

WHEN IT RAINS IT POURS: REAL-TIME SITUATIONAL AWARENESS FOR WEATHER EMERGENCIES

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December 1, 2015

OBJECTIVES

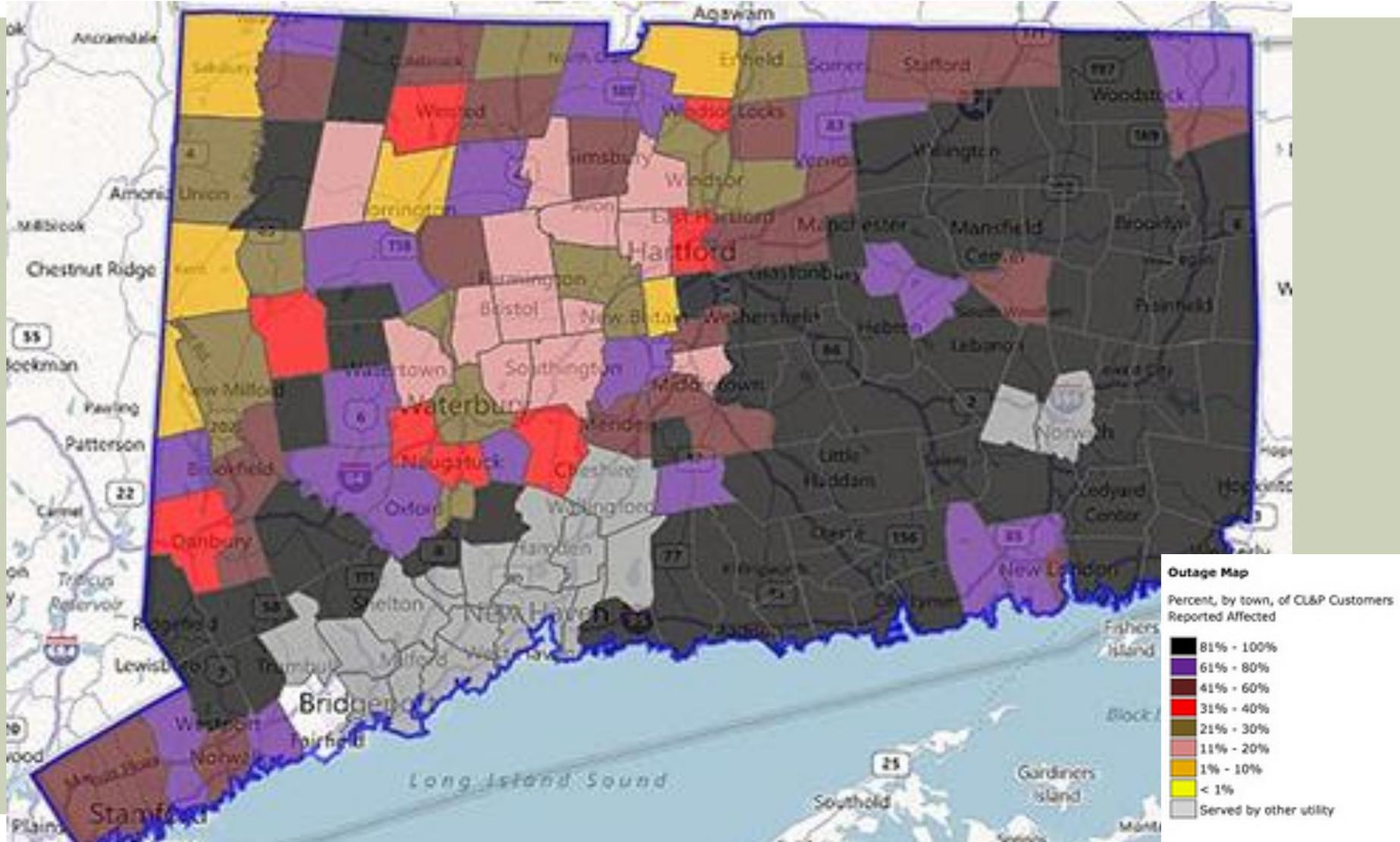
- To describe the health impacts of two extreme weather events in Connecticut
- To characterize the utility of syndromic surveillance data for situational awareness during weather emergencies
- To provide recommendations for monitoring future weather emergencies

