Evacuation and Shelter In Place:

Essentials of Planning and Implementation

&

Principles of Patient Handling during

Healthcare Facility Evacuation

Success in Disaster Response is not accidental or Luck! It IS preparedness and practice!

"By failing to prepare you are preparing to fail."
— Benjamin Franklin

"The time to repair the roof is when the sun is shining."
— John F. Kennedy

"Luck is what happens when preparation meets opportunity."
— Seneca
Why Plan for Evacuation and Sheltering in Place?

The Reasons We Plan for Evacuation and Sheltering in Place:

- First and Foremost: It Saves Lives!
- Good Business
- OSHA Requirement
- Joint Commission Requirement
  - Written EOP which includes ‘staged evacuation’ and total evacuation

Box 3. An Example of the Integration of Nursing Home and Community Emergency Planning

The first, more rural county had emergency management staff that worked closely with nursing home administrators and have ongoing informal communication. In addition to reviewing plans, they advise nursing homes about improving plans and integrating with community plans as they evolve. Emergency managers knew the specific risk factors for each nursing home and were able to advise whether to evacuate, to designate special shelters, and to provide emergency generators. Prior to the storm, emergency managers in this county made contact with nursing homes to ensure that planned resources were in place and assisted the nursing homes with the evacuation and reentry processes.

In the other, more urban county, emergency managers and nursing homes have more formal relationships. They review nursing home emergency plans, but rely on the State to give nursing homes feedback regarding the adequacy of the plans. One nursing home administrator reported that “we are supposed to send our plan to the [agency], but we are not sure what they do with it.” When the hurricane struck, this facility decided to shelter in place. They weathered the hurricane and flooding well, but during the aftermath, the lack of community support became apparent. This facility subsequently evacuated for security reasons and also helped with the evacuation of another facility in the same county that was unable to get help from the emergency management agency.

Source: Summary of interviews with various community and nursing home respondents.
Box 2: The Experience of One Selected Nursing Home In Transit

The nursing home administrator and other staff reported that the facility emergency plan had minimal instructions for evacuation. For example, there was instruction regarding packing food, but no guidance regarding water or medication. The contracted transportation was unavailable and fewer than a quarter of staff remained to evacuate with residents. A mix of staff and borrowed vehicles was cobbled together in the final hours before the hurricane made landfall, and a nine-vehicle convoy began what normally would be a 2-hour trip to a campground.

The convoy was part of a widespread evacuation of a large metropolitan area. Traffic on all outbound highways was slow. Staff reported that temperatures reached 104 degrees and water among residents and staff quickly reached ration level. Other supplies were also inadequate. For example, one resident vomited early in the trip and staff had no cleaning materials. The drivers could not attempt an alternative route because none had maps. After 4 hours, one of the vans broke down and residents were unloaded and crowded into other vehicles. The next morning, after 12 hours on the road, another van broke down and residents were loaded into the remaining vehicles. Oxygen became low, and after calling the nearest town from a cell phone, the local emergency management service delivered an inadequate number of cylinders. Temperatures by midday again climbed over 100 degrees and the air conditioners in the two remaining vans were inoperable.

Once the convoy got close to the camp, camp managers sent two replacement vans and residents were redistributed again; however, only one of the camp vans had air conditioning. All vehicles had been out of water for hours and staff were able to change incontinence supplies only once. Other than one resident who was given a nurse's personal insulin, none of the residents received medication. Residents arrived at the camp after 10 hours in transit. All residents survived, but several were treated for cuts and bedsores resulting from the trip.

Source: Summary of evacuation described reported by the facility administrator.

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When Bad Things Go Right....

- May 22, 2011 - St. John’s Hospital - Joplin, Missouri
- 183 people evacuated within 90 minutes
Most Recent Good Outcome: Oct. 29, 2012

Hurricane Sandy – New York University Langone Medical Center in Manhattan, NY
- Reason: Power outage, (Primary, Secondary and Back Up power all failed within 30 minutes)
- NYU was in identified flood zone area
- Volume of patients evacuated:
  - 400 total patients in hospital
  - 100 discharged to go home
  - 300 Patients were evacuated
  - 20 of these were infants from Neonatal Intensive Care Unit
- One of the patients was the Hospital’s Chairman of the Board
- Patients were evacuated at a rate of approximately one patient every 15 minutes (Huffington Post)
  - Took 15 hours to evacuate hospital (7:30 p.m. to 11:30 a.m. the next morning)

