Abstract #: 2816
Association of Ambient Air Pollution with Emergency Department Visits for Epistaxis, Substance Use Disorders and Lower Respiratory Disease.

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INTRODUCTION: There is considerable evidence supporting a relationship between exposure to ambient air pollution (AAP) and cardiopulmonary morbidity and mortality, however, little is known about other potential health effects. Recently several novel health impacts have been linked to AAP exposure (e.g. abdominal pain, appendicitis, headache, suicide). Based on the literature three new diagnoses (Epistaxis, substance use disorder; SUD; and lower respiratory disease; LRD) were selected for additional analysis of an effect of AAP on emergency department (ED) visits for these diagnoses.

METHODS: The International Classification of Diseases, 9th Revision (ICD-9) coding was used to retrieve ED visits for epistaxis, SUD, and LRD in Edmonton over a ten year period (March 1992–April 2002). These data were linked to levels of ambient air pollution: carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), sulphur dioxide (SO2), respirable suspended particles (PM10), and fine particulate matter (PM2.5). A time stratified case-crossover technique was used. Conditional logistic regression was used to estimate odds ratios (OR) and their 95% confidence intervals (CI). Temperature and relative humidity were adjusted in the constructed models using natural splines with three degrees of freedom.

RESULTS: Results are reported for one interquartile range (IQR) increases in pollutant concentrations. Epistaxis: Positive statistically significant results were for O3 (IQR = 14 ppb), OR = 1.05 (95% CI 1.00–1.09), and for PM10 (IQR = 15 μg/m3) lagged by 3-days, OR = 1.02 (1.00–1.05). SUD: The strongest results were obtained in the cold period (October – March) for 1 day lagged CO (IQR = 0.4 ppm) OR = 1.03 (1.01, 1.05) and NO2 (IQR = 12.8 ppb) OR = 1.04 (1.01, 1.07); ORs were also significant for CO and NO2 with lags of 2–6 days and 2–7 days, respectively. LRD: Exposure to ozone, lag 0 and lag 3 8 days showed statistically significant associations (OR = 1.03 (1.01, 1.06)).

CONCLUSIONS: The results suggest the associations between AAP and increased ED visits for respiratory tract problems extend to both the lower respiratory tract (LRD) and the uppermost portion of the...
respiratory tract (the nose – epistaxis). The findings of positive, statistically significant associations between AAP and SUD are supported by previously established relationships between AAP and depression and depression symptoms.