08/28/2011: TROPICAL STORM IRENE



Photo Source: CT Post

TROPICAL STORM IRENE POWER OUTAGES

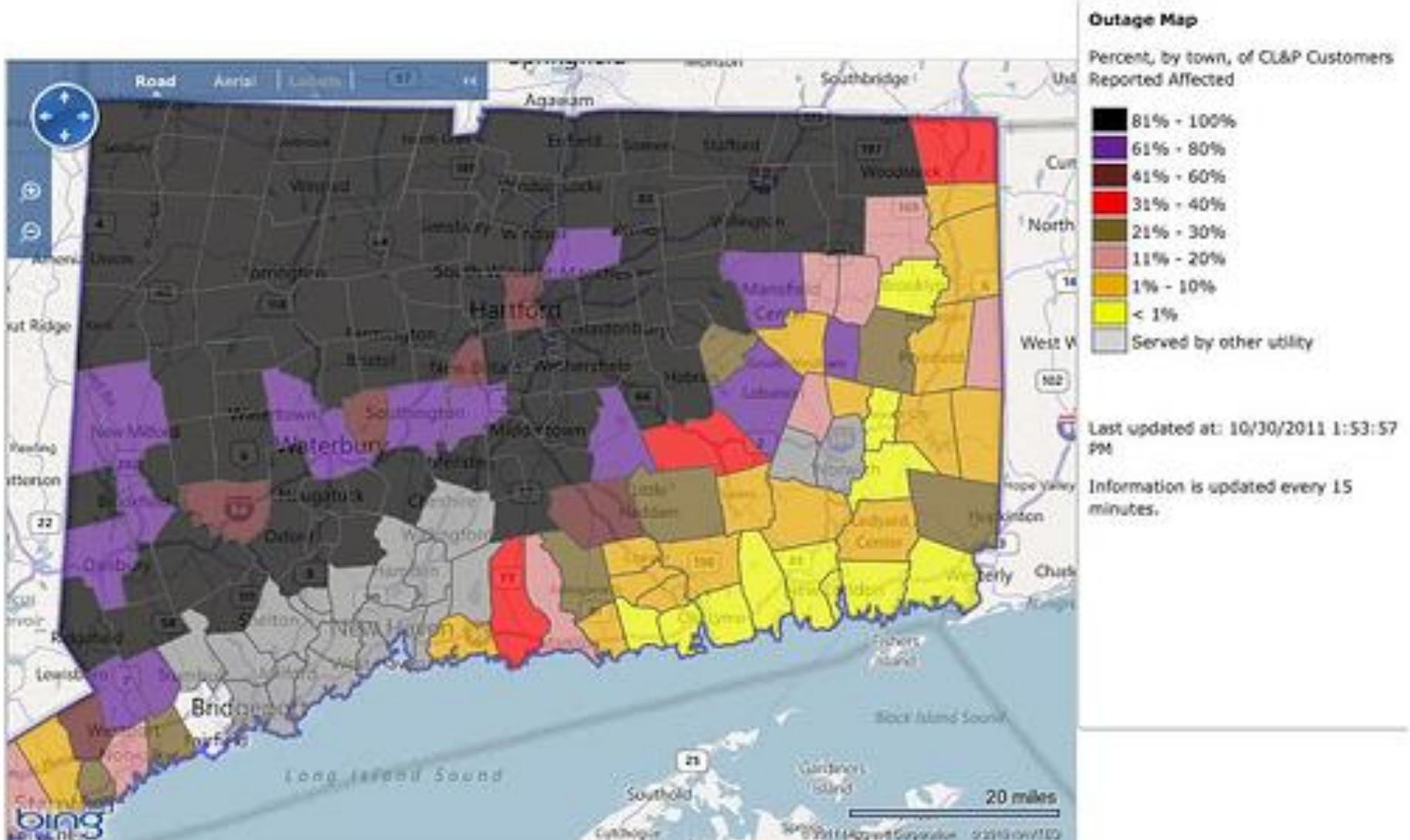


10/29/2011: OCTOBER SNOW STORM



Photo Source: Record-Journal

WINTER STORM POWER OUTAGES



HOSPITAL EMERGENCY DEPARTMENT SYNDROMIC SURVEILLANCE (HEDSS)

- Established in 2004
- Modeled after New York Department of Health and Mental Hygiene Syndromic Surveillance System
- Situational awareness and real-time disease monitoring
- 20/32 hospital EDs and 1 urgent care center participate

HEDSS DATA ELEMENTS

Daily text files from each hospital containing de-identified data:

- Hospital name
- Date of ED Visit
- Time of ED Visit
- Gender
- Age
- 5-digit zip code of residence
- Free text chief complaint

