

Hurricane Sandy And the Greater New York Health Care System

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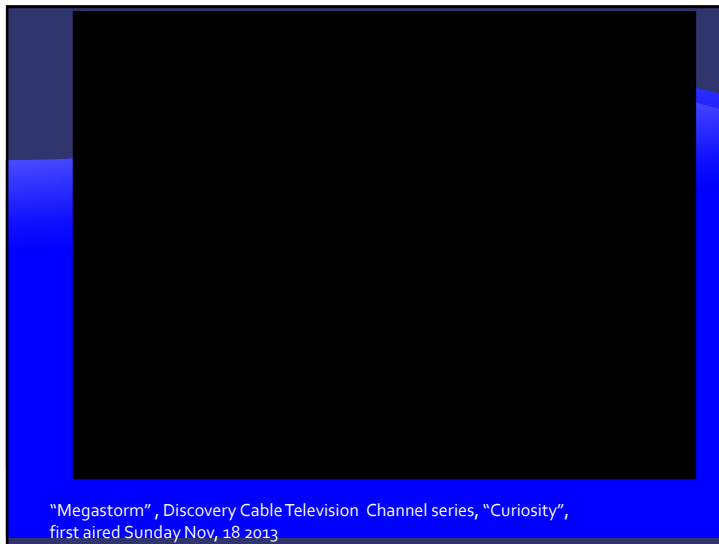
Disclosures

- I work for the City of New York

I Dedicate this Lecture to the Brave Members of the NYC Healthcare Community and to our Armed Forces.



Mayor Michael Bloomberg - Dec 17, 2013 in the wake of the Newtown shooting



"Megastorm", Discovery Cable Television Channel series, "Curiosity", first aired Sunday Nov, 18 2013

Superstorm Sandy-Overall devastation

- The most powerful storm to hit the northeast In recorded history
- A 14 foot Storm surge combines with up to 90 mile a hour winds to create massive flooding and disruption
- 53 deaths in New York
- 8.5 Million People without power / ~10,000 downed trees
- All mass transit (including subway, rail, bus) are shut down

http://en.wikipedia.org/wiki/Effects_of_Hurricane_Sandy_in_New_York
 accessed 3/15/2013

Sources

- Newspapers/magazines
- Internet and Google searches-including Healthcare and Govt. web sites
- Pub Med and the scientific literature (very few accurate-citations available) last accessed Jan ,2014
- Interviews and Personal communications with Physicians /Hospital leaders, DOH and Emergency preparedness officials, NGO reps , friends and members of the press-all with direct Knowledge of the Storm and its effects.



Anderson Cooper goes to many dangerous places.

So when he comes to your hometown...

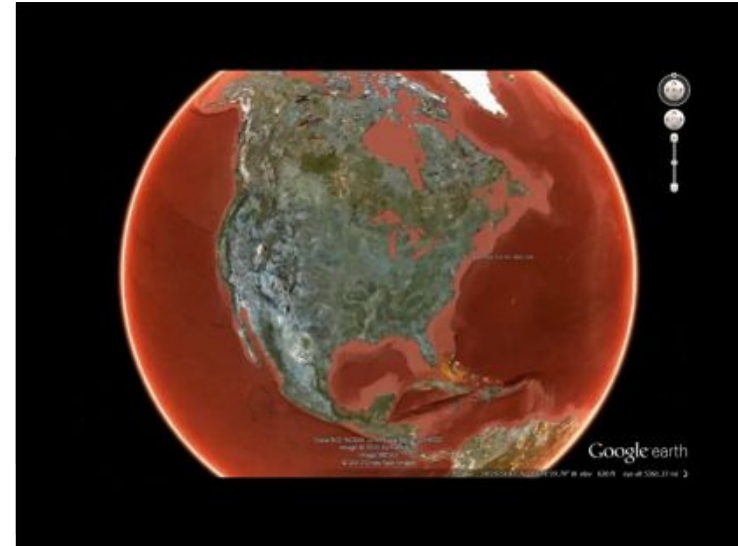


Sandy Meteorology

- ◆ A rare combination of factors
- ◆ Warm air in the Caribbean
- ◆ Abnormal Jet stream Pattern
- ◆ High pressure system to the North



Superstorm Sandy-Overall Devastation



Superstorm Sandy-- Hospital NYU Langone-Preparation

- NYU's Tisch Hospital has 705 beds and 66 operating rooms
- In August of 2011 , ahead of Hurricane Irene, It evacuated- But now it had sheltered in place
- With fair warning there had been a Focused Rapid Discharge Event
 - Many Vented patients were sent out ahead of the storm.

