

# THE EFFECTS OF HEAT WAVES ON MORTALITY AND HOSPITALISATION IN SYDNEY, AUSTRALIA 1994-2009.

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**Background and aims:** Global warming is likely to bring not only warmer temperatures on average, but greater frequency of extreme weather events, including hot days. Understanding who is susceptible to these extreme events will be important in minimising their public health impact, including establishing targeted health programs to better protect the vulnerable. We examined the association of heat waves in Sydney with daily mortality (1997-2007) and hospital admissions (1997-2010).

**Methods:** We categorized the Sydney Greater Metropolitan Region into five sub regional climate zones. We defined sub-regional heat waves as days where the daily apparent maximum temperature exceeded the monthly 95<sup>th</sup> percentile for the study period. We used a time-stratified case-crossover design with a conditional logistic regression model adjusted for flu epidemics, public holidays, and region. Odds ratios (OR) and 95% confidence intervals for cardiovascular and respiratory mortality and hospital admissions on heat wave compared with non heat wave days were estimated.

**Results:** Heat waves (lag 0) were associated with all cause mortality (OR=1.07; 95%CI: 1.05-1.10), all cardiovascular mortality (OR=1.07; 95%CI: 1.03-1.12), all respiratory mortality (OR=1.13; 95%CI: 1.03-1.23). As expected heat waves (lag0) were associated with hospital admissions for heat related injuries, dehydration, and fluid disorders. Heat waves (lag1) were also associated with hospital admissions for renal disease (OR=1.09; 95%CI: 1.05-1.12), mental and behavioural disorders (OR=1.03; 95%CI: 1.01-1.05), and diabetes (OR=1.06; 95%CI: 1.01-1.12).

**Conclusions:** Heat waves are associated with increases in mortality and hospital admissions.