

# Prenatal exposure to traffic is associated with respiratory infection in young children

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Living near a major roadway during the prenatal period is associated with an increased risk of respiratory infection developing in children by the age of 3, according to a new study from researchers in Boston.

"The connection between in utero and early life [cigarette smoke](#) exposure and adverse infant respiratory outcomes is well-established, but the relation of prenatal ambient [air pollution](#) to risk of infant [respiratory infection](#) is less well-studied," said lead author Mary Rice, MD, a pulmonary and critical care fellow at Massachusetts General Hospital and Beth Israel Deaconess Medical Center. "Our study extends previous findings by showing that proximity to a major roadway during the [prenatal period](#) is associated with increased risk of subsequent respiratory infection in children."

The study results will be presented at the ATS 2013 International Conference in Philadelphia.

The study included 1,271 mother-child pairs enrolled during the first trimester of pregnancy between 1999 and 2002 in Project Viva in eastern Massachusetts. The distance from home addresses to the nearest Federal class 1/2A ("major") roadway was calculated using geographic information system software. Respiratory infections were defined as maternal report of any doctor-diagnosed pneumonia, bronchiolitis, croup or other respiratory infection from birth until age 3.

Statistical analyses of the relationship between exposure to a major roadway and respiratory infection were adjusted for gender, birth weight, maternal education, household income, neighborhood income and education, maternal [smoking during pregnancy](#), postnatal household smoking, breastfeeding, daycare attendance, presence of other young children in the household and season of birth.

Of the 1,271 mother-child pairs studied, 6.4% lived

less than 100 meters, 6.5% lived 100 to 200 meters, 33.7% lived 200 to less than 1000 meters and 53.4% lived 1,000 meters or more from a major roadway.

By the age of 3, 678 (53.3%) of the children had had at least one doctor-diagnosed respiratory infection. After adjustment for possible confounders and risk factors for respiratory infection, children whose mothers lived less than 100 meters from a major roadway during pregnancy were 1.74 times as likely as those living 100 meters or more from a major roadway to have had a respiratory infection. Those living 100 to 200 meters from a major roadway were 1.49 times as likely to have had a respiratory infection.

"In our study, living in close proximity to a major roadway during pregnancy was associated with an increased risk of respiratory infection in children, adding to the growing body of evidence linking exposure to traffic with adverse effects on health," said Dr. Rice. "Future research will need to clarify whether the apparent harmful postnatal effects of living close to a major road during pregnancy is due to air pollution from traffic or other exposures related to roads. We plan to further explore this connection using a measure of black carbon, a component of traffic-related air pollution. Using black carbon measures, we also plan to disentangle the associations of pre- vs postnatal air pollution exposures with respiratory infection in early life."

Provided by American Thoracic Society

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