- Resources used for evacuation:
  - 300 patients
  - Infants Carried by Nursing Staff
  - Med Sled

- Immediate issues and decisions which arose:
  - Had to make sure no one was left behind
  - Had to decide who was the sickest and who needed to go first

- Interesting public relations points:
  - Chairman of the board stated “there was nothing more they could have done to prevent the generators from failing”
  - One of the Board’s Trustees stated that the “generators were not state of the art”.
  - Mayor Bloomberg was angry because hospital officials had “assured the city that they had working back up power.”
  - Due to sporadic phone service - NYU depended on the receiving hospital to notify families.

When Bad Things Get Worse....

August 2005- Hurricane Katrina- Memorial Hospital New Orleans, La.
Reasons for Success and Failure

- **Success:**
  - Joplin had just participated in an evacuation drill two weeks prior to the tornado striking St. John’s Hospital
  - NYU – was not under ‘damage stress’

- **Failure**
  - New Orleans had failures on many levels
  - Hospital did not anticipate the severity and magnitude of Hurricane Katrina and its effects on New Orleans
  - 187 Patients, 800 others = Visitors/Staff members/Family Members
  - 45 people died
  - Memorial Hospital was cited for lack of preparedness in settlement of class action. Tenet Healthcare System will have to pay $25 million to patients and visitors for failure to adequately prepare for disaster events

Top Reasons for successful evacuation of a facility:

- **PLANNING**
- Good Decisions
- Drills/Exercises
Elvis has left the building!

What is Evacuation?
The process of moving patients/visitors/staff either totally or partially out of the affected area when the facility cannot maintain a safe environment of care. Evacuations may be emergent (fire or other immediate life safety threat or post-event-) or non-emergent (delayed life safety threat or anticipated evacuation or pre-event).

What is Shelter In Place?
It is the process of taking immediate shelter in a location that is readily available and provides a safe haven to all patients/visitors and staff when there is impending or imminent danger and evacuation is not deemed necessary or feasible for that time.
Shelter in Place and Evacuation

- Many different reasons for having to either evacuate or shelter-in-place in your facility

- Each different type of scenarios/disaster event should be identified during:
  - HTVA
  - Each Risk/Vulnerability identified should be part of the Disaster Plan
  - Continuity of Operations Plan should take each risk/vulnerability into consideration during planning for resources needed

Types of Disasters or Events:

<table>
<thead>
<tr>
<th>Natural Disasters</th>
<th>Technological Hazards</th>
<th>Terrorism</th>
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<tr>
<td>Floods</td>
<td>External: Hazardous Materials Events</td>
<td>Explosions</td>
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<tr>
<td>Tornadoes</td>
<td>Nuclear Power Plants</td>
<td>Biological Threats</td>
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<td>Hurricanes</td>
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<td>Chemical Threats</td>
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<td>Thunderstorms and Lightening</td>
<td>Internal: Loss of Utilities</td>
<td>Nuclear Blast</td>
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<td>Winter Storms and Extreme Cold</td>
<td>- Water, power, gas, medical gases, fuel</td>
<td>Radiological Dispersion Device (RDD)</td>
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<td>Extreme Heat</td>
<td>- Generator failure</td>
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<tr>
<td>Earthquakes</td>
<td>- Loss of HVAC</td>
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<tr>
<td>Landslide and Debris Flow</td>
<td>- Fire</td>
<td></td>
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<tr>
<td>Tsunamis</td>
<td>- Loss of essential services</td>
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<tr>
<td>Fires</td>
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<td>Wildfires</td>
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Evacuation Plan Essentials

Develop Shelter-in-Place and Evacuation Plan

Consider all essential components for planning evacuation and shelter in place:

- Authority and Decision Making Process
- Circumstances and types of evacuation and/or SIP
- Communication
- Patient Evacuation Priorities
- Alternate Care Sites
- Transportation
- Staging and Tracking Patients
- Confirmation of Evacuation
- Recovery, Reopening and Repopulation of Evacuated Facility
- Training, Exercises and Drills
Plan Elements Considerations:

- **Plan Elements**
  - Activation and Decision Making Authority/Process
  - Communication
  - Evacuation Types
    - Pre – event priority
    - Post- event priority
    - Vertical or horizontal
  - Evacuation Process
  - Equipment inventory

- **Process:**
  - Equipment usage
  - Marking of evacuated areas
  - Patient Staging
  - Patient tracking
  - Patient transportation
  - Patient delivery and tracking at destination
  - Recovery, Reopening and Repopulation of facility
  - Training Exercises and Drills

When to Stay and When to Go???

