Urban heat – identifying & addressing the health risks

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Why do heat illnesses occur?

When hot, our bodies have several ways to cool down:

<table>
<thead>
<tr>
<th>Method</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation</td>
<td>Heat released from increased blood flow to skin</td>
</tr>
<tr>
<td>Evaporation</td>
<td>Sweating</td>
</tr>
<tr>
<td>Convection</td>
<td>Fan blowing cooler air across skin</td>
</tr>
<tr>
<td>Conduction</td>
<td>Cold water bath</td>
</tr>
</tbody>
</table>

Heat illnesses occur when prolonged heat exposure exceeds cooling ability.

Source: US Army Research Institute of Environmental Medicine
## Factors that affect heat illness risk

<table>
<thead>
<tr>
<th>Exposure to heat</th>
<th>Homeless</th>
<th>Outdoor workers &amp; hobbyists</th>
<th>Urban areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-existing health vulnerabilities</td>
<td>Older adults / young children</td>
<td>Chronic health conditions</td>
<td>Taking certain prescription medications</td>
</tr>
<tr>
<td>Limited adaptation resources</td>
<td>No air conditioning or can’t afford to use it</td>
<td>Living alone</td>
<td>No transportation</td>
</tr>
</tbody>
</table>
Signs and symptoms of heat illness

**HEAT EXHAUSTION OR HEAT STROKE**

- Faint or dizzy
- Excessive sweating
- Cool, pale, clammy skin
- Nausea or vomiting
- Rapid, weak pulse
- Muscle cramps
- Throbbing headache
- No sweating
- Temperature above 103°F
- Red, hot, dry skin
- Nausea or vomiting
- Rapid, strong pulse
- May lose consciousness

**CALL 9-1-1**

- Take immediate action to cool the person down until help arrives

*Adapted from the National Weather Service*
2018 heat wave impacts

In Burlington:
6 straight days of 93 - 97 °F
High humidity, resulting in heat index as high as 105 °F
High nighttime lows, as high as 80 °F

Statewide impacts:
4 deaths
Over 100 ED visits
Over 140 EMS calls
Heat-related health impacts increase dramatically at 87°F and hotter

Source: Vermont Early Aberration Reporting System (2004-2013)
The number of days per year reaching 87°F in Vermont will increase in the future

- **1981-2010**: 6 days
- **2021-2050**: 11 (B1), 12 (A2) days
- **2041-2070**: 15 (B1), 20 (A2) days
- **2070-2099**: 20 (B1), 34 (A2) days

Source: University of Vermont / Office of the State Climatologist, produced for the Vermont Department of Health
Yearly impact of hot and cold weather in Vermont

- **Deaths**: 4
- **Inpatient Hospitalizations/Emergency Department Visits**: 109
- **Emergency Medical Service Responses**: 56

Urban/rural differences in heat-health

Comparing urbanized areas to surrounding 5-mile buffers

- +4°F average surface temperature difference
- +50% heat-related EMS incidents per capita

Higher temperatures predicted by:

- buildings
- roads
- (lack of) trees
Heat Watch volunteer training video (18 minutes)

Hello and welcome to the CAPA Heat Watch volunteer training video. Thank you for participating and taking the time to learn about the first step in safeguarding your region from heat waves.
How will we use the findings?

Raise awareness of heat risks, especially in urban areas
Support adaptation strategies where most needed

- Community cooling centers
- Transportation assistance
- Home cooling assistance
- Safety checks

Support urban heat mitigation strategies

- Urban tree maintenance and new plantings
- Green design standards for buildings, lots, and streets

Source: Vermont Green Streets Guide
Campaign routes

- Driving polygons
- Bike routes
Key next steps

**Soon**

Complete Knowledge Check & sign waiver

Watch out for email asking you for your availability

Looking for forecast day of 90°F+ and mostly clear

Routes will be assigned based on your availability

We’ll arrange for you to pickup equipment

**Following the campaign**

Share findings when available (about 2 months)

Additional analyses using health and vulnerability data

Prompt community & partner conversations about how to respond
Questions?
Thank you!

Let’s stay in touch.

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