

## EARTHQUAKES - Technical Hazard Sheet - Natural Disaster Profile

### The Hazard

Earthquake can be defined as the shaking of earth caused by waves moving on and below the earth's surface and causing: surface faulting, tremors vibration, liquefaction, landslides, aftershocks and/or tsunamis

Aggravating factors are the time of the event and the number and intensity of aftershocks.

Compound hazards are fire, landslide, and tsunami.

### Factors of Vulnerability

Man made factors:

- Location of settlements in seismic areas;
- Inadequate building practices and regulations;
- Dense concentration of building with high occupancy;
- The absence of warning systems and lack of public awareness on earthquake risks.

### Main Causes of Mortality and Morbidity

#### Direct Impact

Earthquakes cause high mortality resulting from trauma, asphyxia, dust inhalation (acute respiratory distress), or exposure to the environment (i.e. hypothermia).

Surgical needs are important the first weeks. The broad pattern of injury is likely to be a mass of injured with minor cuts and bruises, a smaller group suffering from simple fractures, and a minority with serious multiple fractures or internal injuries and crush syndrome requiring surgery and other intensive treatment.

Burns and electroshocks are also observed.

#### Indirect Impact

Damages to health facilities are massive and can lead to an interruption in basic health care services.

Massive damages to lifelines such as water and sewer systems, energy lines, roads, telecom, and airports.



## Foreseeable Needs

Pending an assessment, needs can be anticipated such as: search and rescue, emergency medical assistance including the management of crush syndrome, and managing homeless population.

## Don't Forget

Survival in entrapment rarely lasts longer than 48 hours: 85-95% of persons rescued alive from collapsed buildings are rescued in the first 24-48 hours after the earthquake.

The demand for health services is concentrated within the first 24 hours after the event.

Most injured people appear at medical facilities during the first three to five days after which consultation patterns return almost to normal.

Patients may appear in two waves. First, come the casualties from the immediate area around the medical facility followed by a second wave of referred cases as relief gets organised in more distant areas. Victims of secondary hazards (post-earthquakes aftershocks and fires) may arrive at a later stage.

This has evident implications on the type of assistance which can be timely and efficient.

Camp/field hospitals and rescue teams usually arrive too late to have a life-saving impact.

Mitigation measures against earthquakes include:

- Long term management of economic and urban development of seismic areas;
- Earthquake-proof building codes and by-laws;
- Incentives, control and enforcement mechanisms;
- Earthquake-proof lifeline systems (including hospitals, etc);
- Strong public capacities for search and rescue and mass casualty management;
- Public awareness on earthquake risks, public education and drills.

## Inappropriate Response

**Blood and blood derivatives: Do not send!** Even if there is a lot of injured victims, there is much less need for blood than the public commonly believes. Local blood donors in the affected country will cover the victim's needs. This type of donation is unsuitable because it requires time-consuming and labour-intensive quality and safety controls, such as refrigeration or screening for detection of HIV.

**Medical or paramedical personnel or teams: Do not send them!** They would arrive too late. Local and neighbouring health services are best placed to handle emergency medical care to disaster victims.

**Field hospitals, modular medical units: Do not send them!** Considering that this type of equipment is justified only when it meets medium-term needs, it should not be accepted unless it is donated.

**Unilateral decision on resource allocation: Do not take it without evidence of needs!**

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[Radix - Radical Interpretations of Disaster](#)

For further reading:

*An Overview of Disaster Management, 2nd ed.* Geneva, United Nations Development Programme, Disaster Management Training Programme, 1992.

*Coping with Natural Disasters: The Role of Local Health Personnel and the Community.* Geneva, World Health Organization, 1989.

*Do's and Don'ts After Natural Disasters.* Washington, Pan American Health Organization Press Release, 1998.

*Earthquakes and People's Health: Vulnerability Reduction, Preparedness, and Rehabilitation.* Proceedings of a WHO Symposium, Kobe, Japan 1997. Geneva, World Health Organization, 1997.

*Emergency Health Management after Natural Disaster.* Washington, Pan American Health Organization Scientific Publication 407, 1981.

*Natural Disasters: Protecting the Public's Health.* Washington, Pan American Health Organization Scientific Publication 575, 2000.

Noji E. *Public Health Consequences of Disasters.* New York, Oxford University Press, 1997. Noji E. *Public Health Consequences of Disasters.* New York, Oxford University Press, 1997.