



# **Healthcare Emergency Management: Learning from the Past, Informing the Future**

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# Overview

- Setting the Context
- Emergency Management Basics
- Case Study
- Future Considerations

# What most people think of...



....what we often end up dealing  
with....



# Setting the Context

- How did we get here?
  - 9/11
  - Katrina
  - H1N1
  - Joplin
  - Sandy
  - Ebola
- What's next? And why won't it be your hospital?

# Then and Now – Part 1

- Pre – September 11<sup>th</sup>
  - Emergency management efforts were handled by Emergency Departments across the country
  - Focus was on mass casualty incidents
- Post – September 11<sup>th</sup>
  - Responsibility for emergency management shifted and senior administration got involved
    - Departments and careers were born
    - Grant funding
  - Focus is all-hazards

# Then and Now - Part 2

- Pre – Hurricane Katrina
  - Hospitals as responders
- Post – Hurricane Katrina
  - Hospitals as responders
  - Hospitals as victims

# H1N1 (2009)

- H1N1 as WHO level 6 pandemic?
- Not the pandemic planned for
- Changing guidance
  - CDC v. OSHA



# Joplin Tornado (2011)

- Massive destruction can happen with little notice
- Patients and staff may be in equal danger
- We think of emergency evacuation one unit at a time – but what if it's not?

# Superstorm Sandy (2012)

- “It’s going to be like Irene...”
- Politics vs risk
- What if the assessments are wrong?
- What do you do when you lose everything?

# Ebola (2014)

- Expectations vs reality
- Changing guidance on PPE
- Dramatic shift in preparedness efforts
- Impact on staff

# Emergency Management Basics

# Emergency Management Basics

- Emergency management as a profession
- Hospital Incident Command System
- 4 phases of emergency management
- Preparedness cycle

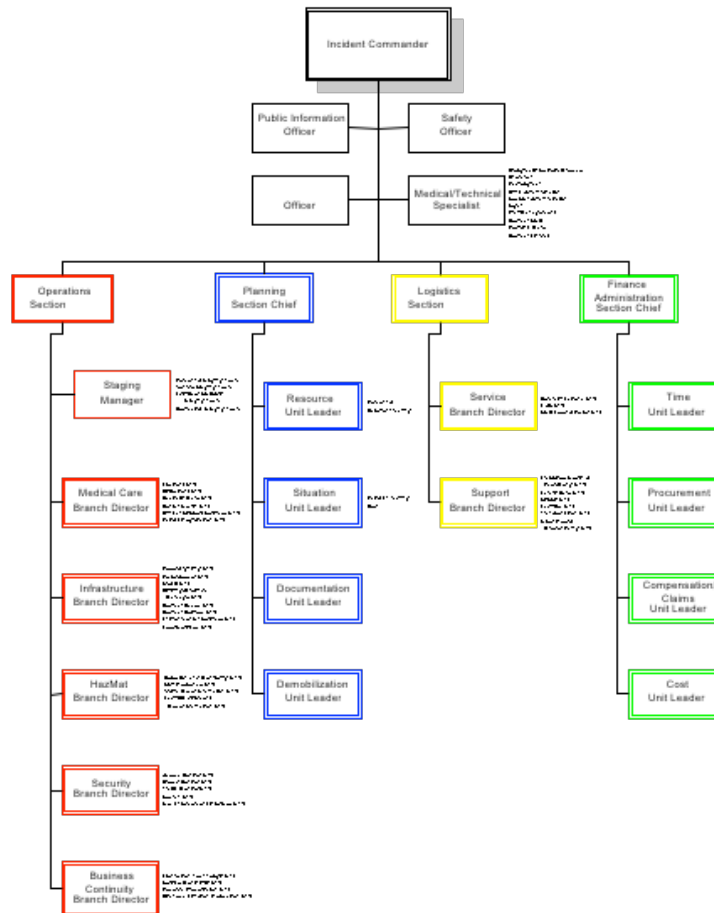
# Emergency Management Profession

- History
- Current tensions
- Education vs experience
- Healthcare context

# Hospital Incident Command System (HICS)

- Integrates best practices in emergency preparedness and response into a comprehensive framework for incident management
- Allows staff to effectively communicate and interface with other emergency responders
- Used for all hazards a hospital may face
- Flexible, scalable table of organization to fit the size and scope of an emergency

