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PREPAREDNESS AND RESPONSE OF HEALTH CARE ORGANIZATIONS IN PAKISTAN

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Abstract: Health care and emergency health care systems are already facing stress and massive challenges. To face these challenges and deal with issues, these systems in the country needs to improve organizational structure and leadership, establishment of supportive infrastructure, organized workforce, superior organizational capacity, information and communication, triage and transportation, logistics, and data collection system. The intention of this term paper is to emphasize the need for policy making regarding organizational structure, capacity building, and to provide guidelines for health care and emergency system in preparing for and responding to an MCI caused by different hazards in the country. This paper will prove itself in providing practical information to support comprehensive MCI care in response to substantial hazards. This paper focuses on two areas: management preparedness and response to a hazard event in the country, and effective care of patients in the pre-hospital and hospital environments during a MCI event.
Keywords: Disaster, Disaster Management, Mass Casualty Incidents, Triage

1. INTRODUCTION

Our society, environment and citizens are suffering from the effects of both human induced and natural disasters. A disaster is defined as a severe disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope on its own resources (UNDHA 2001). Population trends like density and growth, resettlement and migration, ill-planed urbanization, environmental degradation and climate change are the main factors contributing in natural hazards. Comparing with past, in present the mortality rate due natural and human induced hazards is on rise. The Global economic cost related to these hazards is also on rise (Masozera et al., 2007).

Population growth and unplanned development increased disaster threats due to rise in vulnerabilities. The changing socioeconomic and demographic trends are the contributing factors in increased vulnerability. For example if a high scale earthquake or flood struck an open field with no use creates little or no danger. Comparatively an earthquake with less magnitude or flood with weak intensity can cause significant damage to livelihood, economy, materials and human lives in more populated areas or urban settings.

A mass casualty incident can be defined as "an event resulting in a number of victims large enough to disrupt the normal course of emergency and health care services" (PAHO/WHO 2001). An unexpected hazard related MCI requires an instant response; interrupts transportation of casualties, interrupt communication systems, supplies, disturb health care services and health care and emergency workers and may overcome the capacity of community and responding organizations.

All though natural and human induced hazards are common in the country, but our emergency and health care system has minimal resources and skills in taking care of casualties resulted from natural hazards and violent activities. Earthquakes, floods, landslides, road traffic accidents and Bomb blast, resulting in heavy and complex injuries are not commonly treated and seen in our daily settings. Lack of facilities, insufficiency in response potential might lead to rise in mortality and morbidity. It will ultimately result in increased level of stress and fear within the community.

During MCI event large number of people sustaining complex injuries poses an exclusive management challenges for emergency management and health care workers. They receive huge amount of patients in short period of time, creating havoc. This rise in surge within short period of time stresses the ability of systems, resulting in compromise and confusion. The constant and growing risk of violent actions, increased number of natural hazards in past decades in the country, combined with increased vulnerabilities calls for proactive approach of preparedness and response to these conditions. Health care and emergency facilities and public and private setups and health care professionals must work together to make sure that plans and procedures are there to address some basic and important challenges:

- ✓ Accommodate, assess, and take care of increased number of injuries,
- ✓ Quickly recognize and treat seriously injured,
- ✓ Assess and evaluate response efforts during disasters, and
- ✓ Perform Strategic planning and carry out mock exercises, drills for future events.

This paper will be focusing on the key problems and challenges in health care setups response and preparedness during the three care domains related to MCI:

- ✓ Patient Triage and Pre-Hospital Care
- ✓ Allocation and Transportation
- ✓ Emergency and Hospital care

2. TYPES OF HAZARDS / TYPES OF INJURIES

Exposure of Pakistan to natural disasters can be classified as moderate to severe. Natural hazards including earthquakes, floods, epidemics, GLOF, landslides and avalanches threaten the Pakistani society. There are number of human-induced hazards as well posing risk including civil conflicts, urban and forest fires, oil spills and internal displacement of population, which in terms effecting the country environment and economy as well. Prioritizing hazards in terms of their scale and occurrence as high are floods, earthquakes, and social conflicts that have caused massive damages and losses of lives in past decade.

There are different standard injury classifications systems adopted globally for the blasts and other hazards. The one devised by Centers for Disease Control and Prevention (CDC) in 2010, is utilized in this paper. According to CDC injuries due to different hazards and blast can be classified as primary, secondary, tertiary, and quaternary. Primary injuries produced from different events can be easily seen on victim's body. Directly damaging the internal organs primarily responsible for circulation e.g., heart, lungs, ears, gastrointestinal tract and brain as well. Secondary trauma injuries mainly resulting from penetrations and blunt traumas not directly caused by the hazard itself but caused by sharp objects and fragments dislodged during event. Tertiary injuries including penetrating trauma and blunt injuries resulted during movement of the casualty during hazard e.g., being drowned in flood. Quaternary injuries previously known as miscellaneous injuries are those injuries resulting from hazards and exaggeration of existing medical conditions. The injuries include crush injuries caused during structural collapse, burns, fractures, head injuries, and penetrating abdominal trauma.

