



Air pollution and the development of asthma from birth until young adulthood

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Early-life exposure to air pollution, especially from motorised traffic, may have long-term consequences for asthma development, as it is associated with an increased risk of developing asthma through childhood and adolescence into early adulthood <https://bit.ly/39uZHVH>

Cite this article as: Gehring U, Wijga AH, Koppelman GH, *et al.* Air pollution and the development of asthma from birth until young adulthood. *Eur Respir J* 2020; 56: 2000147 [<https://doi.org/10.1183/13993003.00147-2020>].

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ABSTRACT

Background: Air pollution is associated with asthma development in children and adults, but the impact on asthma development during the transition from adolescence to adulthood is unclear. Adult studies lack historical exposures and consequently cannot assess the relevance of exposure during different periods of life. We assessed the relevance of early-life and more recent air pollution exposure for asthma development from birth until early adulthood.

Methods: We used data of 3687 participants of the prospective Dutch PIAMA (Prevention and Incidence of Asthma and Mite Allergy) birth cohort and linked asthma incidence until age 20 years to estimated concentrations of nitrogen dioxide (NO₂), particulate matter with a diameter <2.5 µm (PM_{2.5}), <10 µm (PM₁₀), and 2.5–10 µm, and PM_{2.5} absorbance (“soot”) at the residential address. We assessed overall and age-specific associations with air pollution exposure with discrete time-hazard models, adjusting for potential confounders.

Results: Overall, we found higher incidence of asthma until the age of 20 years with higher exposure to all pollutants at the birth address (adjusted odds ratio (95% CI) ranging from 1.09 (1.01–1.18) for PM₁₀ to 1.20 (1.10–1.32) for NO₂) per interquartile range increase) that were rather persistent with age. Similar associations were observed with more recent exposure defined as exposure at the current home address. In two-pollutant models with particulate matter, associations with NO₂ persisted.

Conclusions: Exposure to air pollution, especially from motorised traffic, early in life may have long-term consequences for asthma development, as it is associated with an increased risk of developing asthma through childhood and adolescence into early adulthood.