



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Thomas Farley, M.D., M.P.H.
Commissioner

2011 Health Advisory #8 Heat-Related Morbidity and Mortality in New York City

- **Be aware that summer heat can be deadly, especially for seniors and people with chronic disease.**
- **Remind at-risk patients to “Keep Cool” and use air conditioners on hot days, especially during heat waves.**

Please distribute to all clinical staff in the Departments of Internal Medicine, Family Medicine, Geriatrics, Psychiatry, Neurology, Rehabilitation, Pulmonology, Cardiology, Nephrology, Rheumatology, Oncology, Endocrinology, Emergency Medicine, Gastroenterology, and Primary Care. Please share with your non-hospital based primary care colleagues.

May 26, 2011

Dear Colleague,

As summer approaches, we need your help to prevent heat-related illness among your patients. Hot weather can cause heat stroke and exacerbate chronic medical conditions, and may lead to severe complications and death. Extreme heat kills more Americans each year on average than *all other natural disasters combined*.

Heat Illness and Death in New York City

Heat illnesses¹ result in an average of 160 hospital admissions and 440 emergency department visits per year in the months of May through September in New York City. From 1997-2010, a total of 152 heat stroke deaths were identified by The Health Department and the Office of Chief Medical Examiner (OCME). Using daily mortality counts from the Office of Vital Statistics (OVS), the Health Department further estimates that deaths from natural causes, such as cardiovascular and pulmonary disease, increased by an average of 6.5% during 12 prolonged heat waves² over the same time period, accounting for approximately 1,090 *additional* deaths.

Risk Factors

The rate of hospitalization and death from heat stroke was over 5 times higher in adults ages 65 and older, compared to those less than 65 years of age. Most fatal cases (76%) and patients admitted to the hospital (83%) also had one or more of the following health conditions: cardiovascular disease, psychiatric illness (frequently involving substance abuse), diabetes, or respiratory illness. Poorer neighborhoods had higher rates of heat illness and death (Figure 1).

¹ Diagnosis codes including: heat stroke, sunstroke, heat syncope, heat cramps, heat exhaustion/fatigue, and heat edema. Excludes man-made heat sources. From 2000-2009, 1571 hospital admissions were identified; ED data were available from 2005-2009, with 2205 cases of heat illness.

² Four or more consecutive days reaching 90°F or higher, with the first three days reaching at least 95°F and at least one day reaching 100°F or more.

Based on an in-depth review of OCME records of heat stroke victims in 2008 and 2010(89%) were at home when symptoms of heat illness first began. None of these victims were found to have a working home air conditioner in use. By contrast, a much smaller number of non-fatal cases had illness onset at home (Figure 2). Height and weight data from OCME records revealed a higher-than-expected prevalence of obesity among fatal cases (39% versus 23% of all New Yorkers).³

Most Vulnerable Patients

In summary, the risk of severe illness and death from extreme heat exposure is highest among:

- Older adults, especially those ≥ 65 years of age
- Adults of all ages with chronic health conditions, especially:
 - Cardiovascular Disease (Hypertensive and/or Atherosclerotic)
 - Diabetes and Obesity (Body Mass Index > 30)
 - Substance Abuse
- Individuals living in high poverty neighborhoods, especially those without home air-conditioning or who cannot afford to use it.

Heat-related mortality is preventable

Air conditioning is the most important way to protect at-risk patients on hot days.

- Be alert to the signs and symptoms of heat-related illness or exacerbation of chronic medical conditions such as heart disease.
- Advise at-risk patients to use their air conditioner or go to a place with air conditioning.
 - **To find a Cooling Center in New York City, call 311 or go to www.nyc.gov/oem.**
- Engage family members and support networks to check on at-risk patients and offer them places to stay that are air conditioned.
- For more information, visit www.nyc.gov/health/heat.

Thank you for your continued dedication and contribution to the health of New Yorkers.

Sincerely,



Nancy Clark, M.A., C.I.H., C.S.P.
Assistant Commissioner,
Environmental Disease Prevention



