

## DISASTER PLANNING\*

Watch therefore, for ye know neither the day nor the hour (Matthew 25:13)

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This was the apocryphal text for a talk scheduled the morning of December 7, 1941, at Pearl Harbour. A Hospital disaster situation exists whenever the sudden influx of patients overwhelms the routine medical facilities and staff, and compromises in treatment are required. It therefore follows that the number of patients required to create a disaster situation will vary greatly from a one doctor outpost health station to a large urban hospital. One author (Spencer 1963) postulated for a rural physician working alone 'a group of victims from a two-car crash with one driver having a crushed chest with pneumothorax and a fractured femur, a passenger with a fractured pelvis and a ruptured bladder, two with head injuries producing coma, and three others suffering from multiple fractures and profound shock. The rural physician might introduce a catheter into the chest of the driver victim and institute underwater seal drainage, direct that a Thomas splint with moderate traction be put on the femur, get a catheter into the ruptured bladder, do a tracheostomy on one of the head victims showing respiratory distress, and direct infusion of dextran for the three shock victims as well as the applications of splints to reduce further shock," and he might have seven living patients if he was assisted by several competent nurses and had thought of such emergencies beforehand.

The potential for a disaster situation exists whenever a large group of people are congregated. Theatre fires, aeroplane crashes, and mob violence (sport, student or political) are examples to which can be added such local hazards as Rajpath bus accidents and possibly earthquakes. In some western countries the existence of a hospital disaster plan is a prerequisite for official hospital approval, and its lack would weigh heavily against hospital authorities should a disaster occur and confusion and unpreparedness result. Disaster planning is no longer limited to the military, but is an essential aspect of preventive medicine.

An efficient hospital disaster plan may be drafted by a committee of key hospital personnel, but to become workable it must become familiar knowledge to the entire hospital staff by frequent review, revisions for staff and structure changes, and mock exercises. The plan should be co-ordinated (Shaftan 1962; B.C. Med. J. 1968) with those of other hospitals in the area, and with the rescue operations and traffic control measures of local police and fire departments. Failing this preliminary liason, fiascos have swamped one hospital, while an almost equidistant second hos-

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pital received only a trickle of patients. In another recorded disaster, lack of traffic control resulted in such congestion that ambulances were forced to unload their injured three blocks from the hospital.

A hospital may be alerted in advance of a local disaster or the first knowledge may be an influx of casualties to the Emergency Dept. Once a disaster situation is recognized, the previously prepared and rehearsed plan is put into operation by the Chief of Surgery and Hospital Administration after consultation. Its chief features briefly are.

- 1) Immediate suspension of all private practice.
- 2) Increase in bed accommodation. Approximately 60% of patients are ambulatory medical cases, post-operatives, or "in for investigation". (A spot Shanta Bhawan check revealed 41 of 54 patients capable of being discharged from the medical and surgical wards). A previously assigned doctor and ward nurse must quickly authorize these discharges, to a suitable area (e.g. adjacent nurses' quarters or courtyard), where they can subsequently be collected by their families. Ward medications for several days use can be sent with them.

Additional beds, mattresses, or just floor space, must have been considered in advance. Physiotherapy areas and dining rooms are often suggested. Wall hooks for IV sets, electrical outlets and available water are other considerations.

- 3) Hospital Traffic Routes must be predetermined, prominently indicated, and rigidly enforced. Guards (police or militia) are required at every entrance to prevent a paralysing influx of frantic relatives and the curious. Usually three entrances are recommended to avoid unnecessary congestion; (a) Hospital staff (who may even have been issued an identifying wallet card) and blood donors.

(b) Walking Wounded, who can be processed in an out-patient area (vide infra),

(c) Stretcher Cases.

The directional signs must be conspicuous and substantial (one elaborate university hospital disaster exercise was doomed from the outset when the cardboard directional signs disintegrated in an unexpected downpour). A multilingual guide could direct the illiterate.

A one-way ambulance drive-way with separate entry and exit is ideal. Hospital litter bearers, possibly volunteers, must be available to empty the ambulances, so that the driver does not leave his seat and can promptly remove his ambulance from the unloading area.

