# EARLY LIFE EXPOSURE TO AIR POLLUTION AND RESPIRATORY SYMPTOMS IN CHILDREN: RESULTS FROM A BIRTH COHORT

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**Background and Aims:** Ambient air pollution has been consistently associated with exacerbation of respiratory symptoms in schoolchildren, but the role of early exposure to traffic-related air pollution in the first occurrence of respiratory symptoms and asthma is not yet clear. We assessed the association between exposure indexes of traffic-related air pollution during early life and respiratory outcomes in a birth cohort.
**Methods:** A cohort of 708 newborns, residents in a district of Rome (Italy), was enrolled in 2003-2004. Direct interviews to the mother were done at birth and at 6, 15 and 48 months of life. Exposure to NO2 was assessed for each follow-up periods, using the estimates derived from a Land Use Regression model (LUR). For each residential address, GIS variables of proximity to high traffic roads (more than 10,000 vehicles/day, HTR) and traffic density were derived. We used current values of NO2 and GIS indexes for each age as well as NO2 weighted lifetime average values to take into account early pre- and post-natal exposure. Associations with respiratory symptoms (at 6, 15 and 48 months) were assessed with logistic regression (odds ratios, OR) using a cross-sectional and a longitudinal approach (GEE model).
**Results:** There was no association between the exposure indices and the respiratory outcomes in the longitudinal model, except for wheezing and metres of HTR (150 meters buffer) (OR=1.62; 95%CI, 1.04-2.54). A stronger association was found at 4 year for wheezing and for lower respiratory infections with distance from HTR (OR=2.84; 95%CI, 1.30-6.19 and OR=3.69; 95%CI, 1.61-8.46, respectively), and for doctor-diagnosed asthma with weighted average NO2 (OR=3.07; 95%CI, 0.99-9.54) and metres of HTR in a buffer of 150 metres (OR=3.47; 95%CI, 1.06-11.35).
**Conclusions:** Consistently with results from literature, some associations between respiratory outcomes and GIS variables and NO2 values were found, especially at 4 years of age.