Hospital Disaster Preparedness: Meeting a Requirement or Preparing for the Worst?

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Too many of our nation's hospitals have become complacent over disaster preparedness. They develop a document to meet a licensure requirement or a Joint Commission on Accreditation of Healthcare Organizations standard. The language is minimal and when the document is exercised, only a few portions (personnel recall and mass casualty, in particular) are tested. It would benefit hospitals to take time to talk to those recently effected by floods, earthquakes or hurricanes, so that they would learn that to be really prepared to face and survive a disaster, extensive, in-depth planning must take place.

INTRODUCTION
Disasters come in all shapes and sizes. They can be natural or man-made. They can be called names like hurricanes, earthquakes, floods, fires or chemical spills/releases. They can come with days of prior warning or can happen without any warning at all.

Hospitals throughout the United States have a disaster plan as a requirement of state licensure or complying with a JCAHO standard. The key question concerning these plans is, do they meet the needs of the facility and the community? Too often, they do not.

WHERE TO START
How do hospitals begin to formulate an adequate disaster plan? The responsibility to develop the plan should be given to a committee, using a self-existing disaster preparedness committee or a subcommittee of the safety committee. The committee should include representatives from every department in the hospital.

"...The disaster planning committee...should include representatives from the following:

- Medical staff (ER physician or trauma surgeon)
- Administration (includes risk manager)
- OR manager
- Nursing staff
- Emergency department
- Security
• Communications
• Public relations
• Medical records and admissions
• Engineering/maintenance
• Laboratory
• Radiology
• Respiratory therapy

This process must be a team effort. No one activity should be given preference over another. The committee members should serve extended terms and rotate off to assure continuity, and they should have the ability to dedicate the time needed to produce a viable plan. The committee should look at each type of disaster that may affect the facility. With the various types of disasters come problems and situations inherently unique to that specific situation.

The committee should initiate an assessment to determine the hospital's capability, potential problem areas and other concerns that must be addressed during a disaster (Appendix A). The entire premise should be examined to see how a disaster will have an effect on the building and how health care will be provided.

Questions need to be asked, such as: is there a well on the property and is it connected to the emergency generator? If triage has to be done outside of the hospital, is there power in the designated area and is it on the emergency generator? Will the air handlers have water if the local water supply is damaged? How will water be rationed? How will food be provided? How will communications be performed (internally and externally)?

Equipment and supplies must also receive the same scrutiny. Are there enough supplies to take the hospital through the first 72 hours post-disaster? Another type of assessment should be an evaluation of where the staff resides. For instance, in an earthquake or flood scenario, personnel who live in the affected portions of the community may not be able to make it into work. Therefore, staffing will have to be adjusted to meet needs. Will staff members be permitted to cross security disaster area lines with their current identification?

To determine needs after the assessments are completed, the gaming process can be used. Different scenarios should be brainstormed and played. This process will help to identify shortcomings before an actual situation is experienced.

Changes in Patient Needs

Changes in the way health care is delivered has generated another requirement for disaster planning. Hospitals are discharging patients to home...
health care. Dialysis patients are treated on an outpatient basis. There are all
types of special needs patients in our communities. Plans should be made with
their family members or friends to evacuate them during times of disasters. For
those patients who cannot rely on their own means of evacuation, local
emergency preparedness agencies must be used for transportation.

In order for these emergency preparedness agencies to properly evacuate
patients, the hospital or home health agency should have the ability to provide
patients' locations and their specific needs as quickly as possible (consult with
the local emergency preparedness agency to establish time frames). Home health
agencies must have a disaster plan. This is required by both the Joint
Commission and the Community Health Accreditation Program (CHAP). Many
communities have special needs shelters which have the ability to provide
temporary care until patients can be relocated or moved back into their homes.

"The staff assesses patient disaster plan needs based on patient's health status,
type of housing, or geographical location. Patients are assigned a risk level...used
to determine patient health care and/or evacuation needs so appropriate actions
can be implemented in a disaster."2 This way, disaster preparedness agencies
know how to prioritize evacuations and the type and amount of transportation
that will be needed. Plans should be made to bring these patients in-house if they
cannot be moved to family, friends or out of the area. Red Cross shelters are
usually not equipped nor is their staff trained to handle patients with special
needs.

