Extreme high temperatures and hospital admissions for respiratory and cardiovascular diseases

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Abstract: BACKGROUND: Although the association of high temperatures with mortality is well-documented, the association with morbidity has seldom been examined. We assessed the potential impact of hot weather on hospital admissions due to cardiovascular and respiratory diseases in New York City. We also explored whether the weather-disease relationship varies with socio-demographic variables. METHOD: We investigated effects of temperature and humidity on health by linking the daily cardiovascular and respiratory hospitalization counts with meteorologic conditions during summer, 1991-2004. We used daily mean temperature, mean apparent temperature, and 3-day moving average of apparent temperature as the exposure indicators. Threshold effects for health risks of meteorologic conditions were assessed by log-linear threshold models, after controlling for ozone, day of week, holidays, and long-term trend. Stratified analyses were used to evaluate temperature-demographic interactions. RESULTS: For all 3 exposure indicators, each degree C above the threshold of the temperature-health effect curve (29°C-36°C) was associated with a 2.7%-3.1% increase in same-day hospitalizations due to respiratory diseases, and an increase of 1.4%-3.6% in lagged hospitalizations due to cardiovascular diseases. These increases for respiratory admissions were greater for Hispanic persons (6.1%/°C) and the elderly (4.7%/°C). At high temperatures, admission rates increased for chronic airway obstruction, asthma, ischemic heart disease, and cardiac dysrhythmias, but decreased for hypertension and heart failure. CONCLUSIONS: Extreme high temperature appears to increase hospital admissions for cardiovascular and respiratory disorders in New York City. Elderly and Hispanic residents may be particularly vulnerable to the temperature effects on respiratory illnesses. © 2009 Lippincott Williams & Wilkins, Inc.
Resource Description

Exposure
- Air Pollution, Meteorological Factor, Temperature, Other Exposure, Specify
  - Air Pollution: Ground-Level Ozone
  - Temperature: Variability
  - Other Exposure: apparent temperature

Geographic Feature
- Urban

Geographic Location
- United States

Health Impact
- Cardiovascular Impact, Respiratory Impact
  - Cardiovascular Impact: Other Cardiovascular Impact, Specify
  - Respiratory Impact: Bronchitis/Pneumonia, Other Respiratory Impact, Specify

Resource Type
- Research Article

Special Topic
- Vulnerable Population