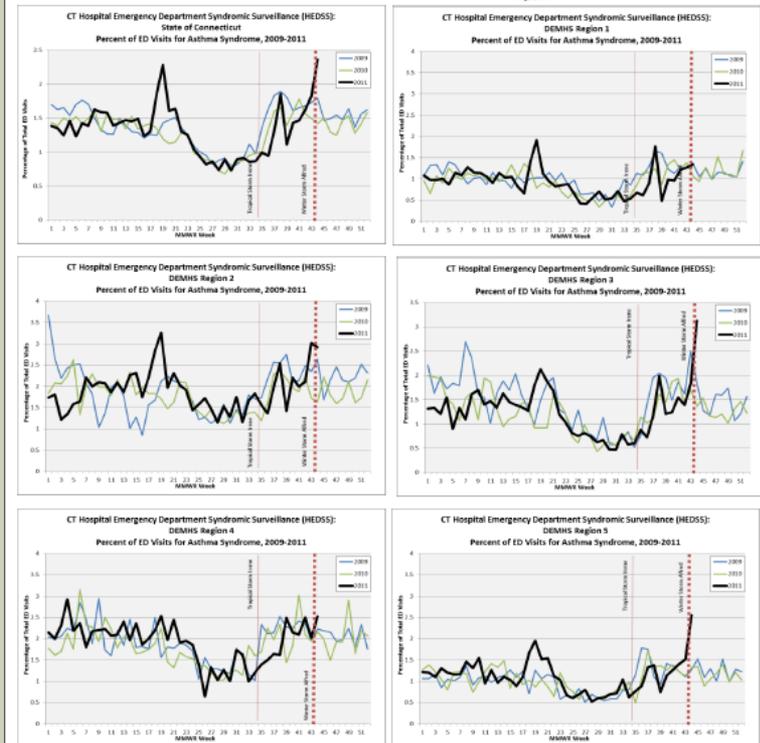
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04/07/201102:06 20M06040FELL- R KNEE PAIN
04/07/201102:31 0M06234GRABBING AT EARS
04/07/201102:49 28M06226V/D ABD PAIN
04/07/201103:19 38M06231ETOH/ R SIDE PAIN
04/07/201103:43 25F06226PELVIC PAIN
04/07/201104:33 9M06256L SIDE EAR PAIN
04/07/201105:11 19M06606PSYCH EVAL
04/07/201106:15 3M06415ASTHMA
04/07/201106:54 51M06226FELL YESTERDAY- L LEG PAIN
04/07/201107:16 22M06226SORETHROAT
04/07/201107:41 48F06264R SIDED ABD PAIN
04/07/201107:47 47M06268BACK PAIN
04/07/201107:53 45F06226COUGH
04/07/201112:57 72F06234HYPONATREMIA
04/07/201108:18 68F06249FELL INJURED L WRIST
04/07/201108:23 54F06260DIZZY/HIT HEAD
04/07/201108:29 8M06226DIZZY COUGH VOMITING L EAR PAIN
04/07/201108:44 17F06226STOMACH AND BACK PAIN VOMITING
04/07/201108:46 47M06226ELEVATED BP CHEST PRESSURE SORETHROAT
04/07/201108:49 63M06237WANTS DETOX
04/07/201108:52 30M06226VOMITING FEVER HEAD PAIN
04/07/201108:58 27M06279ED VISIT
04/07/201109:01 53F06238HEADACHE NAUSEA SINUS PAIN
04/07/201112:36 92M06268SYNCOPE
04/07/201114:48 62M06278SEIZURE HYPOKALEMIA
04/07/201109:36 79F06250UNABLE TO URINATE
04/07/201109:47 35F06226BROKEN TOOTH
04/07/201109:54 39F06226KNEE PAIN ANXIETY FOOT BLISTER
04/07/201110:29 4F06226FLU SYMPTOMS
04/07/201110:34 59M06250TIRED
04/07/201110:49 18M06415LEG LACERATION
04/07/201110:51 57F06238ANXIETY NOT SLEEPING
04/07/201111:07 32M06340BACK PAIN
04/07/201111:16 28M06250FLANK PAIN
04/07/201117:29 84F06280CHEST PAIN
04/07/201111:35 95F06415WEAKNESS
04/07/201120:50 22M06117SEVERE ALLERGIC REACTION ECZEMA
04/07/201111:15 35F06226COPD/EMPHYSEMA/ASTHMA
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HESSS “WEATHER SYNDROMES”

- Storm-related syndromes
 - Carbon monoxide exposure (CO)
 - Gastrointestinal illness (GI)
 - Injuries
 - Hypothermia
 - Motor Vehicle Accidents (MVA)
- Other requested syndromes
 - Asthma
 - Myocardial Infarctions
 - Cardiac
 - Psychiatric

Weekly analysis of HEDSS asthma syndrome
MMWR Week 44 (week ending 11/5/2011)
Statewide: Statewide an increase is being seen in ED utilization for asthma. This statewide increase is primarily being driven by hospitals reporting data in DEMHS Region 3 and DEMHS Region 5. Please note, these proportions may change as additional data become available and should be interpreted with caution.

Department of Emergency Management and
Homeland Security (DEMHS) Regions



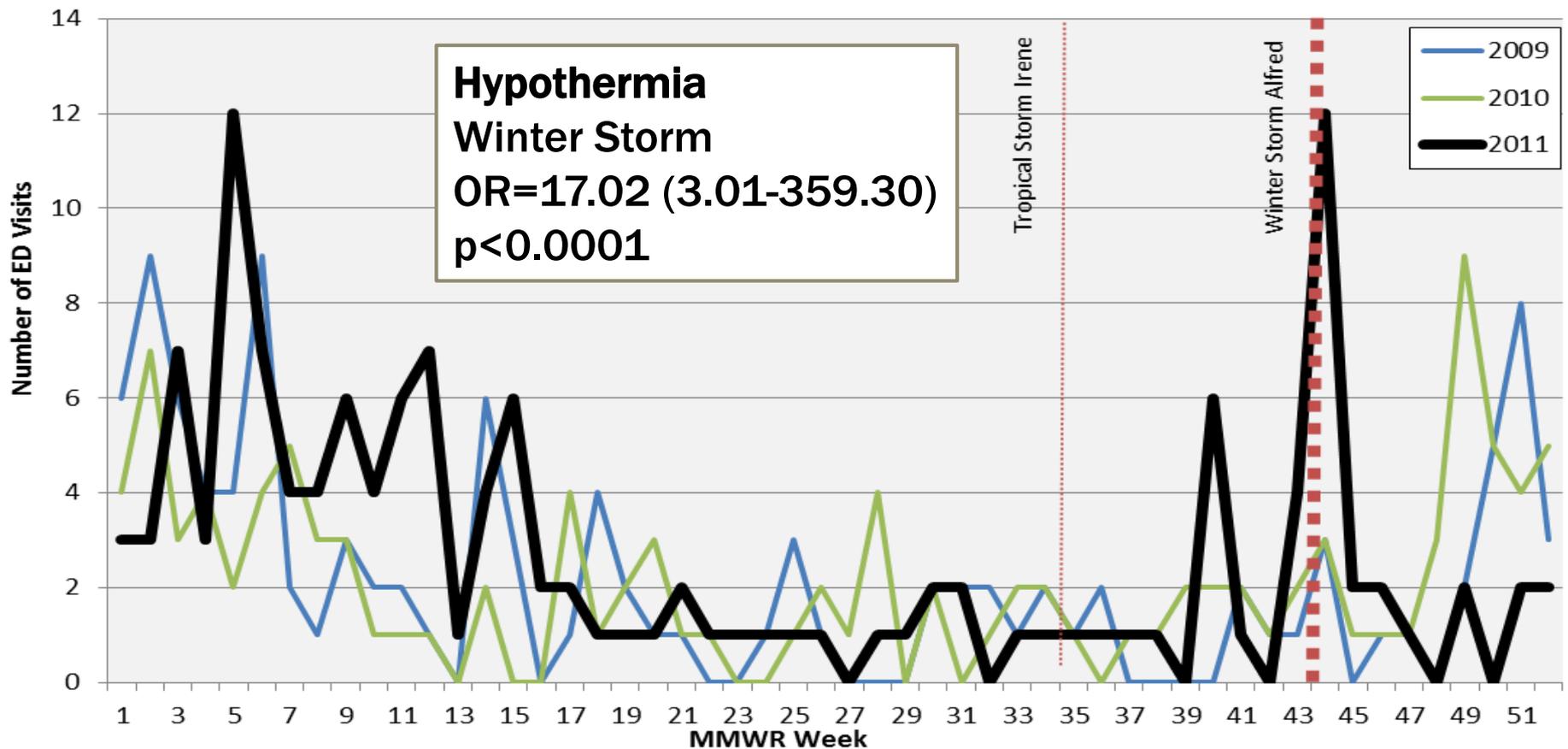
Please note, data for MMWR week 44 is partially complete and should be interpreted with caution.

