

Disaster Planning and Management

The events of September 11, 2001, involving the terrorist destruction of the World Trade Center in New York and a large portion of the Pentagon in Washington, DC, and the crash of the airliner outside of Pittsburgh, have alerted America to the reality of terrorism in the 21st century and the real possibilities of more terrorism on our shores. We have learned that we must be prepared for all types of disasters, whether man-made or natural, in order to protect our institutions and way of life. Hospitals will become the focal point for disaster preparedness, inasmuch as most disaster victims end up in hospital emergency departments. Disaster planning must include national, state, and local agencies in order to have an organized workable model. Preparation must include all types of disasters, natural and manmade. Local institutions must conduct frequent disaster drills to ensure competency by our local and regional health care facilities. Adequate funding must be provided in order to ensure availability of adequate equipment and supplies for any disaster. It is only through careful planning, training, and constant vigilance that our country can be prepared and competent to manage all forms of disasters. Key words: *disasters, disasters drills, disaster planning, local agencies, terrorist destruction, vigilance*

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THE EVENTS of September 11, 2001, involving the terrorist destruction of the World Trade Center, the destruction of a large portion of the Pentagon, and the crash of the airliner outside of Pittsburgh, have awakened Americans to the need to strengthen and reorganize plans and strategies for responding to all sorts of disasters. Disaster planning must involve all aspects and levels of government and health care facilities. Planning must necessarily be governed by the expected nature and extent of the disaster. Small, local disasters may require only a single hospital or very few local hospitals, whereas larger, more extensive disasters may require local, regional, and national support and response.

The recent World Trade Center disaster required the emergency response teams from New York City as well as support personnel from as far away Los Angeles, California. Private conversations as well as news reports have provided information that reflected excellent preplanning by the emergency med-

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ical services (EMS) and hospitals surrounding the World Trade Center. Many hospitals in the local area were well prepared to receive casualties. It is clear that careful disaster preparation and education, including periodic drills, are necessary in order to provide maximal effectiveness in the event of a major disaster.^{1,2,3} Disaster planning must start with local EMS agencies and be governed by both the state and federal agencies, including the state EMS agencies and the Federal Emergency Management Agency.

DISASTER PLANNING AT THE LOCAL LEVEL

Local health care facilities must map out plans for both minor and major disasters. These plans must include preparation for both internal and external disasters. Internal disasters include problems within a facility that prevent the normal work of the facility from proceeding, such as elevator breakdowns, telephone loss, power failure, internal flooding, fire or gas explosions, chemical or radiation spills, bomb threats, or internal intentional violence. External disasters include storms, floods, earthquake, hurricanes, tornado, fire, terrorism, chemical or radiation spills, or crowd disturbances, such as rioting. Planning at the local level must be aimed at all of the above possible disasters, whether minor or major.

Local hospitals need not attempt to reinvent the wheel. It is wise to search for plans from other institutions and agencies for guidance. Plans can then be tailored to meet the needs of a particular local organization or facility.^{1,4,5,6} Inasmuch as hospitals will ultimately receive casualties from any disaster, it is prudent for local hospitals to take the lead in establishing disaster plans for local communities.

The local EMS agency must be closely involved in formulating local hospital disaster

plans. A good starting point is to select a hospital disaster chairperson and a disaster planning committee. This committee should include the emergency medicine departmental director or designee; the chief operating officer or designee; the director of nursing; the medical departmental chairs or designees; the safety police director or safety departmental director; the EMS director of the hospital; and the materials management director. Others may be added to the committee as necessary in order to have input from all involved personnel. Resources must be set aside by the financial director with the consent of the chief executive officer of the facility. Once resources are assessed, a disaster budget can be formulated with the assistance of the committee using other facilities in the community as a guide. Plans must be formulated to cover the entire hospital campus and to include after-hours response. Because disasters occur throughout the day and night, it is crucial that there be mechanisms in place to cover weekends and nights when personnel on campus is at the lowest level. Callback panels must be set up for both medical and nonmedical personnel.^{4,5}

