

Syndromic Surveillance of Heat Illness in NYC

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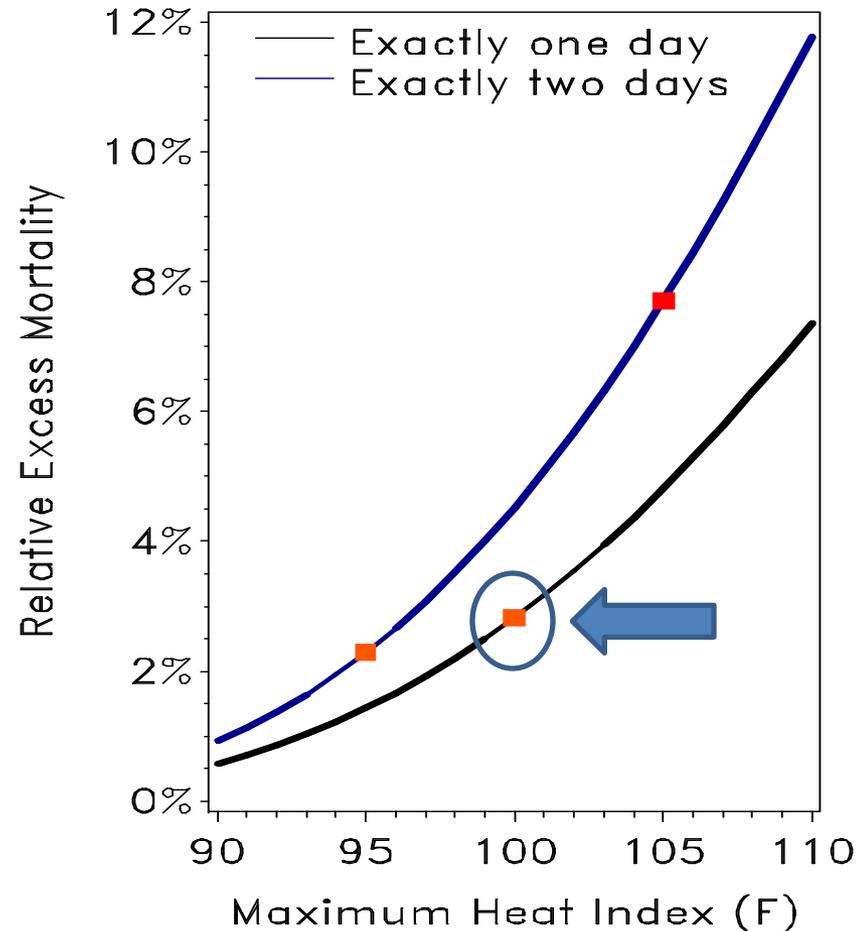
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Outline

- How syndromic surveillance fits into the NYC heat emergency response
- How it is currently implemented
- What are the strengths? What are the limitations?

Heat Emergency Activation Threshold

- Retrospective analysis to evaluate heat advisory thresholds (May-September 1997-2006)
 - Substantial excess mortality below conventional heat warning threshold
 - Consecutive days of extreme heat increases risk
- New advisory level set
 - 2 days with HI $\geq 95^{\circ}\text{F}$
 - 1 day with HI $\geq 100^{\circ}\text{F}$
- Heat emergency criteria different in other areas



Source: Metzger, Ito, Matte, 2010

NYC Heat Emergency Response

- OEM coordinates multi-agency response including:
 - Health advisories
 - Advance warning – special needs
 - Cooling centers
 - Homeless outreach
 - Protection of water and power supply
 - **Syndromic surveillance**
- Ongoing programs:
 - Education for providers & public
 - LI-HEAP Cooling assistance program



Syndromic Surveillance in NYC

- Initially designed to detect communicable disease outbreaks
- De-identified data transmitted daily
 - Emergency department – chief complaint, sometimes diagnostic codes
 - EMS calls – call type
 - Over-the-counter & prescription pharmacy sales
- Syndromes developed for a variety of non-infectious conditions:
 - Heat, Cold
 - CO Poisoning
 - Asthma

Heat Syndromic Surveillance

- Situational awareness during a heat emergency
 - Monitor trends in emergency department (ED) visits & emergency medical services (EMS) calls
 - Detect increases in heat-related illness beyond expected
 - Can be used to inform response, augment messages during ongoing heat wave
- Supplement to the weather forecast – weather conditions most important for guiding response

Models to Assess Trends

- Time-series analysis of daily counts, ~10 years of data
- Two models used evaluate impact of heat
 1. Controlling for time only

Are we seeing more heat-related illness than expected given the time of year?
 2. Controlling for time and meteorology

