Lessons Learned:

Major Hospital Evacuations

Presented by:

Elliott Gion, Med Sled Evacuation
Lessons Learned:

- Joplin, MO: Mercy Hospital
- New York: NYU Langone, Super Storm Sandy
- New CMS Guidelines
Lead time before impact: **24 Minutes**

- EF-5 Tornado, winds exceeding 200mph
- Cut a path $\frac{3}{4}$ - 1 mile wide for 13.8 miles
- Tornado Eye: approximately 300 yards wide.
- 8000 Structures were destroyed
- 160 Deaths
Joplin, MO: May 22, 2011
Mercy Hospital Took a Direct Hit
Mercy Hospital: Aftermath

- All Glass was blown out
- Roof Peeled off
- Gas and Sewer Lines Destroyed
- Generators Destroyed
- Communications lost
- Walls and floors lifted vertically
- All hospital vehicles destroyed.
“In an event of this magnitude, if you try to survive in your facility, you cannot do it. You will need to evacuate the facility as soon as safe to do so.”

- Dennis Manley, RN, Director of Risk Management-Mercy St. Johns
First things first ... Its about People

- Ambulatory
- Non Ambulatory...
  - People who can not SAFELY walk through debris or traverse stairwells without assistance AND without posing a risk to themselves or others
  - Sedation, elderly, amputee, post op, pre op, epidural, disorientation, Psych (NYU 100%) ...
Painting the Picture

- May 22, 2011 was a Sunday
- 183 Patients
  - 1 Surgical Case while storm was in progress
  - 1 Patient in the PACU
  - 24 ED Patients
  - 28 Critical Care Patients
Mercy: Intensive Care Unit
Mercy Hospital: Hallways

KMBC.com
Mercy Hospital: Lobby
Showers and blowing of glass everywhere
Raw sewage projected throughout building
Oxygen tank discharged all liquid oxygen
Doors were blown off their hinges.
3-6” of standing water in rooms & hallways
1 Working Stairwell
Some areas had 3’ floor to ceiling clearance.
“Evacuation was nearly impossible”
Joplin, MO Fire Department
“Anything that could be used to move a patient was used”.
- Evacuation Sleds
- Doors blown off hinges served as backboards
- Mattresses
- Wheelchairs
- Patients were moved down 9 flights of stairs
“In the late afternoon of May 22, 2011 an EF5 tornado hit Joplin, MO. It was a catastrophic event that no one could have expected. The lessons learned during the evacuation of Mercy Hospital are endless but the ability to evacuate the hospital in a timely manner taught us that having the proper equipment deployed in the patient care areas throughout a hospital was essential. The deployed Med Sleds were used in evacuating patients through debris filled hallways, down flights of stairs and out the building”

Charles Copple, Battalion Chief, City of Joplin Fire Department
Evaluate drills/responses
Drill until you fail.
Store Emergency Response Equipment/Supplies where you will need to use them.
Expect to deal with many injuries from the facility debris.
Add patient slippers/shoes to your weather plan.
Emergency Kits at locations throughout
- Paper/Pen, Gloves, Flashlights & Batteries.
Know your Local EOC-Coalition, State Level Positions, and Hospital Association.
October 2012, New York: Hurricane Sandy

- 2\textsuperscript{nd} Costliest Cyclone in US record-keeping history
- 147 Deaths
- 6,300 Patients Evacuated
- From 37 Healthcare facilities
NYU Langone
Because of a 14-ft storm surge, fuel pumps supplying backup generators were damaged, necessitating the urgent evacuation of 322 Patients.

More than 15 million gallons of water poured into the basements and sub-basements in the space of 30 minutes.
NYU Langone: Flooding
“The evacuation order is the hardest thing that we will ever have to do in our careers”

Loss of power caused the urgent evacuation of:

- 322 Patients
- 21 NICU Infants
NYU: Time to Evacuate

- 30 Evacuation Sleds
- “322 Patients were safely evacuated. NYU Langone personnel secured many patients onto evacuation sleds and maneuvered them through the twisting stairwells.”
- 13 Hours needed to safely evacuate all patients.
NICU: 21 Infants Evacuated
NYU Langone: NICU

- Level IIIc Neonatal Intensive Care Unit
  - 25 Beds
  - Average Census: 20

- August 26, 2011:
  - NYU NICU ordered to Evacuate
    - 19 Neonates Evacuated
    - 3 Mechanically Ventilated (1 on High Frequency Oscillator)
    - Completed in 16 Hours
NYU Langone: NICU

BREAKING NEWS
EVACUATIONS UNDERWAY AT NYU LANGONE MEDICAL CENTER
AND THE BROOKLYN BATTERY TUNNEL CLOSED NO TRUCKS ARE BEING
“It took a lot of Coordination between many, many people because normally babies that tiny are not held unless the mother is holding them”

“They all had central lines, and somebody needed to be holding the lines”

“They were on monitors because we had to know how they were doing, because we couldn’t see them that well”. “Somebody was holding the monitor, and then somebody was holding the oxygen tank, and we were bagging the baby.”