The "Buddy System"
Mutual aid agreements with other health care facilities should be included
within hospital disaster plans. These agreements should be for personnel,
supplies, equipment, transportation and whatever else is determined to be
needed in the event that a disaster occurs. These aid agreements should be made
with hospitals and vendors both within your hospital's locale and outside of
what may be the affected area. These agreements should be written and signed
by all parties involved.

Keep It Simple
The most effective document of any kind is one that is easily understood. Most
hospital disaster manuals are lengthy and contain voluminous amounts of
information. True, this information is very important in assisting staff's reaction
to different situations. Realistically, staff members do not have time to familiarize
themselves with every aspect of the disaster manual until there is an actual
occurrence. Then, if it is not an easily understandable document, items may "slip
through the cracks." Disaster manuals should be comprehensive, yet simple.
Where possible, important tasks, procedures, supplies, equipment, etc. should be
in a checklist format. Each job within the hospital should have a checklist for its specific tasks.

One of the best examples of emergency preparedness through checklists can be found in The Hospital Emergency Incident Command System (HEICS) developed by the Orange County (CA) Health Care Agency Emergency Medical Services, in conjunction with several California hospitals (see Appendix B for an example). The system is flexible and easy to understand and follow.

**RECOVERY**

The disaster recovery phase is rarely addressed in hospital disaster plans; however, when the disaster is over, the work has just begun. Hospital disaster planners and safety personnel must quickly pass through the denial that nothing will ever happen to their facility and begin to deal with the realities.

At what point does recovery begin? Planning for recovery begins before anything ever happens. Hospitals should start with a complete inventory of their assets, both buildings and equipment. When new buildings are built, additions are constructed, major renovations occur within the hospital or any other addition or improvement occurs to the inventory, photographs or videos should be taken to build a historical file that can be presented to an insurance agent post-occurrence. "A picture is worth a thousand words" is not just a catchy phrase.

For insurance claims, pictures present the actual condition prior to any damage. In hurricane zones, the staff has time to run around and photographically document the current condition of the campus prior to the storm's landfall. Tornadoes, fires and earthquakes do not allow that luxury. And remember, do not forget to photograph any damage prior to its removal or clean up.

Know your insurance coverage. Not only is replacement insurance needed, business interruption coverage may also be required. Business interruption insurance will help minimize the financial impact of losses from reduction or elimination of earnings, continued expenses and extra expenses needed to stay open or to reopen. The loss of revenue caused by the amount of time the hospital is closed can be devastating. It can take years to recover.

As soon as possible after the disaster, the building(s) should be assessed for structural damages. This can be done by in-house engineering staff or through an outside contract with a professional engineer. It must be decided if the building is safe for continued occupancy. This will be a major determining factor whether total evacuation is necessary and what level of care the hospital can provide.
There are common post-occurrence problems that must be addressed during the recovery phase (Appendix C). They are not disaster specific and must be addressed during the planning phase so that if they do occur, back-up systems or support from those with whom reciprocal agreements have been signed can be initiated.

**Drills**

Disaster plans are no help to anyone unless they work. Other than during a disaster itself, the only way to actually test a plan is through organized drills. Do not focus totally on patient treatment. Depending on the disaster, there might not be much of a facility left to offer treatment. If the hospital is in a hurricane zone, utilize "table top exercises" to test preparation during certain time periods prior to landfall. Most planning is done in 24-hour increments (24-48 hours prior to land- fall, zero-24 hours prior, etc.). Then you can focus on receiving patients.

You do not have to be in a hurricane zone to have table top exercises. During the next disaster drill, involve the hospital engineer in solving problems that could be generated from a flood, earthquake, tornado or fire. Ask your local emergency preparedness agency to include your facility in its exercise. Take advantage of these exercises and involve all staff, not just the emergency room staff. If you are an accredited facility through the Joint Commission, you must have no less than two exercises per year and most licensure organizations require a minimum of one.

**SUMMARY**

As part of the Disaster Coordination Center for the South Carolina Hospital Association, a review of the majority of South Carolina hospitals' disaster plans was done. Noting inadequacies, a tool (Appendix A) was developed which many hospitals have used to strengthen their disaster preparedness plans. The biggest obstacle in hospital disaster preparedness is finding time for staff to devote to developing a comprehensive, workable plan. Staffs have been reduced to the point where only those tasks necessary for patient care have priority. However, hospitals must realize how important it is to plan for a disaster, even though one may never occur.

