

# CHAPTER 6.

## MASS CASUALTY MANAGEMENT

---

---

Medical treatment for large numbers of casualties is likely to be needed only after certain types of disasters. Most injuries are sustained during impact, and, thus, the greatest need for emergency care occurs in the first few hours. Many lives have been lost because local resources have not been mobilized quickly.

The burden of organizing and delivering transport, first aid, medical care, and supplies falls on the affected country. Help from the international community is unlikely to make a difference in saving lives during the period of greatest need, because of the response time required.

In the classic care approach used most commonly to deal with a huge number of victims after a disaster, first responders are trained to provide victims with basic triage and field care before evacuating them to the nearest available receiving health care facility.

The management of mass casualties is divided into three main areas: pre-hospital emergency care (search and rescue, first aid, triage, and stabilization of victims); hospital reception and treatment; and redistribution of patients to other hospitals when necessary.

### PREHOSPITAL EMERGENCY CARE

#### Search, Rescue, and First Aid

After a major disaster, the need for search, rescue, and first aid is likely to be so great that organized relief services will be unable to meet more than a small fraction of the demand. Most immediate help will come from uninjured survivors, and they will have to provide whatever assistance possible. Improvement in the quality and availability of immediate first aid services depends on increased training and preparation obtained through specialized agencies, for example, through courses taught to volunteers by fire brigades.

#### Field Care

Ideally, the transport of victims to the hospital should be staggered, and patients should receive adequate field treatment, allowing them to tolerate delays. However in reality, most injured persons will converge spontaneously on health facilities if they are at a reasonable distance, using whatever transport is available, regardless of the facility's operating status. Some victims may not request or be able

to seek medical care, which makes active case finding an important part of any casualty relief effort. This is sufficient reason for creating mobile health-care teams to be deployed to the disaster site in addition to fixed first aid stations located near existing health facilities.

Providing proper treatment to casualties requires that health service resources be redirected to this new priority. Bed availability and surgical services must be maximized by selectively discharging routine inpatients, rescheduling non-priority admissions and surgery, and fully using available space and personnel. Certain physician responsibilities can be postponed and others can be delegated to health technicians, for example, treating minor wounds.

Provisions should be made for food and quarters for health personnel.

A center should be established to respond to inquiries from patients' relatives and friends; it should be staffed round-the-clock, using non-health personnel as necessary. The Red Cross may be well-equipped to direct this function.

Priority must be given to victim identification, which is becoming an increasingly specialized issue. Adequate mortuary space and services also must be provided.

## Triage

When the quantity and severity of injuries overwhelms the operative capacity of health facilities, a different approach to medical treatment must be adopted. The principle of "first come, first treated," which is applied in routine medical care, is inadequate in mass emergencies. Triage consists of rapidly classifying the injured on the basis of the severity of their injuries and the likelihood of their survival with prompt medical intervention. It must be adapted to locally available skills. Higher priority is granted to victims whose immediate or long-term prognosis can be dramatically affected by simple intensive care. Moribund patients who require a great deal of attention (with questionable benefit) have the lowest priority. Triage is the only approach that can provide maximum benefit to the greatest number of injured in a disaster situation.

Although different triage systems have been adopted and are still in use in some countries, the most common classification uses the internationally accepted four-color code system. Red indicates high priority treatment or transfer, yellow signals medium priority, green is used for ambulatory patients, and black for dead or moribund patients.

Triage should be carried out at the disaster site in order to determine transportation priority and admission to the hospital or treatment center where the patient's needs and priority for medical care will be reassessed. Ideally, local health workers should be taught the principles of triage as part of disaster training to expedite the process when a disaster occurs. In the absence of adequately trained field health personnel, a triage officer and first aid workers must accompany all relief teams to the disaster site to make these assessments. Where an advanced medical post is established, medical triage will be conducted at the entrance to the post to determine the necessary level of care.

Persons with minor or moderate injuries should be treated near their own homes whenever possible to avoid social dislocation and the added drain on resources of transporting them to central facilities. The seriously injured should be transported to hospitals with specialized treatment facilities.

## Tagging

All patients must be identified with tags stating their name, age, sex, place of origin, triage category, diagnosis, and initial treatment. Standardized tags must be chosen or designed in advance as part of the national disaster plan. Health personnel should be thoroughly familiar with their proper use.

## HOSPITAL RECEPTION AND TREATMENT

At the hospital, triage should be the responsibility of a highly experienced clinician, as it may mean life or death for the patient, and will determine the priorities and activities of the entire staff.

