Title: A Surveillance System to Detect Heat-Related Illness in a Canadian Urban Centre

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Background:
The adverse effect of heat on health in urban communities is of major concern. There is a need to develop a surveillance system that will indicate the incidence and distribution of heat-related illness in Canadian cities so that public health policies and interventions may be appropriately developed and targeted. Our research group pilot tested such a system using 911 medical dispatch data during the summer of 2007 in Toronto, Ontario.

Methods:
Daily call information for all heat-related and aggregate counts of all emergency calls were sent to the researchers from Toronto Emergency Medical Services. The proportion of heat-related calls to all emergency calls was calculated per day and processed through an aberration detection algorithm, EARS. Public health colleagues were informed of aberrations and comparisons made with alerts generated by Toronto's current synoptic warning system. The temporal pattern of 911 calls was compared with daily temperature measures. Spatial methods were applied to create maps of locations of calls.

Results:
The temporal pattern of 911 heat-related calls was similar to temperature. There were some peaks in 911 calls that were not associated with a heat alert declared by the Toronto synoptic system. While there was not sufficient data from one study summer to examine the geospatial pattern of calls, this was possible using retrospective data from previous summers illustrating clear geospatial heterogeneity between neighbourhoods.

Conclusions:
911 calls are a useful additional data source that should be considered to support decisions around declaring heat alerts and provide new geospatial information to assist with intervention targeting for heat-related illness.