THE “GOOD NEWS”

- **Completeness of Reporting**
 - 96% Post-Tropical Storm Irene
 - 91% Post-October Snow Storm
- **No increase in ED utilization observed for:**
 - Gastrointestinal Illness
 - Injury
 - Motor Vehicle Accidents
 - Myocardial Infarctions
 - Cardiac
 - Psychiatric

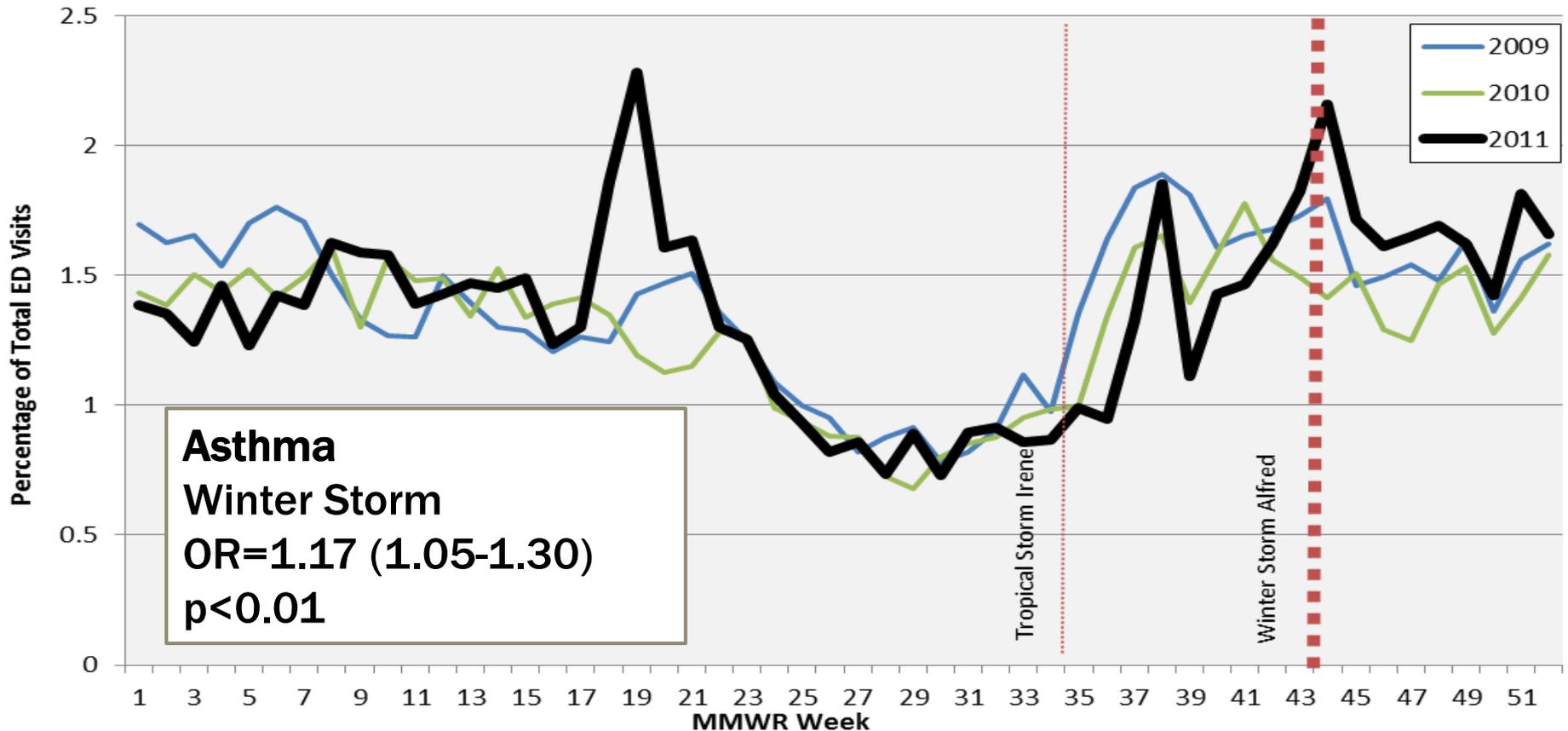
MINOR HEALTH IMPACTS

CT Hospital Emergency Department Syndromic Surveillance (HEDSS):
State of Connecticut
ED Visits for Hypothermia Syndrome, 2009-2011



