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Disaster drill at a university hospital

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Abstract

The course of a disaster drill held on 23 October 2001 at Aga Khan University, Karachi is reported. The Hospital Emergency Plan was put to trial on that day. Volunteers were invited to become simulated casualties in the drill. Briefing seminars had been conducted with the key players of the hospital. The scenario was a man-made type disaster. A 747 jumbo jet with 200 passengers had crashed at the end of the runway at Quaid-e-Azam International Airport while taking off in a thunderstorm. Fifty casualties were sent to Emergency Room by ambulance. The Plan was activated and relevant units were mobilized according to the Plan. It took 2 hours to complete the disaster drill. Major difficulties were identified in the operations, communications, staff deployment, and emergency control center. Debriefing sessions reviewed difficulties encountered throughout the drill and the possible remedies.

Introduction

The literature of disaster planning and management makes frequent reference to disaster drills and exercises as a fundamental training tool.[1] By paying attention to educational principles, disaster exercises are likely to meet their potential as an educational tool.[2] The place of drills in disaster management is well recognized,[3] and it has proved valuable in cases of real disasters.[4,5] The drills identify potential problems in real emergencies, and provide us an opportunity to correct flaws in planning long before they cause catastrophes in real life.[6]

The disaster drills are not done regularly in our hospitals. However it is of great relevance in Pakistan, as there is a lack of disaster plans in hospitals and increased risk of disasters due to terrorist attacks.

As part of its continuing efforts to (a) test and update the hospital Emergency Plan, (b) assess the level of awareness of emergency preparedness among staff, and (c) educate/train staff on emergency preparedness, AKU develops, arranges and conducts Emergency Mock Drills. Under the prevailing situation in the international/ national/local scenario, the need to carry out one such mock drill is evident. For this reason, an exercise was arranged to meet the above-described objectives and to streamline the emergency procedures as outlined in the AKU Emergency Plan and departmental Emergency Sub-Plans.

The aim of this exercise was to test and train hospital employees in the event of an external disaster under controlled/non threatening conditions.

The objectives of the mock drill were to:

- ♣ Test plans and procedures.
- ♣ Create teamwork within AKU
- ♣ Be better prepared to respond to an actual emergency.

The hospital civil disaster contingency plan

It would be difficult for a single unit to manage a major disaster when the demand for life-saving and emergency services exceeds its normal capacity of routing operations. Both supplementary human and material resources must be ready at all times so that quick and effective response is possible. The number of contingency staff and logistics required from other units also have their own contingency plan so that they can respond to ER's demand effectively in case of disaster.

Table 1. Disaster Drill Time Table / Scenarios.

No.	Events	Time
1	Switchboard operator received call from Airport Managers Office regarding crash of a 747 Jumbo Jet due to thunderstorm. 35/40 casualties are expected at AKUH.	1100 hrs
2	ER notified by local Emergency Dispatch Center (Airport) about the crash and Victims with burns, major fractures, internal bleeding etc. being sent to AKUH.	1110 hrs
3	3 Casualties brought to ER by Edhi Ambulance and others are also expected soon.	1115 hrs
4	TV camera crew arrived with the first batch of casualties at ER and wants to film/interview victims.	1120 hrs
5	Examination of victim at ER indicates bleeding from fore head, extensive burns and femoral fracture.	1125 hrs
6	Additional casualties arrive at ER and some require admissions	1130hrs
7	Emergency was declared at 1130 hrs. Five patients each to be admitted in medical and surgical wards whereas the wards are full.	1200 hrs
8	3 minor injuries from ER Triage are to be sent to Community Health Clinic for necessary treatment and discharge.	1210 hrs
9	News of disaster has spread. There is heavy rush at the ER of relatives and press who are eager to find out about the condition of patients etc.	1215 hrs
10	The patient-care area of ER has becomes full of disaster casualties. Twenty more casualties are expected to arrive for which the ER requires additional medical, surgical and pharmaceutical supplies from Pharmacy and Warehouse.	1220 hrs
11	2 critically injured casualties to be sent to operating room (OR) for immediate surgery; blood to be arranged for 6 seriously injured casualties.	1230 hrs
12	Emergency generator has broken down and OR has become inoperable.	1235 hrs
13	AKU has received 50 casualties when the Emergency Committee receives information that 5 more casualties with 2 in life-threatening condition are about to reach AKU.	1245 hrs
14	CT Scan machine of Radiology is out of order. A patient with low Glasgow Coma scale from surgical ward needs CT Scanning.	1255 hrs
15	Exercise finished	1300 hrs

Disaster Drill

Preparation

A series of seminars for both hospital personnel and clinicians in the hospital were arranged in order to make everyone familiar with the Plan as well as their role in disaster management.

