



We need better preparedness and emergency responses to heat waves

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As the world faces climate change, new challenges arise for Emergency Care. One of the biggest climate-related concerns is heat waves, which are periods of extremely hot weather that can last for several days or even weeks. Heat waves provoke more than just discomfort—they can be dangerous, leading to a health challenge known as heat-related illness, and this can be a population-level health problem [1]. A recent study by Gossack-Keenan et al. investigated the characteristics of patients with heat stroke in British Columbia during the heat waves in 2021 [2].

This study evaluated 10,247 adult patients who presented to 7 hospitals in British Columbia and found 139 patients diagnosed with heatstroke during the heat wave between June 25 and 29th, 2021. The included patients were predominantly older (median age 84.4 years), living alone

(87.8%), and unable to activate the emergency medical system by themselves. Most of the patients had high acuity (90.6% were triaged as “resuscitation” or “emergent”) and needed hospital admission (77%). The in-hospital mortality was quite high (11.5%). The authors warned that emergency medical systems and hospitals must prepare for an increase of heat stroke patients during heat waves.

Heat-related illnesses, resulting from heat waves, are a critical public health issue not just in North America, but globally. Previous report shows that the mean global temperature increase triples between 2022 and the 1986–2005 baseline (a 0.9 °C population-weighted summer temperature change compared with a 0.3 °C global mean summer temperature change), and an average of 86 days of health-threatening high temperatures per year occurred in 2018–22 [1]. The United Nations Office for Disaster Risk Reduction reported that between 1998 and 2017, the number of people affected by extremely high temperatures increased to 97 million, and more than 166,000 people died due to heat waves [3]. While the study by Gossack-Keenan et al. highlights the severe impact of heat waves in British Columbia, particularly on vulnerable older populations, a trend has been similarly observed in other countries with aging populations. In EU and Japan, the majority of heat-related fatalities have occurred among the elderly [4, 5]. Annual heat-related mortality of people older than 65 years is predicted to increase by 370% above 1995–2014 levels by 2041–60 under a scenario with limiting global temperature rise to 2 °C [1].

The susceptibility to heat-related illnesses arises from a combination of individual vulnerabilities and sociocultural factors that impede adaptation to hot and humid conditions. Particularly for the elderly with neurodegenerative diseases such as dementia or who suffer from social isolation, their behavioral capacity to adjust to such environments is often diminished [6]. Moreover, they often have underlying medical conditions that may compromise their physiological resilience owing to their diminished thermoregulatory capacity [6]. As suggested by the study from Gossack-Keenan et al., when heat waves occur, it is critical to be prepared for the

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eventuality that a large number of vulnerable individuals will suffer from heat stroke and require emergency department services. Concurrently, prevention is important, including timely collection and dissemination of environmental data, along with public education and awareness campaigns targeting older and socially vulnerable individuals.

Globally, clinical data are still limited, and we need to accelerate these kinds of epidemiological studies to elucidate the risk factors, occurrence patterns, and clinical characteristics of heat-related illnesses, especially in vulnerable countries. This will inform preventative strategies against heatstroke and guide the development of optimal preparedness and treatment protocols.

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