Shelter in Place versus Evacuation

- **Authority**
  - Incident Commander other designated authority
  - External Authority- Public Safety Officer (Fire Chief, Police, Governor)

- **Decision Making Process and Logic**
  - Information needed to make decisions
  - Information Available
  - Event
  - Imminent or present danger
Hospital Evacuation and Shelter in Place Decisions

Event or Situation
- Event Requiring facility to consider whether evacuation or shelter in Place Plans should be activated
- External and Internal information regarding event

Must Shelter-in-Place
- The external environment would pose a greater danger to patients, staff and visitors than evacuation (e.g., Chemical/biological agent release, nuclear incident plume
- Adequate and timely facility and/or mutual aid resources are not available or accessible (e.g., earthquake)

Must Evacuate
- The proximity, scope and/or expected duration of event poses an immediate threat to patient and staff safety
- Adequate and timely facility and/or mutual aid resources are available and accessible to support Full or Partial Evacuation

Event
- Activate Shelter-in-Place Plans
- Initiate Conservation Measures as Necessary
- Initiate EOP - Capabilities - Patients

Sources of Information for Decision Making Process

Factors to consider when determining to either evacuate or shelter in place:

1. The nature of the event, including its expected arrival time, magnitude, area of impact and duration

2. The anticipated effects on both the hospital and the community, given the nature of the event
Types of Information Needed for the Decision Making Process:

Current information (Situational Awareness) of external events and possible impact on facility with time of impact estimated

Plant Operations/Maintenance Department’s evaluation of the utilities and or structural integrity of facility (impending or actual)

The Medical staff and/or Nursing Department’s determination of whether adequate patient care can continue under the current

Types of Evacuation and Sheltering in Place

Pre Event
Post Event
Partial Evacuation or Shelter in Place
Complete Evacuation or Shelter in Place
Vertical
Horizontal
Shelter in Place Considerations:

Re-locate patients and/or residents to the safest location within the medical facility
– Vertical (another level)
– Horizontal (same floor-different area)

Must have enough staff, supplies, food, water, equipment, medications and
Emergency Utilities such as power, water, fuel, and medical gases for
At least 72-96 hours!

Evacuation Types

Pre-Event Evacuation:
Evacuation which is initiated due to an impending threat to the community and facility. Can be performed at a slower pace.

Post-Event Evacuation:
Evacuation which is performed after an event has occurred and damage to the infrastructure and/or facility has occurred rendering the staff incapable of continuing to provide care to patients

Advance Notice

Minimal to No Notice
Based on imminent danger: Usually pre-warning with time available to prepare in a timely manner

No pre-warning: Facility incurs structural damage or loss of infrastructure!
Evacuation Categories

Partial Facility Evacuation:
Evacuation of a subset of facility patients - this may involve patients requiring specialized care that can no longer be safely delivered at the affected facility (i.e. intensive care, dialysis).

Vertical Evacuation:
Movement of patients to a safe area on a different floor or outside the building. Considerations must be made for moving non-ambulatory patients up and down stairs without the use of elevators.

Complete facility evacuation: All patients, personnel and visitors are evacuated to another facility or alternate care site (will involve horizontal and vertical evacuation). Will also usually involve facility shut-down actions.

Horizontal Evacuation:
First response of moving patients from a single danger area to another, more safe, area on the same floor, preferably nearer to an emergency exit.

Communications

Internally
- Should be in PLAIN English
- Should reach staff
- Should reach patients and visitors
- Medical Providers

Externally
- EMA
- Public Health
- EMS, Fire, Police (Transportation)
- Partner Agencies
- Alternate Care Sites
- Patient Families
- Community

Define Who will do the communications (PIO, JIC) and How communications will be done (canned messages which can be modified to specific event)
Triage Priorities

Do the greatest Good for the Greatest Number!