Once the facility has approved a disaster plan, there must be approval by the local hospital governing board, and a copy of the plan should be reviewed by the local EMS agency for comments and recommendations. After final review by the concerned agencies, the plan should be approved by the Professional Staff Association, or equivalent, and the governing body of the facility. All facility personnel must be thoroughly familiar with the approved and adopted disaster plan. After appropriate training has taken place and equipment and supplies have been purchased, the facility must have ongoing disaster drills to ensure the effectiveness of the plan.^{1,2,6,7}

A permanent disaster committee needs to be appointed to replace the initial planning committee. This committee should include a

similar list of members as stated above. An ongoing budget must be approved on an annual basis, and encouragement must be provided to maintain a condition of readiness at all times. This may be accomplished by participation in outside disaster drills as well as periodic (twice a year) internal disaster drills.

An important part of any disaster plan is the assigning a chair of command and a command post to be activated during disasters. It is important to work closely with the ED director and EMS director in order to maximize hospital resources and skills. It is recommended that the ED serve as the focal point for receipt of all information on injuries, including the severity and numbers of injured patients. The command post should be near the ED and should be manned by high-level management personnel. There must be a direct link between the command center and the ED in order to ensure adequate and prompt communication of data and casualty information.^{1,7,8}

DISASTER DRILLS

Disaster drills are a necessary part of all facility disaster plans. Hospitals must ensure that all appropriate personnel have been properly trained to respond correctly and efficiently during any type of disaster. Drills must be as realistic as possible, involving live models when possible who pose as victims. Victims (models) must be triaged and appropriately treated, admitted, and discharged through regular procedures. Frequent drills will assure staff and outside agencies that the facility is ready for any disaster.

Hospitals are encouraged to participate in a positive way in all local and regional disaster drills, when finances of the facility permit. This will serve to keep local facilities in a state of readiness. Hospitals that are located in large municipalities must be more vigilant, as ter-

rorism and other manmade disasters appear to occur more frequently in these areas. Moreover, a major disaster in Los Angeles or New York will be more devastating based solely on the number of persons residing in a given area. The Watts riots of 1965, the south central Los Angeles uprising of 1992; the earthquake in San Francisco in 1995, and the World Trade Center disaster in 2001 are but a few examples.

PLANNING THE EMERGENCY MEDICINE FUNCTIONS DURING DISASTER

It must be understood that the ED must play a major role in the planning for local disasters. The Emergency Medicine director must be intimately involved in the planning phase, as well as disaster drills and, ultimately, the disaster. There must be a close relationship between those assigned to the command center and the ED director. The ED must, of necessity, network with the local EMS agency in preparing for disasters in order to provide proper coordination with this pivotal agency during an actual disaster. EDs must be prepared to accept additional patients beyond their usual capacity in order to provide much needed assistance in the event of large number of casualties requiring ED beds.^{1,8,9}

Emergency Medicine staff must be on the front lines of any local or regional disaster. Staff must be properly trained to protect not only arriving victims, but must also protect themselves and support staff in order not to become casualties of a specific threat such as chemical, biologic, or natural disasters. Facilities must provide barriers for contaminated victims and provide areas outside of the facility to quarantine victims who may have potential or actual exposure to chemical or biologic agents. Funds must be granted by the health care facility to purchase necessary

equipment and supplies to maintain readiness to handle all types of disasters. Recent events in New York and Washington, DC, have heightened our awareness to the potential for bioterrorism as an actual threat to our local and regional communities. If the hospital has a separate Trauma Center, the Trauma director must be involved in the planning stage and the actual management of traumatic disasters.