The hospital volunteer group was contacted for recruiting 'victims', with encouraging response. About 30 volunteers participated in the exercise. They were briefed by the disaster drill coordinator on how to cooperate with hospital staff and their roles in the exercise. Then 'fake wounds' of various severities ranging from open fractures to superficial abrasions were created on volunteers using cosmetic materials.

The Disaster Drill Process

The Disaster was a full-scale man-made mock drill and man-made, and held on October 23, 2001. A 747 jumbo jet with 200 passengers has crashed at the end of the runway at Quaid-e-Azam International Airport while taking off in a thunderstorm. Fifty casualties were sent to Emergency Room by ambulance. Most of them required transporting devices, for example stretchers or wheel chairs, while some were ambulatory. The Drill

Table 2. Content of the Debriefing Session.

Nature	Difficulties encountered	Proposed remedies
Emergency Room (ER) operations	The staff from other departments were standing in ER as speculators.	Only essential/required staff should be allowed in ER during emergency.
	There was a rush of attendants in the ER that hindered the patient care activities.	Holding area should be setup outside ER to avoid rush/disturbance in ER.
	Some patients were transferred inappropriately.	The Triage at ER should ensure proper tagging of all casualties including Dead on arrival.
	Disaster casualties were not given medical record numbers that created confusion while sending laboratory and diagnostic tests.	Proper medical record numbering of casualties should be ensured at ER.
	There was no mechanism for timely and accurate information regarding casualties and their condition from ER to ECC.	A proper information mechanism is required at ER.
	Doctors spending valuable time in writing up X-ray examination request forms	Let patient go to X-ray department with ER records, no need to use individual request forms.
Staff deployed from other units	Nurses from other units were not familiar with the operating system	Some major areas must be manned by ER nurses to ensure smooth operations; flexibly mobilizing staff to support various areas.
	Patients' particulars were inadequately updated on the ER clinical record sheets.	Registration staff should go around to the waiting hall or even various functional stations to do registration work.
	Supporting staff, e.g., porters did not know their roles and functions in disaster management and can only psssively wait for assignment.	Enrich their understanding of disaster management by specific orientation.
Communications	Announcements were only made in English. Announcements could not be heard clearly in some areas.	Urdu announcements should also be arranged.
		Communications Department to ensure proper testing/working of public address system.
	Installation of telephones at the Emergency Control Center and issuance of pagers was late.	Action needs to be speeded up.
Emergency Control Center (ECC)	There was a significant gap of real information flow between participating areas and ECC.	A centralized information system should be setup at ER with telephone/wireless for correct and immediate information be regularly passed to ECC and other key areas.
	Generally, the ECC members were not getting any feedback from their respective divisions/departments	Departments should workout a proper communication strategy.
Others	Insufficient wheelchairs.	Hospital administration should revise both numbers and logistics reserved for supporting ER in disaster management
	Extra chairs not available in triage station for walking wounded victims	
	No press release was issued.	A proper press release should be prepared jointly with the ECC.
	Deployment of security staff to many important areas was delayed.	Security Department should ensure immediate deployment to pre-listed key locations.
	Requirement from Warehouse and distribution was not met.	Proper arrangements should be made to meet the requirements.
	Arrangements at mortuary were insufficient	Proper training and awareness is required.

ER : Emergency Room

ECC: Emergency Control Center

designer/coordinator decided to activate the Disaster Plan in response to the accident. Relevant parties of the hospital were mobilized according to the Plan. The trauma team was activated, and the nurses and doctors from different parts of the hospital were mobilized to support Emergency Room. A total of 42 hospital staff including doctors, nurses, supporting and security staff gathered in Emergency Room, as per plan.