• Pre-Event  (Timely evacuation)
  ▪ Evacuate the most fragile and resource intensive patients first
  ▪ Non- ambulatory patients
  ▪ Semi Ambulatory patients
  ▪ Ambulatory patients

Since this is an orderly and non emergent evacuation- you can transport several categories of patients at the same time- especially if you have different types of transportation sources.
  ▪ Transporter types: ALS, BLS, Ambulatory/First Aid

Triage Priorities

• Post Event (Rapid evacuation- under duress and stress)

• Evacuate most hazardous areas first! (closest to danger and farthest from the exit) and the most fragile population first

• Sequence of evacuation should be:
  – Patients in immediate danger
  – Ambulatory patients
  – Semi- ambulatory patients
  – Non- ambulatory patients

Do the greatest Good for the Greatest Number!
What to take with Patients?

Always try to ensure continuity of care:

- **Document of Care** document (medical record or a 1-2 page summary document)
- **Medications**
- **Food / water** (depending on distance to alternate care site)
- **Assistive devices**
- **Anything else which will facilitate continuity of care**

Alternate Care Sites

**QUESTIONS??????**

- Where are you going to send the evacuated patients?
- Where are the designated Alternate Care Sites?
- Do you have MOUs or agreements in place with those facilities?
- Will they be able to care for the patient acuity levels you will be sending?
- Do you also need to send staff with the patients to provide patient care?

**Solutions:**

- Partner with like agencies to ensure same level of care
  - Within the community of affected facility
  - Outside of the community area
- Develop Memorandum of Understanding or Contracts with these partners
- Discuss patient care, patient acuity levels and staffing of patients at Alternate Care Site facilities
**Transportation**

- Is your primary plan to use EMS??
- How will patients be moved?
  - Ambulances
  - Buses
  - Helicopters
  - Trucks
  - Cars
- Partner with community resources
  - Schools
  - Bus Services
- Do you have relationships with all of your transportation partners?
- Have you trained with your partners/providers?

**Staging and Tracking**

**Patient Staging:**
- Designate Triage Areas
- Designate staging areas specific to patient acuity needs
- Designate locations where patients will be brought once evacuated from the facility so transportation resources can easily pick them up
- Patient ‘pick up’ locations should be easily accessed with capability of diminishing traffic jams
- Communicate and train staff on patient staging procedures

**Patient Tracking:**
- Designate a patient tracking system/process to ensure tracking location of patients
- Patients should have identification wrist bands or evacuation tag
- Tracking form should contain key patient information such as:
  - Medical Record number
  - Time they left the facility
  - Name of transporting agency
  - Medical Record (either original or document of care document)
  - Critical medical information
  - Medications
  - Equipment (yes/no)
  - Family notified of transfer (yes/no)
  - Private MD notified (yes/no)
  - Destination
Confirmation of Evacuation

- Do you know if everyone has been removed from the building?
- Do you have a plan in place to mark rooms and then do a follow up survey to check and make sure all rooms are empty?

Ensure every patient has been evacuated from the building:
- Mark all areas which have been evacuated
- Designate who is responsible for ensuring/checking that no one has been left behind
- Define a post evacuation process to validate that everyone has been evacuated
- Communicate evacuation confirmation

Make sure all of the ‘Elvis’s have left the building!

Sample Evacuation Marking

Used after Hurricane Katrina on Houses Searched:
Recovery, Reopening and Repopulation of Evacuated Facilities

- Develop guidelines and checklists for repopulating the facility after it has been evacuated to ensure that it is safe for reopening
  - Circumstances for evacuation will dictate some of the process

- Process for securing government/regulatory agency approvals for reopening after structural/infrastructure damage

Facility Recovery/Repopulation

Systematic healthcare facility repopulation should be considered for:

- Certain types of damage or severity of facility damage
- Significant damage to the surrounding community and municipal services
- Complete Facility Evacuation
- Facility Closure – Brief versus Protracted
Recovery / Repopulation Considerations

• Priority considerations:
  – Safety of building- Structural integrity
  – Operational Basic Municipal Services (Fire, Law Enforcement)
  – Adequate staff to safely operate the hospital
  – Safe Passage to and from the hospital for patients, staff and suppliers
  – Operational EMS, local ambulances and paramedic services

Additional Recovery/ Repopulation Considerations

- **Administration:** Coordination / Decisions / Financial
- **Facility:** HVAC, Water, Power, Elevators, other critical infrastructure
- **Security & Fire Safety:** Radiation Containment, pharmacy security, perimeter safety
- **Information Technology and Communications:** Data back up, password authentication, nurse call and paging systems
- **Biomedical Engineering:** Medical Equipment function in all units, Operating Room, Emergency Department, Laboratories, and Pharmacy

