

Outdoor heat increases risk of emergency respiratory hospitalization in elderly

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Outdoor heat is associated with a significantly increased risk of emergency hospitalization for respiratory disorders in the elderly, according to a large epidemiological study of more than 12.5 million Medicare beneficiaries.

"While outdoor heat has been shown to increase respiratory mortality, evidence on the relationship between heat and respiratory hospitalizations has been less consistent," said lead author G. Brooke Anderson, PhD, postdoctoral fellow in the Department of Biostatistics at the Johns Hopkins Bloomberg School of Public Health. "In the largest population of the elderly yet studied, we found strong evidence that short-term exposure to outdoor heat increases the risk of hospitalization for COPD and [respiratory tract infections](#). This relationship was consistent for men and women and across all age groups studied."

The findings were published online ahead of print publication in the [American Thoracic Society's American Journal of Respiratory and Critical Care Medicine](#).

The study included 213 urban counties across the United States and more than 30 percent of the U.S. population aged 65 or older. Data on Medicare emergency respiratory hospitalizations were obtained for the period 1999-2008, along with measurements of weather and air pollution.

On average, respiratory hospitalizations increased 4.3 percent for each

10°F increase in daily mean [summer temperature](#). This association, which was not changed by adjustments for [air pollution](#), age, gender or seasonal trends in [hospitalization rates](#) and temperature, was strongest on the day of exposure to heat and remained elevated the day following exposure.

The increased risk for heat-related hospitalization was similar for COPD (4.7 percent) and respiratory tract infections (4.1 percent), and tended to be higher in counties where summers are typically mild.

Each 10°F increase in daily temperature translates to approximately 30 excess respiratory hospitalizations per day among the elderly in the 213 counties studied, with larger increases in temperature expected to result in more excess hospitalizations.

"Our study provides clear and consistent evidence of a link between outdoor heat and hospitalization for respiratory disease in the elderly," said senior author Dr. Roger D. Peng, associate professor in the Department of Biostatistics at the Johns Hopkins Bloomberg School of Public Health. "As the prevalence of respiratory conditions and the age of the population continue to increase and global temperatures continue to rise as a result of climate change, the risk of heat-related respiratory disease is also likely to increase."

Provided by American Thoracic Society

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