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# 5. HOSPITAL ORGANIZATION

## A. INTRODUCTION

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This chapter will describe the organization to be implemented in a hospital in order to respond to a mass casualty event. This organization, utilizing pre-established and tested procedures, will allow:

- Active mobilization and management of available resources (human and material)
- Links with pre-hospital organization
- Management of in-patients and victim flow
- Management of care
- Management of secondary evacuations
- Informing and updating authorities and relatives of victims

Timely implementation of such an organization cannot be improvised and requires a well conducted preparatory phase including:

- Draft of a specific Hospital Mass Casualty Management Plan (HMCM), which forms part of the Hospital Disaster Response Plan as well as of the National Mass Casualty Management Plan;
- Dissemination of this HMCM plan to concerned persons and sectors (hospital staff, ministry of health, police, fire service, national disaster office);
- Regular testing and up-dating of the plan at hospital and multi-sectoral level.

At any time, any hospital must be able to respond, according to its capacities, to a mass casualty event.

## B. ACTIVATION OF HOSPITAL MASS CASUALTY MANAGEMENT PLAN

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### 1. Alerting Process

The alert message originating from the dispatch center must be communicated directly to the Accident and Emergency Department (via hotline or radio). This message must be received personally only by the nurse in charge or physician on duty.

In collaboration with the administrative officer on duty (Administrative Nurse, Hospital Administrator, Hospital Medical Director), the decision to activate the HMCM will be made. At this time, the hospital telephone operator will begin to call persons on the established list.

### 2. Mobilization

#### 2.1 *Hospital Mobile Disaster Team*

If the site of the event is within a twenty-minute radius, the hospital mobile disaster team shall proceed immediately to the scene. If the event is further than twenty minutes away, the hospital mobile disaster team will proceed to the site only at the request of the district health team.

In special circumstances likely to produce mass casualties (e.g., airport crash, fire on cruise ship) the hospital's mobile disaster team must be automatically dispatched to site.

## **2.2 Hospital Staff**

### **2.2.1 Key Staff**

Certain key persons must report to the hospital immediately (Hospital Administrator, Medical Superintendent, Matron, Stores Manager, Hospital Pharmacist, Housekeeper, Laundry staff, and all on-call staff).

### **2.2.2 Reinforcement Staff**

#### *Internal mobilization of Hospital Staff*

As the staff of the Accident and Emergency Department leave for the site, replacement staff from the hospital must be redeployed to the Accident and Emergency Department. Staff from other wards must assist staff clearing specific wards.

#### *Centripetal Mobilization of Hospital Staff*

Reinforcement of key departments, i.e., Accident and Emergency Department, Surgery, Operating Theater, Laboratory, X-Ray, Intensive Care Unit, must be effected and specific staff, e.g., orderlies, kitchen, laundry, maintenance, stores personnel, security and telephone operators must be summoned. For greater efficiency, reinforcement must be carefully planned and staggered to ensure a quick turnover of staff in the most exposed areas (e.g., Accident and Emergency Department, Operating Theater). This protects against staff burn out during a mass casualty event and ensures prompt return to routine activities with adequate personnel.

## **2.3 Coordination with Other Sectors**

In accordance with the National Mass Casualty Management Plan, the hospital will coordinate with the following sectors:

### **2.3.1 Police**

The national Mass Casualty Management Plan must make provision for the automatic dispatch of an adequate police squad to the hospital as soon as a disaster is declared. This police squad will reinforce the security at the hospital with particular attention to securing the reception area and all the hospital entrances.

If within fifteen minutes of the disaster notification the police squad has not reported to the hospital, the telephone operator must notify the dispatch center, the Emergency Operations Center, or the central Police Station.

### **2.3.2 Coordination with Red Cross**

The office of the Red Cross will send specifically trained volunteer teams to the hospital to be deployed in two teams, one for the Accident and Emergency Department and the other to be utilized wherever necessary.

### **2.3.3 Ham Radio Operators**

Ham radio operators will report to the hospital administrator and will deploy equipment as directed. The hospital administrator should contact the Red Cross office and the Ham Radio Association directly or through the Emergency Operations Center if these teams have not reported within thirty minutes of the disaster notification.