# Hospital Incident Command System (HICS)





# HICS Table of Organization

- HICS structure has two key components:
  - Command Staff
    - Incident Commander
    - Liaison Officer
    - Public Information Officer
    - Safety Officer
    - Medical/Technical Specialists
  - General Staff
    - Operations
    - Planning
    - Logistics
    - Finance

# Four Phases

- Mitigation
- Preparedness
- Response
- Recovery

# Preparedness Cycle



# Special Challenges for Hospitals

- Responder/Victim
- Specialized Response Needs
- Evacuation
- Open Facilities
- 24/7 Functioning

# Case Study

# New York City

- Population: 8.30 million
- Manhattan is the most densely populated borough
  - Geographical area: 22.96 square miles
  - Population: 1.60 million
    - Daytime population: 2.87 million
- Manhattan is an island connected to 1 other island and the mainland by 8 bridges and 4 tunnels

# Map of NYC

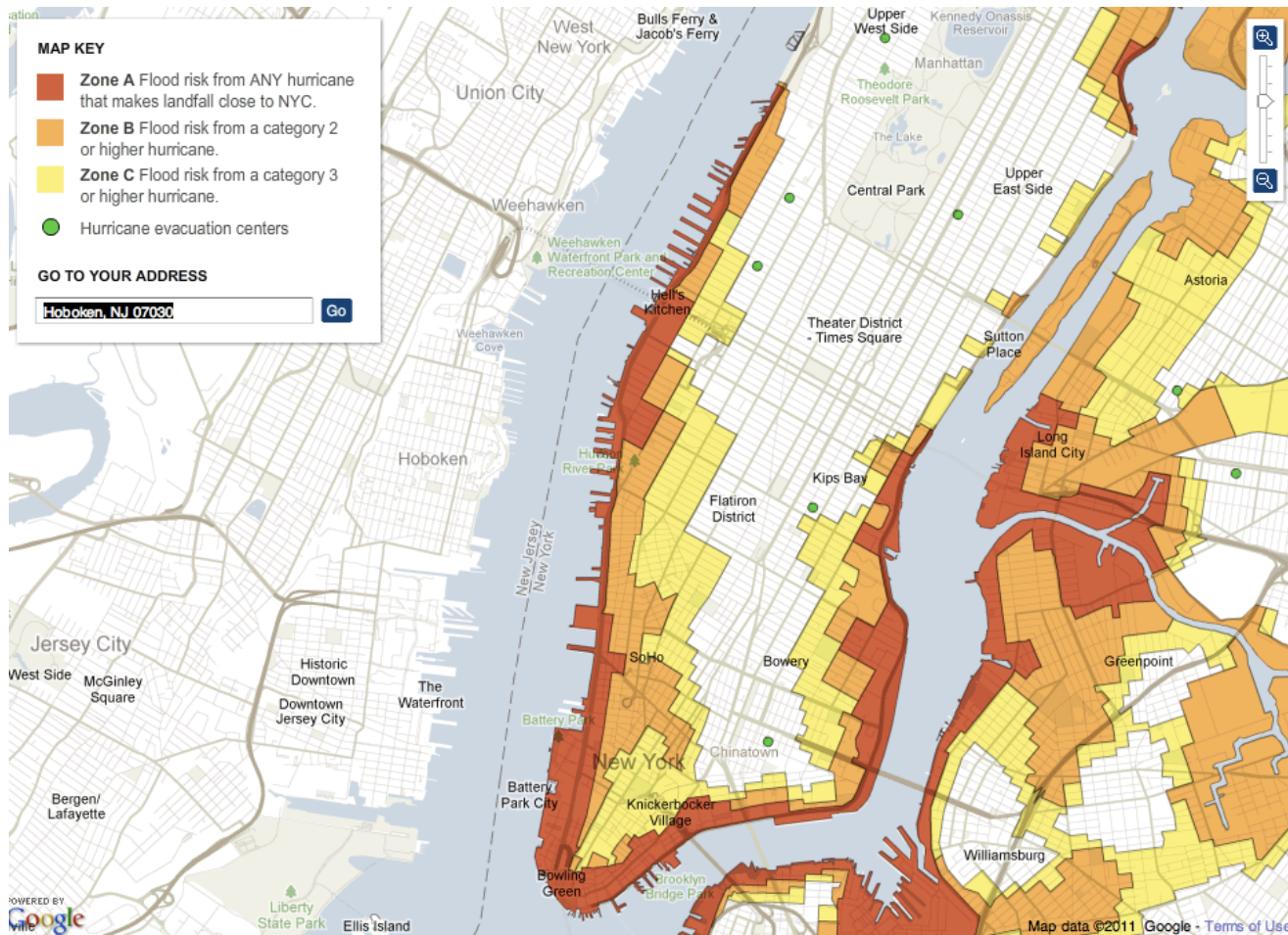


# NYC OEM Coastal Storm Plan

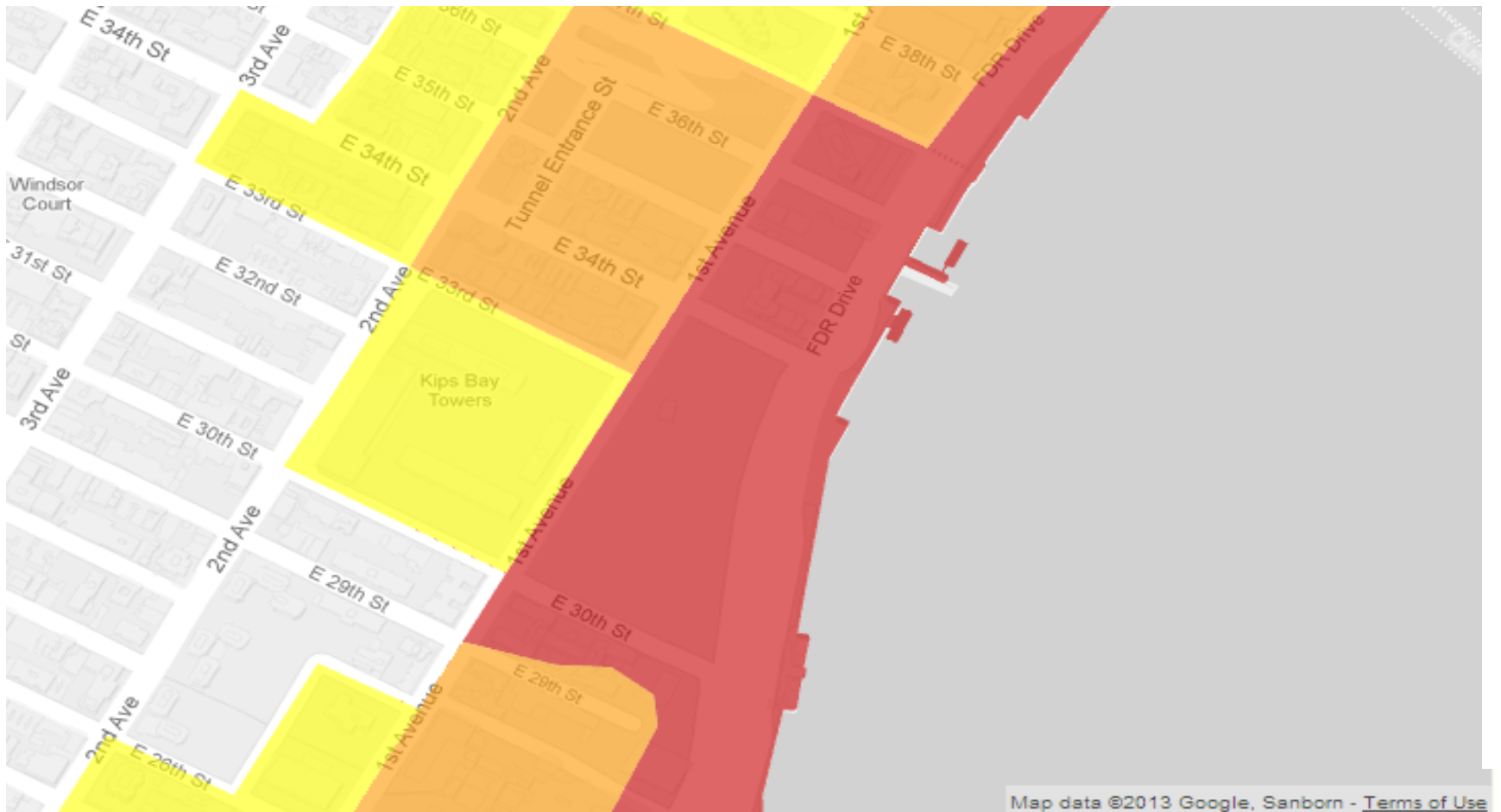
- First released to NYC agencies for review in 2006
- Hurricane Katrina brought coastal storm issue to forefront
  - Hospitals as victims
- Identification of SLOSH zones
- Citywide evacuation planning
  - Evacuating 3 million people
  - Sheltering 600,000 people
- Multiple trainings and exercises