Superstorm Sandy-- Hospital Evacuation- NYU Langone

- Between 7 and 8 PM the basements, lower floors and elevators shafts flooded
- Most backup systems or generators failed
- "Things went downhill very, very rapidly and very unexpectedly."^{*}
- There are were 215 patients left
 - They were "Sledged" down the stairs by medical students and fireman (by Flashlight)

^{*}Senior VP/Vice Dean- DR. Andrew Brotman

CNN Web Site- Tue Oct 30, 2013

Massive Critical Care Needs

- A single one line Text is transmitted from the EP Officer at NYU to Dr. Kevin Chason's (EPO at Mt. Sinai Medical Center) phone
- "NYU is Evacuating Now!" (into the storm). Can you Help???
- Response is immediate: " We will take 100 Critically ill patients."



Dr. Kevin Chason-
Emergency
Preparedness
Officer- the Mt.
Sinai Medical
Center-NYC

Massive Critical Care Needs



Solid Organ Transplant
Pediatric Heart and PICU
Surgical and Medical ICU
Hi Risk Obstetrics

Massive Critical Care Needs

- Sinai had already halted all elective surgeries
- Their main Post Anesthesia Care Unit (PACU=Recovery Room) is empty
- The decision is made: All of NYU's major ICU's will surge directly into the Sinai PACU
- NYU staff will escort the patients
 - They are granted instant "disaster" privileges
 - They will work side by side (Blue scrub/ Grey scrub)

Superstorm Sandy-- Hospital Evacuations NYU Langone

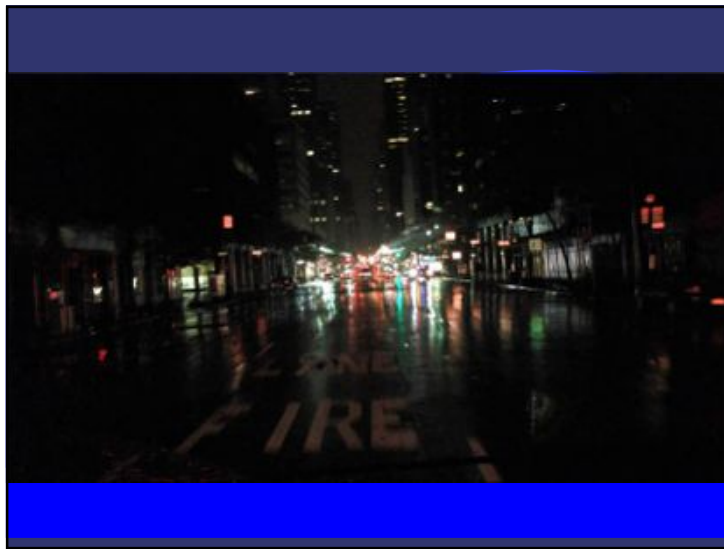


Flow of Patients from NYU



Patients also sent to Beth Israel, St Luke's Hosp. and Roosevelt Hosp.

Slide Credit-Jaymes Garland



NYU ICU at Mount Sinai!

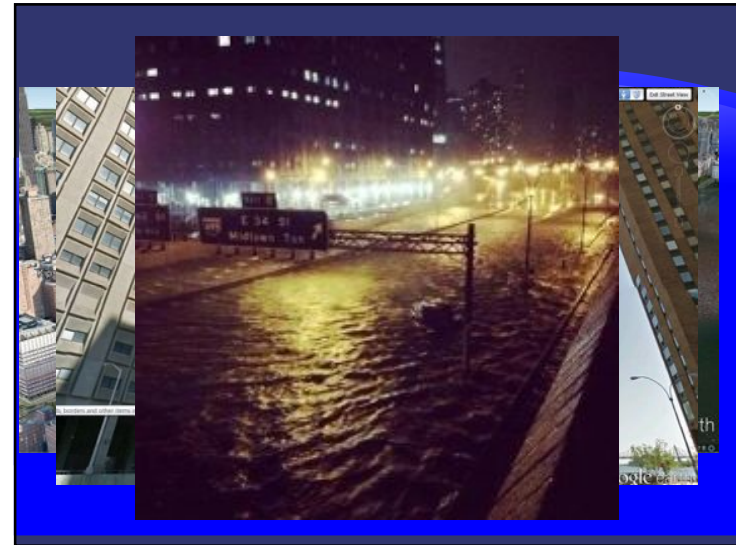


The Morning of Tuesday October 30th

Its been a long night!