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### 3. Hospital Command Post

In each hospital, a room should be identified to serve as the Hospital Command Post during a mass casualty event. This room should be pre-equipped with radio and telephone or be pre-fitted with the appropriate connections to facilitate immediate operation of radio and telephone communications. The room should be large enough to accommodate a maximum of ten persons and be easily identifiable.

The following persons will constitute the core of the Hospital Command Post:

- Hospital Administrator
- Medical Superintendent
- Matron
- Secretary
- Spokesperson (liaison with families and media)

### 4. Clearance of Receiving Facility

Beds should be made available in the hospital to accommodate victims of the mass casualty incident. The Hospital Command Post must initiate, immediately, pre-established procedures to clear in-patients who are able to be moved.

### 5. Estimate of Hospital Care Capacity

The reception capacity of a hospital is not only linked to the number of beds available, but to its capacity to deliver care. In a mass casualty event that produces trauma victims, the "bottleneck" of the care delivery system will definitely be the surgical and intensive care capacity of the receiving hospital (see Figure 14).

A multiple trauma victim will need, at minimum, two hours of surgical attention. The number of effective operating rooms (which includes availability of the room and

surgeon, anaesthetist and equipment simultaneously) determines the surgical treatment capacity and thus the hospital care capacity.

If a hospital with three effective operating theaters receives twelve "red" victims needing prompt surgical attention during a mass casualty event, it will be able to treat, on an average, three patients every two hours. So, three of these twelve victims will have access to operating theaters six hours after their arrival at the hospital. This situation can severely endanger the life of these victims, if intensive care is not able to stabilize them.

Taking these limitations into consideration, it would then be more efficient to organize the rapid evacuation of these victims to health care facilities which would be able to provide appropriate care in a shorter time. Moreover, in such a situation, the Hospital Command Post must inform the Field Command Post that it cannot receive more "red" victims and that it is necessary to proceed to another health care facility.