Capabilities of the Trauma Center to handle large volumes of casualties must be known and accepted by the Trauma director. Trauma personnel must receive similar training as planned for the ED staff. It is of the utmost importance that all trauma personnel be thoroughly trained in disaster management. This will ensure a smooth disaster response where large numbers of trauma casualties are expected, similar to what was experienced during the World Trade Center and the Pentagon tragedies of September 11, 2001. All disaster training for local health care facilities should include trauma services as well as other services mentioned above.^{7,10,11}

SPECIAL CONSIDERATION FOR PEDIATRIC CASUALTIES

Both federal and local agencies must not forget the possibility of disasters involving large numbers of children, who should be included in any disaster planning. Because children would be disproportionately affected in certain types of disasters (eg, chemical or biologic weapons release), there must be involvement of pediatricians experienced in disaster management. There is always the possibility that natural disasters such as earthquakes, hurricanes, or storms could involve local schools or child care centers. Pediatricians would be very valuable in assisting in the management of pediatric casualties. An exam-

ple of children being involved in a disaster occurred during the 1995 Tokyo subway disaster, when 5,000 adults and children were involved. Recent suicide bombs in the Middle East have included children as victims. There has been at least one terrorist threat involving the potential use of nerve gas of a Disneyland theme park in California.¹²

PLANNING FOR SPECIFIC TYPES OF DISASTERS

Disasters involving hazardous materials

Planning for response to disasters involving hazardous materials must include the gathering of data from several reference sources including: the Centers for Disease Control and Prevention; Occupational Safety and Health Administration; Environmental Protection Agency; the Agency for Toxic Substances Disease Registry; and the American College of Emergency Physicians, Section on Disaster Medicine. These agencies, in addition to others, are considered excellent sources of information in reference to planning for hazardous materials disasters.

EDs must be prepared, through training and drills, to handle all types of hazardous materials. Both accidents and terrorist attacks may involve hazardous materials. In 1993 there were 3,945 hazardous materials releases reported by 11 states. Eighty-four percent of these accidents occurred at fixed sites, while the remainder occurred during transportation. Inasmuch as reporting of events involving hazardous materials is not perfect, the incidence of accidental and terrorist releases is not truly known. There were over 200,000 calls to Chemical Manufacturers Association emergency response phone service (CHEMTREC) in 1994. Approximately 4% were related to hazardous materials emergencies. This represents a tremendous area of concern for those

involved in disaster management in local health care organizations.¹³⁻¹⁶

Disasters involving traumatic injuries

EDs and trauma centers must take the lead in formulating plans and coordinating with the local EMS agency and other local and regional agencies. There must be adequate effort placed upon triaging of victims of natural or manmade disasters. ED physicians must be trained to effectively triage large numbers of traumatized patients. Patients who are severely injured would benefit from an established Trauma Center if they are expected to survive. Lesser-injured patients may be routed to urgent care and Level III Trauma Centers. Resources must not be allocated for victims that have no chance of survival as determined by the EMS personnel at the scene of the disaster.

To improve efficiency of the triage process, it is recommended that a triage screening system be considered. Areas of consideration would include type of injury, body area injured, cardiovascular and respiratory status, capillary refill, central nervous system status, eye opening, verbal response, and motor response. It is advisable to have an easy-to-use, simplistic system for prehospital personnel to use in the field. Other systems use mechanism of injury, such as falls from 20 feet, motor vehicle accident with death of a passenger, ejection

from the vehicle, and high velocity impact. The use of more categories decreases chance for mistriage but increases the complication of the triage system and may have a negative impact on survival.^{1,2,17,18}

CONCLUSION

The events of September 11, 2001, involving the terrorist destruction of the World Trade Center in New York, a large portion of the Pentagon in Washington, DC, and the plane crash outside of Pittsburgh have alerted Americans to the need to reexamine their disaster planning and management. Preparation includes complete training for all personnel involved in disaster response and management. Training for EMS, hospital, and ED personnel is a crucial portion of the entire puzzle. Disasters are a local problem in most cases, although a national approach is essential to provide the necessary local support. Hospitals must take the lead in preparing for all types of natural as well as manmade disasters.

Triage represents an important aspect of disaster management. When this process is performed well, it can save more lives and allow for appropriate handling of large numbers of casualties. When hospitals and EMS personnel are properly trained and prepared, response to all types of disasters will be smooth and effective. Adequate funding must be provided by national, state, and local agencies.¹⁹⁻²⁷

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