



# UPDATE

## Middle Ear Infections, Antibiotics, and Asthma

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On September 13, 2006, the *Journal of the American Medical Association* published a randomized controlled trial concerning the protocol for the treatment of acute otitis media, titled:

### **Wait-and-See Prescription for the Treatment of Acute Otitis Media'**

Key points from this article include:

1. "Acute otitis media is the most common reason for which an antibiotic is prescribed to children," accounting for an "estimated 15 million antibiotic prescriptions written per year in the United States."
2. "Untreated acute otitis media has a high rate of spontaneous resolution, with similar rates of complications whether antibiotics are prescribed or withheld."
3. "Resistance to antibiotics is a major public health concern worldwide and is associated with the widespread use of antibiotics."
4. The typical length of antibiotic therapy prescribed for children

with acute otitis media is a 10-day course, and Amoxicillin is prescribed 92% of the time.

5. Diarrhea is the most frequently reported side effect of taking antibiotics for acute otitis media.
6. Immediate treatment of acute otitis media with antibiotics increases the rates of diarrhea by 2- to 3- times compared to the wait and see approach to treating acute otitis media.
7. These authors showed that waiting to prescribe antibiotics for acute otitis media is a "successful treatment strategy."
8. This randomized controlled trial has shown that waiting to use antibiotics for acute otitis media "significantly reduces the use of antibiotics" without compromising clinical results.
9. Most pediatricians in the U S are trained to routinely prescribe antibiotics for acute otitis media and "believe that many parents expect a prescription."

10. Only a "small minority of practitioners who care for children routinely use watchful waiting" before prescribing an antibiotic for acute otitis media.

11. "The risks of antibiotics, including gastrointestinal symptoms, allergic reactions, and accelerated resistance to bacterial pathogens must be weighed against their benefits for an illness that, for the most part, is self-limited." **[Very Important]**

12. The routine use of waiting to prescribe antibiotics for acute otitis media "will reduce both the costs and adverse effects associated with antibiotic treatment and should reduce selective pressure for organisms resistant to commonly used antimicrobials." **[Very Important]**

13. The waiting to prescribe antibiotics approach "substantially reduced unnecessary use of antibiotics in children with acute otitis media."

The bottom line from this study is that since acute otitis media is usually a self-limiting illness, and because utilization of antibiotics is associated with significant risks (including antibiotic resistance and gastrointestinal symptoms), the best approach is to "wait-and-see" rather than to immediately prescribe antibiotics. Curiously, a significant known risk from the pediatric use of antibiotics that was not mentioned in this article is the risk of atopic disorders, including allergy and asthma.

The March 2006 issue of the journal *Chest* published a systemic review and metaanalysis concerning the use of antibiotics in infancy and the development of asthma, titled:

### **Original Research – Asthma Does Antibiotic Exposure During Infancy Lead to Development of Asthma?'**

Key points from this article include:

1. Increasing antibiotic use in children coincides with "an increase in physician visits for otitis media, and a high rate of inappropriate prescribing for viral upper respiratory infections and bronchitis."
2. "This increase in antibiotic use in children has been accompanied by an increase in the prevalence of asthma and has led to the hypothesis of a causal association."
3. Asthma is the most common chronic disease of children, affecting about 12.5% of western country children.
4. In industrial countries, asthma has increased significantly over the last 30 years and is a major public health concern.
5. The "Hygiene Hypothesis" suggests that "growing up in a more hygiene environment with less microbial exposure may increase atopic (T-helper type 2) immune responses and, thus, the development of asthma." **[Important]**
6. The increased asthma risk after antibiotic exposure in the first year of life is 105% increased risk with a range between 41%-199%.
7. The increased risk for the development of asthma after exposure to antibiotics in the first year of life in the four retrospective studies re-

CONTINUED ON PAGE 20

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