# Coastal Storm Threat in NYC



# SLOSH Zones



# Hospital Coastal Storm Preparedness

- 2009
  - Voluntary assessment of shelter-in-place capability by independent consultant for hospitals in SLOSH zones through NYC DOHMH
- 2010
  - NYS DOH led major initiative to develop, review, and standardize hospital evacuation plans
- 2011
  - Hurricane Irene
- 2012
  - Coastal storm and shelter-in-place plans developed and updated
  - Voluntary re-assessment of shelter-in-place capability by independent consultant through NYC DOHMH

# Timeline: Friday, October 26, 2012

- Storm preparation begins
- Some hospitals begin lowering census
  - Preparation uneven across city
- Governor Cuomo declares a state of emergency based on potential path of Superstorm Sandy
- Zone A expected to bear brunt of impact
- Some Emergency Departments in SLOSH Zone A request diversion

# Timeline: Saturday, October 27, 2012

- Mayor Bloomberg orders evacuation of residents in Zone A in New York City boroughs
- Hospitals exempt from automatic order
  - Manhattan VA voluntarily evacuates
  - Other Zone A hospitals prepare and request to shelter-in-place
- Hospital preparation in other zones varies by facility

# Timeline: Sunday, October 28, 2012

- Hospital departments mobilize staff to be onsite before public transportation closes at 7pm.
  - Staff to 150% of projected need
  - Hospitals sheltering hundreds of staff
- Multiple hospitals cancel elective procedures for Monday and Tuesday
- NYS and NYC DOH approve requests to shelter-in-place and close Emergency Rooms.
  - No hospitals ordered to evacuate
  - One hospital (not in SLOSH zone) elects to evacuate because of a planned loss of steam

