

# Invasive Bacterial Infections in Afebrile Infants With Otitis Media: Worry Less but Still Worry

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In this issue of *Pediatrics*, McLaren et al<sup>1</sup> evaluated the risk of invasive bacterial infections (IBIs) among infants aged <90 days who have been diagnosed with acute otitis media (AOM). The identification of IBIs in febrile infants has been an area of extensive study in pediatrics for the better part of 50 years, with many risk stratification systems that rely on combinations of clinical and laboratory features.<sup>2-4</sup> Similarly, the diagnosis of AOM has been an area of active research, with multiple care guidelines.<sup>5,6</sup> The commonly used AOM guidelines do not include recommendations for children aged <6 months, and there is a dearth of data on which to base care recommendations for young infants with a clinical diagnosis of AOM without accompanying fever.<sup>7-11</sup>

Most children diagnosed with AOM are treated as outpatients, and serious complications are uncommon.<sup>12</sup> However, neonates and young infants are at increased risk of developing disseminated infection. The best care practices for AOM in this age group are unclear. In their study, McLaren et al<sup>1</sup> help to fill this gap.

The authors conducted an international multicenter retrospective chart review of 1637 afebrile infants aged ≤90 days with an emergency department (ED) diagnosis of AOM seen in 29 pediatric EDs. Overall, a reassuring extremely low rate of

IBIs was identified. However, although the authors present a robust data set, several qualifications are needed if one attempts to translate the findings into clinical practice. The first qualification is inherent to the retrospective study design: the inability to verify the diagnosis of AOM. The authors acknowledge and address this by adding the chart review of physical examination findings to support the study findings, but they unfortunately include an examination description of erythema alone as confirmatory of the diagnosis. Red ear notoriously lacks specificity because erythema can result from a viral infection or crying. Also, there is tremendous interobserver variation.<sup>13,14</sup> Furthermore, a proportion of patients might be noted as having erythema to support the clinician's bias toward finding AOM. Overdiagnosis can overestimate the positive outcomes found in this age group. Including specifics on how many times erythema only on physical examination was used to confirm the diagnosis of AOM could help indicate the potential extent of this bias. In the data set presented, it appears that erythema only may have occurred in up to 35% of the sample (assuming 30% with otorrhea and 35% with bulging tympanic membranes were exclusive groups), which could be a significant limitation of this study.

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This report will not resolve the significant challenge faced by clinicians in treating infants aged <28 days who have the highest risk of occult bacteremia and systemic spread of a focal bacterial infection. In studies of febrile infants, researchers have established this age group to be at the highest risk for systemic bacterial involvement and the most difficult to risk stratify on the basis of physical examination findings and initial laboratory results.<sup>15</sup> In fact, the subjects aged <28 days in this study had nearly a 50% admission rate, underscoring the clinical uncertainty faced by pediatric emergency medicine providers. In addition, the study included relatively few subjects aged ≤28 days (6% of the sample; 100 of 1637), and the authors acknowledge insufficient data to generalize the overall findings to the youngest infants. Management of infants in this age group after finding a focal bacterial infection continues, for now, to be part of the art of clinical care.

Despite a paucity of young infants and limitations inherent to the design, this study does contribute to the literature with a robust retrospective data set of afebrile infants between 1 and 3 months of age with an ED diagnosis of AOM, with the findings of low rates of laboratory findings or identified outcomes consistent with IBI. It certainly provides a base of support for carefully designed prospective studies in which researchers aim to determine the best care for AOM in children aged <6 months.

## ABBREVIATIONS

AOM: acute otitis media  
 ED: emergency department  
 IBI: invasive bacterial infection

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