors.

Reflective models of adult learning theory are based on the premise that we learn best when we are told (1) what we are supposed to do, (2) how we should do it, and (3) receive feedback to reflect on how we did.^{3,4} In this issue of *Pediatrics*, Kronman et al,⁵ in their clinical trial based on the theory of planned behavior, also seem to recognize that clinicians are adult learners, and they combine interventions to implement these adult learning theory tenets to improve appropriate antibiotic prescribing. In their cluster-randomized stepped-wedge clinical trial among pediatric providers across the United States, they use (1) best practices training (addressing the “what”), (2) communications training (addressing the “how”), and (3) individualized antibiotic prescribing feedback reports. After using this combined strategy across 19 primary care pediatric practices, the probability of receiving an antibiotic prescription for an acute respiratory tract infection decreased by

11% during the final intervention period and demonstrated a sustained reduction of 7% in the 2- to 8-month postintervention period.

The Dialogue Around Respiratory Tract Illness Treatment (DART) Quality Improvement Program is an evidence-based online communication skills and antibiotic prescribing education training program. The DART modules highlight 4 easy and evidence-based steps to improve communication between providers and families, especially when faced with a situation in which a parent or guardian might expect an antibiotic prescription but the provider does not think one is necessary. First, review your physical examination findings aloud. Second, provide the family with a clear diagnosis. These 2 steps help to explain why antibiotics are not needed. Third, use positive treatment recommendations. Patients are more willing to hear that antibiotics are not needed if the message is combined with suggestions of how to make them feel better. Finally, always provide a contingency plan, like a “safety script” or instructions for when to return to care. Contingency plans have been shown to increase patient satisfaction in visits in which antibiotics are not prescribed.⁶ The DART modules are publicly available online at <https://www.uwimtr.org/dart/> and include examples of successful “scripts” of what to say in these situations. In previous research leading to the development of the DART program, researchers have shown this training to be effective in addressing parental pressures and

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demand and in leading to increased patient satisfaction as well as shorter patient encounter times.^{6–8}

Although researchers in the study bundled interventions and did not evaluate the individual contributions of each intervention, analyzing antibiotic prescribing from engaged participants (received feedback reports and engaged in the online tutorials) as well as nonengaged participants (received feedback reports but did not engage in the tutorials) allows the opportunity to make some inferences about the relative contributions of each of these interventions. In conjunction with past studies, results of this trial suggest that feedback reports should not be used alone. Gerber et al⁹ showed that after discontinuation of feedback reports, antibiotic prescribing reverted back to preintervention rates. Szymczak et al¹⁰ found through semistructured interviews that physicians developed mistrust in the feedback reports. In the current study, nonengaged physicians had an increase in second-line antibiotic prescribing, whereas the engaged physicians had a decrease in second-line antibiotic prescribing. This suggests that the addition of communications training could mitigate the undesirable effects that may result from solely using feedback reports. Furthermore, overall antibiotic prescribing for acute otitis media (among engaged and nonengaged practitioners) did not seem to be affected by the bundled interventions; however, when analyzing data for only those engaged practitioners, antibiotic

prescribing for acute otitis media did decline. This might suggest that communications and/or knowledge training is a necessary component to achieving improvement in prescriptions for acute otitis media rather than feedback reports alone.

In summary, Kronman et al⁵ demonstrate that combining interventions to address the multiple factors contributing to unnecessary antibiotic prescribing, communications training (addresses managing parental expectations), best practices training (addresses provider knowledge), and feedback reports (addresses social norms and increasing self-awareness), effectively reduced antibiotic prescribing for acute respiratory tract infections and might lead to sustained improvement in appropriate antibiotic prescribing when providers are engaged in training. Future directions in outpatient antibiotic stewardship should include incentivizing communication skills training for providers.

ABBREVIATION

DART: Dialogue Around
Respiratory Tract Illness
Treatment

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