

# Mock drills: The impact on the hospital Disaster preparedness

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**Abstract—** Hospitals are the first institutions to be affected after a disaster and they need to be well prepared to handle such unusual workloads. The present study was aimed to assess the hospital preparedness through mock drills using a questionnaire based upon a “Tool for Evaluating Core Elements of Hospital Disaster Drills” prepared by Johns Hopkins University, Baltimore. These included pre-drill and drill questionnaire based on functioning of various zones i.e. Incident Command zone, Restriction Zone, Triage Zone and Treatment Zone.

In a total six drills were conducted. In the first drill, there was no designated Control room, while 2<sup>nd</sup> drill onwards it was established in MS Office. The time taken by in-charge to take command and to activate the disaster plan was initially 20-30 minutes, but later it improved to <10 minutes.

Restriction Zone was activated as soon as information was confirmed. In-charge security deployed appropriate number of security personals. Ambulances reported till restriction zone. Victims were received in restriction zone and documentation done. The staff in restriction zone included EMO, trolley men, May I Help You personals and security guards. This area was commanded by faculty members. The victims from this area were shifted to treatment zone, operation theatre with proper and clearly visible triage labelling. Triage zone functioned efficiently because of sufficient supply of medicines and equipments for management of injured.

The Treatment zone is the area where victims are actually treated according to their triage labels and it was inside surgery emergency itself.

Hence, though institute is well equipped with disaster stock and is capable to manage the disaster situations efficiently but there is need to raise awareness, conduct regular training programmes and the institute's disaster management policy to increase the efficiency and capability of health care workers.

*Keywords-hospital management, disaster drill, mock drills*

## I. INTRODUCTION

The word disaster implies a sudden overwhelming and unforeseen event<sup>1</sup>. Developing countries suffer the greatest costs when a disaster hits – more than 95 percent of all deaths caused by disasters occur in developing countries, and losses due to natural disasters are 20 times greater (as a percentage of GDP) in developing countries than in industrialized countries<sup>2</sup>.

Disasters, emergencies, and other crises may cause ill-health directly or through the disruption of health systems, facilities and services, leaving many without access to health care in times of emergency<sup>3</sup>. The level of preparedness directly governs how a hospital deals with the initial onslaught of a disaster. A well prepared, well informed hospital will already know what is needed and will be able to provide crucial information and will effectively implement essential relief programmes<sup>2</sup>. Much can be done, both to prevent and reduce the adverse consequences of disasters on health during the various stages in the evolution of a disaster.

The present study was aimed to assess the hospital preparedness through mock drills using a questionnaire based upon a “Tool for Evaluating Core Elements of Hospital Disaster Drills” prepared by Johns Hopkins University, Baltimore. These included pre-drill and drill questionnaire based on functioning of various zones i.e. Incident Command, Restriction Zone, Triage Zone and Treatment Zone.

## II. METHODOLOGY

The study was conducted in one of the tertiary care multispecialty city hospital of North India serving a population of city itself (around 12 lakhs) as well as states of Punjab, Haryana and Himachal Pradesh. The hospital emergency block was prime focus in the study; divided into Medicine Emergency and Surgery-cum-Orthopaedic Emergency. Hospital emergency is 54 bedded and bears a load of 1 lakh patients per year. Emergency Medical Officer (EMO) is posted round the clock in emergency and patients are filtered according to their medical condition in respective emergency. Each emergency is staffed with two consultants (on call), two Senior Residents and two Post Graduate Junior Residents (PG-JR) and two interns in each shift and six staff nurses round the clock.

The Incident Command zone (ICZ) was established in the control room of Department of Hospital Administration. Any information regarding disaster was first received, assessed there and measures to manage any sort of crisis situation were planned and activated. The Restriction Zone, Triage zone and Treatment zones were established in the emergency to manage the disaster effectively.

The drills assessed not only the functioning of Emergency area of the hospital but also other important factors which play important role for implementing disaster plan effectively i.e.

communication both internal and external, security arrangements, effective media & public control etc.