NYU Langone-Aftermath

- Hospital closes for months
- It will have no ER for over a year



Southern Manhattan in the Dark



Superstorm –Bellevue Hospital Evacuates


- "By Tuesday, the elevator shafts at Bellevue, the country's oldest public hospital, had flooded, so all 32 elevators stopped working. There was limited compressed air to run ventilators, so oxygen tanks were placed next to the beds of patients who needed them. Water faucets went dry, food ran low, and buckets of water had to be carried up to flush toilets".

New York Times-Front Page Story-"At Bellevue, a desperate flight to Ensure the Patients' Safety", Nov2, 2012



Decision Making-When to Evacuate?

- Not a common problem for Health Care Administrators
- What factors are critical?
- What help do you need?
- Should we train on this decision?




The Cavalry Arrives at Bellevue

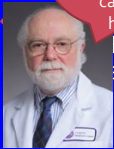



Captain Ian Seagriff/
Operations Officer
Lt. Colonel Omar Bholat
Bellevue Trauma Surgeon
US Army Reserve-1st
forward Surgical
The 69th Infantry Regiment of the
US Army National Guard- at Muster
in the Bellevue Lobby

Hospital Evacuations- Arranging transfers




- A common thread emerges-Pt. transfers are arranged Doctor to Doctor , Nurse to Nurse...Colleague to Colleague. At the sending hospital to the receiving hospital
- The "We are in trouble Sheldon, can you help?" with an emerging paradigm of Emergency preparedness full disaster are local!"

<http://www.biossecurity.org/website/resource/publications/2010/pdf/2010-02-29-prepreport.pdf>

Super Hospital Evacu



- "A... ba... res... brig... ge..."
- "S... Tu... the... the... Na... aft... ou..."

New York Times-Fro...
 Ensure the Patients... 7/18/14, 2014

The National Guard Evacuate Bellevue Hospital



The Cost

- ◆ Bellevue Would Remain closed for at least 3 months
- ◆ As with NYU, Bellevue doctors and nurses are displaced all over the city
 - ◆ Graduate Medical education suffers
- ◆ Lost revenue is not FEMA reimbursable
- ◆ The Health and Hospitals Corporation estimates its lost 900 Million dollars between all its damaged facilities

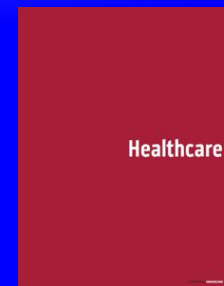
Superstorm Sandy- Hospital Evacuations- Loss of Power

- ◆ Another common factor is the flooding of the backup generators, or the electrical switching equipment
- ◆ If an elevator shaft will be unusable
- ◆ It becomes clear that good as the weakest



This is the Actual Coney Island Hospital Generator that was salvaged

New York City's After Action Plan for Hurricane Sandy



Plan NYC



Plan NYC-ER's and Hospitals



Lourdes Hospital-Binghamton, NY

Superstorm Sandy-Fuel Shortage



- ◆ Supply chain interrupted for weeks
- ◆ Doctor and nurses can't get gas
- ◆ St Joe's in Patterson NJ opens its own gas station*

*Personal communication Dec 3, 2012. James Prudin, M.D., Emergency Preparedness Officer- St. Joseph's Hospital Patterson, NJ

Community Health Care System Effects After the Storm- Manhattan

- ◆ The closing of so many Hospital beds and ER's creates surge and pressure at the remaining facilities
- ◆ In Manhattan- "Emergency visits have gone up 25 percent at Weil Cornell, which in Bellevue's absence is the closest high-level trauma center, treating stab wounds, gun wounds ..." Stretcher patients are routinely double parked and "lined up like train cars"

New York Times, Dec 13 2013 "With Some Hospitals Closed After Hurricane, E.R.'s at Others Overflow"