### Organizational Structure

Spirgi notes that effective management of mass casualties demands an organization of services that is quite different from that found in ordinary times. He states that a "hospital disaster plan designates the command structure to be adopted in case of disaster . . . [A] command team (consisting of senior officers in the medical, nursing, and administrative fields) . . . will direct people where to work according to the plan and mobilize additional staff and additional resources as required."<sup>1</sup>

### Standardized Simple Therapeutic Procedures

Therapeutic procedures should be economical in terms of both human and material resources, and should be chosen accordingly. Health personnel and supplies should support these procedures. First line medical treatment should be simplified and aim to save lives and prevent major secondary complications or problems. Preparation and dissemination of standardized procedures, such as extensive debridement, delayed primary wound closure, or the use of splints instead of circular casts, can produce a marked decrease in mortality and long-term impairment.

Individuals with limited training can, in many instances, carry out simple procedures quickly and effectively. Certain more sophisticated techniques requiring highly trained individuals and complex equipment and many supplies (e.g., treatment of severe burns) are not a wise investment of resources in mass casualty management. This shift in thinking and action from ordinary practice to mass medical care is not easy to achieve for many physicians.

## REDISTRIBUTION OF PATIENTS BETWEEN HOSPITALS

While health care facilities within a disaster area may be damaged and under pressure from mass casualties, those outside the area may be able to cope with a much larger workload or provide specialized medical services such as neurosurgery. Ideally, there will be a metropolitan system of emergency medical treatment

---

<sup>1</sup> Edwin H. Spirgi, *Disaster Management: Comprehensive Guidelines for Disaster Relief* (Bern: Hans Huber, 1979).

that allows hospitals to function as part of a referral network. At different levels of complexity, a network of prehospital relief teams can coordinate referrals from the disaster area. The decision to redistribute patients outside the disaster area should be carefully considered, since unplanned and possibly unnecessary evacuation may create more problems than it solves. Good administrative control must be maintained over any redistribution in order to restrict it to a limited number of patients in need of specialized care not available in the disaster area. Policies regarding evacuation should be standardized among all agencies providing relief in the disaster area, and hospitals that will receive patients.

The task of matching resources to needs is best accomplished by using a chart similar to that shown in Figure 6.1, which also can be enlarged and displayed on a wall. Hospitals are listed according to their geographic location, starting with those closest to the impact area. A visual display of the number of beds available, medical or nursing personnel required for round-the-clock services, shortages of essential medical items, and other needs will permit the Health Disaster Coordinator to direct external assistance to areas where needs and expected benefits are greatest. Patterns for redistributing resources or patients will emerge from analysis of the data. Such monitoring of hospital resources will be most useful when medical care is likely to be needed for an extended period.

If the Health Disaster Coordinator finds that the country's total health care capacity is insufficient to meet disaster-related needs, several alternatives must be considered. The best is rapid expansion of the country's own permanent facilities and staff, which has the advantage of fulfilling immediate needs and leaving behind permanent benefits. Another alternative, which has proved to be less desirable, may be staffed, self-sufficient, mobile emergency hospitals available from government, military, Red Cross, or private sources. If such a hospital is necessary, one from the disaster-affected country, or a neighboring country with the same language and culture should be considered first, and those from more distant countries considered second.

Foreign mobile hospitals may have several limitations. First, the time needed to establish a fully operational mobile hospital may be several days, while most casualties resulting from the immediate impact require treatment in the first 24 hours. Second, the cost of such a hospital, especially when airlifted, can be prohibitive and is often deducted from the total aid package given by the governmental or private relief source providing it. Third, such hospitals are often quite advanced technologically, which raises the expectations of the people they serve in a way that will be difficult if not impossible for local authorities to meet during the recovery period. Finally, it must be recognized that such hospitals are of great public relations value to the donor agency, which may inappropriately urge their use.

**FIGURE 6.1. Monitoring of hospital resources.**

1 NAME-PLACE	2 Specialty	3 BEDS		4 SURGEONS		5 ANESTHESIOLOGY		6 Other medical personnel required	7 Nurses required	8 Essential items in short supply	9 Other requirements or contracts
		a	b	a	b	a	b				
		Total	Available	Present	Required	Present	Required				
Hospital "A," Disaster City	General	850	8	5	4	5	4	2 pediatric 1 gynecol.	5	Suturing material, X ray film	Generator
Hospital "X," Normalville	Trauma- tology	450	145	5 (traumatol.)	—	3	—	1 gynecol.	1	Linen	Limited kitchen facilities