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Asthma in school age:
prevalence, incidence and remission in relation to environmental determinants

The Obstructive Lung Disease in Northern Sweden (OLIN) Studies, Thesis XI

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Akademisk avhandling

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Abstract
This thesis aimed to investigate the clinical expression of childhood asthma over time, to describe the determinants of new-onset and remission of asthma, and to evaluate possible environmental risk factors in northern Sweden. Following questionnaire surveys among children aged 7-8 years in three municipalities in the north of Sweden, pediatric cohorts were formed in 1996 (n=3,430) and in 2006 (n=2,585). The cohort of 1996 was followed annually until age 19 years. The study participation and retention rates were high. Among children in the second cohort living in Luleå, the home addresses were assigned to coordinates in a geographical information system (GIS) to evaluate the impact of living near roads with much traffic. While children aged 7-8 years in 2006 more often had physician-diagnosed asthma compared to children of the same age in 1996 (7.4% vs 5.7%), they had less asthma symptoms. In parallel, a more beneficial environment and a more intense treatment with inhaled corticosteroids (ICS) were observed. The explanation for this change in clinical expression probably includes also an increased awareness and diagnosing of asthma. The risk of new-onset asthma in adolescence was increased among girls, sensitized and those with heredity for asthma. Smoking and home dampness increased the risk for incident wheeze. The risk for both incident asthma and wheeze was inversely related to number of siblings. Among children with current asthma at age 7-8 years, 21% were in remission, 38% had periodic asthma and 41% had persistent asthma at a follow-up at age 19 years. The probability of asthma remission from childhood to early adulthood was significantly increased by absence of allergic sensitization, male gender and a low asthma severity scoring at age 7-8 years. Sensitization to furred animals was more important as a determinant of both incidence and remission than sensitization to pollen. Living close to roads with high traffic flows, especially with heavy vehicles, was associated with an increased risk for current wheeze. Stratified analyses showed that the effect of traffic on asthma and wheeze was restricted to non-sensitized subjects.

Keywords
Asthma, wheeze, sensitization, childhood, adolescence , epidemiology, vehicle traffic

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