Disaster Risk Management for Health
MASS CASUALTY MANAGEMENT

Key Points

- Disasters from natural, technological and societal hazards lead to large numbers of non-fatal casualties or survivors.
- Mass casualty management is the health sectors immediate priority in an emergency.
- Many deaths following natural disasters are preventable with rapid medical care.
- The medical response to a mass casualty event operates at two broad locations: on-site and at the hospital.
- Defined pre-hospital search and rescue and triage are essential to determine patient treatment and transport priorities to save lives and optimise resources.
- A standardized and well rehearsed incident management system together with Standard Operating Procedures are paramount for linking site operations to health-facility based care during an actual disaster.

Casualties in temporary hospital, Mianzhu City, Sichuan Earthquake, 2008, WHO

Why is this important?

In the last decade more than 2.6 billion people have become casualties of natural disasters.[1] Acute events such as earthquakes, landslides and cyclones, and rising tide events such as heat waves, floods or severe cold weather can result in significant numbers of casualties.

An estimated 1.2 million people are killed and as many as 50 million are injured each year in road crashes, of which a large number are mass casualty incidents. Projections indicate that these figures will increase by about 65% over the next 20 years. [2] Conflict and civil unrest may also result in many trauma cases.

Mass casualties following disasters and major incidents are often characterized by a quantity, severity, and diversity of injuries and other patients that can rapidly overwhelm the ability of local medical resources to deliver comprehensive and definitive medical care.

Casualties associated with natural disasters, particularly rapid-onset disasters, are overwhelmingly due to:

- blunt trauma.
- crush-related injuries.
- Drowning.
- mental health issues.

Most people affected by natural disasters DO NOT DIE and many deaths and long term consequences for casualties are preventable with timely and appropriate intervention.

Example: Haiti earthquake (2010)

The Haiti earthquake created 300,000 non-fatal casualties. Typically, approximately 60% of persons presenting to field hospitals require surgical intervention, of which 80% involved debridement of wounds and dressings with very few primary closures or external fixation procedures.[3]

What are the health risks?

Immediately after impact, severe trauma and wounds are the most urgent priority for medical management. Maternal and new born emergency care as well as mental health effects are other facets of these dramatic situations.

In these settings, trauma is often related to collapsing infrastructure and transport-related injury, though violence and civil unrest can also be a follow-on cause of trauma. In flooding and tsunami, drowning is a major cause of death.

Following the Gujarat earthquake in 2001, the most commonly injured areas were:

- lower extremity (56%).
- spinal and pelvic (17%).
- upper extremity (13%).
- chest and/or abdomen (<4%).
- crush syndrome (<2%).

Early interventions are critical for survival and reduced health impacts.

Many casualties can be treated both on an outpatient or surgical basis.

It is vital that care begin at the site, e.g. during search and rescue, which is nowadays more and more medicalised.

First aid and essential surgical care capacities at local level can help to reduce trauma mortality in the short term and long-term morbidity and sequelae, including disabilities.

Risk management considerations

Multisectoral action to reduce the risk of mass casualty situations include:

- Safe construction and maintenance of housing, health facilities and other buildings, and road safety measures.
- Public risk communication to promote personal and organizational safe behaviours, including responding to warnings, safe evacuations, shelter plans and protection from extreme events e.g. earthquakes, floods, tsunami.
- Maintaining civil order reduce injuries and trauma that arise from inter-personal violence, escalating to conflict in the extreme.

Local response and infrastructure management can help reduce mortality and morbidity in the initial post impact period through:

- Identification, assessment and monitoring disaster risks related to trauma and overall mass casualty management.
- Enhancing early warning systems and a responsive community.
- Community first aid and search and rescue which the first line of the community response to mass casualty events.
- A standardized and well rehearsed incident management system.
- Strengthening pre-hospital and hospital systems to ensure the best outcomes for those severely injured in an event.[4, 5]
- Essential surgery and emergency care capacity at a local level can ensure that injured patients receive immediate life-saving treatment.
- Maternal and new born emergency care.
- Provision of psychosocial support for the affected community, and management of mental health effects.
- Maintenance of good communication to minimize disruptions to response and social support measures, prevent further injury, and maximize effective response outcome.
- Rapid and timely deployment of trained personnel to needed areas.
- Follow up treatment for recovery and rehabilitation, including equipment and devices for people with disabilities.

References and further reading

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4. Disaster Management Guidelines WHO http://www.who.int/surgery/publications/EmergencySurgicalCareinDisasterSituations.pdf
5. WHO. Mass Casualty Management Systems: Strategies and guidelines for building health sector capacity.2007 http://www.who.int/hac/techguidance/MCM_guidelines_inside_final.pdf

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