EFFECTS OF AMBIENT AIR POLLUTION ON ASTHMA-RELATED EMERGENCY DEPARTMENT VISITS WITHIN THE LAS VEGAS METROPOLITAN AREA

Abstract

The objective of this research was to evaluate the risk for asthma-related Emergency Department visits and their association with ambient air pollution within the Las Vegas metropolitan area. This ecological population-based study analyzed daily asthma counts of Emergency Department visits from January 1st, 2009 to December 31st, 2014 (N= 109,550). All data were aggregated by date and ZIP Code. The association was analyzed using the distributed lag non-linear model in an attempt to identify elevated concentrations of specific air pollutants as triggers and their delayed effects (lag days). Relative Risk (RR) and 95% confidence intervals were produced, while adjusting for socioeconomic status. The exposure-outcome analysis found that when PM$_{10}$ reaches 265 $\mu$g/m$^3$, RR is greater than 1, between 0-2 days lag, dissipates, and peaks between 5-7 days lag. At initial exposure, PM$_{10}$ had a RR of 2.83 (95% CI = 1.11, 7.20). At 7 days lag, PM$_{10}$ reached a RR of 2.91 (95% CI= 1.21, 7.02), supporting that these associations present a significant non-linear lag effect. Understanding the adverse effects of air pollution at high concentrations as well as recognizing that a lag time exists, is the beginning of a call to action for healthcare providers to educate their patients as to proper exposure prevention strategies and the development of tailored asthma management plans.

Date: Friday, November 16, 2018
Time: 2:45 p.m.
Location: BHS 201

Faculty, students, and the general public are invited.

Committee In Charge:
Dr. Lung-Chang Chien, Advisory Committee Chair
Dr. Lung-Wen Antony Chen, Advisory Committee Member
Dr. Sheniz Moonie, Advisory Committee Member
Dr. Lori Candela, Graduate College Representative