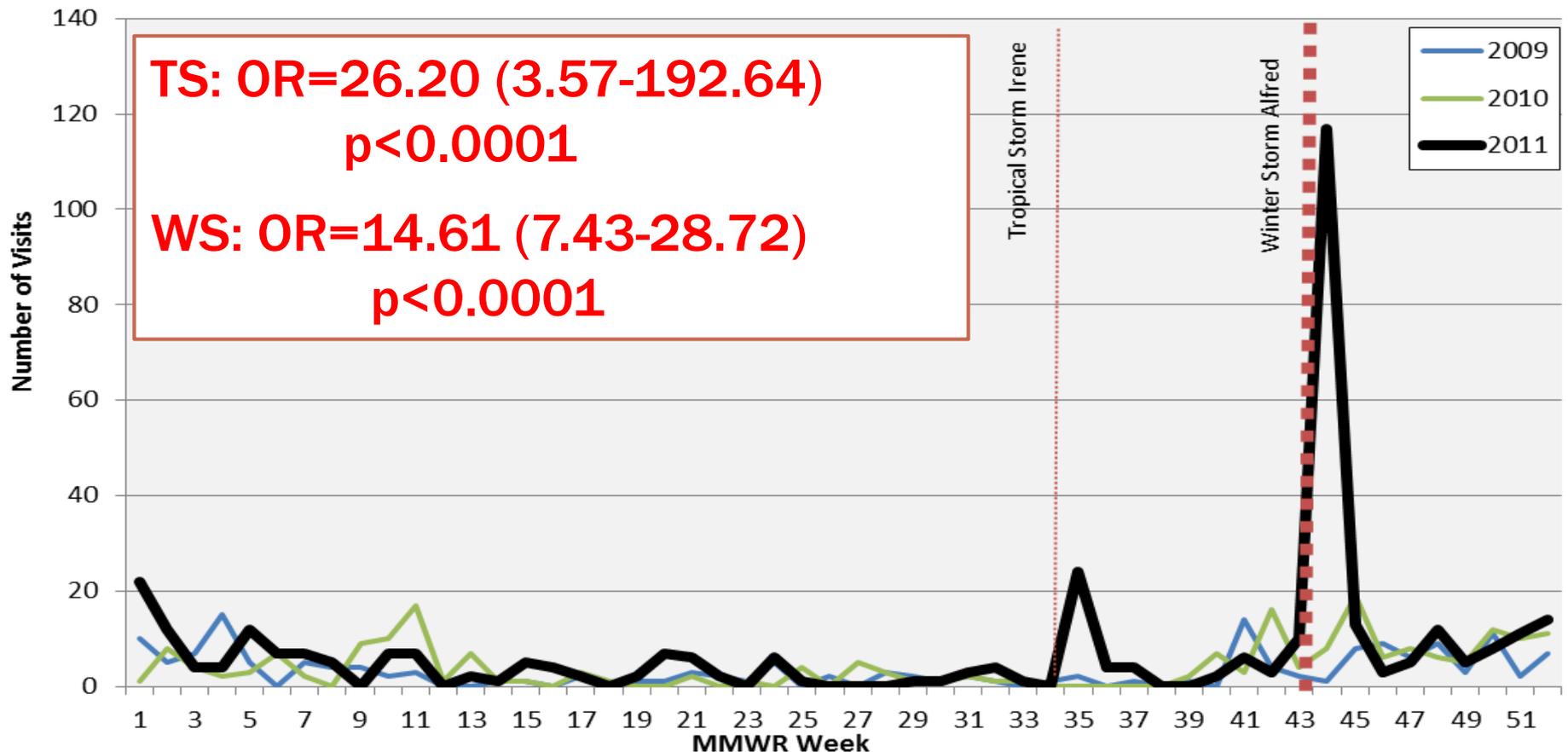
MINOR HEALTH IMPACTS

CT Hospital Emergency Department Syndromic Surveillance (HEDSS):
State of Connecticut
Percent of ED Visits for Asthma Syndrome, 2009-2011



