

# Reducing Unnecessary Antibiotics Prescribed to Children: What Next?

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**KEY WORDS**

antibiotics, utilization

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[www.pediatrics.org/cgi/doi/10.1542/peds.2013-4016](http://www.pediatrics.org/cgi/doi/10.1542/peds.2013-4016)

doi:10.1542/peds.2013-4016

Accepted for publication Dec 18, 2013

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PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

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**FINANCIAL DISCLOSURE:** The author has indicated he has no financial relationships relevant to this article to disclose.

**FUNDING:** Funded by the National Institute of Allergy and Infectious Diseases (grant R21 AI097759-01).

**POTENTIAL CONFLICT OF INTEREST:** The author has indicated he has no potential conflicts of interest to disclose.

**COMPANION PAPER:** A companion to this article can be found on page 375, and online at [www.pediatrics.org/cgi/doi/10.1542/peds.2013-2903](http://www.pediatrics.org/cgi/doi/10.1542/peds.2013-2903).

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Common respiratory illnesses such as otitis media account for approximately three-quarters of all outpatient antibiotic prescriptions for US children.<sup>1,2</sup> Unfortunately, a large fraction of those prescriptions are unnecessary.<sup>2,3</sup> Over the last 2 decades, efforts to address this problem of overprescribing led to roughly a 25% drop in antibiotics prescribed per child. Considering that, in the United States in 1990, children received 1.5 antibiotic prescriptions per year per child,<sup>1</sup> the public health benefits of this drop are enormous. It is a success story that has not received the attention it deserves.

While the medical community should be proud of this success, the article by Vaz et al<sup>4</sup> in this issue of *Pediatrics* provides an important cautionary note. Consistent with other work,<sup>5</sup> the authors found that the trend of decreasing antibiotic prescribing has stalled in 3 health systems. They also identified persistent and rampant overuse of broad-spectrum antibiotics.

The article provides an opportunity to both review what drove the decrease in antibiotic prescribing and consider next steps. The combinations of the pneumococcal vaccines and broader influenza vaccination have decreased the number of visits for acute respiratory conditions. What is striking is that the drop in number of visits per child over the last 2 decades vastly exceeds what we would have predicted from trials. For example, the randomized PCV7 trial led to a 6% drop in episodes of otitis media.<sup>6</sup> However, among children aged <5 years, there was a 33% drop in otitis media visits (and a 17% drop in all visits for acute respiratory illnesses) nationally from 1995 to 2005.<sup>7</sup> Why parents are less likely to bring their sick children for care is unclear. The Get Smart campaign from the Centers for Disease Control and Prevention<sup>8</sup> and other public health efforts have helped in explaining that antibiotics are not always necessary. A (positive) feedback loop is also probably playing a role. If visits are less likely to result in antibiotic prescription, then parents are less likely to bring their child in the next time the child develops a similar illness. In addition, physicians are prescribing less frequently, with a notable drop in visits for viral illnesses that result in an antibiotic.<sup>5</sup>

Despite these positive changes, there remains much room for further improvement. One striking finding in the article by Vaz et al<sup>4</sup> is that 1 health system's antibiotic prescribing rate was almost one-half that of the other 2 sites. Given that ongoing efforts appear to be no longer working, the question is what next. I offer 3 suggestions.

First, we need to focus more energy on limiting inappropriate prescribing over the telephone. Vaz et al<sup>4</sup> found that ~1 in 10 antibiotics were not associated with a visit. Anecdotally, we hear of physicians who commonly prescribe antibiotics to a child on the basis of history only. The nature of most common pediatric bacterial infections

requires a physical examination or results of testing to confirm diagnosis and justify antibiotic use.<sup>9</sup> We need to better understand and target this often inappropriate clinical care.

Second, we need to consider efforts that are much more intrusive on providers to curb antibiotic use for conditions (eg, viral upper respiratory tract infections) in which they are clearly not helpful. Although we might congratulate the physician community on decreased antibiotic prescribing, the “competition” has surpassed us. Despite the American Academy of Pediatrics’ cautions,<sup>10</sup> many children receive care in retail clinics,<sup>11</sup> and the care provided by nurse practitioners at retail clinics is actually superior in terms of antibiotic stewardship. Minnesota’s rankings of medical groups on their quality of care includes retail clinics.<sup>12</sup> One of the top performers is a retail clinic where almost 100% of patients receive guideline-concordant care for pharyngitis and viral upper respiratory tract illnesses. These re-

tail clinics use more intrusive forcing mechanisms (eg, a clinician must provide a written justification for use of an antibiotic for a condition in which antibiotics are not indicated) and routine random audits of providers to drive better care. Justifying the use of certain antibiotics is also the norm in many hospitals through antibiotic stewardship programs. Is it time to transfer such efforts to outpatient physician offices?<sup>13</sup>

Lastly, we should consider methods for parents to “self-triage” and therefore completely avoid physician office visits. In the field of patient safety, 1 mechanism to avoid patient harm is to eliminate error-prone events. An office visit for acute respiratory illness could be viewed as such an event. For a variety of reasons, including rushed schedules, short visits, perceived parent demand, or lack of knowledge, the average physician has a substantial error rate; that is, prescribing antibiotics when they are not helpful. One way to decrease antibiotic

prescribing is to try and avoid physician visits. Building on the growing effort to increase patient empowerment, self-triage tools are being developed for influenza<sup>14</sup> and pharyngitis,<sup>15</sup> which allow patients to answer several questions to determine whether to seek care. At least in theory, self-triage tools could empower parents to decrease the number of unnecessary visits for acute respiratory illnesses among children.

The article by Vaz et al<sup>4</sup> serves as a warning that current efforts to decrease antibiotic prescribing among children appear to have run their course. Given the link between over-prescribing of antibiotics and antibiotic resistance, the tough question before the medical community is, what next?

## ACKNOWLEDGMENTS

The author thanks Jeffrey Linder and Kristin Ray for their thoughtful input on this commentary.

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*Pediatrics* 2014;133;533

DOI: 10.1542/peds.2013-4016 originally published online February 2, 2014;

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