

## EARLY LIFE EXPERIENCES AND ASTHMA RISK

**The increasing prevalence of asthma in the developed world continues to confound health experts. Many theorize that something about our environment, such as exposure to too few germs due to our overemphasis on hygiene, affects the immune systems of young babies, making them highly sensitive to allergic responses.**



**A** clue into the impact of environment on asthma risk was provided by recent research showing that developing a fever during a specific period very early in life was associated with a reduced risk of developing asthma later on. This finding spurred Anita Kozyrskyj and her colleagues at the University of Manitoba to look at the timing of vaccinations, which can themselves produce a fever as a side effect, on asthma development.

The research, led by Kozyrskyj's graduate student Kara L. McDonald, was an analysis of 13,980 children born in 1995 in Manitoba for whom complete health care and vaccination information was available through to age seven. Specifically, the investigators looked at the association between the timing of the children's DTP vaccine and the later development of asthma. DTP protects against diphtheria, tetanus and pertussis (also known as whooping cough). It's worth noting that this particular vaccine is no longer used, as cellular pertussis has been replaced by acellular pertussis in the DTaP vaccine.

Among over 11,500 children who received at least four of the five standard doses of the DTP vaccine, *"the likelihood of developing asthma at age seven was reduced by half if the first dose of DTP was delayed more than two*

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*months,"* says Kozyrskyj. *"The first dose is given at two months of age, usually, so the delayed dose would have been given at more than four months of age."* Delaying later doses may have had an effect too, but the timing of the first dose appeared to have the most impact.

### SHIFTING AWAY FROM AN ALLERGIC IMMUNE RESPONSE

To understand what this might mean for asthma development, it is important to know a little bit about the immune system. It can produce two main types of response, known as TH1 and TH2. TH2 immunity is dominant after birth and is associated with classic allergy symptoms, such as hay fever, itchy skin rashes and asthma. The first year of life is a critical period for balancing out the TH1 and TH2 response, so events during this time period, such as fever induction of TH1 immunity, can affect it. The DTP vaccine may actually reduce the risk of asthma by promoting a shift from a TH2 to a TH1 type of immune response, due to fever caused by the pertussis vaccine or by some other mechanism.

### NO INFORMATION ON WHETHER OR NOT TO VACCINATE

Don't be tempted to overanalyze the findings of this study, however. Fever is a common reason to delay vaccination and may be the reason for the reduced asthma risk, rather than the vaccine itself. Also, the DTaP vaccine currently used is different from the one studied, *"so these findings don't have any direct application to the current immunization protocol,"* says Kozyrskyj. More importantly, this study did not compare children who had been vaccinated with those who had not, so it has nothing to say about whether vaccination versus no vaccination affects asthma rates. Kozyrskyj does point out, however, that the risk of developing potentially deadly diphtheria, tetanus or pertussis is very real among children who are not vaccinated or whose vaccinations are delayed. 🦋

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