Hospital disaster plans should prepare a hospital for any type of disaster that might happen. Extensive planning must occur utilizing the talents of many people throughout the organization. How your facility is prepared to "weather the storm" is as important as how it recovers from the storm. The efforts of the planning will result in how your hospital will be able to serve the community after a disaster. The cycle of planning, exercising and rewriting is never ending. The more you engage in the process, the better prepared you will be.
APPENDIX A

If the Winds Blow and the Earth Shakes: A Disaster Planning Checklist

A good disaster plan will address any contingency that the hospital may face. Hospitals tend to use a generic approach when preparing their disasters plans. However, not all disasters are the same. Some will involve mass casualties while others will involve the facility and its operation. A disaster plan should be simple so that all staff can understand it, but thorough enough so that if a disaster should strike the hospital or its surrounding community, staff will be able to respond appropriately.

Here are some ideas to help evaluate a disaster plan and issues that should be addressed within the document. This checklist is not intended to be comprehensive; it is developed as a tool to assist in planning.

I. Square One
   A. Has a disaster planning committee been formed?
   B. Are there representatives from the medical staff (particularly from the emergency department and surgery), nursing, various support services and administration?
   C. Has this committee been charged with overseeing the development of the disaster manual?
   D. Does this committee review and critique disaster drills and evaluate whether changes need to be made to the disaster manual?
   E. Has the Board of Trustees been informed of its responsibilities in the event of a catastrophe to the hospital, and is it willing to delegate certain decision-making to the CEO for expenditure of funds for emergency needs/repairs?

II. Address the Threat
   A. Is the area in which your hospital is located susceptible to:
1. Hurricanes?
2. Earthquakes?
3. Tornadoes?
4. Nuclear accidents?
5. Physical attacks?
6. Flooding?
7. Chemical spills?
8. Fire?

B. If the answer is YES to any of the above, have you addressed the following?
   1. How each disaster will affect the facility.
   2. How each disaster will affect the road network surrounding the hospital.
   3. How each disaster will affect the staff’s personal life (family and homes) and possibilities of housing certain staff within the hospital during the period following the disaster.
   4. Types of injuries caused by each disaster.
   5. Types of staff, supplies and medication needed for each type of disaster.
   6. Additional support needed to react to each disaster.
   7. Photographic documentation of building(s) and equipment (pre-disaster).

III. Organize Staff
   A. Is there a call-back roster and is it updated frequently? Does the roster include the individual’s cellular telephone and beeper numbers, when applicable?
   B. Is there a roster for outside support activities needed during a disaster and is it updated frequently?
   C. Have personnel responsibilities been defined and a checklist developed for each key position?
   D. Are there rosters of personnel from within the hospital whose duties are changed when a disaster occurs, and are they aware of their responsibilities?
   E. Has a chain-of-command been developed for the hospital and its departments?
   F. Have communication links been developed within the hospital when normal communication services are disrupted?
   G. Has a command center been identified, as well as personnel who will occupy the center and equipment that will be needed?
   H. Has a security plan been developed?
   I. Has each department developed its own checklist of what needs to be done within its areas to prepare for or react to a disaster?

IV. Survey the Facility
A. Location of the Hospital Command Center
   1. Is it a central location, easily accessible and familiar to staff?
   2. Is the location isolated from where patient care will be given?
   3. Are there adequate telephone lines into the location (at least one direct line out of the building)?
   4. Will press briefings be given from this location or will another place be designated?
   5. Is the location powered by the emergency generator?
   6. Is it large enough for command activities?
   7. What furniture will be needed during command center operations?
   8. Are tasks for those manning the command center formulated?
   9. Have you made photos of your buildings and structures on your campus?
  10. Have you evaluated your insurance coverage with your insurance agent?
  11. Has your facility been equipped to connect with an external, mobile emergency generator if necessary?

B. Treatment of emergency patients
   1. Will there be too many patients for the space in the emergency department?
   2. Where will triage take place?
   3. Will patients have to be evacuated? Where to? How will they get there?
   4. Will decontamination from a chemical or radioactive material exposure be required? Where and with what equipment?

