

TIMING OF AND LOCATION AT STROKE ONSET: IMPLICATIONS FOR CHARACTERIZING SHORT TERM EFFECTS FROM AMBIENT AIR POLLUTION

Julie Johnson, *Health Canada, Ottawa, Ontario, Canada*

Paul J Villeneuve, *Health Canada, Ottawa, Ontario, Canada*

Brian Rowe, *University of Alberta, Edmonton, Alberta, Canada*

J Lowes, *University of Alberta, Edmonton, Alberta, Canada*

Dion Pasichnyk, *University of Alberta, Edmonton, Alberta, Canada*

S Kirkland, *University of Alberta, Edmonton, Alberta, Canada*

Background and aims: Time-series and case-crossover studies have found that short-term increases in ambient air pollution are associated with a higher risk of stroke. These studies have typically used the day of presentation to an emergency department to infer the time of stroke. The objective of this study is to improve our understanding of potential sources of bias that could arise from the use of hospital administrative data to estimate the risk of stroke from exposure to ambient air pollution.

Methods: We collected survey data from 336 stroke patients in Edmonton, Canada on the date, time, location and nature of activities at onset of stroke symptoms. The daily mean concentration of ambient NO₂ and PM_{2.5} on the self-reported day of stroke onset was estimated from continuous fixed site monitoring stations.

Results: Among the 241 patients who were able to recall when their stroke started, 72.6% experienced stroke onset the same day they presented to the emergency department; there was no systematic difference in assigned pollution levels for either NO₂ or PM_{2.5}. At the time of stroke onset, 90% were inside at the time of stroke onset. On the day of their stroke, most patients (84.5%) reported that for most of the day they were within a 15 minute drive from home.

Conclusions: Our analysis suggests that day of presentation obtained from hospital administrative records can reasonably capture onset of stroke, and that any associated errors are unlikely to be important source of bias when estimating air pollution risks.