



Lower use of antibiotics improves gut health, lowers asthma risk

CHILD research published in the prestigious *Lancet Respiratory Medicine* found a link between early-life antibiotic exposure and childhood asthma.

The *Lancet* paper combined findings from population-level data, individual health data available from CHILD, and a mechanistic investigation to support a link between early-life antibiotic exposure and childhood asthma.

ANTIBIOTIC USED LINKED TO MISSING MICROBES

Dr. **Stuart Turvey**, co-director of CHILD and the Vancouver CHILD site lead, was the study's lead author. Among the findings:

- Population-level data from the province of BC found that every 10% increase in the prescribing of antibiotics was linked with a 24% increase in asthma incidence.
- Individual data from more than 2,600 children participating in CHILD showed that antibiotic use in the first 12 months of life was associated with a near doubling of the risk of being diagnosed with asthma by age five.
- Further investigation found that gut bacteria were less diverse overall among the kids who received antibiotics before their first birthday and developed asthma by age five.

Significantly, they lacked several key bacteria whose absence is known to impact the overall functioning of the immune system and has been previously linked

with a higher risk of developing asthma.

“Our findings suggest that careful antibiotic use in children under the age of one is important to help preserve the diversity and abundance of healthy gut bacteria, making children less susceptible to developing asthma later in life,” said Dr. Turvey.

“The good news is, that after decades of rising rates of asthma in Canadian kids, that trend is finally reversing.”

A ROBUST MICROBIOME LEADS TO LIFE-LONG BENEFITS

While asthma diagnoses in Canadian kids tripled in the last half of the 20th century, incidence of the disease and associated hospitalizations are now declining, according to the researchers.

“It was CHILD data that helped us to pinpoint the role that healthy gut bacteria play in the development of a baby's immune system and the prevention of immune-mediated diseases like asthma,” noted Dr. **Hind Sbihi**, study co-author and UBC postdoctoral fellow.

“Good bacteria play a vital role in childhood health and development,” added co-author Dr. **B. Brett Finlay**, Peter Wall Distinguished Professor in the Michael Smith Laboratories and the departments of microbiology and immunology and of biochemistry and molecular biology at UBC.

“As this research shows, nurturing a diverse and robust microbiome, which entails the prudent use of antibiotics, can play a key role in the healthy development of a child's immune system and lead to life-long benefits.”

Lower use of antibiotics improves gut health, lowers asthma risk

Nearly **2x** risk of asthma if antibiotics used in child's first 12 months

Careful antibiotic use in children under one helps preserve the diversity and abundance of healthy gut bacteria, making them less susceptible to asthma.

Less diverse gut bacteria if antibiotics used in child's first 12 months

Every 10% increase in the prescribing of antibiotics is linked with a 24% increase in asthma incidence.

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