C. Damage assessment to the hospital
   1. Is the structural integrity of the building compromised?
   2. Is the emergency generator damaged?
   3. Are there alternative sources of essential utilities?
   4. Are elevators safe?
   5. Is the water system functional?
   6. Is water safe to drink?
   7. Are ceilings safe to work under?
   8. Is the HVAC system working?
   9. Are communication systems working?
  10. Is the sewage system working?
  11. Are the fire suppression and alarm systems working?
  12. Is there a water rationing plan in the event of water outage or other water problems?
13. Is there a camera with adequate amount of film available to record damages to the building and equipment for insurance purposes?

D. Identify patient rooms that may have to be used by physicians and staff if their presence is required around the clock.

V. Supplies

A. Are the following supplies identified or stored for use during a disaster?
   1. Flashlights and batteries
   2. Water for immediate use
   3. Medical supplies
   4. Medical equipment (batteries charged)
   5. Beds
   6. Wheel chairs
   7. Linen
   8. Litters
   9. IV equipment
   10. Bed pans and urinals
   11. Pharmaceuticals
   12. Cellular telephones or other communication linkages
   13. Food
   14. Other supplies and equipment identified by the disaster planning committee
   15. Weather alert receiver
   16. Extra supply of oxygen
   17. Plywood to protect windows (minimum of ¾" thick)
   18. Adequate fuel supply for the emergency generator
   19. Sand bags and rolls of plastic if located in flood prone areas

B. Are there emergency "disaster kits" (flashlights, batteries, etc.) located on patient care floors, treatment areas or other designated areas that are immediately accessible if a disaster were to occur, and are they inspected at least annually? (Prior to hurricane season for coastal hospitals.)

C. Have mutual agreements been signed with another hospital(s) (in and outside of your location) to assist in furnishing supplies/equipment in the event there is a need?

D. Have agreements been made with vendors (in and outside of your location) to furnish supplies/equipment during a disaster?

E. Are status reports given daily on supplies and equipment during recovery period?

VI. Accounting
A. Are the computers that contain vital records and financial information on the emergency generator and uninterrupted power sources?
B. Are there computer back-up files kept by the medical records and accounting departments and stored in a safe place (where they will not receive water or wind damage)?
C. Is there a system to gather insurance information from patients who present themselves or someone else to your hospital during the disaster?
D. Is there a system to pay employees by cash in the event of a major disaster?
E. Does the CEO have the board's approval for layoffs or over-hires during a disaster?
F. Is there a system in place to pay or reimburse for patient transfers and/or "out of the ordinary" services that are generated by a disaster?

VII. Patient Care
A. Is a procedure in place to discharge patients who can be discharged?
B. Is a triage area determined if the emergency department is over flowing?
C. Are medical department roles spelled out?
D. Are standing orders developed?
E. Are there plans to care for community special needs patients, e.g., dialysis patients, oxygen dependent patients, etc.?
F. Are there agreements with other facilities to transfer patients that require a higher level of care?
G. Have arrangements been made for transportation of those patients being transferred?
H. Has a protocol been developed to determine which patients require staff accompaniment during transfer and what level of staff is to accompany the patient?
I. Have transportation routes been determined for the transfer of patients?
J. Are status reports given on patient census and bed availability?

VIII. External Coordination
A. Has contact been made with the following entities to coordinate each other's role during a disaster?
   1. County emergency preparedness agency
   2. Local chapter of the American Red Cross (it operates disaster shelters and offers assistance to disaster-stricken persons)
   3. Long-term care facilities in the hospital's vicinity
4. Other organizations which care for special needs patients which may end up in your facility
5. Local National Guard (remember, its assets and services belong to the Governor during disasters)
6. Other hospitals, should you have to evacuate
7. Fire department
8. Police department
9. Emergency medical services (ambulances, private and public)
10. Local utility companies
11. External means of transporting patients (bus companies)
12. Local funeral homes for temporary morgue facilities

B. Coordinate with other hospitals or vendors in developing assistance agreements for supplies, equipment and/or personnel.
C. Coordinate with local amateur radio operators to assist you in the event of communication disruption (this will require having radios within your facility and antenna on your roof).

IX. Evacuation

A. Who authorizes evacuation of the hospital?
B. For partial evacuation, are areas identified within the hospital where patients will be evacuated? Consider utility requirements for ICU/CCU and OR patients.
C. Has coordination been planned with receiving unit, and is there equipment to transport when partial evacuation is required?
D. For full evacuation, has coordination been arranged with receiving facilities and has transportation been arranged to move the patients?
E. Identify who will accompany relocated patients.
F. Are evacuation routes identified?