3. DISASTERS AND EMERGENCY HEALTH CARE SYSTEM

The havoc produced at the site of an MCI is consequently transferred through all phases of the organization response. The confusion and havoc most of the times results in the interruption of the communication, disordered transportation of the victims, confusion among health care workers, shortage of supplies, and can devastate the capabilities of health care setups. The health care system can reduce the chaos and confusion during an MCI with earlier planning, emergency plans, and practices regarding emergency management. Planning regarding mass casualties necessitate innovation in certain fields, including pre-hospital management, hospital surge capacities, patients distribution and management, leadership management, controlling crowd and relationship with media. Throughout an MCI, health sector will be facing increased stress, raised demands and reduces resources availability.

4. PRIVATE HEALTH SECTOR IN PAKISTAN

The infrastructure of the private health care sector in Pakistan is deficient in organization with no specific standards. There is an extensive inconsistency in the provision of care in private sector in health sector ranging from very well established tertiary health care hospitals to general disorganized and un-authorized health units. It is argued that very few hospitals in country in private setup are well equipped with proper staffing, equipments and supplies in the country (EMRO, WHO 2007).

5. LEVEL OF RESPONSES

The declaration of mass casualty incident is dependent on the primary assessments and reports of the initial responding teams at the scene. There are some factors that have to be considered while initiating an MCI including site of the event, reported number of fatalities, type of exposure, potential causes and capacities. In standardizing the notification of an MCI event, ruling out its impacts, and determining the appropriate use of recourses during event, classification of levels of responses to mass casualty incidents is necessary. Establishment of responses is based on the nature of event and resources required to tackle it.

≡ Level I: Normal Response

A devastating single or simultaneous event that can be easily managed using normal local response by the setup, with no compromise on capabilities of the services to respond to other emergencies. This type of response will most likely have a significant impact on the routine operations of local health care facility. The numbers of casualties that is reported can be handled through normal response are 10 or less. Authorities of the incident have determined that the early response is sufficient to meet the event requirements.

- ✓ The emergency department (ED) may demand of supplementary resources as required.

- ✓ Emergency Department will communicate and alert other departments within the hospital as will.
- ✓ Examples: Residential and industrial fires with multiple injuries, road traffic accidents etc.

≡ **Level II: Community Emergency Response**

An overwhelming single or simultaneous event, that may require a significant commitment of additional resources, which will result in interruption of activities of local health care setups and community health care systems. Authorities has determined that the magnitude of the event is strong enough requiring implementation of an expanded resources. The numbers of casualties that can be handled through community emergency response are 11-20 or less.

- ✓ Authorities notify monitoring and rapid response service centers of Level II event condition.
- ✓ Monitoring and rapid response makes suitable announcement as per local practices.
- ✓ All local healthcare setups and community health care centers are notified of possible rush of patients, and receive back information of staffing and resources available. The administrations can then call for additional man power and resources as needed.
- ✓ Administration can also consider off duty human resources.
- ✓ Examples: Extended fire and accidents, Earthquake, floods etc.

≡ **Level III: Minor Disaster Response**

A destructive single or concurrent events that is more likely to extend beyond the capacities of local health care and emergency setup and their additional resources, requires multi-dimensional approach. It will require the involvement of other domains of the society. Minor disasters will have considerable effects on local and regional health care system. The number of casualties that is usually reported in minor disasters is 100 or less.

- ✓ Authorities should appeal a local status of emergency.
- ✓ Local emergency operations center should be initiated for the monitoring and coordination of the event.
- ✓ For additional support and resources status of the event is determined.
- ✓ Local, regional and national health care setups are informed about the status of the event, number and types of patients.
- ✓ Examples: Extended earthquake, Air plane crash, terrorist attacks and use of explosives, wide spread civil disturbances.

≡ **Level IV: Major Disaster Response**

An overwhelming event that is more likely to extend beyond capacities of local authorities and hospital surge capabilities, and need a wide range of state and government assistance. State of emergency is declared by local authorities.

- ✓ Regional emergency operations center should be initiated for the monitoring and coordination of the event.
- ✓ National and regional emergency operational center demands for assistance.
- ✓ Authorities inform regional, local and national healthcare facilities for pediatric, burn and trauma of event, including number, types of patient, and types of injuries.
- ✓ Examples: Huge earthquake, heavy floods, Tornado with loss of infrastructure, and terrorist attack.