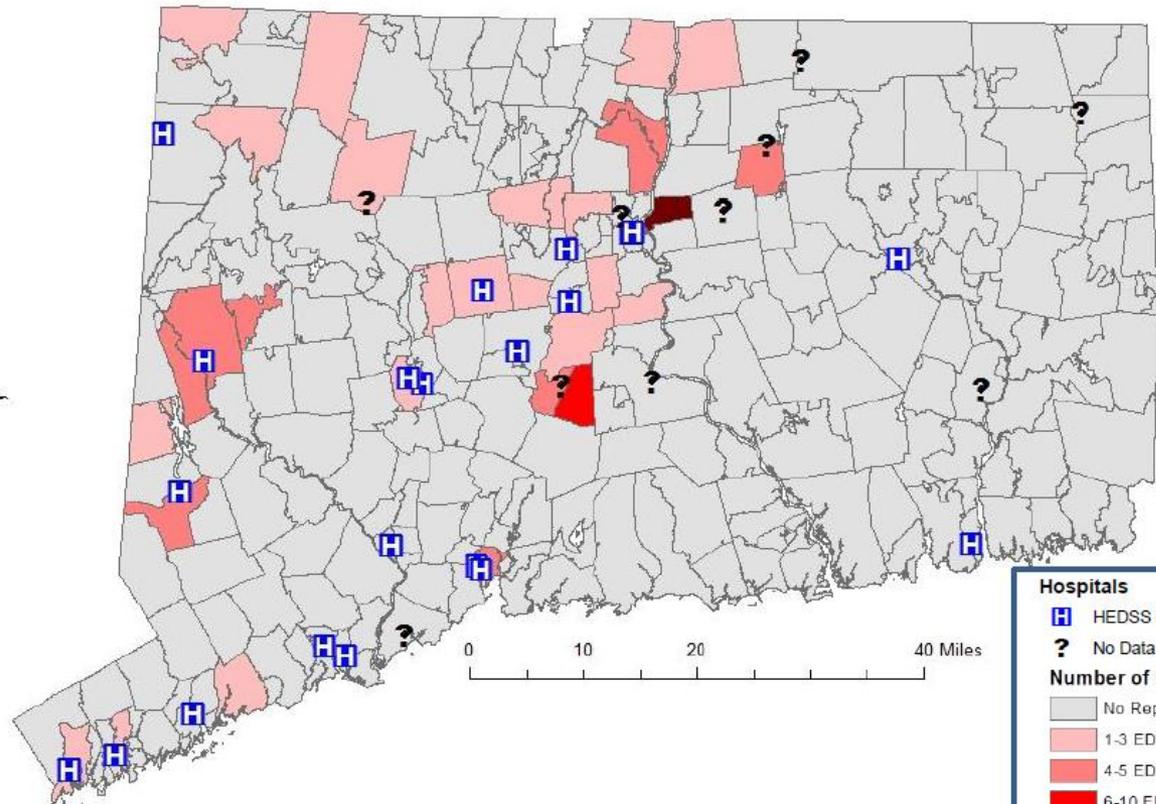
CARBON MONOXIDE SYNDROME

CT Hospital Emergency Department Syndromic Surveillance (HEDSS):
State of Connecticut
Total Visits for Carbon Monoxide Syndrome, 2009-2011



CASE SUMMARIES

Hospital Emergency Department Syndromic Surveillance System (HEDSS)
 ED Visits for Carbon Monoxide Exposure, Connecticut, 10/31/2011-11/03/2011
 (Updated 11/04/2011)



Hospitals

- HEDSS Hospital
- No Data Available

Number of ED Visits

- No Reports
- 1-3 ED Visits
- 4-5 ED Visits
- 6-10 ED Visits
- > 10 ED Visits

*Please note, this data is based on chief complaints reported through the HEDSS system based on zip code provided during hospital registration. These data represent 20/32 (63%) of hospital EDS and likely underestimate carbon monoxide exposures.

ED Visits for Carbon Monoxide Poisoning

10/29/2011-11/02/2011

ED Visit Date	#	%
10/29/2011	4	5
10/30/2011	16	20
10/31/2011	22	27.5
11/1/2011	32	40
11/2/2011*	6	7.5
Sex		
Female	40	50
Male	40	50
Age		
less than 5	12	15
5-17	23	28.75
18-49	31	38.75
50-64	4	5
65 and older	10	12.5

42 unique exposures

CO SYSTEM COMPARISON

■ Laboratory Reporting

- Requested immediate reporting by telephone during storm
- Able to match to HEDSS data using demographic information

REPORTABLE LABORATORY FINDINGS 2012

The director of a clinical laboratory must report laboratory evidence suggestive of reportable diseases. The Laboratory Report of Significant Findings form (OL-15C) can be obtained from the Connecticut Department of Public Health (DPH), 410 Capitol Ave., MS#11EPI, P.O. Box 340308, Hartford, CT 06134-0308; telephone: 860-509-7994 or on the DPH [website](#). The OL-15Cs are not substitutes for physician reports; they are supplements to physician reports, which allow verification of diagnosis. A listing of possible bioterrorism diseases is highlighted at the end of this list. Changes for 2012 are noted in **bold** and with an asterisk (*).

