
Children's Environmental Health Research Findings
March 2015

Topic: asthma and environment

Title: A systematic review of associations between environmental exposures and development of asthma in children aged up to 9 years.

Conclusion: There was consistent evidence linking exposures to secondhand smoke, inhaled chemicals, mould, ambient air pollutants, some deficiencies in maternal diet and respiratory viruses to an increased risk for asthma.

Authors: Dick S, Friend A, Dynes K, AlKandari F, Doust E, Cowie H, Ayres JG, Turner SW.

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Abstract:

OBJECTIVES: Childhood asthma is a complex condition where many environmental factors are implicated in causation. The aim of this study was to complete a systematic review of the literature describing associations between environmental exposures and the development of asthma in young children. **SETTING:** A systematic review of the literature up to November 2013 was conducted using key words agreed by the research team. Abstracts were screened and potentially eligible papers reviewed. Papers describing associations between exposures and exacerbation of pre-existing asthma were not included. Papers were placed into the following predefined categories: secondhand smoke (SHS), inhaled chemicals, damp housing/mould, inhaled allergens, air pollution, domestic combustion, dietary exposures, respiratory virus infection and medications. **PARTICIPANTS:** Children aged up to 9 years. **PRIMARY OUTCOMES:** Diagnosed asthma and wheeze. **RESULTS:** 14,691 abstracts were identified, 207 papers reviewed and 135 included in the present review of which 15 were systematic reviews, 6 were meta-analyses and 14 were intervention studies. There was consistent evidence linking exposures to SHS, inhaled chemicals, mould, ambient air pollutants, some deficiencies in maternal diet and respiratory viruses to an increased risk for asthma (OR typically increased by 1.5-2.0). There was less consistent evidence linking exposures to pets, breast feeding and infant dietary exposures to asthma risk, and although there were consistent associations between exposures to antibiotics and paracetamol in early life, these associations might reflect reverse causation. There was good evidence that exposures to house dust mites (in isolation) was not associated with asthma risk. Evidence from observational and intervention studies suggest that interactions between exposures were important to asthma causation, where the effect size was typically 1.5-3.0. **CONCLUSIONS:** There are many publications reporting associations between environmental exposures and modest changes in risk for asthma in young children, and this review highlights the complex interactions between exposures that further increase risk.

Keywords: asthma, child