“With the really sick infants, we had about six or seven in a group...nine flights of stairs...everybody has to move together.”
Six to Seven People to Move One Baby
Preparing for Safe Transport

- Isolets: Not an option
- Vests: Not an option
- Basinettes: Not an option

- Hand Carry:
  - During Hurricane Sandy, Hand Carry was the ONLY option!
“It is critical to prepare your facility for the worst case scenario. There are many lessons we have learned from catastrophes like Hurricane Katrina, the Joplin tornado and now Super Storm Sandy. Our job as emergency preparedness professionals is to apply these lessons to our plans.”
**Reality**: Must plan for the worst case scenario

- Plan for the ONE thing you think will never happen (NYU)
- Practice – Realistic drills …
  - Darkness, (NYU) limited resources…(Joplin)
- Plan to go vertical
  - Most situations have had to. Practice it
- You will be on your own … 10 min to 10 hours plus (Every minute may count)
Reality:

- Do not over rely on technology or ability to sustain
- Mercy Hospital in Joplin and NYU had back up generators ...
- What man makes ... Mother Nature can break (every major disaster has proven this)
- Elevators are NOT an option in any evacuation scenario ... too dangerous and to slow (Joplin, NYU, Bellevue-NY)
- Must Plan for the Worst ... if you do you can handle everything less (NYU)
Condition of Participation: Emergency Preparedness

- The hospital must comply with all applicable Federal, State, and local emergency preparedness requirements. The hospital must develop and maintain a comprehensive emergency preparedness program that meets the requirements of this section, utilizing an all-hazards approach. The emergency preparedness program must include, but not be limited to, the elements below:
(a) The hospital must develop and maintain an emergency preparedness plan that must be reviewed and updated at least annually. The plan must do the following:

1. Be based on and include a documented, facility-based and community-based risk assessment, utilizing an all-hazards approach.
2. Include strategies for addressing emergency events identified by the risk assessment.
3. Address patient population, including, but not limited to, persons at-risk; the type of services the hospital has the ability to provide in an emergency; and continuity of operations, including delegations of authority and succession plans.
4. Include a process for cooperation and collaboration with local, tribal, regional, State, and Federal emergency preparedness officials’ efforts to maintain an integrated response during a disaster or emergency situation, including documentation of the hospital’s efforts to contact such officials and, when applicable, its participation in collaborative and cooperative planning efforts.
(b) The hospital must develop and implement emergency preparedness policies and procedures, based on the emergency plan set forth in paragraph (a) of this section, risk assessment at paragraph (a)(1) of this section, and the communication plan at paragraph (c) of this section. The policies and procedures must be reviewed and updated at least annually. At a minimum, the policies and procedures must address the following:

- (3) **Safe evacuation from the hospital**, which includes consideration of care and treatment needs of evacuees; staff responsibilities; transportation; identification of evacuation location(s); and primary and alternate means of communication with external sources of assistance.
(d) The hospital must develop and maintain an emergency preparedness training and testing program that is based on the emergency plan set forth in paragraph (a) of this section, risk assessment at paragraph (a)(1) of this section, policies and procedures at paragraph (b) of this section, and the communication plan at paragraph (c) of this section. The training and testing program must be reviewed and updated at least annually.

(1) Training program. The hospital must do all of the following:
   - (i) Initial training in emergency preparedness policies and procedures to all new and existing staff, individuals providing services under arrangement, and volunteers, consistent with their expected role.
   - (ii) Provide emergency preparedness training at least annually.
   - (iii) Maintain documentation of the training.
   - (iv) Demonstrate staff knowledge of emergency procedures.

(2) Testing. The hospital must conduct exercises to test the emergency plan at least annually. The hospital must do all of the following:
   - (i) Participate in a full-scale exercise that is community-based or when a community-based exercise is not accessible, an individual, facility-based. If the hospital experiences an actual natural or man-made emergency that requires activation of the emergency plan, the hospital is exempt from engaging in a community-based or individual, facility-based full-scale exercise for 1 year following the onset of the actual event.
   - (ii) Conduct an additional exercise that may include, but is not limited to the following:
     - (A) A second full-scale exercise that is community-based or individual, facility-based.
     - (B) A tabletop exercise that includes a group discussion led by a facilitator, using a narrated, clinically-relevant emergency scenario, and a set of problem statements, directed messages, or prepared questions designed to challenge an emergency plan.
   - (iii) Analyze the hospital's response to and maintain documentation of all drills, tabletop exercises, and emergency events, and revise the hospital’s emergency plan, as needed.
Questions?

Comments.

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The Joplin Tornado: The Hospital Story and Lessons Learned. [source]


Preparedness and Partnerships: Lessons Learned From the Missouri Disasters of 2011. Missouri Hospital Association. [source]

2012 NYU Langone Annual Report. [source]