Prompt consultations and treatment were delivered to all victims. The overview of the drill timetable and different scenario is illustrated in Table 1.

All the disaster patients were initially screened at the triage station that was manned by a nurse and a physician. All the victims had to stop a while in triage station, regardless of their injury, for priority determination and patient identification. Individual patients would receive a special bracelet and a clinical record sheet that carries pre printed special stickers for identification purpose. Patients with life-threatening injuries were managed in the "Resuscitation Room," while the non-ambulatory victims were transferred to examination cubicles for consultation and treatment in the main area of Emergency Room. The patients who could manage to walk were treated in the "Fast Track" that was away from the main ER stream. After being seen by doctors, patients underwent X-ray investigation and other interventions, like applying plasters, wound dressing, and suturing.

It was anticipated that there would be a huge demand on patient transportation. Those activities were centrally organized by transportation. Porters were in stand-by position at vital places where patient movement was expected, for example triage station, main treatment area, X-ray department, etc. The supply of logistics, handling of media and security services were provided by the Hospital Administration so that clinical personnel could concentrate on the major task of patient care.

It took 2 hours to complete the exercise resulting in 5 victims certified dead on arrival at ER; 12 hospitalized;and the rest allowed home after treatment.

Debriefing Session

Immediately after the drill, the drill Coordinator chaired a debriefing session with an aim to review operational difficulties encountered and to discuss possible remedies. The majority of drill controllers and evaluators attended the meeting. The discussion was summarized (Table 2).

Discussion

The disaster exercise was found to be useful in making clinicians understand their roles during disaster management. The debriefing critique reviewed problems encountered. In fact, we identified some more difficulties that did not occur in the drill.

It was planned to summon back off-duty ER staff to support the service in managing catastrophes. One may anticipate that severe traffic jams will result due to traffic control of the roads near the hospital. Off-duty staff may not be able to reach the hospital at the critical moment.

There would be many people crowded in the ER including anxious victims, stressed relatives and friends, hard working hospital staff (some may not be familiar with disaster management), journalists and relevant government officials. Different parties pose a different focus of concern. No matter how good a plan is, a certain degree of chaos in the ER is inevitable.

It was also noticed that some helping hands (those staff summoned from other units) found it difficult to identify the ER staff because numerous nurses and doctors were crowded into the department. The strangers may need help in some way, for example to access the store of intravenous fluids. The problem will no longer exist because there will be specially designed uniforms for ER staff in the near future.

During the exercise, patients bottlenecked at different areas. To solve the problem in the future, frequent visit of ER staff was suggested amongst the various functional areas in order to enhance flexible staff and logistics deployment. The use of a walkie-talkie is necessary as to enhance communication between functional stations and disaster coordination center.

Some problems were also noticed in the Communication department; such as the announcement was not properly heard at different areas and announcements were made only in English. It was also found that the Emergency Control Center was not getting the information in time. These problems will be rectified in future.

The exercise took 2 hours to complete. It seems that everything went uneventfully and smoothly. This efficiency may be due to successful staff pre-briefing. Some delay and chaos would be inevitable due to unanticipated environmental factors during disaster management.

On the other hand, a real disaster will happen anytime of the day or night and will be of different nature, type and magnitude. Hospitals should prepare more than one contingency plan, for example civil disaster plan, radiation emergency contingency plan, etc., so as to enhance effective crisis management. Disaster exercises of

dirvers nature should be carried out at least once a year,[7] even though disaster drills are also considered as time-wasting activities.[8]

Conclusion

A disaster drill is more than an isolated event. It should be an integral part of a comprehensive disaster-training program. Our experience revealed that it would be important for hospitals to test their contingency plans regularly. Organizing practice drills may provide clinicians with the opportunity to anticipate possible operational difficulties and find remedies to tackle them. This may also help to develop effective coordination and cooperation among various departments of the hospital in disaster management. Only trials run together with real life experiences could make improvement and refinement of the plan possible. Besides, continuous review of the plan against latest developments of the hospital is essential.

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