Effect of ambient temperature and humidity on hospital admissions for cardiovascular disease among Indigenous and non-Indigenous populations in the Northern Territory

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Health/climate change

• Human physiology is directly affected by variability in temperature and humidity
• Both heatwaves and cold periods affect human health
• The prevalence of long-term adverse health conditions is much higher among Indigenous than non-Indigenous people in Australia
• It is anticipated that climate change will exacerbate current health disparities

• Is the health of Indigenous Australians more sensitive to extreme ambient temperature and humidity conditions than the non-Indigenous population?
• Are Indigenous Australians more sensitive to projected changes in climate?
Diseases selected to study

• Cardiovascular disease is the largest contributor to the disparity in health outcomes

• Ischaemic heart disease (IHD) is a disease characterized by reduced blood supply of the heart muscle (ICD: I20-I25, 410 – 414)

• Heart failure is diagnosed when the heart is unable to provide sufficient pump action to maintain blood flow to meet the needs of the body (ICD: I50, 428)
Study region
Range of Tmax (°C) from the northern-most region (left), to the southern-most (right).
NT Population
(ave 1992-2011: 176,000)

Showing percentage of population that is Indigenous (in each age group)
Admission rates
(per 100,000 population)

25 to 64 years

Ischaemic heart disease

Older group: Higher rates male (?) and IHD cf. HF

Heart failure

Younger group: Higher rates for males, Indigenous and IHD cf. HF

65 plus years

Ischaemic heart disease

Highest rate of all: Older non-Indigenous males

Heart failure
A 17% higher rate of Indigenous admissions was found for IHD in the younger age cohort on very hot days; 32% higher rate for younger indigenous females.
<table>
<thead>
<tr>
<th>HF</th>
<th>Hottest 95&lt;sup&gt;th&lt;/sup&gt; percentile</th>
<th>Coldest 5&lt;sup&gt;th&lt;/sup&gt; percentile</th>
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Higher rates of admissions (up to 64% higher rates: n-Ind., HF, male) for the Indigenous and non-Indigenous older population on very cold days.
Conclusions

• Higher rates of admissions for heart failure and IHD were associated with cold weather with elderly people in the NT.
• Higher rates of admissions for IHD amongst were associated with hot weather in the younger Indigenous population in the NT.
• In the absence of adaptation activities, climate change is thus likely to have greater adverse health effects – at least for cardiovascular related events – in the Indigenous compared to non-Indigenous population.
Acknowledgements

• We appreciate comments from the expert working group, particularly:
  – R. Bailie, Menzies School of Health Research, on methods and analysis; and
  – Assistance from J. Bhend, CSIRO with data mining.
  – X. Schobben, Director of Environmental Health Branch of the Department of Health, Northern Territory.

• This study was funded by the NHMRC, project 1011599.