THE IMPACT OF LOCAL AIR POLLUTION ON MEDICATION USE

Paul Fischer, *National Institute for Public Health and the Environment (RIVM), Centre for Environmental Health (MGO) , P.O. Box 1, 3720 BA Bilthoven, Netherlands, Email: paul.fischer@rivm.nl*
Oscar Breugelmans, *National Institute for Public Health and the Environment (RIVM), Centre for Environmental Health (MGO) , Bilthoven, Netherlands*
Carla van Wiechen, *National Institute for Public Health and the Environment (RIVM), Centre for Environmental Health (MGO) , Bilthoven, Netherlands*
Danny Houthuijs, *National Institute for Public Health and the Environment (RIVM), Centre for Environmental Health (MGO) , Bilthoven, Netherlands*
Marten Marra, *National Institute for Public Health and the Environment (RIVM), Centre for Environmental Health (MGO) , Bilthoven, Netherlands*
Wim Swart, *National Institute for Public Health and the Environment (RIVM), Centre for Environmental Health (MGO)Bilthoven, Netherlands*
Jan van de Kassteele, *National Institute for Public Health and the Environment (RIVM),* Expertise Centre for Methodology and Information Services (EMI)*Centre for Environmental Health (MGO) , Bilthoven, Netherlands*

Background and aims: Information on the influence of long term exposure to (traffic-related) air pollution on medication use is sparse. Detailed maps of air pollution levels of PM10 and NO_2, based on land use regression models became recently available for the whole of the Netherlands. We studied the relation between long term exposure to (traffic-related) air pollution and medication use, making use of routinely collected information at public pharmacies.

Methods: The Foundation for Pharmaceutical Statistics (SFK) routinely collects data about the use of pharmaceuticals in the Netherlands. Air pollution maps were linked to addresses and the average air pollution level was calculated for the 4-digit postal code area, which was the lowest possible aggregation level for which medication data was available. We obtained information on the total number of prescriptions within each postal code area for the prescription of antihypertensives and airway medication. The percentage of non-western immigrants and the average socio-economic status (SES) of the residents within each postal code area were used as potential confounders. Indirect standardization for gender and age was applied.A spatial regression model was used to assess a possible association between medicine use and air pollution exposure.

Results: The study area contains more than 1.5 million residential addresses, approximately one fifth of all addresses in the Netherlands. Both air pollution components were positively associated with prescriptions; with NO_2 levels statistically significant with prescription of antihypertensives (RR 1.04 per 10 $\mu g/m^3$; CI: 1.00 – 1.09) and airway medication (RR 1.05 per 10 $\mu g/m^3$; CI: 1.02 – 1.08).

Conclusion: The present study shows an association between increased (traffic related) air pollution levels and prescription of medication use for antihypertensives and airway diseases at a 4 postal code area level in an area in the Netherlands.