

Editorial:

## **Mass Casualty Management and Emergency Care System (E M S)** **Hikmat A.R.Hatam, FRCS.**

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A characteristic of the EMS is the mechanism by which sudden increasing demands on one local system are met by shifting resources from less involved areas to the scene of the demand. A common term for the process by which resources are temporarily loaned to the system being taxed by emergency demands is "mutual aid". In this manner, peak emergency care demands are often met by use of shared facilities or temporarily borrowed resources from systems in neighboring areas.

EMS systems are triggered locally several times a year and therefore planning and operations are kept current through repeated use.

The plan for managing victims of disasters should be built around an existing EMS system. Since detection, notification and primary dispatch of rescue teams and on-site early care are all part of the EMS, it is the pre-hospital component of EMS that will commonly provide hospitals with their initial notification and assessment of the scope and nature of the disaster.

Experience in handling large numbers of injured patients is relatively limited only to those who involved in Iraq, Iran conflict and much of the accumulated experience has been military rather than civilian. It is unlikely that we will ever have much carefully controlled data on which to base our management of this type of problem.

Primary care consists mainly of basic life support (BLS) measures together with such advanced life

Supports (ALS) measures as may be necessary. (These are usually devoted to airway and ventilation factors, control of hemorrhage, anti-shock treatment and preparation for transportation).

### **Principles of Disaster Management** **Advance Planning**

The most important and generally agreed – upon principles that have emerged from the experience of the medical profession in handling disasters is the need for realistic advance planning. In spite of the importance and wide acceptance of this principles, there has been less thoughtful planning for handling mass casualties than there should. Shaft an summarizes this well in stating that most description of civilian disasters are concerned with implementation of hospital disaster plans and casualty care after the patient reaches the hospital triage area .

In many cases central medical authority cannot be designated effectively in time for any important decisions to be made. Obviously, criteria for such decision making should have been discussed in planning sessions with representative of all involved personnel (fire and police departments, medical planners and the support and mutual aid agencies commonly utilized, including nearby military recourses).

Disasters may range from episodes of violence in an urban setting, in which scope of the occurrence is relatively easy to define, to the large acts of nature with disruption of communication and

transportation over wide geographical areas.

Disasters may be natural (floods, earth quakes, windstorms, large fires, volcano eruptions) or man – made (transportation explosion, fire, riot and civil unrest, war). There are many proponents of planning and exercises designed to meet the needs of the hospital involved in a disaster. So many organizations would be involved in such an exercise that the undertaking would be difficult and expensive.

It is obviously difficult to develop plans that will be suitable for the limitless type and magnitude of disasters that may occur. Some disasters cause a general disruption in a community and others are localized to a building or two. There are certain features that are sufficiently common to enough different types and sizes of disasters to justify the effort involved in planning. By definition in mass casualty situations the demands always exceed the capacities of the personnel and facilities.

**The purpose of advanced planning is therefore to establish a system that will assure the optimal utilization of personnel and facilities for the particular situation.**

#### **Casualty predictability**

As previously stated, the key to effective handling of disaster situations is realistic advance planning.

#### **Use of effective maneuvers**

A third principle is that certain maneuvers that are economical of personnel, facilities and time may produce a decrease in mortality, early morbidity and long-term functional loss. More Sophisticated techniques that require the prolonged services of highly trained individuals using complex equipment and many supplies though extremely valuable in ordinary practice, may not be a wise investment of resources in handling large numbers

of injured people in a brief period of time.

#### **Treatment modifications**

This principle is that the way in which we handle specific types of injuries in ordinary practice must often be modified when we are dealing with casualties from a disaster this shift in thinking and action is extremely difficult for many physicians to make unaware of the modifications that must be made in a mass casualty situation are likely to continue to utilize conventional techniques in such a situation unless there is forceful direction from those in charge in a mass casualty situation are likely to continue to utilize conventional techniques in such a situation unless there is forceful direction from those in charge.

