

# Acute Otitis Media in the 21st Century: What Now?

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Acute otitis media (AOM) is, by far, the most common indication for antibiotic prescribing to children.<sup>1</sup> Thus, understanding the epidemiology of AOM is important to optimize clinical outcomes and promote judicious antibiotic use. In this issue of *Pediatrics*, Kaur et al<sup>2</sup> offer a community-based glimpse into 21st century AOM. Notably, the authors summarize the current bacteriology of AOM in the patients of Legacy Pediatrics, a research-oriented primary care practice in Rochester, New York. It is gratifying to note that research from individual practice settings is alive and well. Pichichero and co-workers<sup>3–5</sup> have been tracking changes in bacteriology of AOM at Legacy Pediatrics since 2007. He previously published work with similar methodology<sup>6</sup> on patients from Elmwood Pediatrics, the Rochester practice with the decades-long tradition of infectious disease research dating back to Breese and Disney's first article on group A streptococci.<sup>7</sup> The rationale for reinvestigation is twofold: AOM diagnostic criteria have become ever more stringent, and use of the pneumococcal conjugate vaccine (PCV) against *Streptococcus pneumoniae* (once the dominant AOM pathogen<sup>8</sup>) has increased steadily.<sup>9</sup> The National Institute on Deafness and Other Communication Disorders provided financial support for this investigation, but we owe even more thanks to the participating parents and children of Legacy Pediatrics. Patients are enrolled prospectively at 6 months of age. Those diagnosed with AOM are routinely approached for tympanocentesis, which is portrayed

in the article (and presumably to the parents) as both a diagnostic and therapeutic procedure. Patients are then routinely placed on amoxicillin/clavulanic acid, unless there is an allergy to penicillin.

What do the authors of the study tell us? The information on the bacteriology of first AOM infections is compelling and confirms other reports.<sup>10</sup> However, the study design, acknowledged as problematic by the authors themselves, limits the conclusions one can draw about what follows first infections. This is because patients in the study have received initial treatment that strays in 3 ways from the most recent American Academy of Pediatrics (AAP) guideline<sup>11</sup>: routine use of tympanocentesis, therapy with amoxicillin/clavulanate acid (as opposed to amoxicillin), and duration of antibiotic therapy. As such, for those of us who follow this guideline, the information gained regarding subsequent infections is less generalizable.

The prospective data collection and rigorous diagnostic criteria for AOM are clear strengths of this study. The limitations, from an epidemiological standpoint, include some lack of clarity regarding the study design and analysis. Although never stated as such, this appears to be a cohort study, but precisely who the controls are and how they have been selected is inadequately specified. We are not told the proportion of eligible children that were actually enrolled, nor how nonenrolled children might have differed from study subjects.

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It is not clear that differences in duration of follow-up among subjects were accounted for in the analyses. Statistically significant but clinically insignificant findings (eg, the reported protective association between breastfeeding and recurrent AOM [ $P$  value = .016; odds ratio = 0.99]) are worth noting as such.

What do we know and what uncertainties remain? The incidence of AOM seems to be decreasing coincident with the introduction and expansion of pneumococcal vaccine coverage, so vaccination with PCV should remain a priority. Although it might not be every parent's (or child's) choice as a management strategy, tympanocentesis appears to be safe, diagnostic, and therapeutic. The best choice of antibiotic therapy, however, remains unclear. Although Kaur et al<sup>2</sup> use amoxicillin clavulanate and justify this choice on the basis of the bacteriology from middle ear fluid cultures, no head-to-head studies have compared this broader-spectrum antibiotic with amoxicillin, the AAP guideline-recommended choice for most children with AOM. Lastly, although 5 days of antibiotic therapy was used in this study, researchers conducting a recent randomized controlled trial found that 5 days of amoxicillin clavulanate was inferior to 10 days of that antibiotic for AOM.<sup>12</sup>

The take home for practicing clinicians is clear: keep using PCV and keep following the evidence-based

AAP guidelines, which reflect the most comprehensive review of evidence regarding treatment. For researchers, a head-to-head clinical trial between different antibiotic choices and durations is greatly needed to provide working clinicians with the best evidence for managing AOM in the 21st century.

#### ABBREVIATIONS

AAP: American Academy of Pediatrics  
AOM: acute otitis media  
PCV: pneumococcal conjugate vaccine

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