Community Health care system effects after the storm

- ◆ Lenox Hill converts three wards back from office space to patient rooms
 - ◆ Surgery is expanded to seven days a week from five.
- ◆ “Administrators at the Shuttered hospitals...worry their patients and doctors are being raided , with some never to return”

New York Times, Dec 13 2013 "With Some Hospitals Closed After Hurricane, E.R.'s at Others Overflow"

Community Health care system effects after the storm- Brooklyn

- ◆ At Maimonides Medical Center the wait for a bed out of the ER is two or three days instead of a few hours
- ◆ Almost all new patients come fro zip codes in the are of the evacuated Coney Island Hospital



Maimonides Hospital ER Photo by Benjamin Norman of the New York Times

New York Times, Dec 13 2013 "With Some Hospitals Closed After Hurricane, E.R.'s at Others Overflow"

Dialysis patients

- ◆ There are at least 26,000 Dialysis patients in the greater New York area*
 - ◆ 14,000 live in the greater NYC area
 - ◆ 40 Dialysis centers closed after the storm
 - ◆ No mandate for backup power
- ◆ Hospitals/Centers with power accommodated the “blackout” patients by doing shorter/less frequent runs on all
- ◆ Special pre-storm diet (Low K⁺, Restrict Fluid)

*Susan Caponi RN, Personal Communication (Verbal) on January 22, 2013. Ms. Caponi is the Executive Director of the IPRO ESRD Network- New York

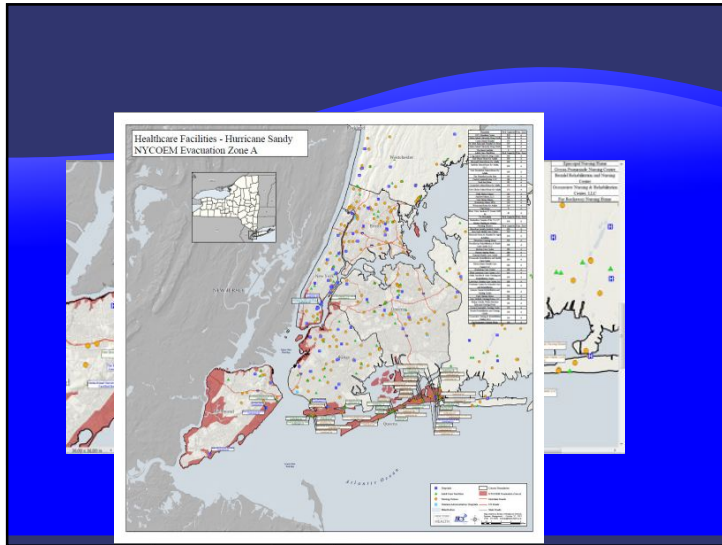
Nursing Homes-Not So Perfect

- ◆ Decision made not to Evacuate Nursing home (and Adult home) in the flood zone preemptively
- ◆ Transfer of so many elderly patients is risky
- ◆ 29 facilities in Queens and Brooklyn were severely flooded
- ◆ National guard, FDNY rescue over 4,500 NH and 1,500 adult home residents. Many carried down stairs.



Evacuation of nursing homes in the Rockaways-Photo by Dean Meminger- NY 1

The New York Times-Front Page story, Dec 2, 2012. "Behind a Call that kept Nursing Home Patients in Storm's Path"



Medical Special Needs Shelters

Sets up the shelter throughout the city and up to 1000 people are housed.

Insulin

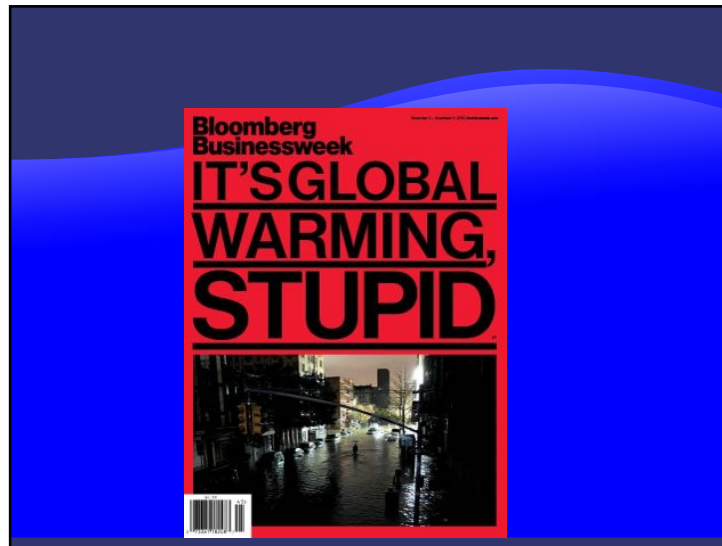
The complex block features a collage of four photographs. The top-left photo shows three medical professionals in white coats reviewing a document. The top-right photo shows a patient in a hospital bed being attended to by a nurse. The bottom-left photo shows a large room with many hospital beds set up on a red track. The bottom-right photo shows a similar large room with many hospital beds. The word "Insulin" is written in large, red, stylized letters across the center of the collage.