AIDS (report only to the State)

CD4+ counts < 200 cells/ μ L _____ < 14% _____

Arboviral infection

California group virus (species) _____
 Dengue
 Eastern equine encephalitis virus
 St. Louis encephalitis virus
 West Nile virus infection

Babesiosis: IFA IgM (titer) _____ IgG (titer) _____

Blood smear (1) PCR Other _____
 microti *divergens* *duncani* Unspecified*

Campylobacteriosis (species)

Culture EIA Other: _____*

Carboxyhemoglobin \geq 9%: _____ % COHb

Chancroid

Meningococcal disease, invasive (1,3)

Mercury poisoning

Urine \geq 35 μ g/g creatinine: _____ μ g/g

Blood \geq 15 μ g/L: _____ μ g/L

Mumps (10) (titer): _____

Neonatal bacterial sepsis (11) spp: _____

Pertussis (titer) _____

DFA Culture (1*) PCR

Pneumococcal disease, invasive (1,3)

Poliomyelitis

Rabies

Rocky Mountain spotted fever

Rotavirus

Rubella (10) (titer): _____

Salmonellosis (1,2) (serogroup/serotype): _____

CO SYSTEM COMPARISON

167 Laboratory Reported Cases of CO

111 Laboratory Reported Cases of CO from HEDSS facilities

50 Laboratory Reported Cases matched to specific HEDSS records

22 characterized
as HEDSS CO
Syndrome

11 had gasoline or
smoke inhalation
listed as chief
complaint

13 had symptoms
consistent with CO
exposure

4 unrelated/
uninformative
chief complaints

Not included in current HEDSS CO Syndrome

10/29/2012: HURRICANE SANDY

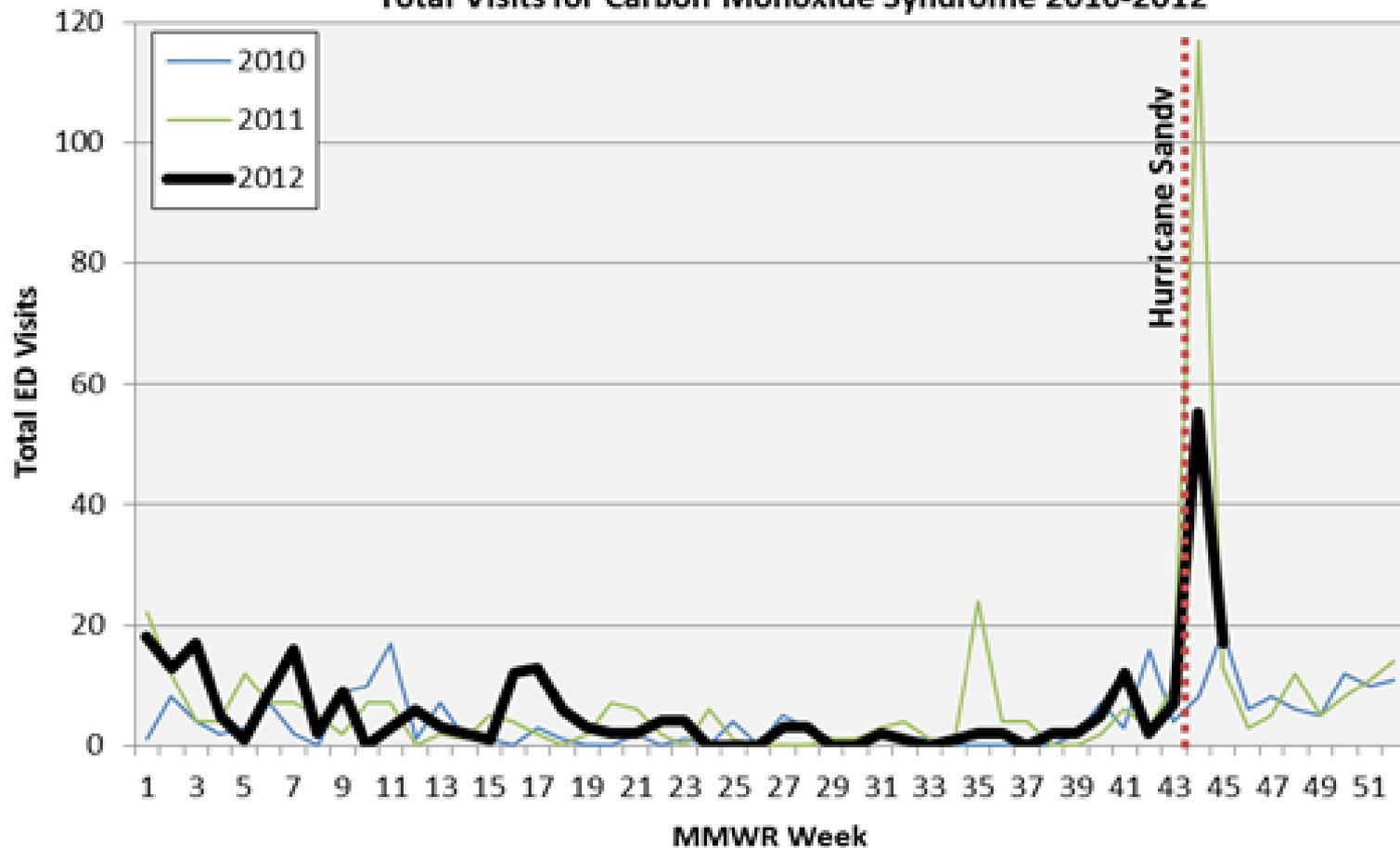


HURRICANE SANDY

CT Hospital Emergency Department Syndromic Surveillance (HEDSS)

State of Connecticut

Total Visits for Carbon Monoxide Syndrome 2010-2012



LIMITATIONS

- Hospital Participation
- Based on chief complaint
- Limited data elements collected
- Not fully automated

CONCLUSIONS

- Both weather events had significant health impacts in Connecticut
- HEDSS system provided real-time information during response and recovery phases
- System was flexible to accommodate requests to monitor additional syndromes
- Prolonged power outages led to increased CO exposure
- HEDSS system and reportable disease detected different cases
 - Reportable disease surveillance detected “illness”
 - HEDSS detected “exposures”