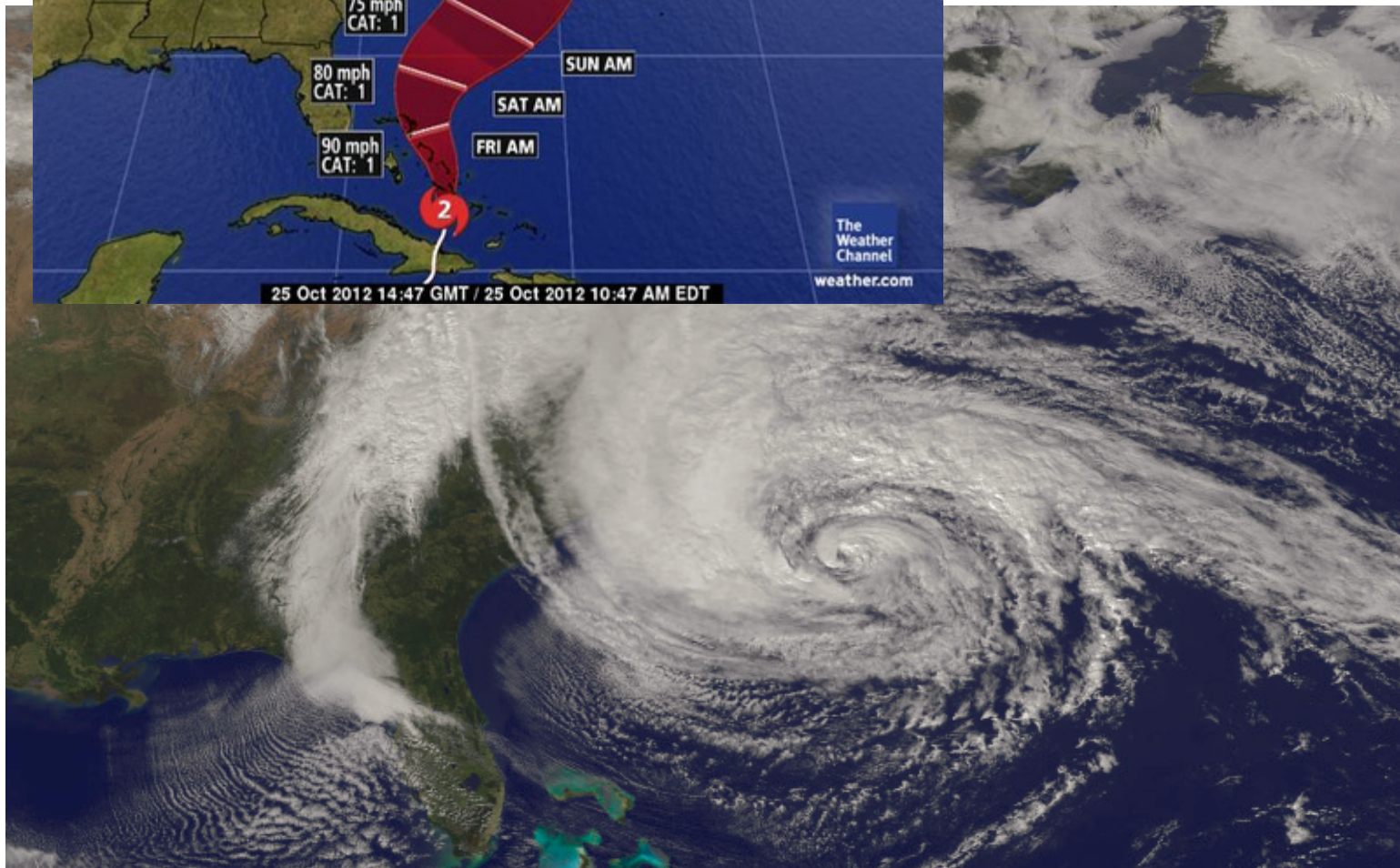
## Timeline: Monday, October 29, 2012 - Day

- Final storm preparations in place
  - Staff, supplies
  - Patient discharge
  - Patient movement
  - Pre-storm checklist
  - ED closures
  - Visitor restrictions
- ~5:30 pm Con Edison states it may preemptively cut off electricity and steam in parts of Manhattan to avoid damaging equipment in the event of flooding

