

Antibiotic use in infancy may increase risk of childhood asthma

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(PhysOrg.com) -- Children who receive antibiotics within the first six months of life are at a significantly increased risk of developing asthma and allergies by 6 years of age, even without a genetic predisposition, new research by the Yale School of Public Health suggests. The findings are reported online in the *American Journal of Epidemiology*.

Researchers followed 1400 women, collecting data throughout their pregnancies and from their children until their sixth birthdays. The researchers found that infants exposed to antibiotics during their first six months of life were up to 52 percent more likely to develop [childhood asthma](#) and allergies than their peers who did not receive antibiotics.

While previous studies have also found that antibiotic use may increase the risk of asthma in children, those studies may have been biased because antibiotics are used to treat respiratory tract infections that could themselves be early symptoms of asthma. The Yale study sought to eliminate this bias and concluded that antibiotic use increased risk of childhood asthma even in children who have not experienced respiratory tract infections and in children whose asthma is first diagnosed after 3 years of age.

Another controversy from earlier studies has been whether the effect of antibiotic use is different in children who are genetically pre-disposed to asthma. The Yale research was designed to study this, since 40 percent of participating mothers had asthma. The findings suggest that children who did not have any asthmatic parents had an even stronger risk of developing asthma after antibiotic use.

According to lead researcher Michael B. Bracken, professor of epidemiology at the Yale School of Public Health, antibiotic use and increased asthma and allergy risk relates to the so-called "hygiene

hypothesis," which may explain why [asthma](#) rates have increased in developed countries among children growing up in overly hygienic environments. "Early antibiotic exposure, especially to broad-spectrum antibiotics, may suppress the developing immune system and produce a reduced anti-allergic response," Bracken explained. Researchers write that early microbial exposure, particularly in the intestinal tract, seems necessary for transition to a mature and balanced immune system in childhood. Antibiotic use, especially broad-spectrum antibiotics, may alter microbial flora in the gut, thereby causing imbalances in the [immune system](#) and a poor allergic response.

A third of U.S. infants are exposed to antibiotics in the first six months of life, most commonly for respiratory tract infections, although the majority of these diseases are viral and do not respond to antibiotics. The use of broad-spectrum [antibiotics](#) continues to increase.

"The findings from our study should encourage physicians to avoid unnecessary [antibiotic use](#), especially in low-risk children," said Kari Risnes, a pediatrician from the Norwegian University of Science and Technology, visiting researcher at the Yale Center for Perinatal, Pediatric and Environmental Epidemiology and the study's lead author.

Provided by Yale University

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