Hot day deaths, summer 2009: What happened and how to prevent a recurrence

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Summertime heat is generally thought not to be an important contributor to population mortality in British Columbia. Although summer temperatures of over 33 °C are not uncommon in BC's lower Fraser Valley and while daily temperatures can reach 36 °C in the Okanagan Valley and in southern mountain communities such as Lillooet and Merritt, few BC homes have air conditioners, and few if any BC municipalities have emergency response plans for heat waves. A review of vital statistics over the past 10 years has shown that less than one death per year has been attributed to hyperthermia or heat stroke, or otherwise directly to environmental heat injury (Dr R. Fisk, BC Ministry of Healthy Living and Sport).

That hot weather may under some circumstances have significant impacts on mortality in BC was suggested by preliminary analysis of daily deaths recorded during the extreme heat of late July–early August 2009 (Figure). During an 8-day period from July 27–August 3, temperatures as high as 34.4 °C were measured at Vancouver International Airport; during the same period, the Fraser and Vancouver Coastal health authorities registered 455 deaths (from all causes and all ages) as compared to an average of 321 during the equivalent calendar period for the years 2004–2008. Lower impacts were noted on reviewing mortality records for Vancouver Island and parts of interior BC. While most of the excess numbers of deaths were in persons of 65 years and more, the greatest proportional increase was in the 45–64 age group. A second extreme temperature event, in late August 2009, was also accompanied by a spike in recorded numbers of daily deaths.

While the tragedy of children left in cars, athletes overexerting in the heat, and workers denied shelter and fluid replacement are widely reported, most heat-related deaths are insidious and are often unrecognized. Medical, personal, social, and environmental factors have been associated with high vulnerability to the effects of heat. Among medical factors are cardiovascular impairment (heart failure deaths are a large proportion of the hot day excess) and pre-existing chronic respiratory, renal, neurologic, and psychiatric disease. Therapeutic fluid restriction needs careful management when patients become overheated, and diuretics and major tranquilizers (which diminish sweating) put patients at high risk. Older age, inactivity, and obesity have been shown to increase risk of hot day mortality. Living in an urban area with few trees, living on the upper floor of a building without air conditioning, and lack of regular social contact are also risk factors. Protection comes from a personal heat plan, including having contact with a friend, neighbor or relative, having easy access to water, and a cool space for respite from the heat. Keeping cool and hydrated are key hot day strategies; physicians can help by

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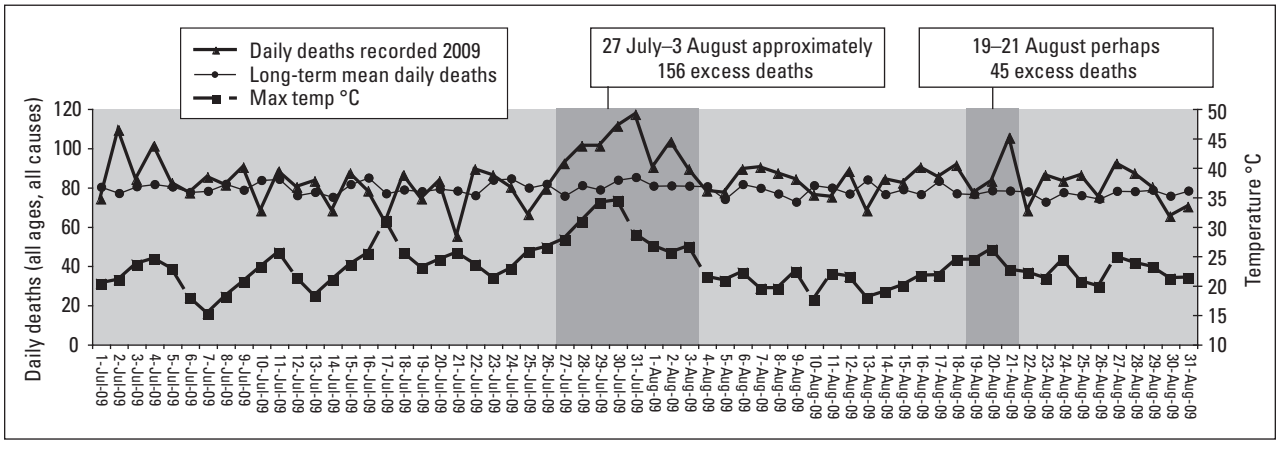

Figure. Temperature at Vancouver International Airport and deaths by day, British Columbia, July and August 2009.

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Integrating public health and Aboriginal health around divisions

Division leads are invited to contact the Divisions of Family Practice office to discuss their ideas and proposals, as well as to arrange meetings to develop each prototype. There will be no formal call for proposals.

Ultimately, by 2012, the goal for both initiatives is that 90% of BC residents who want a family physician can and will be attached to a family physician.

Updates on attachment and integration are available from the GPSC at www.gpscbc.ca, Divisions of Family Practice at www.divisionsbc.ca, or by e-mail at divisions@bcma.bc.ca.

—Brian Evoy, Executive Lead, Divisions of Family Practice

Reference

1. Hollander MJ for the British Columbia Ministry of Health Services and the General Practice Services Committee. Evaluation of the Full Service Family Practice Incentive Program and the Practice Support Program. Final Synthesis Report. June 2009:ii.

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informing their patients that cooling and hydration prevent harm from heat; waiting till one feels hot or thirsty is waiting dangerously too long.

Identifying persons at high risk, encouraging planning for hot days, assuring the means for cooling and hydration, and having a buddy who keeps watch can be hot day lifesavers. These factors, combined with building greener cities and cooler homes, offer protection in an ever warmer world. And we must all do our part in reducing the buildup of greenhouse gasses.

BCCDC's National Collaborating Centre for Environmental Health has information on personal heat protection geared to both clinicians and public health physicians (www.ncceh.ca). Two informative articles are:

Basu R, Samet JM. Relation between elevated ambient temperature and mortality: A review of the epidemiologic evidence. Epidemiol Rev 2002;24:190-202.

Hajat S, O'Connor M, Kosatsky T. Health effects of hot weather: From awareness of risk factors to effective health protection. Lancet 2010 Mar 6;375:856-863.

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