# Needs assessment: Use of corticosteroids for treatment of acute bronchiolitis in infants

## Summary

In 2014, the American Academy of Pediatrics issued a revision of its 2006 guidelines on the “Diagnosis and Management of Bronchiolitis”.1 The guideline applied to infants aged 1–23 months. Among the AAP recommendations, the group recommended against use of systemic corticosteroids for treatment of acute bronchiolitis in this age group (evidence quality A: strong recommendation). Nevertheless, a follow-up study two years later by the same group2 found that, even after a comprehensive educational intervention involving 20 hospitals, substantial numbers of hospitals reported continued use of corticosteroids for treatment of acute bronchiolitis. There was a statistically significant overall decrease in steroid use (68%); nevertheless, substantial use continued. Three of the 20 reported increased use of steroids during the study period. Therefore, a substantial gap exists between recommended and actual practice regarding use of corticosteroids for infants with bronchiolitis. This gap may be filled by dissemination of appropriate community education in the form of continuing medical education programs.

## Epidemiology

Acute bronchiolitis is the most common cause of lower respiratory illnesses in infants. It is most often caused by infection with the respiratory syncytial virus (RSV).3 Nearly all children become infected with RSV before the end of the second year of life; however, only a small minority become sick enough to require hospitalization. Nevertheless, RSV bronchiolitis is responsible for approximately 60,000 hospitalizations and over 2 million outpatient visits per year.

## Pathophysiology

The precise pathophysiology of lower airway obstruction is not known; however, the consensus of opinion is that the obstruction derives from sloughing of dead infected respiratory epithelial cells. This, combined with mucous plugging, gives rise to the obstructive symptoms associated with acute bronchiolitis (tachypnea, grunting, nasal flaring, intercostal retractions). The available evidence suggests that the pathophysiology of airway obstruction in bronchiolitis is mechanical, rather than inflammatory. This may explain, at least in part, the ineffectiveness of corticosteroids.

## Literature review

In 2007, the Bronchiolitis Study Group of the Pediatric Emergency Care Applied Research Network (PECARN) published a multicenter, randomized controlled trial of dexamethasone in 600 infants (2–12 months of age) presenting to emergency departments with diagnoses of moderate-to-severe acute bronchiolitis.4 Approximately half infants received placebo. The primary outcome of the PECARN study was rates of hospital admission. The secondary outcome was the Respiratory Assessment Change Score (RACS). They also evaluated length of hospital stay, subsequent medical visits or admissions, as well as adverse events.

There were no significant differences between dexamethasone and placebo groups with respect to rate of hospital admission as well as changes in RACS. There were some small-magnitude statistically significant differences in ancillary outcomes that the investigators felt were not clinically significant. There were no significant differences in adverse events between groups.

In 2007, a Cochrane systematic review on steroid use in acute bronchiolitis was published.5 The investigators found 17 studies comprising 2596 participants. Most of the studies were of good quality with minimal bias. They found that hospitalization rates were comparable in steroid and placebo groups. For patients who were admitted for bronchiolitis, lengths of hospital stays did not differ between steroid and placebo groups. Adverse effects were comparable in both groups. The investigators concluded that steroid use offered no benefit in the management of acute bronchiolitis in infants.

## Recommendations

Given the difference between the evidence-based guidelines and actual practice with respect to steroid use for treatment of acute bronchiolitis, a gap exists that could be usefully filled with widespread continuing education. The target of such interventions would be primary care physicians, especially pediatricians, as well as emergency room physicians, and hospitalists.

## References

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