- 4) Triage occurs in the reception area. This is the sorting of patients into categories based on the greatest good for the greatest number. A 70% burn patient has slight hope of survival under optimum conditions and the time, personnel and medications utilized in the attempt are better utilized where salvage is more likely. These categories are flexible, and patients can be shifted from one to another as either their condition changes, additional staff becomes available, or the initial work load tapers off. The designation should be by the

Chief of Surgery assisted by a senior nurse and a clerk. This is the most likely site for a bottle-neck to develop. There should be no attempt at treatment, but only a brief description of the injuries, *secondly recommendations for immediate treatment and investigations* should accompany the patient. Bowers et al (1960) suggest these categories:

- a) Minimal treatment group; 40-45% of the total load.
  - i) Walking wounded; minor lacerations, simple fractures which do not interfere with ambulation or self-care, second degree burns of less than 10% body surface.
  - ii) Minor injuries rendering the victim non-effective; foot fractures or burns, swelling about the eyes which prevents vision, and moderate psychiatric disorders (nuisance rather than a menace).
- b) Immediate Care group; 20%
  - i) Haemorrhage from a readily accessible site, manageable by pressure, ligature or Barton bandage for maxillo-facial injury.
  - ii) Rapidly correctible mechanical respiratory defects; sucking wounds (occlusive dressing), tension pneumothorax (aspiration) or flail chest (tracheotomy and plaster cuirass),
  - iii) Severe facial or pharyngeal burns requiring tracheotomy.
  - iv) Severe crushing wounds of the extremities. Avoid hazard of haemorrhage or toxic absorption by completing the amputation or accomplishing a physiological one by a prominent tourniquet, until surgically performed.
  - v) Severe lacerations and compound fractures requiring debridement, immobilization, and delayed closure.
- c) Delayed Care Group; 20%. Either delay will not significantly affect their prognosis, or resuscitation is required before surgery.
  - i) Closed fractures of major bones. Treat by splinting.
  - ii) Abdominal wounds. Hopefully IV fluids, suction and antibiotics would be available. 68% survival may be expected.
  - iii) Multiple severe injuries.
  - iv) Burns of second or third degree exceeding 40% surface area.
- 5) **Documentation** is essential and must be adequate. To avoid the problem of unidentified patients (children, unconscious, mutilated) numbers can be assigned in the triage area, tied securely to the patient, and subsequently used for lab and x-ray identification. Brief clinical notes are mandatory to avoid duplicating clinical examinations or medications, with a record of vital signs, tetanus immunization, and morphine administrations.
- 6) **Information Service** must be established, ideally adjacent to the hospital and probably staffed with volunteers, provided with a prompt and accurate record of the names and condition of the victims for relatives and the press.

- 7) Supplies; Lists have been released by Civil Defence agencies, but these are impractical for most financially embarrassed hospitals. Items which should be stock-piled however, in excess of routine needs, are burn dressings, splints (including Thomas), and blood Volume expanders and Ringer's Lactate. (Eiseman 1967)
- 8) D. O. A. Lay people will ordinarily not accept the responsibility of pronouncing death at the disaster site. On arrival at the hospital they are best left in the ambulance and despatched to a suitable adjacent building, perhaps a church, temple or school, where they can be identified and claimed by relatives.
- 9) Kitchen. Special diets are suspended when confronted with a large increase in both patients and staff to be fed. Either the existing facilities must be expanded, a mobile type canteen utilized, or previous arrangements made with public catering service (hotels, restaurants) to provide simple meals for the hospital.

The foregoing is a review of the subject in the author's experience with no claim of originality. The text of Bowers and Hughes (1960) is a particularly readable and rewarding reference for those interested. Contr versial aspects such as the value of an emergency medical team despatched to the disaster area, or of regular disaster exercises have not been considered. It is hoped, however, that the headings above will provoke both discussion, and action, by doctors, both urban and rural, who will agree that pre-planning for disaster is one of their major responsibilities.

#### Reference

- 1) Bowers, W.F. and Hughes, C.W. 1960. Surgical Philosophy in Mass Casualty Management C.C. Thomas, Springfield.
- 2) Eiseman, B. 1967, Combat Casualty Management in Vietnam: J. of Trauma, 7, p 58.
- 3) Disaster Planning Committee; Disaster Planning Committee, Greater Vancouver Regional District; B.C. Med. J.; 1968, 10, No. 9, 256-7.
- 4) Shaftan, G.W. 1962, Disaster and Medical Care: J. of Trauma; 2,
- 5) Spencer, J.H. 1963 Mass Casualties in the Civilian Hospital: Bull. Am. Coll. of Surg. Nov. Dec. 1.

#### Recommended:

Film: Disaster Plan

available from

Abbott's Laboratories Ltd.,  
P.O. Box 6150 Montreal, P.Q., Canada.  
or American Hospital Association Film Library,  
840 North Lake Shore Drive,  
Chicago, Ill., U.S.A. 60611