≡ **Level V: Catastrophic Disaster Response**

In catastrophic disasters health care and emergency response is completely overwhelmed, and ineffective. Massive national and international assistance is required in event with catastrophic magnitude. State of emergency is declared at national level with information from regional and local authorities. The numbers of casualties that is usually reported in minor disasters are 1000 or above.

- ✓ National emergency operations center is initiated for the monitoring and coordination of the event, it will also alerts local, regional, national health care and emergency setups.
- ✓ Examples: Earthquake of 2005, floods 2010, Terrorist attacks.

6. COMMON CHALLENGES FOR HOSPITALS

≡ **Predicting Patient Surge**

As soon as the MCI struck, numbers of patients with complex injuries are likely to rush towards the closest health care and emergency setup. Patients being carried towards health care setups encounter different problems like transportation issues, security problem, aftershocks or prolongation of event, secondary effects e.g., structural collapse. The havoc and stress produced during hurry and huge amount of casualty results in failure of the system. Equilibrium between numbers of victims and care standard is disturbed.

Health care system should devise an emergency plans to tackle initial rush of wounded patient who can walk. Patients with minor injuries with psychological trauma and who can walk, often rush itself towards or self transport towards health care and emergency facilities immediately after event, often creating chaos. They mostly arrive before severely injured victims and for several hours they might keep on arriving. They occupy beds, and devastate the health care and emergency setup which receive them and interrupt

management of seriously wounded victims. As stated that in an MCI priority should be given to critically wounded patient (Schultz CH, Koenig KL, 1996).

≡ **Delays in declaring a mass casualty event**

Declaring an MCI is relatively a challenging task. An official announcement and declaration of an MCI is typically made by an officer or person with authority. Delay in declaring MCI can produce negative effects. There are three common delays that usually take place while declaring an MCI that make it difficult for hospital to surge.

≡ **Late recognition of event**

Event severity detection is the main issue for the authorities of health care and emergency systems. Inadequate or ineffective understanding about the situation is the main issue producing enough response.

≡ **Delayed notification and activation**

Using reactive approach causes interruption in delivering definitive care and lifesaving interventions. In reactive approach emergency system is activated according to situation, if the system is activated in judicious manner, many lives can be saved. To avoid delay using a proactive approach with simultaneous and full launching of all crisis system is required, following by gradual removal of MCI supported by information gathered.

≡ **Sluggish mobilization of resources**

In reactive approach slow and linear conversion from routine process to suitable response results in delay. The phase of conversion must be nonlinear, immediate, and proactive in extent and scale. Ineffective planning and arguments leads to sluggish establishment and should be set aside until after the response.

≡ **Time constraints**

The reaction towards an MCI event should be mainly based at local level and needs quick intervention. Routinely exercised local emergency plans will function effectively and will never fail. Integration of the plan into regular operations will make it more effective.

≡ **Limited health care workforce**

Numbers of health care workers available in daily routine are never enough to respond to an MCI. For effective response off duty staff will have to report to their concern departments, but they may not be able to report and respond during an emergency either for the reason that they cannot arrive at the Emergency department or are worried about their own safety or that of relatives. To minimize errors shortage of the staffing should be addressed as health care system in Pakistan is suffering already from staff shortages and lack of funds (WHO, 2010). Planning must include provisions of staff to government sectors and provisions of funds.

7. MANAGEMENT OF PATIENT SURGE

≡ **Planning**

Each health care facility should have a coordinated and collaborated emergency plan. Standard operating procedures (SOPs), Checklists, Plans, protocols, and symbols facilitate hospital administration and curtail confusion during crisis. In severe stress, confusion among individual can be managed by SOPs. Prepared crisis protocols must be used and implemented as decisions making is always difficult during crisis. While preparing protocols it should be considered that they are short, easy, workable, practical and rationalized. Interaction with other key organization should also be considered in preparing protocols. The plan should be evaluated continuous basis including lessons learned and experiences.

≡ **Surge capability and capacity map**

Healthcare and emergency facilities should formulate comprehensive map of available external and internal resources. It should also include setup's ability to respond to an MCI, appropriate contact information and potential resources as well. It must be updated, transparent and shared with key stake holders of the organization.

≡ **Mock exercises and drills**

Drill and mock exercises should be performed prior to an MCI event on regular basis. It will help in identifying flaw, and error. Exercises can be performed at different levels with management, health care workers, community representatives, and all other individual responsible for response to an emergency. These exercises should be on regular interval, and updated. There are four levels of drills which are effective and important:

- ✓ Specific or vertical drills for tasks oriented, particularly to mass casualty events,
- ✓ Table-top (horizontal) exercises for senior personnel,
- ✓ Functional drills for all those individual in charge.
- ✓ Real Time and full-scale drills with full contribution from all hospital staff.

