Housing, Heat & Health in a Changing Climate: Improving the Adaptive Capacity of Households Vulnerable to Heat Stress

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The issue: A changing climate

• **Climate change** (CC) = the most widely recognised global environmental change (McMichael 2001)

• Frumkin & McMichael (2008) suggest the question regarding whether it will impact on public health is settled:
  – “Yes”
  – Some benefits expected, but **most impacts negative**

• Past research demonstrates clear link between **housing & health**, however fresh examination called for in light of impacts of CC
Heat waves

• CC impacts include an increase in frequency/intensity of heatwaves, heat-related morbidity & mortality (McMichael & Githeko 2001)

• Extreme heat events responsible for deaths more than floods, cyclones & bushfires (Klinenberg 2002; McMichael et al. 2008a)
  – Mortality due to heart attack, stroke, respiratory failure & heat stroke (Garnaut 2008; McMichael 2009)
  – Morbidity effects include impairment of physiological functioning, mood & behaviour (i.e. accident-proneness) (Kjellstrom 2009 in McMichael 2009a)
Action required

• Due to ageing populations, hotter summers, peak electricity demand, increasing housing density & air-conditioner use:
  – adaptation to extreme heat warrants urgent research & policy attention

• But programs, policies & research to increase adaptation to heat are in their infancy
This paper:

- Presents a case for research exploring influence of social & contextual factors, in particular housing, on vulnerable populations’ capacity to adapt to extreme heat

- Although Australian in focus, it aims to outline a way forward that builds on existing research through increasing understanding of how social & contextual variables moderate vulnerability
Air-conditioning: Short-sighted

- Response to heatwaves: install air-conditioners (AC) in vulnerable households
  - currently recommended by the Australian Medical Association

- However, AC is neither technically feasible nor environmentally (and economically) sustainable option

- Although AC has a role to play in preventing heat stress, it should not be relied upon as the dominant or only solution
Air-conditioning (AC): Short-sighted solution

• AC use increasing

• Changes to house design a contributing factor
  – AC offered as standard in new homes
  – Declining block size, increasing floor area of homes
  – Increasing # of apartments

• Results in higher expectations for constant homogeneity of temperature (DeDear & Brager 2002)
Vulnerability & adaptation to heat

• Globally, vulnerability to heat stress is currently assessed by epidemiological analysis of past mortality data (Brown & Walker 2008)

• Older people majority of victims (Brown & Walker 2008)

• Other vulnerable groups include: low-income households (Harlan et al. 2006; Rey et al. 2009), children, the homeless & those will mental ill-health (Bouchama et al. 2007)

• Vulnerability not due to physiology alone
  – social & contextual factors need to be accounted for (e.g. mobility, house type & quality, isolation)
Vulnerability & adaptation to heat

- Current vulnerability assessment obscures subtleties & complexities of vulnerable populations
- Key social & contextual variables such as household type, housing, underemphasised
- Little research explored how housing & other social determinants of health moderate vulnerability
- Need to deepen our understanding of how vulnerability is created & offset in everyday settings
  - requires research/methods that complement broad scale demographic approaches
A call to action: housing, heat & health

• CC will test limits of existing housing, low-income households in particular, through
  – Direct impacts e.g. higher temperatures
  – Indirect impacts e.g. higher cost for energy & water

• Direct & indirect effects will interact & compound overall impact

• Aim to discover ‘ordinary’ heat adaptive strategies
  – In particular those that provide alternatives to reactive ‘one-size-fits-all’ solutions (i.e. AC)
Disciplines, methodologies

• Draw on public health, sociology & housing research
  – Housing & health multidimensional concepts (Lawrence 2004)

• Current approaches too focused on emergency management
  – No on-ground data relating to settings of everyday life

• A new methodology is required: social practices
  – A practice = routinised behaviour involving connected elements of bodily & mental activities, objects/materials & competencies, interconnected with other practices & occurring within wider political, economic, legal & cultural systems of provision (Reckwitz, 2002; Røpke 2009)
Disciplines, methodologies

• Practice research features social & contextual factors such as: housing design, neighbourhood plans, provision of energy & water

• It would investigate in households’ daily thermal comfort practices, such as adjusting windows, blinds & shading or changing clothing & bedding arrangements

• Could identify key factors to moderate vulnerability that
  – facilitate greater understanding of mortality & morbidity patterns
  – contribute to the design of programs aiming to increase adaptive capacity of households to extremes of heat, & rising temperatures more generally
Conclusions

• Practice-based methodology to understand adaptation to extreme heat will account for components of complex systems implicated in the creation & maintenance of vulnerability to heat stress

• Outcomes for policy makers, & the health, housing & environment sectors numerous, including:
  – Increased understanding of the adaptive capacity of vulnerable population groups & where housing & other policies & programs can be most effective
  – Identification of adaptive opportunities with broad relevance to a the community, &
  – Potential identification of alternatives to current strategies
Notes

• We have submitted an application to a competitive grant scheme set up by the Australian Government to conduct social practice research on adaptation to heat with vulnerable households (outcome approx. October 2010)

• References available on request or see workshop paper

• This paper is currently in review in Health Promotion International