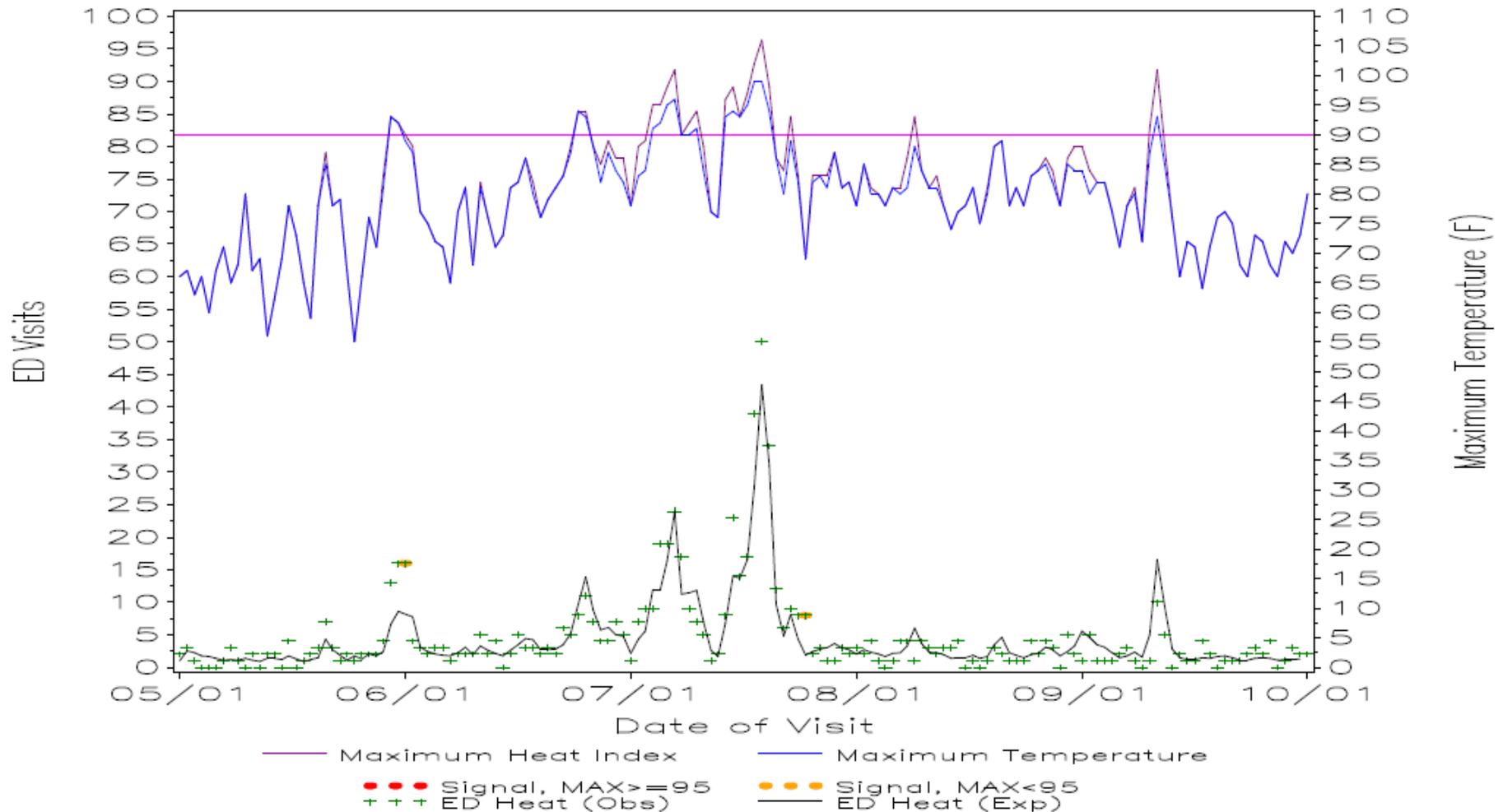
Are we seeing more heat-related illness than expected given the weather conditions?

Implementation

- Automated daily reports sent via email during warm season
 - Previous day's EMS Heat Syndrome results
 - Previous day's ED Heat Syndrome results
- Interpret and communicate results during heat emergencies to inter-agency steering committee
 - Can contribute information starting on 2nd day of heat wave

