Climate Change Adaptation: Addressing Heat-Related Morbidity and Mortality among Seniors in New York City

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Heat Waves and Public Health

- Heat wave or extreme heat events
  - Period of very hot and humid weather that can make people sick and even lead to death

- Heat waves kill more Americans each year on average than *all other natural disasters combined*
Climate Change and New York City

NYC Warming Trends

Days > 90°F per Year

- 23-29 (2020s)
- 29-45 (2050s)
- 37-64 (2080s)

Source: NYC Panel on Climate Change Report
NYC August 2006
40 heat stroke deaths and 100 excess deaths
## Heat Related Mortality Risk Factors

(2006 Only; N=46)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over age 65</td>
<td>21</td>
<td>53</td>
</tr>
<tr>
<td>≥ 2 medical conditions</td>
<td>27</td>
<td>68</td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>27</td>
<td>68</td>
</tr>
<tr>
<td>Diabetes</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>Respiratory disease</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Psychiatric cognitive disorders</td>
<td>11</td>
<td>28</td>
</tr>
<tr>
<td>Living with someone</td>
<td>21</td>
<td>53</td>
</tr>
<tr>
<td>Home air conditioner</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>
Heat Wave Characteristics Associated with Increased Morbidity and Mortality

- First of the season
- Early in the season
- Longer
- Higher maximum heat index
- Night-time lows above 80°F
Characteristics of Senior Population in NYC
1 Million Seniors ≥ 65 years of Age

- Poor Health Status
  - Fair or Poor Health (40.4%)
  - Hypertension (63%)
  - Diabetes (23%)
  - Overweight/Obesity (60%)
  - Depression (13%)
  - Disability (46%)
  - Asthma (10%)

- Lack of AC in the Home
  - Do not own or use an air conditioner (14.5%)

- Socially Isolated
  - Live alone (35%)
  - At risk for social isolation (17%)
  - Difficulty going outside home (8%)

Sources: Epiquery Community Health Survey; NYC Department for the Aging
Heat Illness Prevention Strategy

- Policy
- Surveillance
- Structural Interventions
- Education/Outreach
Citywide Heat Emergency Plan

- Multi-agency coordination of activities to protect New Yorkers during heat waves

- Includes:
  - Special needs advance warning
  - Cooling centers
  - Homeless outreach
  - Excavation safety alert
  - Spray cap program

- Health concerns at the forefront
National Weather Service Advisories

- Retrospective analysis of mortality risk to evaluate heat advisory thresholds (May-September 1997-2006)
  - Excess mortality increased as heat index increased
  - Consecutive days of hot weather increased mortality risk compared with isolated days of hot weather
  - Substantial excess mortality below conventional heat warning threshold
  - Similar risk for two consecutive days HI > 95°F, one day HI > 100°F

(Source: Metzger et al., 2010)
‘Syndromic’ Surveillance

- Daily ED, EMS data from previous day
  - Compares observed counts of heat illness compared to expected counts based on time of year, weather conditions
Cooling Centers

Agency resources and outreach

Legend
- OEM_Cooling_Centers
- DFTASenior_housing
- DFTA_Senior_Facilities

% residents below poverty
- 0.047 - 0.11
- 0.12 - 0.19
- 0.20 - 0.32
- 0.33 - 0.47
Cooling Assistance Program

- Free AC with installation
- HEAP funded

Eligibility:
- ≥ 60 years
- Income
- Increased risk for heat-related morbidity
  - Physical or mental health condition documented by health care provider
- No working AC at home
Education and Outreach

- Print materials – high risk and social networks, providers, community organizations
- Presentations – community organizations, faith-based leaders
- Public health detailing
- Health alert network – health care providers
- 311 Calls – public
Program Results (2008 - 2010)

- Distributed > 65,000 educational materials
- Mailed > 1,000 letters to faith leaders
- Visited > 230 health care providers in 90 health centers
- Presented to > 100 community board members and community organizations
- Installed > 8,000 ACs
Preparing for Present and Future Climate Emergencies

Expand on heat illness prevention model

Priority Areas

- Strong empirical data to relate projected changes in climate variables to greater environmental hazards/exposures

AND

- Significant morbidity or mortality in NYC under current conditions or pose current major threats
Preparing for Present and Future Climate Emergencies: Coastal Storms and Flooding

- Projected increases in rainfall, coastal storms and continued sea level rise in NYC

- Health risks include flooding and evacuation injuries, PTSD and mental health effects of displacement, water contamination
Preparing for Present and Future Climate Emergencies: Climate Change Adaptation Program

- Assess climate change health impacts on NYC residents
- Develop a public health action plan to prepare for and respond to the health impacts of climate change
- Enhance local public health infrastructure to climate change impacts
- Foster community resilience to climate change impacts

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Summary – Adaptation Strategies

Interventions in NYC
- Engage diverse stakeholders and use multiple approaches
- Provide for short-term and longer term interventions
- Depend on collaboration and coordination to be successful
Thank You!

- NYC DOHMH
- NYC Department for the Aging
- NYC Office of Emergency Management
- Human Resources Administration
- NYC Housing Authority
- National Weather Service
- CDC
Questions

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