

**Original Research
Asthma**

**Does Antibiotic Exposure During Infancy Lead to Development of Asthma?
A Systemic Review and Metaanalysis**

Chest

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FROM ABSTRACT

OBJECTIVES:

To determine the association between antibiotic exposure in the first year of life and the development of childhood asthma.

DESIGN:

Metaanalysis of observational studies retrieved through systemic search of all available electronic data sources, 1966 to present.

RESULTS:

Eight studies (4 prospective and 4 retrospective) examined the association between exposure to at least one course of antibiotics and development of childhood asthma.

The pooled odds ratio [of increased asthma risk after antibiotic exposure] for the 8 studies was 105% increased risk with a range between 41% - 199%.

For each additional course of antibiotics the risk of developing asthma increased 16% with a range between 5% - 28%.

CONCLUSIONS:

Exposure to at least one course of antibiotics in the first year of life appears to be a risk factor for the development of childhood asthma.

THESE AUTHORS ALSO NOTE:

"Antibiotics are commonly used to treat infections during early childhood."

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."

"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."

Asthma is the most common chronic disease of children, affecting about 12.5% of western country children.

In industrial countries, asthma has increased significantly over the last 30 years and is a major public health concern.

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]**

These authors searched multiple databases to assess the association between antibiotic exposure and childhood asthma, initially finding 2,056 articles, and using the 8 best studies that met their metaanalysis inclusion criteria. In total, the used studies reviewed the status of nearly 40,000 children.

The risk of asthma after being exposed to antibiotics in the first year of life was increased by 105% with a range between 41% - 199% increased risk. **[Important]**

The increased risk for the development of asthma after exposure to antibiotics in the first year of life in the 4 retrospective studies reviewed was 182% with a range between 107% - 285%.

CONCLUSIONS

"The use of antibacterials in the first year of life is associated with subsequent development of asthma."

KEY POINTS FROM DAN MURPHY

- 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 4 retrospective studies reviewed was 182% with a range between 107% - 285%.
- 8) For each additional course of antibiotics in the first year of life, the risk of developing asthma increased 16% with a range between 5% - 28%.
- 9) "The use of antibacterials in the first year of life is associated with subsequent development of asthma."
- 10) "Exposure to at least one course of antibiotics in the first year of life appears to be a risk factor for the development of childhood asthma."