

# Environmental Heat Monitoring and Heat Illness Surveillance

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## OBJECTIVE

To describe the integration of an environmental heat monitoring network and an electronic public health monitoring system for prospective real-time heat-related illness surveillance in South-Eastern Ontario.

## BACKGROUND

The health effects of climate change are expected to seriously challenge public health systems globally in the coming century. In 2003, approximately 35,000 excess deaths in Europe were attributed to summer heat events. One recent model estimates that heat-related mortality in south-central Canada could conservatively more than double by the 2050s and triple by the 2080s. [1] Learning from the European example, further study of heat-health relationships in Canada is necessary to develop public health strategies and appropriate interventions to protect at-risk populations. [2]

## METHODS

Beginning in August 2009, 15 environmental heat monitoring systems (EHMS) were deployed in urban and rural areas throughout South-Eastern Ontario. The EHMS' collect the four most important environmental parameters for the physiological response of humans to increased heat conditions and subsequent heat stress. These are: temperature, humidity, radiant load from the sun and air movement. These four parameters are then combined within the EMHS' to give a real-time composite value known as the Outdoor Wet-Bulb Globe Temperature (WBGT<sub>o</sub>). Sites were chosen to more closely approximate the environmental conditions experienced by the diversity of populations and at-risk groups living in the area.

Heat-related illness and mortality in this region are monitored a RODS-based acute care-enhanced syndromic surveillance system monitoring emergency department (ED) visits and hospital admissions at 12 area hospitals, a hospital employee absenteeism monitoring system linking occupational health and human resources data, and a regional mortality surveillance system using municipal death data [3].

Environmental data is aggregated in real-time over a secure, distributed, web-based network and mapped temporally and spatially, enabling continuous monitoring of heat levels as an independent layer in RODS.

## RESULTS

By December 2009, several months of environmental data and corresponding heat mapping will have been collected, linked with heat-related ED visits, hospital admissions, and all-cause mortality in this region.

## CONCLUSIONS

Over time, data fusion from the integration of real-time systems monitoring ED visits, hospital admissions, mortality, and environmental heat conditions will establish baseline heat-health relationships for this region and enable prospective real-time surveillance for heat events and heat-related illness. This data will allow us to validate, monitor, respond to and recover from heat events in the community.

## PROJECT PARTNERS

Kingston, Frontenac and Lennox & Addington Public Health; Prince Edward Hastings Public Health; Lanark, Leeds & Grenville Public Health; Health Canada.

## REFERENCES

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