Hurricane Sandy's Effects on Healthcare in the Community

- ◆ Primary Care Medicine is disrupted
- ◆ Availability of Medications and Pharmacy Services
- ◆ Methadone for recovering addicts. A huge problem.
- ◆ Mental Health services-Offline-A stressful time

Lessons Learned -Sandy

- ◆ We need to fortify our hospitals and Nursing Homes against floods
- ◆ Hospitals need full time commitment to Emergency Preparedness
- ◆ Disasters work out best if doctors and nurses work side by side with administrative decision makers



Coney Island Hospital- Superstorm Sandy



- ◆ 371 bed Public Sector Hospital- Shelter's In Place
- ◆ "Electrically Vulnerable" Pts. are Evacuated ahead.
- ◆ The Hospital floods and there is enough back up power for the patients
- ◆ But all the support services are off line
- ◆ The sun comes and the Hospital evacuates
- ◆ It's the same phone calls and the same friends



Lessons Learned -Sandy

- ◆ The PACU is the most logical place to create room for a massive critical care surge of patients
- ◆ For these Critical Care patients-Best to bring staff
- ◆ All disasters are local –and local coalition partners are the key to success
- ◆ **This is definitely going to happen again!**



Lessons Learned -Sandy

- ◆ In flood zones all the Electrics need to be "On High"
- ◆ Hospitals need full time commitment to Emergency Preparedness
- ◆ Disasters work out best if doctors and nurses work side by side with administrative decision makers



Evacuation Critical Care- NYU to Mount Sinai

NYU and Bellevue to Sinai during Sandy

Chasoon, Kevin <kevin.chasoon@mountsinai.org>

Situation:

I am looking for some pictures but from a data perspective

We received 77 patients from NYU but here are the highlights

Overhead surge was actually in Labor and Delivery as we provided space after storm for NYU OB's to deliver at site!

We opened our PACU to NYU to provide NYU with umbilical clamps!

36 NYU deliveries from 10/30/12 to 11/01/12

We opened our PACU to NYU to provide NYU with the NYU staff:

- 10 Medical ICU patients in our PACU with the NYU staff
- 6 surgical ICU patients in another PACU
- 8 PICU patients were placed in our PICU
- 5 cardiac pediatric ICU patients in our pediatric cardiac ICU
- 4 NICU in our NICU
- 7 women in labor delivered at site!
- 5 women post partum with babies
- 5 pre and post solid organ transplant patients

Our deliveries increased by:

NYU staff emergency credentialled 208 over that week

17 docs

146 nurses

Respiratory tech 5

From Bellevue 37 patients:

Highlights:

- 20 Asian Pylori patient kept together with Bellevue team and transition.
- 13 TB/diabetic patients

Diagnoses:

Kevin

Kevin Chasoon, D.O.
 Director, Emergency Management
 The Mount Sinai Hospital



Coney Island Hospital- Superstorm Sandy



Coney Island Hospital



Artie Wagner- CEO Coney Island Hospital and his senior staff



Dialysis Patients-End Stage Renal Disease Network (ESRD Network)

- Regionalized Networks contracted by CMS to manage dialysis patients in the event of a disaster
- Large National Chains ("franchises") dominate the industry
 - Deeper resources to obtain generators, fuel and staff
- Between the two- and with back up from large hospitals- Dialysis needs are met.

Susan Caponi RN, Personal Communication (Verbal) on January 22, 2013. Ms. Caponi is the Executive Director of the IPRO ESRD Network- New York