MONASH University

Medicine, Nursing and Health Sciences

The Effects of High Ambient Temperature on Daily Emergency Department Presentations

Ms Fern McAllan[1], Dr Diana Egerton-Warburton[2,3]

1 Monash University, Melbourne, Victoria, Australia
2 Southern Health, Melbourne, Victoria, Australia
3 Southern Clinical School, Melbourne, Victoria, Australia

MONASH University and Southern Health emergency research group

Background

- Global average temperatures are predicted to rise significantly this century.[1]

- Increased morbidity in response to elevated ambient temperature will be of increasing importance.

Objectives

- To systematically describe the **effects of high ambient temperature** on **daily emergency department presentations**.

Methods

- **Medline (Ovid) and Web of Knowledge databases** were searched and the references of included papers were scanned for relevant citations. Experts in the field were consulted and one in-press paper was sourced. **Free text and Medical Subject Headings (MeSH) terms were used**.

- A total of 439 unique papers were identified post-1980. Analysis of title, abstract and full-text identified **41 papers which met the inclusion criteria**. Abstract-only was available for five studies. A further four papers were identified from citations.

Results

- **Total emergency department (ED) presentations have been shown to increase** in response to high ambient temperature
  - Australia:[2] 4.4% in total ED presentations (IRR 1.044, 95% CI 1.033 – 1.054) per 10°C increase in maximum temperature in Perth
  - Europe:[3] 2600 excess ED visits in Paris during the 2004 European heatwave
  - Asia:[4] increase in all cause ED visits associated with the first extreme heat event of 99th percentile temperature (RR 1.08, 95% CI 1.01-1.15)

- Presentations to the **ED for a broad range of conditions** have been shown to increase. In addition to the classically heat related illnesses,[5] these include cardiovascular,[6] renal[7] and psychiatric ED presentations.[8]

- The **clinical significance** of the magnitude of the effect is rarely discussed.

Conclusions

- With predicted increases in global average temperatures, the effect of high ambient temperature can only be expected to increase in future. **High ambient temperature should be studied as a broader entity than solely heatwaves**, which represent only the most extreme high ambient temperatures.

- Further work on a **location specific basis** allows the relationship between ED presentations and high ambient temperature to be quantified to assist with heat health planning. The **clinical significance of any increase in presentations should be considered**.

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