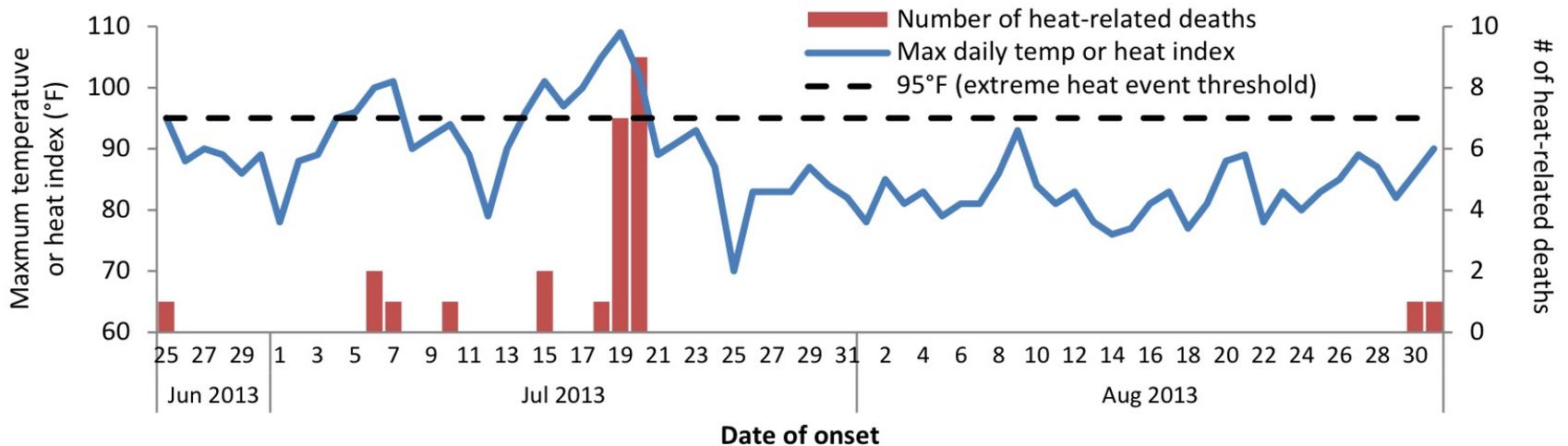
Weather Model

Modeling Expected Daily Counts for Current Weather Conditions
EXCLUDES heat wave days from current year in calculations



2013 Hyperthermia Deaths

2013 New York City heat-related deaths and maximum temperature or heat index



Date of illness onset was missing for two deaths, represented here based on date of death (July 20, 2014).

Sources: Preliminary NYC DOHMH Vital Records 2013 as of June 2014, National Weather Service

Evaluating Impact of Heat

		2. Model controlling for time and meteorology	
		No excess	Excess
1. Model controlling for time only	No excess	Expected for time of year	---
	Excess	Increase in heat-related illness associated with hot weather	Excess of heat-related illness beyond expected for hot weather

Data Limits & Notes

- Relative indicator of heat-related illness, not a tally of all “cases”
 - Misclassification
 - Does not reflect increases in other heat-sensitive conditions (i.e. diabetes, renal failure)
- Always looking backward, need to monitor forecast
- Absolute impact can only be assessed after the event
 - Not a replacement for traditional surveillance of heat stroke and illness

Examples of uses

- Situational awareness
- Public messaging during an event
 - 2011, 2013 heat waves
 - Press releases, press conferences
- Other potential uses:
 - Monitoring during warm weather power outages
 - Targeting specific areas of city for messaging, canvassing if needed

Health department warns new yorkers on heat, asks them to assist family, friends and neighbors

Extreme heat expected to continue through Saturday

July 18, 2013 – The Health Department today warned New Yorkers about this week's dangerous heat and asked New Yorkers to assist persons at risk for the dangerous effects of heat. Today marks the fifth day of dangerous levels of heat, with the hottest conditions today and tomorrow, and continued hot weather through Saturday. The risk increases with each passing day and the intensifying heat. City agencies and non-service providers are visiting the homes of vulnerable persons, and the Health Department is asking to assist this effort by checking on vulnerable relatives, friends, and neighbors to get them into a cool place and get them medical attention if they are showing signs of heat illness. Signs of illness include hot, dry skin



Talking Points: Staying Safe and Healthy During Heat Waves

This guide is for those who communicate with the public about health and environmental issues. It explains heat health risks and how to help vulnerable people and their caregivers stay safe during extreme heat.

What you should know:

- Most New Yorkers receive warnings about heat waves, but some may not understand the dangers. It is important to communicate about who is most at risk and how to prevent heat-related illness and

Messages need to be targeted

- Random sample telephone survey, focus groups on heat-health behaviors and awareness, 2011-2012
- Most had heard some sort of heat warning
 - 8% of adults don't own/use AC AND have heat-health risk
 - About half stay home in hot weather, regardless of hearing warning
 - Vulnerable people may not understand risk, or protect themselves during extreme heat
- Longer-term interventions also needed
 - Increase access to AC, awareness of who is at risk, etc.

Conclusions

- Syndromic surveillance useful for monitoring heat-related illness during extended heat waves to inform ongoing action
- Provides health departments and other responders with information to guide prevention and emergency response
- Need to regularly evaluate and improve emergency response