

Maternal-infant Child Health and Environment Research Symposium:
“How Local Research can Influence Policy and Practice”

Thursday, February 26th, 2009, 08:00-17:00 hrs
Maple Leaf Room, Lister Conference Centre, University of Alberta

Presenter: *Alvaro R. Osornio-Vargas, MD, PhD*

Presentation Summary: *Children's Cancer and Carcinogens in Alberta: Mapping Pilot Study*

Early beginnings of epidemiology included the use of maps linking cholera cases to a contaminated water pump that resulted in the contention of the outbreak after the contaminated pump was closed by local authorities. This is an example of how research can benefit from mapping in understanding the environmental contribution to disease. Although mapping continues to be an effective way to deliver information on the spatial distribution of pollutants and disease in a particular a region, little has been done to link, co-locate and map concurrent variables from the biological, social, chemical and physical environment.

We mapped carcinogens (IARC group 1) released into the air, occurrence of cancer in children (all types) and childhood (age 0 to 19) distribution in Alberta, to test whether existing publicly funded databases could be used for GIS mapping research. Data from the National Pollution Release Inventory, Alberta Cancer Board and Statistics Canada was obtained for years 1994 to 2005. Identification of a geographical unit that would serve the purpose of displaying information with enough resolution without giving away individuals privacy was a major challenge. Forward sortation areas (FSAs) became the working unit in our project.

Results indicate that the distribution of children, carcinogens released and cancer cases is not homogeneous throughout Alberta. The overall release of IARC group 1 carcinogens in the province in general has been decreasing with startling increases in the release of As, Cd and CR from 2001 onwards. However, cancer occurrence has been stable after adjusting for child population growth. Co-location of high releases; high cancer occurrence; high child population, and high observed vs. expected cancer occurrences were observed in only 10 of the 150 Alberta FSAs. A closer look shows that the distribution of the variables within the selected FSAs is heterogeneous, calling for higher resolution before conclusive evidence can be drawn.

Our data indicates that existing databases can be used to construct maps, overlaying information on environmental factors and disease. This mapping tool identifies potential areas of concern for further research and possibly surveillance. The potential of this project by incorporating other variables, modeling and more sophisticated GIS analyses requires expanding collaboration into other disciplines, e.g. computing sciences, earth and atmospheric sciences, health informatics, social sciences, biostatistics, etc.

A major challenge in this research incorporates the ethics concerning individual privacy vs. a community right to know.