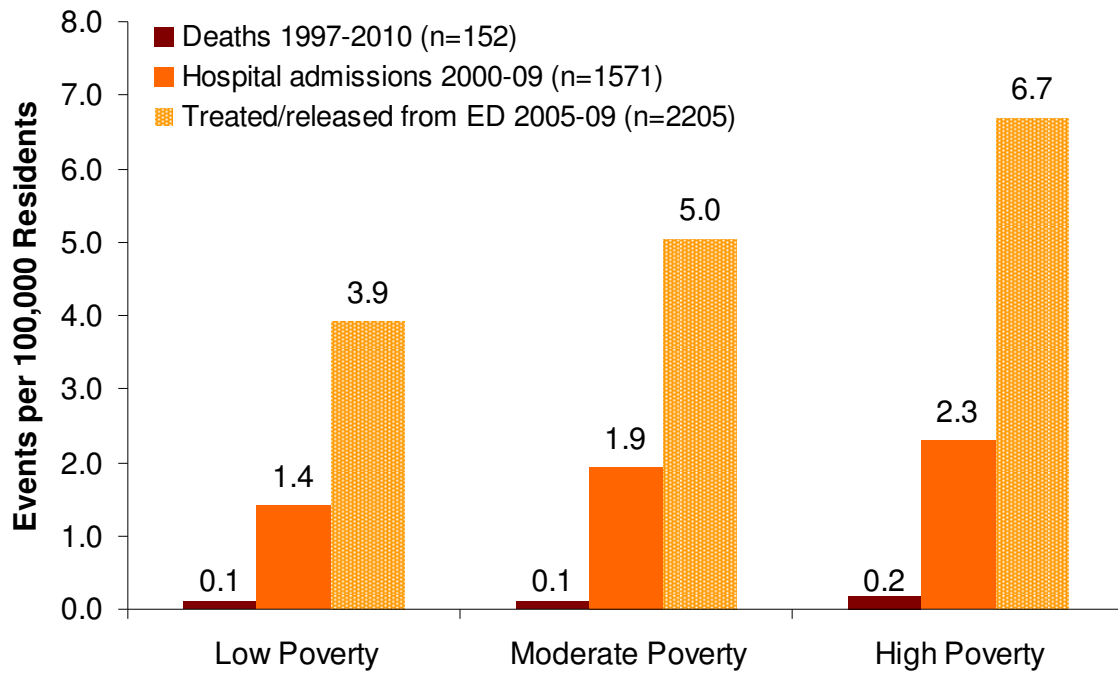
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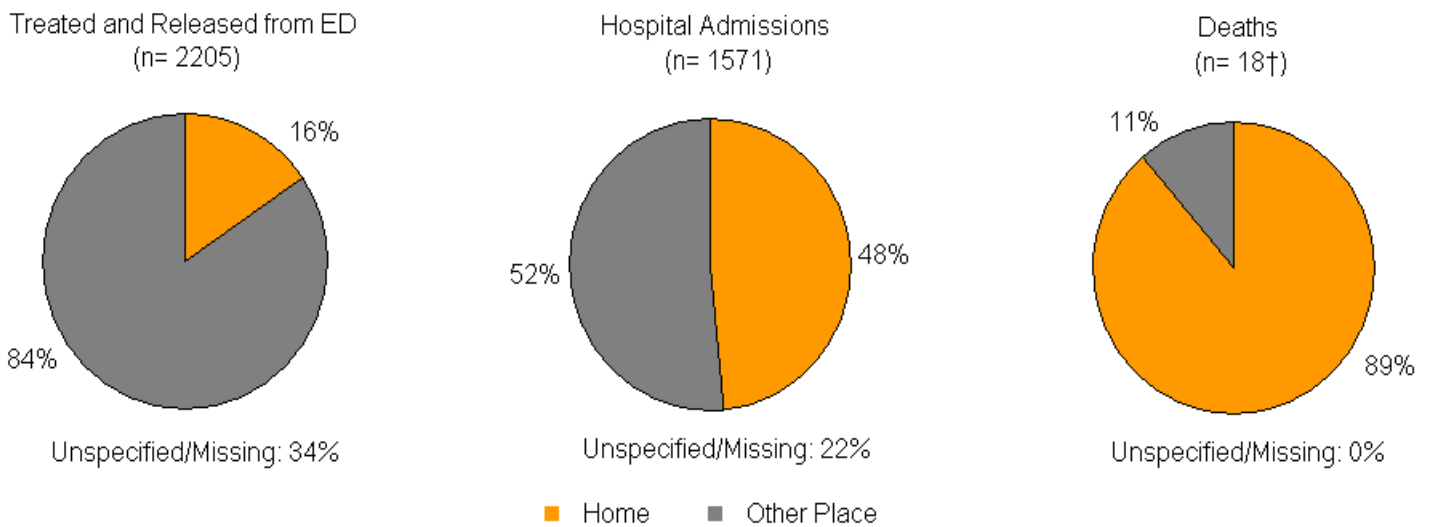
³ New York City Department of Health and Mental Hygiene. Epiquery: NYC Interactive Health Data System - Community Health Survey 2009. Accessed 5/9/2011. <http://nyc.gov/health/epiquery>.

Figure 1. Annual rates of heat illness/death in New York City by neighborhood poverty^o



^oBased on percent of household incomes twice below the 2000 federal poverty standard

Figure 2. Place of heat illness onset by outcome



[†]Subset of 18 deaths for which medical examiner records were reviewed.