From the AAN Annual Meeting and Conference

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1. Geospatial Linkage to Public Health Asthma Outcome

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Background: In 2003, Canada and the United States unveiled a joint strategy aimed at improving border air quality and addressing related health concerns. This proposed international, multi-disciplinary, and multi-institutional study builds upon geospatial models developed at the University of Windsor to identify and predict environmental influences on health outcomes in Detroit and Windsor.

Purpose: The overall aim of this research is to develop spatial-temporal models using geographic information systems (GIS) to identify and predict environmentally induced health conditions in adults and children (5 years and older) in and across Detroit and Windsor. This study specifically measures spatial variability of airborne contaminants including NO_2, sulfur dioxide (SO_2), particulate matter (PM), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs) and their impact on the public health outcomes of asthma.

Methodology: Our approach involved an international, multi-institutional, and multi-disciplinary team that is (1) collecting and modeling air quality data in Detroit, Michigan and Windsor, Ontario; (2) collecting and evaluating asthma health outcome information from Henry Ford Hospital, Windsor Health System, and Health Canada databases; (3) integrating the environmental and health outcome data into a GIS framework. The spatial relationships between environmental and health information will be analyzed to evaluate the study hypotheses.

Findings: Air quality in Detroit and Windsor was sampled in September 2008 and June 2009. Health data related to asthma morbidity is currently being collected from databases in Detroit and Windsor and will be presented.

Summary Concluding Statement: Our central hypothesis is that there are correlations among mappable environmental attributes and health indicators that can be used to understand and improve urban community health outcomes. Our findings will help in developing and applying spatial models of air quality that predict asthma morbidity in the Detroit and Windsor areas.

2. Sleep Disturbance among Low-Income Minority Teens

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Background: Sleep is particularly important for brain maturation and sleep deprivation in teens has a potent negative effect on behavior, emotion, and attention. Adolescents tend to experience more problems with sleep loss as a natural consequence of puberty, but teens from impoverished inner-city areas witness violence and experience stressors that are likely to affect sleep.

Purpose: To examine sleep disturbance, violence, mood, and attitudes in very low income youth in the Mobile Youth Survey (MYS).

Methodology: The MYS is a longitudinal household study of impoverished inner-city adolescents that has a strong repeat participation rate (70-80%). Data from the years 1998-2005 (N=20,716; age range = 9.75-19.25 years) were used to compare sequential surveys ie, 2-year increments). The measure of sleep disturbance captured aspects of both insomnia and nightmares and was elicited by a question about how sleep was affected "when bad things happen to a friend or a family member".

Findings: Growth curve analysis showed that reports of sleep disturbance decreased incrementally from age 10 to age 18, and that after age 10 boys had consistently lower levels of sleep disturbance than girls. Using a cross-lagged panel multivariate approach comparing reports by subject for sequential years and controlling for age and gender, sleep disturbance was associated with violent behavior (carrying, brandishing or using