

might explain persistence of findings, the researchers found that having multiple comorbid conditions and having multiple lobes involved were the main independent risk factors for persistence. Curiously, the authors don't tell us how long it took for the pneumonia to resolve clinically. Too bad.

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Data on treating bronchiolitis severely limited

King VJ, Viswanathan M, Bordley WC, et al. Pharmacologic treatment of bronchiolitis in infants and children: a systematic review. *Arch Pediatr Adolesc Med* 2004; 158:127–137.

■ CLINICAL QUESTION

How effective are the various treatments for bronchiolitis?

■ BOTTOM LINE

In spite of the large number of studies assessing treatments for bronchiolitis, in general the studies have been small, of poor quality, and don't assess clinically important endpoints. The treatments may be effective, however, just unproven. To really judge their effectiveness, we'd need large, well-designed studies that include clinically important outcomes. Until then, bronchiolitis treatment is in the "can do, but not required" category—there are few "musts" or "must nots," so don't obsess about overtreatment or undertreatment. (LOE=1a-)

■ STUDY DESIGN

Systematic review

■ SETTING

Various (meta-analysis)

■ SYNOPSIS

The authors systematically reviewed Medline and the Cochrane Collaboration Database of Controlled Clinical Trials for randomized controlled trials published in English that assessed the effectiveness of various treatments for bron-

chiolitis. They used an explicit and reasonable set of search terms and did a limited search for unpublished data.

The team assessed the quality of each study with disagreements adjudicated by consultation and consensus. The authors reported on 44 studies of the most commonly used agents: epinephrine, beta-2-agonist bronchodilators (albuterol and salbutamol), corticosteroids, and ribavirin. They found a handful of studies evaluating inhaled helium, RSV-immunoglobulin, Chinese herbs, and so forth, but chose not to report these data in the paper. (If readers are interested, these are reported in an AHRQ Evidence Report at www.ahrq.gov/clinic/evrptfiles.htm#bronch.) In general, most studies were quite small, of limited quality, looked at short-term improvement, and failed to assess clinically important outcomes.

Racemic epinephrine was studied against beta-2-agonists in 8 randomized controlled trials of 660 infants. Five of these studies assessed hospitalization, only 2 reported either fewer admissions or shorter stays. Most of the 13 studies of nebulized beta-2-agonists had multiple treatment arms: saline placebos, unspecified placebos, ipratropium, and oral agents, for example.

Seven of the studies assessed hospitalization, none reported meaningful differences in rate or duration. Four studies evaluated oral corticosteroids and found no consistent effect on hospitalizations or duration of stay. Parenteral corticosteroids had no effect on clinical outcomes. In 10 randomized controlled trials of ribavirin (Copegus, Rebetol), the overall study quality was low. Of the 5 studies reporting on clinically important outcomes, 4 failed to demonstrate any effect on rate of hospitalization, length of stay, duration of illness, or use of intensive treatment.

The sole study finding a benefit (on use of intensive treatment) used sterile water as the placebo. But since sterile water can induce bronchospasm, thereby making ribavirin appear more effective, this study has been criticized.

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