X. Drills

A. When you conduct disaster drills, are all types of disasters eventually addressed? (See paragraph II, section A)
B. Are all aspects of a supposed disaster tested or only mass casualties?
C. Do drills include testing external agreements that you have with hospitals/vendors?
D. Are areas of the plan tested other than activating the recall roster?
E. Do staff members understand their functions during a drill?
F. Are drills evaluated using criteria determined by the disaster planning committee or the safety committee?
G. Are drills critiqued to determine short falls and strengths?
H. Is the entire disaster planning committee present for critiques?
I. Is the disaster manual corrected when short falls are determined?
J. Are new employees educated in what is expected of them during a disaster?
K. Are all hospital activities involved in disaster drills: engineering, materials, biomedical engineering, accounting, etc.?

XI. Recovery
A. Have you made a video or taken photos of the damage to the buildings on your campus?
B. Have you contacted your insurance agent?
C. Have you made a damage assessment?
D. Are your buildings structurally sound?
E. Will you have to totally evacuate or curtail certain services?
F. Will outside staffing be required to allow your staff members time to take care of their personal disaster needs?
G. Have broken windows and roof openings been covered?
H. Are there equipment and/or supplies that need to be protected from the elements if there is damage?
I. Are there any environmental concerns?
J. Have you categorized all disaster-related costs with a separate cost code for accounting purposes?
K. Have you established a crises counseling opportunity for staff affected by the disaster?

This checklist is not meant to be all encompassing. The intention is to stimulate idea sharing and coordination among the designated committee members to develop the disaster plan for the hospital.

(Developed by Paul V. Richter, 4/95. Revised 1/96, 4/96, 1/97, 6/97)

APPENDIX B
Materials Supply Unit Leader
Position Assigned To:

You Report To: (Logistics Section Chief)
Logistics Command Center: Telephone:

Mission:
Organize and supply medical and non-medical care equipment and supplies.

Immediate:
Receive appointment from logistics section chief.
Read this entire job action sheet and review organizational chart on
back.
Put on position identification vest.
Receive briefing from logistics section chief.
Meet with and brief materials management and central sterile supply personnel.
Establish and communicate the operational status of the materials supply pool to the logistics Section chief, EOC and procurement unit leader.
Dispatch the predesignated supply carts to the triage area, immediate treatment area, delayed treatment area and minor treatment area, once these areas have been established. Enlist the assistance of the transportation unit leader.
Release search and rescue team equipment packs to those teams designated by the damage assessment and control officer.
Collect and coordinate essential medical equipment and supplies (prepare to assist with equipment salvage and recovery efforts).
Develop medical equipment inventory to include but not limited to the following:

- Bandages, dressings, compresses and suture materials
- Sterile scrub brushes, normal saline, anti-microbial skin cleanser
- Waterless handcleaner and gloves
- Fracture immobilization, splinting and casting materials
- Backboard, rigid stretchers
- Non-rigid transporting devices (litters)
- Oxygen-ventilation-suction devices
- Advance life support equipment (chest tube, airway, major suture trays)

Extended:

Identify additional equipment and supply needs. Make requests/needs known through logistics section chief. Gain the assistance of the procurement unit leader when indicated.
Determine the anticipated pharmaceuticals needed with the assistance of the medical care director and pharmacy unit leader to obtain/request items.
Coordinate with the safety and security officer to protect resources.
Observe and assist staff who exhibit signs of stress or fatigue.
Report concerns to psychological support unit leader.
Other concerns:
APPENDIX C
COMMON POST-OCCURRENCE PROBLEMS

- Failure of water pressure which shuts down fire sprinkler systems, water flushing systems and inhibits operation of air handling units
- Failure of backflow protection systems
- Lack of potable water
- Failure of emergency generators, air conditioning and public utility systems
- Difficulties with special needs patients (ventilator, dialysis)
- Detrimental effect on operating systems due to volume of patients, evacuees, family members and residents
- Failure of telecommunications systems/staffing systems
- Flooding of mechanical rooms, patient floors, elevator shafts, etc.
- Lack of pumping capabilities to handle flooding
- Waste management problems
- Loss of equipment and damage to hospital roofs
- Loss of windows, doors and frames
- Obstruction from debris
- Inability to manually secure electronic doors and alarm systems
- Security