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**Title:** Wheeze in preschool age is associated with pulmonary bacterial infection and resolves after antibiotic therapy

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**Body:** Introduction: Preschool children with persistent wheezing often respond insufficiently to conventional asthma therapy and management of persistent symptoms is difficult and costly. Recent studies show that colonization of the airways with *H. influenzae*, *Strep. pneumoniae* or *M. catarrhalis* is associated with an increased risk for recurrent wheeze and asthma. Objectives: We assessed the relevance of bacterial colonization and chronic airway infection in preschool children with severe persistent wheezing and evaluated the outcome of long-time antibiotic treatment on the clinical course in such children. Methods: Preschool children (n=42) with severe persistent wheeze but no symptoms of acute pulmonary infection were investigated by bronchoscopy and bronchoalveolar lavage (BAL). Differential cell counts and microbiological and virological analyses were performed on BAL samples. Patients diagnosed with bacterial infection were treated with antibiotics for a mean of 6 weeks (n=29). A modified ISAAC questionnaire was used for follow-up assessment of children at least 6 months after bronchoscopy. Main Results: Of the 42 children with severe wheezing, 34 (81%) showed a neutrophilic inflammation and 20 (59%) of this subgroup had elevated bacterial counts suggesting infection. *H. influenzae*, *Strep. pneumoniae* and *M. catarrhalis* were the most frequently isolated species. After treatment with appropriate antibiotics 92% of patients showed a marked improvement of symptoms upon follow-up examination. Conclusion: Chronic bacterial infections are relevant in a subgroup of preschool children with persistent wheezing and such children benefit significantly from antibiotic therapy.