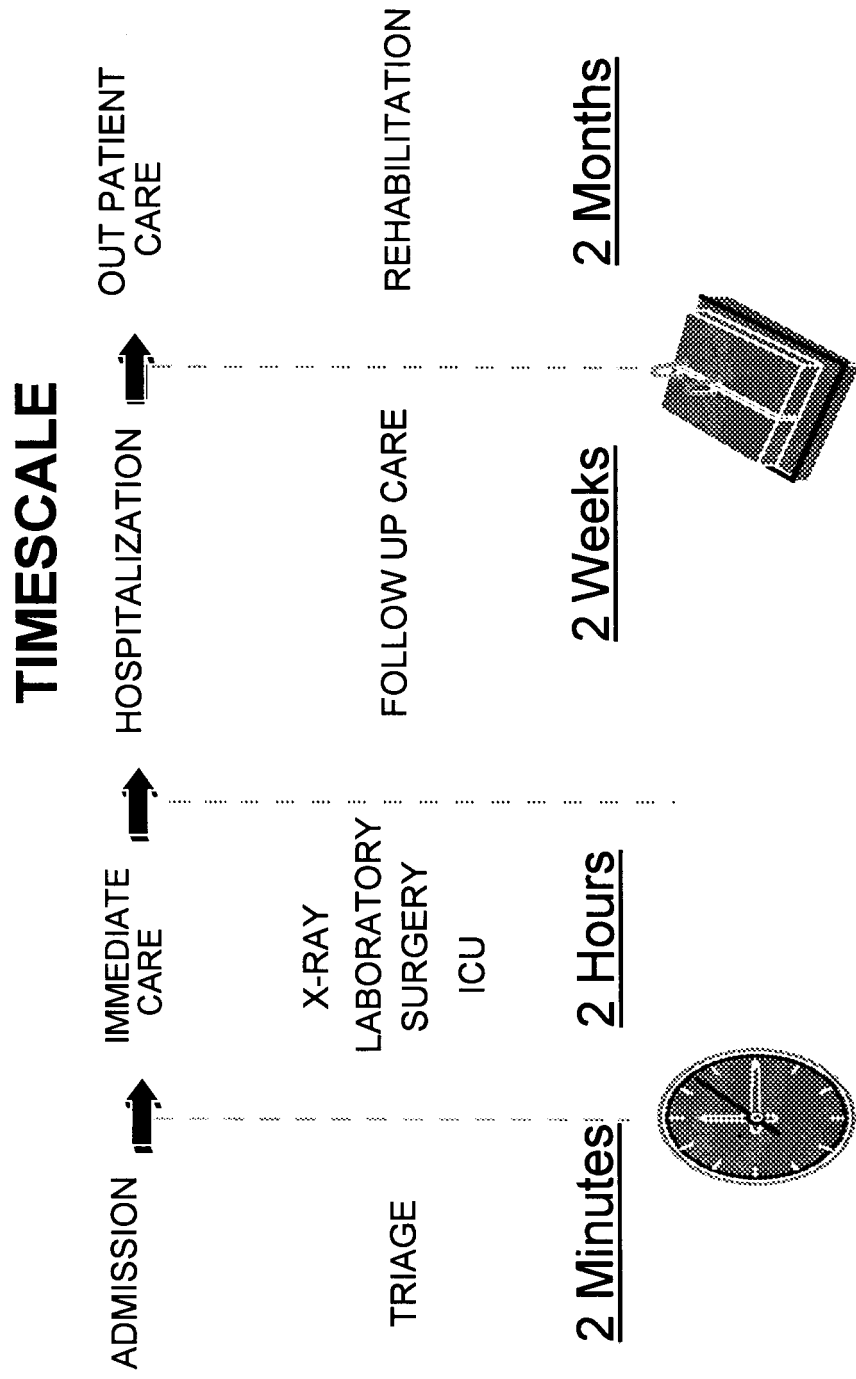
## C. RECEPTION OF VICTIMS

### 1. Location

A reception area is where the hospital triage is conducted. The following requirements should be met:

- Direct access from the ambulance off-loading area
- Covered area
- Adequate lighting
- Easy access to key care sectors, e.g., Accident and Emergency Department, surgery, and ICU

**Figure 14. HOSPITAL DISASTER MANAGEMENT**



When pre-hospital victim management is efficient, the controlled flow of victims arriving at the hospital will allow, after triage, immediate dispatch of victims to the appropriate care area. However, if the pre-hospital management system fails and uncontrolled large numbers of victims arrive at the hospital, it will be necessary to hold patients after triage in a large room adjacent to the triage area, where victims will be stabilized and monitored before dispatch. Such a situation can overwhelm the hospital's capacity.

## **2. Personnel**

The hospital triage officer will assess each victim in order to either confirm the evacuation triage or to recategorize. With efficient pre-hospital management, hospital triage could also be carried out by an experienced nurse from the emergency department.

If the pre-hospital management was not effective, an experienced emergency department physician or anesthesiologist should manage the hospital triage.

## **3. Links With the Field**

In a well-established Mass Casualty Management System, constant communication must be maintained between the Hospital Command Post, the Advance Medical Post and the Field Command Post (see Figure 15).

In the hospital, there must be a constant flow of information between the hospital triage area and other key departments and the Hospital Command Post.

The ambulance will establish contact with the hospital triage area 5 minutes prior to arrival.

## **D. HOSPITAL TREATMENT AREAS**

### **1. Red Treatment Area**

A minimum of two hours of surgical attention is necessary to treat a multiple trauma patient. In a country or province with a limited number of operating theaters, it will be impossible to provide simultaneous surgical care to victims requiring such care. Hence, it is necessary to have available a specific area where these "red" victims will receive appropriate attention. This area will be called the "red treatment area", should be managed by an anesthesiologist, and is best located in the Accident and Emergency Department which is already equipped and accustomed to managing acute patients.

### **2. Yellow Treatment Area**

Victims tagged in the yellow category will be sent immediately after triage to a surgical ward which has been cleared during the activation phase for that purpose. This area will be managed by a hospital physician.