**III. RESULTS**

In a total six drills were conducted. In the first drill, there was no designated Incident Command zone/ Control Room for Disaster Management. Thereafter, 2<sup>nd</sup> drill onwards ICZ was established in the Department of Hospital Administration and Medical Superintendent was the In-charge of any drill/disaster

situation. Initial drills were neither started on time nor disaster plan followed. The time taken by in-charge to take command of the ICS was initially 20-30 minutes but later it improved to <10 minutes. Similarly, the time taken to initiate the disaster plan in the form of the job responsibilities ranged from 20 to 30 minutes but till 6<sup>th</sup> drill it reduced to less than 10 minutes. Also as there was no documented Disaster plan for initial three drills, but after that a flow diagram of the course of action and job responsibilities were identified and followed from 4<sup>th</sup> drill onwards.

**Table. 1: Incident Command Zone**

Points evaluated	Drill 1 09.11.2012	Drill 2 13.02.2013	Drill 3 27.07.2013	Drill 4 28.10.2013	Drill 5 08.05.2014	Drill 6 15.05.2014
1. Was disaster control room established?	No	Yes	Yes	Yes	Yes	Yes
2. Location of disaster control room?	-	Emergency	M S Office	M S Office	Emergency	M S Office
3. Did drill start on time?	No	Yes	No	No	Yes	No
4. Time taken by in-charge to take command?	20-30 min	10-20 mins	10-20 mins	10-20 min	<10 mins	<10 mins
5. Time taken to activate disaster plan?	Not activated	20-30 mins	20-30 mins	10-20 mins	< 10 mins	<10 mins
6. Was disaster plan followed?	No	Yes	No	Yes	Yes	Yes
7. Was staff updated?	No	Yes	Yes	Yes	Yes	Yes

The Restriction Zone includes the area where disaster victims were received. The inflow of routine patients, their attendants and visitors were restricted during the drill. This zone was activated as soon as the information regarding disaster was confirmed. In-charge security ensured deployment of appropriate number of security personals so as to check limited entry of visitors and also quick mobilization of excess of patients who are stable to the other areas. Initially time taken to take charge of the area was about 30 minutes but later on it improved to 20-30 minutes and lasts to 5-8 minutes. Victims were received in this zone and documentation done by EMO. The staff in the restriction zone included EMO, attendants, May I Help You personals and security guards.

Ambulances reported till this zone. Ambulances reported till this zone. Media was not allowed to enter in this area.

The triage zone was commanded by a surgeon and Orthopaedic surgeon. The victims from this area were shifted to the treatment zone with proper and clearly visible triage labelling. Besides, triage minor treatments of stable patients were done in this zone itself. In the initial drills no one took charge of it, but in 3<sup>rd</sup>, 5<sup>th</sup> and 6<sup>th</sup> drill the triage area was developed and taken command by designated health personnel. The space allocated for triaging was found deficient, as other routine patients were also present in this area.

The Treatment Zone is the area where victims are actually treated according to their triage labels and it was created inside the surgery emergency area itself. In-charge of this zone was Chairman Emergency. Time taken to take charge of the area earlier ranged from 20-30 minutes but in the later drills it decreased to less than 10 minutes. It was observed that the staffing was insufficient in first two drills, and it was strengthened from 3<sup>rd</sup> drill onwards. Also, staff were not well aware of their assigned roles and responsibilities, but after first drill they were given instructions in Pre-Disaster Briefing, so that they could efficiently manage the disaster victims. There was sufficient supply of disaster inventory (medicines and equipments). Also security control in this zone was found to be improved during the course of drills.

In these drills it was found that there is sufficient manpower, stock & inventory for handling any disaster but there awareness and alertness is not at par as the staff working in emergency was found not well versed with the disaster management. Also it was found that fully trained and designated teams in Triage and Resuscitation were not functional during drills and there is need to develop inter-departmental co-ordination for the same.

Although Disaster Management Committee (DMC) and Disaster Control Committee (DCC) have been constituted and there are regular meetings to discuss job actions, requirements

and assessment of current situation, the deficiency of a well documented Disaster Plan was felt during the drills. DMC and DCC were found efficient in managing the disasters but due to lack of a well documented plan led to delay in the implementation of disaster management guidelines.

#### IV. CONCLUSION

Thus to conclude the study, it was found that institute is well equipped with disaster stock and is capable to manage the disaster situations efficiently but there is need to develop training and awareness programmes regarding disaster management and the institute's disaster management policy to increase the efficiency and capability of health care workers.

#### REFERENCES

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