#### **Teamwork**

This brings us to a fourth principle of mass casualty management: teamwork. In ordinary practice each physician is accustomed to working in a more or less independent capacity. The effective management of large numbers of casualties in a short time demands a totally different or organizational structure. There must be someone in charge, in the person of the disaster plan director, who by experience and training is capable of giving orders, and other must be able and willing to have control as close to absolute authority as is seen in medical practice.

#### **Philosophical Approach**

Special attention should be given to the readjustment of thinking-literally of philosophy- that is necessary if the best possible results are to be obtained from the medical care of disaster victims. The physician is ordinarily committed to the highest quality of care for his individual patient. When a hospital is flooded with tremendous numbers of seriously injured individuals, an abrupt

modification of this philosophy is essential. For example, certain individuals will arrive at the hospital in such condition that, under the disaster circumstances, there is no hope of salvaging them, though had they arrived in isolated circumstances, aggressive treatment might have permitted their survival. In the disaster situation we have no reasonable choice but to regard these individuals as hopelessly injured and to turn the bulk of our efforts to those less seriously wounded.

### **Disaster Planning for the Hospital**

A key feature of the hospital management of disasters is the provision of separate space for triage, stabilization, major surgery, minor surgery and recovery. Special provision should be made for supplying space for waiting families of disaster victims, for the handling of the dead and for accommodation of representative of communication of representatives of communications media. The integration of these facilities, the provision of adequate resources and staff and mobilization of a disaster plan require finely tuned coordination. Such coordination can be achieved only if the plan is exercised at regular intervals through disaster drills.

Surgery in Most hospitals, the major surgery area will be the main set of operating rooms in disasters. Ample numbers of surgical staff, anesthesia staff and nursing staff must be provided and a plan must be at hand for orderly addition of staff as needed. A minor surgery area (and possibly a special fracture area) should be provided so that patients need not remain for definitive care in the stabilization area and so that patients at the same time will not overload the major surgical area. The minor surgery are must be supervised by an experienced individual who can maintain a steady flow of patients. It is

imperative to note that here, as elsewhere in the handling of disasters victims, it may be necessary to compromise the highest quality of care in the name of efficiency.

Recovery Area Plans must provide for the easy evacuation of regular hospital patients from areas normally used for recovery or for intensive care to provide large open areas for recovering disaster victims.

Intensive care unit personnel must constantly be aware of patients who could be moved out if a need should arise suddenly.

It is particularly important that an appropriate individual have the authority to make decisions about patient moving and that a crisis of authority not be allowed to arise that would be superimposed on the crisis imposed by the disaster itself.

### **Logistics**

The key feature in coordination of hospital disaster efforts is successful communication among those responsible for resources. In order to coordinate the various resources and facilities, an information system manned by trained personnel must provide the communication s connection. A single individual should be in charge of coordinating disaster resources and facilities.

The disaster control center should include representative of the medical staff, nursing staff, administration, materials management, security, public affairs and support services. Specific communication support should be provided. The individual in the control center must have the authority to call in staff from outside.

### **Drills**

As indicated earlier the effective coordinating of facilities, resources and manpower requires both planning and practice. It is commonplace that the requisite

disaster drills are given little attention beyond that necessary to comply with external standards. Complex problems that may arise to challenge key coordinating staff in an actual disaster are not covered in many drills.

### **Triage**

The classification of patients into categories is critical in determining the success in handling a disaster. These categories may include patients who need immediate stabilization, those who can proceed to definitive care and those with relatively minor injuries. Physicians performing such triage must be experienced in the care of trauma patients and sensitive to unusual clinical problems. It is imperative that this task not be relegated to junior staff or house officers. The triage area must be capable of expansion to accommodate all patients that may be brought to a given hospital. Since triage is best performed at the entry point to the hospital the emergency department should have been planned to serve this purpose. Ideally, the registration and waiting areas should be capable of conversion to triage.

The details of patient sorting will, of course, depend upon the particular circumstances. Patients arriving at the hospital may be classified into one of four major categories by the triage officer. These are:

**I.** Patients with minimal injuries who will do well on self-care or “buddy” care. Medicolegal responsibility makes it necessary not only to allow any patient to register if he desires but also to provide “medically trained” personnel to render care. This holds true for the disaster situation and may make the self-care or “buddy” system not feasible and force these patients to be grouped with category II patients

**II.** Patients whose injuries are less trivial and will require medical

attention but are not of a serious nature; these patients will not require intensive care.