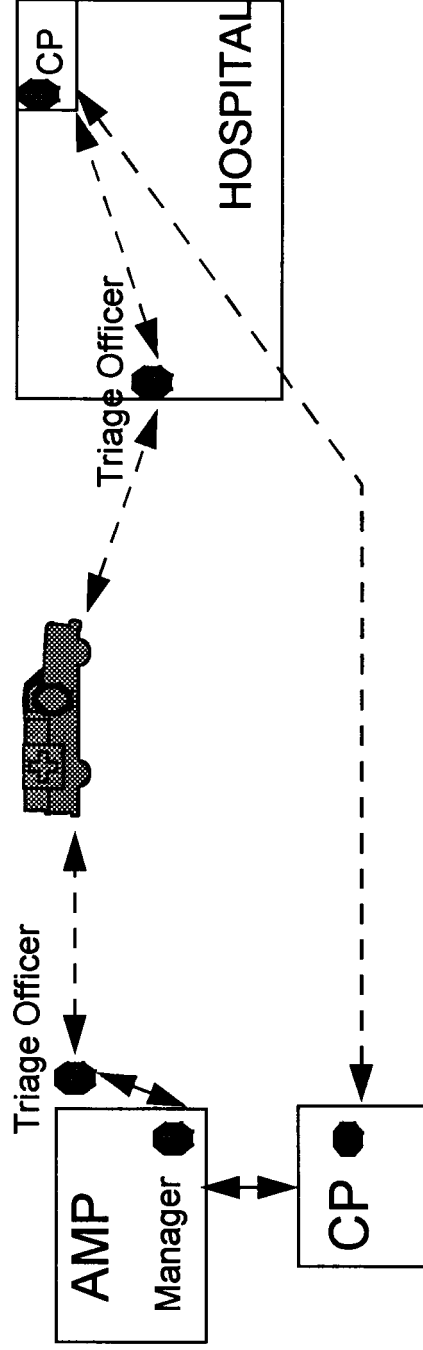
The victim's status must be continuously monitored, reassessed, and stabilization maintained. If the victim's status worsens, he or she must be transferred to the "red" area.

### **3. Green Treatment Area**

Green coded patients should not be transferred to the main hospital, but referred to health centers or clinics. However, when the pre-hospital management system fails, many "green" victims will arrive at the hospital. Therefore, provision must be made in hospital mass casualty management plans for a holding area for this category of victim. This area is best located away from the

Figure 15. **RADIOCOMMUNICATION NETWORK**

**FIELD - HOSPITAL**



other care areas. Whenever possible, these victims should be transferred to a nearby health center/clinic.

#### **4. Hopeless Victim Area**

These patients, needing only supportive care, are most appropriately held in a medical ward, previously cleared during the activation phase.

#### **5. Deceased (Black Category) Victims Area**

Space large enough to accommodate a minimum of ten bodies in acceptable conditions should be identified in the Hospital Mass Casualty Management plan.

### **E. SECONDARY EVACUATION**

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Under certain circumstances, such as when the hospital capacity is overwhelmed, or a victim requires highly specialized care (e.g., neurosurgery), transfer to more appropriate care facilities will be necessary. This can be to another hospital in the same area, to another district or province, or might include overseas evacuation.

The Hospital Command Post transmits requests for evacuation to the Medical Officer in the Emergency Operations Center who will make the necessary contacts and organize the transfer.

### **F. CASE STUDY (Continued)**

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Mr. John Smith arrived at the hospital triage area where he was assessed by the hospital triage officer who confirmed his status as a "red" category victim as determined by the evacuation officer of the Advance Medical Post. This patient required immediate surgical care (for internal abdominal bleeding and crush syndrome).

The officer in charge of the hospital triage contacted the Hospital Command Post requesting immediate access to the operating theater. This being possible, Mr. Smith was immediately transferred to the operating theater. While the anesthesiologist was preparing him for surgery, blood samples were sent to the laboratory requesting standard blood tests and blood prepared for transfusion.

Mr. Smith underwent surgical amputation of the right leg and splenectomy for a ruptured spleen.

It was noted that in spite of fluid replacement, no urine had been passed since admission to the Advance Medical Post. A diagnosis of acute renal failure secondary to crush syndrome and massive hemorrhage was made.

No facilities being available for renal dialysis, the anesthesiologist communicated a request to the Hospital Command Post for transfer to an appropriate facility.

The Hospital Command Post contacted the Emergency Operations Center requesting evacuation. The medical officer at the EOC received the information with appropriate details and made enquiries of neighboring facilities. The University Hospital of a neighboring country agreed to admit this patient to its acute dialysis unit. The medical officer at the EOC then requested assis-

tance from the National Disaster Coordinator to organize transportation of the victim.

Three hours after the request for evacuation, Mr. John Smith was transferred from the hospital red treatment area to the hospital helipad and airlifted with medical escort to the receiving hospital where he arrived forty minutes later.

## G. HOSPITAL MANAGEMENT GENERAL SCHEME

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Figure 16 shows the flow of victims through the hospital mass casualty system.



Figure 16. **HOSPITAL RECEPTION**

**Victims' Flow**

