

Heat Effects Program

Office of Environmental Health

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Leadership for a Healthy Arizona



Background

- Heat Related Deaths (HRD's) an issue in Arizona
 - 3-7 X's greater than in the US overall (1993 to 2002)
 - Over the 20th century, average annual temperatures in Metro-Phoenix increased 3.1°F
 - Annual HRD's in Maricopa County have increased from 2001 to 2008; peak years being in 2005 and 2006 (80 and 85 deaths respectively)
 - (Maricopa County's 2008 Annual Report)
- Local Issues
 - Dry Climates may exacerbate problem: People don't feel uncomfortable until problems such as dehydration are already started
 - (Zack Guido of the University of Arizona)
 - Urban heat island effects & limited vegetation
 - amplify the impact of the heat

Heat Wave

- Summer 2005
 - 182% increase in HRD's during summer in comparison to 2000–2004 in Maricopa County, Arizona
- July 2005
 - 14 day heat wave
 - Caused 28 deaths in Maricopa County alone
 - An excess heat-related mortality of 102% in comparison with the corresponding periods from 2000 to 2004 (Yip et al. 2008)

Heat Emergency Response Plan

- In response to 2005 heat wave
- To improve ADHS' response to excessive heat emergencies
- Assistance from CDC to identify local at-risk population, and characterize HRD' s during the heat wave
 - Findings reported in Int J Biometeorol (2008) 52:765–772

The impact of excess heat events in Maricopa County, Arizona: 2000–2005

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ORIGINAL PAPER

The impact of excess heat events in Maricopa County, Arizona: 2000–2005

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Abstract Exposure to excess heat is preventable yet it is the primary weather-related cause of mortality in the United States. In the Southwest United States, high temperatures are common and indoor environments often have cooling devices. In summer 2005, Maricopa County, Arizona experienced a 182% increase in reported heat-related deaths in comparison to 2000–2004. We examined at-risk populations and excess mortality. We characterized heat-related deaths using descriptive and multivariate time-series analyses of county vital record data from June–September 2000–2005. Dose-response relationships for heat-related mortality and heat index were evaluated using linear and quadratic splines. From June–September, 2000–2005, 136 heat-related deaths (0.68 per 100,000) were reported; 49 (36%) occurred in 2005.

In July 2005, a 14-day heat wave resulted in 28 (57%) reported deaths—a 102% increase in comparison to the same time period in 2000–2004. Decedent demographics in 2005 did not differ from previous years. The mean age of all 136 deaths was 56 years (range: 7–92 years). Of those with discernable reported injury locations, 62 (66%) were identified outdoors. Forty-eight (77%) decedents identified outdoors were <65 years; conversely, 26 (82%) decedents who were found indoors were ≥65 years. A 6% (95% CI: 1.00–1.13) increase in mortality risk was observed for each degree (F) increase in heat index. Excess heat impacted a younger population in Maricopa County and many deaths occurred outdoors. Consecutive days of heat exposure—even among a heat-acclimated population—can increase mortality risk.

The impact of excess heat events in Maricopa County, Arizona: 2000–2005

- The mean age of all 136 deaths was 56 years (7–92 years)
- Place at time of death
 - 62 (66%) were found outdoors
 - 48 (77%) decedents found outdoors were <65 years
 - 26 (82%) decedents found indoors were ≥65 years
- A 6% (95% CI: 1.00– 1.13) increase in mortality risk was observed for each degree (F) increase in heat index.
- Conclusions
 - Excess heat impacted a younger population in Maricopa County
 - Many deaths occurred outdoors
 - Consecutive days of heat exposure—even among a heat-acclimated population—can increase mortality risk

Program Goals

- Identify risk factors and adaptation strategies to improve healthy environments
- Enhance current surveillance systems
- Promote awareness of climate implications on public health

Goals, Objectives, and Activities for Year 1

- Goal 1: Understand stakeholders' baseline knowledge and perceived needs
- Goal 2: Enhancing surveillance
- Goal 3: Promoting Awareness

Goal 1: Understand informants' baseline knowledge and perceived needs

- Planning group
 - People who work with school aged children
 - Teachers
 - Parents
 - Pediatricians
 - Coaches
- Conduct in-house needs assessment to plan topics for program implementation
- Program Evaluation: conduct pre and post tests to school-aged children

Goal 2: Enhancing surveillance

- Review current databases
- Link vital statistics & weather databases
- Analyze data connections & explanations
- Draw conclusions for characterization of heat related illness/death trend & make recommendations
- Develop program plans

Risk Factors

- Identify risk factors and heat adaptation strategies to improve environments for Arizona residents
 - Literature Review and Needs Assessments
 - Enhanced Surveillance
 - Stakeholder input

Goal 3: Promoting Awareness

- Implement community outreach programs
 - Start in schools
- Create and distribute Training Video Series
 - Focused on school aged children
- Health Alert System
- Newsletter
 - Bi-monthly
- Construct a user-friendly extreme heat preparedness website
- Implement training workshops
- Publicize findings, compile reports, and send updates to CDC, ADHS and policy makers

Checklist to Date

- Hire Environmental Health Epidemiologist
- Create website
- Invite potential stakeholders to participate and provide input
- Begin 1st newsletter
- Obtain mailing list for teachers, pediatricians
- Contact ADEQ for weather data & stakeholder input

Contact Information

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