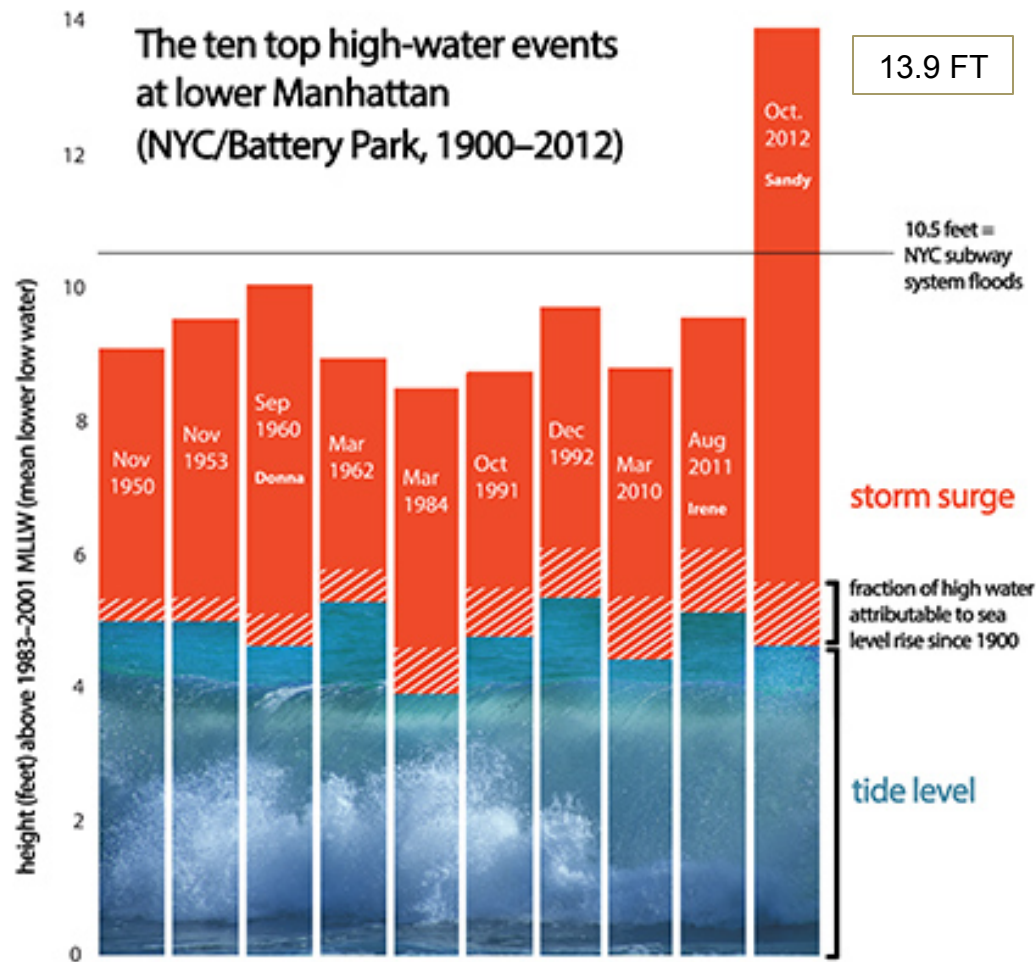
# Superstorm Sandy at Landfall

- At a glance
  - Cat 1 Hurricane: 74-95 mph
  - Massive Size: 1,000 miles across
  - Storm Surge: ~14 feet





# Historic Perspective



# Timeline: Monday, October 29, 2012 - Evening

- Water reported in multiple hospitals as storm hits.
  - Impacted hospitals include Zone B
  - Up to 15M gallons of water; basements completely flooded
- Hospital systems rapidly fail including:
  - Power
  - Telephones
  - Steam/HVAC
  - Water
  - Network/Internet/Email
  - Radio repeaters
- Different hospitals make different decisions re: evacuation
  - Urgent evacuation vs. waiting

# Urgent Evacuation Concepts

- Priorities
- Strategy
- Bed identification
- Staff deployment
- Patient preparation
- Patient movement
- Patient transport













MECHANICAL EQUIPMENT ROOM  
AUTHORIZED PERSONNEL ONLY



MECHANICAL EQUIPMENT ROOM  
AUTHORIZED PERSONNEL ONLY

**DANGER**

MATERIALS IN THIS ROOM  
CONTAIN ASBESTOS FIBERS  
WHICH MAY BE RELEASED INTO  
THE AIR DURING REMEDIATION  
WORK. PROTECT YOURSELF  
AND OTHERS BY FOLLOWING  
ALL SAFETY PROCEDURES.

**CAUTION**



Hearing protection  
recommended in this  
area



NOT IN  
SERVICE





# Successes

- Everyone evacuated safely
- Decision-making re: evacuation
- Applied lessons learned from Hurricane Irene
- Shelter-in-Place planning
- Annual evacuation exercises
- Support from NYC and NYC hospitals
- Labor Pool highly effective
- Med Sled/evacuation equipment usage
- Dual checkpoints before exiting building

# Lessons Learned

- Develop incident-specific evacuation plan
- Census
  - ED
  - OB
- Escalate exercises to the improbable level
- Resources on units
- Communicate the communications plan
- Need greater understanding of community partners' capabilities
- Need greater integration of physicians into response

# Major Ongoing Challenges

- Is this a flood zone hospital issue or is it a regional issue?
  - Everybody plays
- Ownership of coordination of bed identification and patient transfer
  - Too many hospitals are competing for the same resources
- Lack of common terminology for beds from institution to institution

# Future Considerations

# Trends

- Coalitions
- Resilience
- Higher stakes
- Business continuity

# Final Thoughts

- What else do we know to be true?
- What if we are wrong?
- Why isn't your hospital the next headline?

Questions?