- **Medical / Patient Care Areas:** (ED, ICUs, OR, Clinics)
- **Ancillary Services:** Pharmacy, Morgue, Blood Bank, Clinical Research Labs
- **Material Management:** Supplies
- **Building and Grounds Maintenance:** Environmental Services, Waste Disposal
- **Facility Damage:** Fencing, exterior or roof damage
- **Support Services:** Housekeeping, Dietary, Kitchen, Patient Transport, Volunteer Services
Training, Exercises, Drills

Practice makes perfect

• Train everyone on plan

• Participate with community partners in exercises

• Have internal drills on how to move patients

Principles of Patient Handling During Evacuation
NUMBER ONE RULE OF EVACUATION:

STAFF Safety must be a high priority to prevent injuries to the staff and to the patients such as:
- Lifting injuries
- Trip Injuries
- Bio Hazards

Patient and Staff Considerations in Evacuation

Special consideration must be given to fragile and psychiatric patients:
- Speak calmly, simply and concretely using short sentences
- Identify yourself
- Respect the dignity of the person as an equal and an adult
- Look for and take note of medications and special medical considerations
- Give the patients frequent updates
Patient and Staff Considerations in Evacuation

Ensure that you have a system in place which includes:

– Prioritizing / triaging patients for evacuation
– Tagging Process for identifying patient acuity and levels of care required
– Identifying and preparing patients for evacuation:
  • Physical preparation of patients
  • Medical records
  • Medications
  • Essential medical supplies/equipment

Other Considerations:

No power = No elevators

No elevators = Physical Evacuation
Staging Evacuation Resources

Evacuation equipment should be stored strategically throughout the facility to maximize timely access and utilization:

- Each storage location should be clearly marked
- A List of equipment should be kept at each location
- Equipment should be inspected and inventoried regularly
- Locations of evacuation equipment should be marked on hospital evacuation maps

Many different types of Equipment:

- Sled beds
- Stair chairs
- Ski sheets
- Basket stretchers
- Mattresses
- Backboards
- Baby Carriers
- Bariatric Vacumat
Pediatric and Infant Equipment Examples

Triage Considerations

Evacuation Triage:

– START Triage Categories are reversed for evacuation
– START Triage Categories revert to original category once the patient reaches staging/Alternate Care Site
  • Most unstable persons will need to be moved into Alternate care medical facility first!
Patient Evacuation

<table>
<thead>
<tr>
<th>Triage Level</th>
<th>Priority for Evacuation of Patient Care Units</th>
<th>Priority for Transfer to Another Healthcare Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green- Go</td>
<td>These patients require minimal assistance and can be moved FIRST from the unit. Patients are ambulatory and 1 staff member can safely lead several patients who fall into this category to the staging area.</td>
<td>These patients will be moved LAST as transfers from your facility to another healthcare facility.</td>
</tr>
<tr>
<td>Yellow- Caution</td>
<td>These patients require some assistance and should be moved SECOND in priority from the inpatient unit. Patients may require wheelchairs or stretchers and 1-2 staff members to transport.</td>
<td>These patients will be moved SECOND in priority as transfers from your facility to another healthcare facility.</td>
</tr>
<tr>
<td>RED- Stop</td>
<td>These patients require maximum assistance to move. In an evacuation, these patients move LAST from the inpatient unit. These patients may require 2-3 staff members to transport.</td>
<td>These patients require maximum support to sustain life in an evacuation. These patients move FIRST as transfers from your facility to another healthcare facility.</td>
</tr>
</tbody>
</table>

Patient Movement Techniques

**WITH Assistive Devices**

Using assistive devices is usually the safest and easiest way to move patients for the staff and patients!
Patient Movement Techniques

Stair Chair:

Patient Movement Techniques

Basket Stretchers
Patient Movement Techniques

Sled Beds:

Evacuation Sleds
Transportation
Plan in advance and don’t let your resources end up like this.....

Buses in New Orleans after Hurricane Katrina

Use Your Community Resources:

Partner with your local Fire Department to assist with your evacuation training:

- Equipment selections
- Patient Packaging Techniques
- Moving Patients Vertically and Horizontally
EXERCISES and DRILLS

Should be conducted on a regular basis with your response partners!

Remember the key components for successful evacuations are:

– Planning
– Good Decisions
– Exercising and Drilling your Plan!
Questions?