

# Vaccines Have Changed the Epidemiology of Acute Otitis Media

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The rate of acute otitis media (AOM) in young children has dropped significantly since the introduction of pneumococcal conjugate vaccines (PCV7 and PCV13) and more stringent diagnostic criteria to distinguish AOM from otitis media with effusion, study authors say.

Ravinder Kaur, PhD, from the Center for Infectious Diseases and Immunology, Rochester General Hospital Research Institute in New York, and colleagues found significantly lower rates for AOM episodes than did researchers who led a study in 1989.

In the current prospective, longitudinal study, the researchers followed 615 children in their first 3 years of life from 2006 to 2016 in Rochester. In that time, 23.0% had one or more AOM episodes and 3.6% had three or more episodes. By age 3 years, approximately 60% had one or more episodes and approximately 24% had three or more episodes.

For comparison, in the 1989 [report](#) from the Teele et al Boston pediatric cohort, by age 3 years, 83% had at least one episode of AOM and 46% had at least three episodes.

However, the main risk factors linked with AOM are the same: attending day care, having a family history of AOM, or having AOM at a young age.

The findings were [published online](#) August 7 in *Pediatrics*.

In 1989, there was no vaccine, and fluid behind the tympanic membrane was considered evidence of AOM. There were few alternatives to amoxicillin.

In the current study, all the children got four doses of either 7-valent-PCV (those enrolled before April 2010) or 13-valent-PCV (those enrolled after April 2010) at 2, 4, and 6 months of age, with a booster at age 15 months.

This research used the American Academy of Pediatrics' (AAP's) strict definition of AOM, confirmed by tympanocentesis and bacterial culture of middle ear fluid, something the few previous studies have not done.

Understanding the epidemiology of AOM is important because it is the most common indication for antibiotics in children, Richard C. Wasserman, MD, from the University of Vermont Children's Hospital and Larner College of Medicine, University of Vermont, both in Burlington, and Jeffrey S. Gerber, MD, PhD, from Children's Hospital of Philadelphia and Perelman School of Medicine, University of Pennsylvania, both in Philadelphia, Pennsylvania, write in an [accompanying commentary](#).

They point out that, according to AAP, more than 5 million AOM cases appear every year in US children, resulting more than 10 million antibiotic prescriptions and 30 million care visits per year. The editorialists conclude that physicians should continue using PCVs and follow the AAP guidelines, "the most comprehensive review of evidence regarding treatment."

Still unanswered, however, is which antibiotic is best after diagnosis of AOM. The researchers use amoxicillin clavulanate, but "no head-to-head studies have compared this broader-spectrum antibiotic with amoxicillin, the AAP guideline-recommended choice for most children with AOM," Dr Wasserman and Dr Gerber say.

They also question the 5-day duration chosen by the researchers, noting that a recent randomized controlled [study](#) showed a 10-day course of amoxicillin clavulanate was more effective for AOM.

Limitations of the study, they say, include lack of clear design and analysis.

"[P]recisely 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," they write.

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