A RAPID, DATA-DRIVEN APPROACH TO SETTING TEMPERATURE THRESHOLDS FOR HEAT HEALTH EMERGENCIES

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Background and Aims: During the summer of 2009 a hot weather event in Vancouver, Canada resulted in considerable excess mortality (Kosatsky et al. *Submitted.*). As a direct result local authorities decided to develop a Heat Health Emergency (HHE) action plan. In late spring 2010 the BCCDC was asked to provide a rapid, evidence-based recommendation for the temperature at which an HHE should be called.

Methods: Data on all-cause mortality for the summers of 2004-2009 were obtained from the BC Vital Statistics Agency. Measured and forecasted temperatures at the Vancouver (coastal) and Abbotsford (inland) airports were obtained from Environment Canada for the same period. Candidate thresholds were identified and tested by combining forecasted and measured temperatures in four early warning scenarios with different lead times, which has been identified as a priority for such work (Hajat et al. 2010). Early warning estimates were compared with measured temperatures using their sensitivity and positive predictive values (PPV).

Results: In Vancouver the relationship between early warning estimates and measured temperatures deviated considerably from the 1:1 line, which resulted in multiple false positive HHE identifications for a 2-day average of maximum temperatures • 30ºC. All three true positive events were succesfully identified at the 18- and 6-hour lead times (sensitivity = 1, PPV = 0.43). In Abbotsford the relationship was more linear for a 2-day average of maximum temperatures • 36ºC, but the three true positives were not all identified until the 6-hour lead time (sensitivity = 1, PPV = 0.6).

Conclusions: The BCCDC recommended that the HHE early warning system be based on data from Abbotsford, where the relationship between predicted and measured temperatures was most stable. We also suggested that a long-term educational campaign should be concurrently developed, especially if the HHE system is based on 2-day averages (i.e. one hot day must pass to trigger it).

References:

Hajat S, Sheridan SC, Allen MJ, Pascal M, Laaidi K, Yagouti A, Bickis U, Tobias A, Bourque D, Armstrong BG and Kosatsky T. Heat--health warning systems: a comparison of the predictive capacity of different approaches to identifying dangerously hot days. *American Journal of Public Health* 2010; 100(6):1137-1144.

Kosatsky T, Henderson SB and Pollock SL. Shifts in mortality during a hot weather event in Vancouver, Canada: rapid assessment with case-only analysis. *Submitted.*