ACKNOWLEDGMENTS

DPH Epidemiology Program

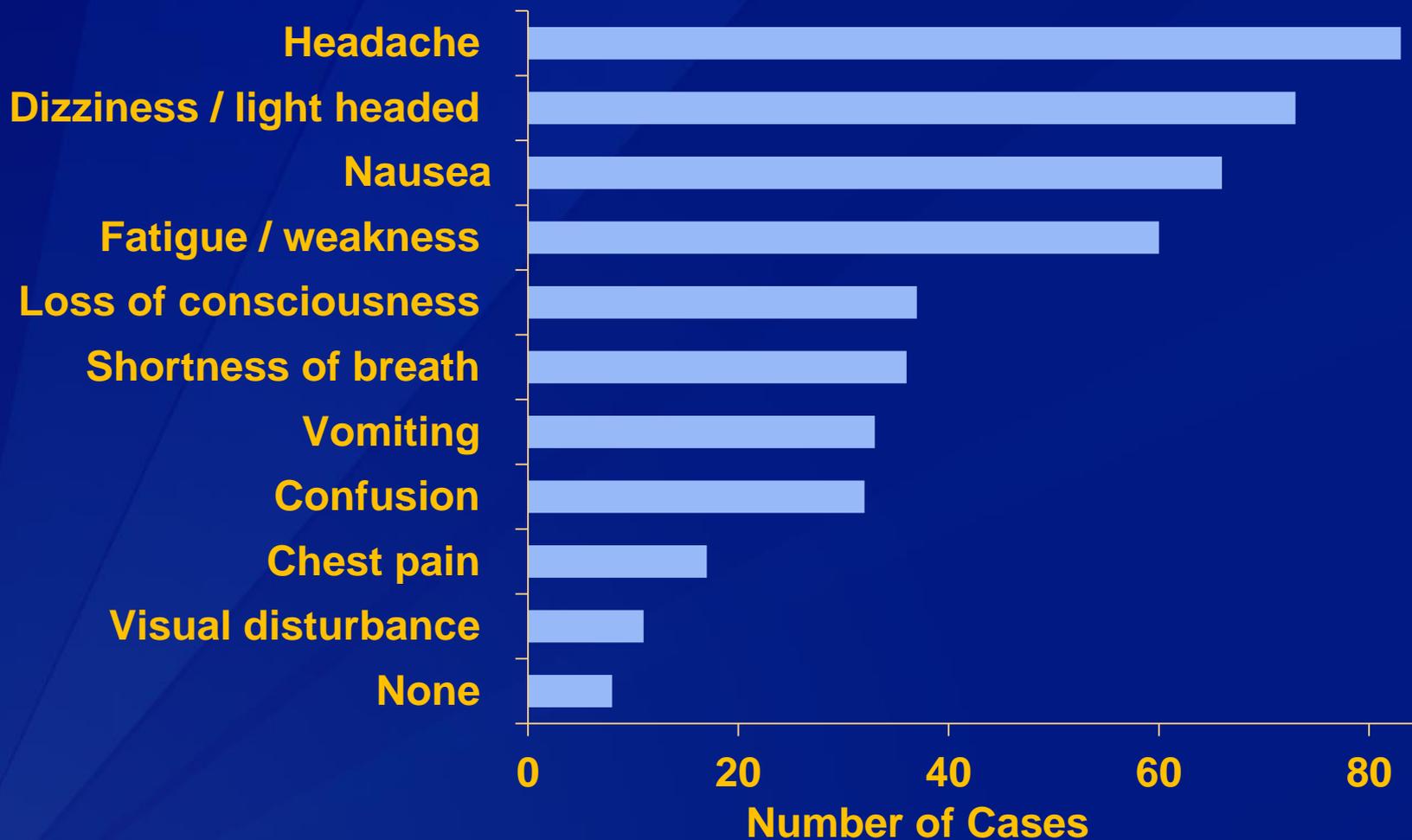
- Matthew Cartter, MD, MPH
- Therese Rabatsky-Ehr, MPH
- Jaime Krasnitski, MPH

DPH Environmental and Occupational Health Program

- Brian Toal, MSPH
- Patricia Przysiecki, MPH

EXTRA SLIDES:

Symptoms Among Cases (N = 133)



Source: Styles T. Carbon Monoxide Poisoning Following a Rare October Snowstorm-Connecticut, October 2011. Aug 2012.

Type of CO Exposure Source by Incident (N = 72)

	Freq	(%)	Cases per incident
Generator	38	(53)	2.1
Charcoal	22	(31)	1.5
Propane/kerosene heater	6	(8)	1.8
Gas furnace	2	(3)	1.5
Fireplace	1	(1)	3
Gas hot water heater	1	(1)	3
Other	1	(1)	1
Unknown	1	(1)	1

Source: Styles T. Carbon Monoxide Poisoning Following a Rare October Snowstorm-Connecticut, October 2011. Aug 2012.

As a Result of This Outbreak...

- ❑ **Multi-lingual materials**
 - Posters and fliers
 - Door hangers warnings
- ❑ **Expansion of media sources**
 - Facebook and twitter
 - Multi-lingual links
 - Expanding media partnerships
- ❑ **Educational outreach**
 - Fire department community programs
- ❑ **State legislature**
 - Strengthening CO alarm requirements
 - Public Act Nos. 05-161, 11-248, 12-184