In exercises and drills performances must be systematically and logically assessed with contribution from other health care setups, response group. Issues identified must be tackled properly before the next drills.

≡ **Redundant systems**

At some stage in crisis communication failure, failure of equipment and infrastructure may occur. To reduce distraction and delay in rush management, redundant systems should be established for contingencies. For electrical shut down, communication breakup, health care setups must have contingency plan. Emergency department should be designed in a way that it should reduce likely risk and improved work flow with minimal interruptions throughout serge.

≡ **Triage and level of care**

During an MCI the triage system used differs in many aspects from conventional triage system. Following an MCI, large numbers of victims are brought into an emergency department; the health care resources are inadequate. To offer health services to large number of casualties, healthcare worker can modify the standards of triage and care provided at individual level, so that greatest number of people can be saved and reduce the terrible outcomes of injuries. A simple but very effective technique of triage for crisis categorizes victims into two basic categories as either walking or non-walking is being used during emergencies. The victims that can walk do not usually need immediate emergency medical services and including the individual with psychological trauma who are not injured but exposed mentally to the event. The victims that cannot walk or non-walking are individuals who should be investigated and treated on urgent or emergent basis. There must be two health care workers for triage of the patients at the entrance of emergency department, trained in trauma care. A secondary triage team may be needed if the first team is overwhelmed by the surge of victims. Lerner BE, Schwartz RB (2008) supposed that the following guidelines should be integrated into practices

- ✓ We should build up flexible triage practices which are only based on consistent criteria for mass casualty and struggle for system that is easy to remember, simple, and agreeable,
- ✓ Appropriate for all age groups and population
- ✓ Easily adjustable for modification in resource available and circumstances.
- ✓ We should design a color-coded condition oriented protocols, in which red means immediate treatment is required, delayed for yellow, green for minimal, and black deceased or near to die.
- ✓ Reduce work burden of extra documentation on triage team.

≡ **Withdrawing the emergency status**

Just like quickly preparing transitioning from routine to status of emergency is necessary, quick return to normal activities have the same importance. Debriefing of health care workers will reduce the exhaustion caused by the event and will help in gathering important data for future emergencies.

≡ **Resources**

It is essential to organize and mobilized sufficient number of qualified and skilled health workers during an MCI event. There are some expertise which will be essential for functioning during MCI event in an ED including emergency physicians trained in trauma, surgical services with anesthesiology, orthopedic surgery team for different fracture, health education team, nurses, pharmacy staff to ensure sufficient supplies during MCI, blood bank workers, radiology operators, administration, and support.

Some of the important factors that should be considered are;

≡ **Trauma training and continuing education**

- ✓ These educations and training must be compulsory for every one working inside ED.
- ✓ Doctors and nurses and paramedics should have up-to-date knowledge.

≡ **Leadership**

- ✓ Health care authorities and senior members of the health should attend mock exercises and be an integral part of the drills for its effectiveness.

≡ **Human resource requirements**

- ✓ These matters should be addressed, and policies regarding human resource must be prepared
- ✓ Compensation for extra work hours, and injuries should be provided to ensure timely availability.
- ✓ Arrangement of transportation and incentives for calling in off-duty hospital staff.

8. CONCLUSION

The idea in this term paper is to highlight the need regarding the training and preparation of policy makers and health care and emergency workers to respond to an overwhelming event with effective, preplanned and organized manner. This paper is mainly focusing on the response of first responders, health care and hospital administration, and emergency department staff, as they have a great role in responding to mass casualty incidents. This paper discusses the concept of modified triage system, declaration of

emergencies, problems faced during responses, resources' allocation and mobilizations of individual responsible for response. This paper offers authorities and leaders intervening guidance in formulating policy and plan to meet the needs of specific situations. Effective and timely preparation is the key to success.

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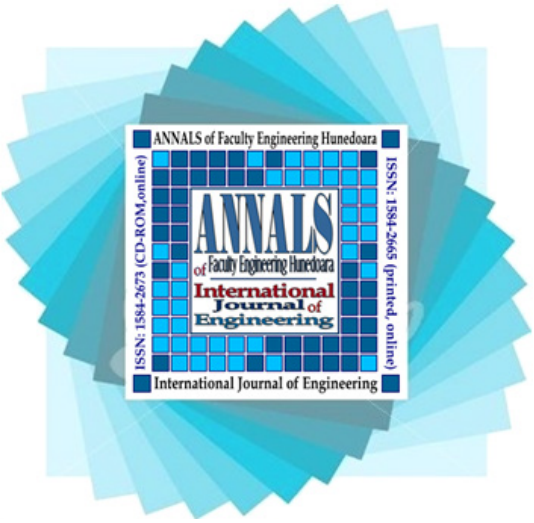

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