**III.** Patients whose injuries will require major medical attentions. This group may be subdivided into the following.

A. Require early operation

1- Immediate

2- After an interval

B. Do not require operation or operation will be performed only later in their course.

**IV.** Patients who are either dead on arrival or so hopelessly wounded that under the circumstances of disaster there is no reasonable chance of saving them.

In some disaster situations, the patient flow may be so great that initially triage should be made according to the most basic classifications, i.e., (A) those who will live no matter what, (B) those who will die no matter what and (C) those whose survival depends upon early critical care. It may be necessary to have “tiered triage in which category C patients are subdivided by another team according to whether or not there is need for surgery, and early operation or delayed operation.

In Addition to sorting patients into categories, the triage officer may or may not be assigned two additional responsibilities. The first is the establishment of priorities among Category III patients. In other words, the triage officer may determine which patients most urgently need surgical attention, blood transfusions and other care. The other responsibility sometimes assigned to triage officers is the institution of certain measures of immediate care such as the relief of airway obstruction and the control of hemorrhage. If it is elected to assign to the triage officer the responsibility of priority of determination for Category III patients or the responsibility for execution of some immediate care measures.

## **Patient Identification and Record-Keeping**

System that serves to identify patients in a disaster situation should be different from the hospital routine in several respects. A system such as D1, D2, D3, would identify the disaster victim as being such. Later permanent hospital numbers could be assigned so that disaster numbers could be used again.

## **Patient Care Categories**

Patients in each category should be cared for in a separate location. The segregation of patients on this basis, which in ordinary hospital practice is called progressive patient care, is properly the most efficient means of handling large numbers of casualties in a brief period of time with limited resources.

**Category I – Minimal Care.** Almost no medical personnel are necessary to handle patients in this category.

**Category II- Light Medical Attention.** Again, very little medical expertise needs to be expended. The principal duties to be carried out are perhaps the administration of tetanus shots, the application of light dressing and other chores that can safely be performed by medical students.

**Category III-Major Medical Attention.** It is this category that will utilize most of the personnel, equipment and supplies. The specific organizational structure of Category III care is best determined by the individual hospital on the basis of its particular resources. The designation of a senior person to supervise this large portion of the mass casualty management is probably advisable in most hospitals.

Patients who require early operation treatment must, if priority has not already been determined by the triage officer, be sorted with respect to the urgency of operative intervention.

The decision regarding the timing of operation will, of course, depend in large measure upon the nature and size of the disaster- several patients with moderately severe head injuries may require decompression quite early. On the other hand, in the event of a major catastrophe with hundreds of soft – tissue injuries to be cared for by a few surgeons, the talents may be much better utilized in the performance of 30 or 40 wound debridements than in the performance of three or four cranial decompressions. It is probably desirable for a relatively high- ranking member of the surgical staff to serve as a deputy disaster plan director in charge of Category III patients. His major responsibility is to keep the workload reasonably well distributed among the personnel caring for these patients. Those with the greatest expertise and leadership ability should be utilized to fill the position of disaster plan director.

**Category IV- Hopelessly injured a D. O. A.** The emotional difficulty – involved in classifying these patients and the importances of assigning some patients who arrive at the hospital alive to this category have already been discussed. Patients in Category IV should be made as comfortable as possible with the facilities at hand. A few nurses equipped with drugs can ordinarily do this.

## **Conclusion**

Optimal medical care in disasters of all sizes and types is dependent upon realistic advance planning by the community and its hospitals. The type of catastrophe that will occur in a particular community cannot be anticipated, but planning can assure that when a disaster occurs, appropriate individuals will be in a position to deal effectively with the specific problems that arise. The fact that planning cannot be complete is no

justification for the absence of preparation. The integration of hospital disaster planning to the regional EMS plan is essential for realistic preparedness in the event of a real disaster.