



All abstracts from the 2009 AAN Annual Meeting and Conference can be viewed at [www.nursingoutlook.org](http://www.nursingoutlook.org).

## 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<sub>2</sub>, sulfur dioxide (SO<sub>2</sub>), 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

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a gun/knife), quick-temperedness, worry, and belief in the neighborhood Street Code in the subsequent year. Conversely, worry, traumatic stress, a quick temper, a positive attitude toward the neighborhood and identification with the Street Code were each associated with sleep disruption in a subsequent year.

**Summary Concluding Statement:** These results suggest a partial explanation for the negative effect of socioeconomic status on sleep among low-income adolescents. The data also suggest that developing approaches to sleep hygiene for teens may help reduce violence, aggression, and impulsivity among high-risk groups.

### 3. Adolescent Use of Performance Enhancing Substances

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**Background:** Consumer use of performance enhancing substances (PES) is a multi-billion dollar industry, fueling public health concerns regarding use in adolescents hoping to enhance athletic performance, body appearance, or fight obesity. PES may also be used for military, sexual, and intellectual performance enhancement. PES consumption can be viewed as a healthy fitness endeavor. Healthcare providers tend to be less familiar with PES than other forms of substance abuse. PES adverse effects can include violent behavior, suicide attempts, and premature deaths. Prevalence of use can be difficult to ascertain due to secrecy issues and misinterpretation of survey questions.

**Purpose:** A secondary analysis of 2007 *National Youth Risk Behavior Survey* (YRBS) data was conducted to better understand predictors of PES use. Bandura's *Social Cognitive Theory* (SCT) served as the organizing framework guiding the analysis. The study aim was to describe the combined influence of personal, environmental, and behavioral factors on PES use (eg., steroids; methamphetamines; diet pills, powders, liquids) in US adolescents ( $n = 14\,041$ ).

**Methodology:** *SPSS version 17.0 Complex Samples* module was used to examine descriptive statistics and relationships using bi-variate and logistic regression analyses of YRBS variables.

**Findings:** Adolescents reporting: feeling sad/hopeless, considering suicide, perceiving being overweight, being offered illegal drugs at school, being sexually active, cigarette smoking, and alcohol use was significantly associated ( $p < .05$ ) with PES use for gender groups and specific geographic regions. The highest rates of PES use were reported in the South USA. For personal, environmental, and behavioral factors combined, having considered suicide emerged as the factor most associated with PES use.

**Summary Concluding Statement:** Behaviors contributing to leading causes of adolescent morbidity and mortality are interrelated, continue into adulthood, and may be preventable. Health and school professionals must be familiar with adolescent PES use in order to adequately assess and address related physical, psychological, and social issues.

### 4. Enhancing Diversity of Nursing Faculty Using Distance Technology

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**Background:** Recruitment of faculty to colleges of nursing who represent ethnic, racial, and geographic diversity is critical to preparation of a culturally competent nursing workforce and development of nurse scientists to address issues of health disparities. The lack of doctorally-prepared faculty from minority backgrounds and rural locations prevents realization of this goal. Barriers to pursuit of PhD education are prevalent in minority and rural nurses: family obligations that preclude long commutes or relocation, requirements for full time study, need to maintain employment during doctoral study, lack of geographic access to programs with the desired research focus, and reticence to commit to loan programs to finance doctoral study in light of the faculty salary levels that commonly are less than clinical salaries.

**Purpose:** To increase access of culturally and geographically diverse students to doctoral education the University of Utah has implemented a distance doctoral program format to allow students to "educate in place".

**Methodology:** Every course is taught through live, interactive Internet-based videoconferencing to each student's individual site. The part-time program requires nine semesters plus dissertation with 2 to 3 courses per semester. Start-up cost to student for technology is about \$300 plus the cost of an up-to-date computer and high speed internet. The greatest cost of the program is the use of bridge technology, which costs about \$300 000 to support the videoconferencing

**Findings:** Forty-seven students from 22 states have been admitted to the distance PhD program in oncology, gerontology, and non-specialty cohorts. Racial and ethnic diversity of the cohorts ranges from 15-45%. Average time to graduation was 3.7 years compared to 5.8 years for traditional students. Students have secured an unprecedented number of fellowships, awards, and research grants. Student and faculty satisfaction is also higher.

**Summary Concluding Statement:** Technology-based education supports development of competent nurse scientists and culturally competent educators.