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Chapter

Medical Provision of the Population within an Outbreak of a Traumatic Defeat an Earthquake: A Fundamental Tool of the Staged Health Risk Management

Diana Dimitrova

Abstract

The most destructive and unpredictable disasters around the world are determined earthquakes. Various consequences are reported as possible negative effects and therewithal health-related of them. The identification and classification of the different types of health risk factors is an initial goal in an uncomplicated earthquake setting and a fundamental tool to a good understanding and effective organization of the health care system (HCS) in case of complicated medical situation. The health care system works at high tension with considerable difficulties due to the calamity of a large magnitude outbreak of a traumatic defeat such as an earthquake. In conditions of the worst-case earthquake scenario with the subsequent provoked multi-secondary disasters and with multi-secondary risk factors possibilities to take accurate solutions is a real challenge for the health risk manager. They are available critically low resource constraints. Two main critical points are formed. On the one hand the description of a structure of mass victim and achievement high quality medical triage in complicated setting due to earthquakes is a conceptual medical stage of health risk management. On the other hand it is a main step of medical provision of the population and a step of risk reduction strategy.

Keywords: earthquake, mass victim structure, medical triage, medical provision of the population, health risk management, risk reduction, prevention measures, emergency and disaster medicine, good medical practices

1. Introduction

The medical provision of the injured population (MPIP) is a key task in the activity plan of the health system (HS) in case of emergencies and disastrous situations (EDS) [1–3]. This is regulated and specified for each level of government and for each type of structural unit within the HS of the country [2]. The timely and correct updating of the action plan of EDS by the healthcare leaders and health risk managers is a consistent, up-to-date annual task in order to maintain a highly optimal readiness for rapid response [2–4]. According to the type of EDS for each individual critical care potion the availability of action protocols guarantees not only confident

firmness but also readiness for effective operational response and good medical practices. The productive operational activities at each stage of the MPIP with responsible and expert risk health management in a dynamically changing environment at the EDS require mobile flexibility and maneuverability in the development of the plan and its implementation [2, 5–7]. The provision with sufficient resources and their maneuver contextually according to the specific EDS is the basis for a good organizational culture [7, 8] Essential step for rescuing and providing successful medical care to the affected population is a practical interaction with other emergency systems and organization [8, 9]. Coordination of the EDS activities on a large scale is a solid fundament principle for the correct direction of the actions [7–9]. In case of the destructive EDS with a serious territorial scope and severely affected

Region	**Probability (low, moderate, high)**	**Power (low, moderate, high)**	**Expected losses (low, moderate, high)**		
			People	**Finance**	**Ecology**
Blagoevgrad	High	High	Moderate	Moderate	High
Burgas	Low	Low	Low	Moderate	Moderate
Varna	Moderate	Moderate	Moderate	High	High
Veliko Tarnovo	High	High	Moderate	Moderate	Moderate
Vidin	**Low**	**Low**	**Low**	**Low**	**Low**
Vratsa	Low	Moderate	Low	Moderate	Moderate
Gabrovo	Moderate	Moderate	Low	Moderate	Low
Dobrich	High	High	Moderate	Moderate	Moderate
Kardzhali	Moderate	Low	Low	Moderate	Moderate
Kyustendil	Moderate	Moderate	Low	Low	Moderate
Lovech	Low	Moderate	Low	Low	Low
Montana	**Low**	**Low**	**Low**	**Low**	**Low**
Pazardzhik	High	High	Moderate	Moderate	Moderate
Pernik	Moderate	Moderate	Moderate	High	High
Pleven	Moderate	Moderate	Moderate	Moderate	High
Plovdiv	High	High	Moderate	High	High
Razgrad	Moderate	Moderate	Low	Low	Low
Ruse	High	High	Moderate	High	High
Silistra	High	High	Moderate	Low	Moderate
Sliven	Moderate	Moderate	Moderate	Moderate	Moderate
Smolyan	Moderate	Moderate	Low	Low	Low
Sofia-city	**High**	**High**	**High**	**High**	**High**
Sofia	Moderate	Moderate	Low	Moderate	Low
Stara Zagora	High	High	Moderate	High	Moderate
Targovishte	High	Moderate	Low	Low	Low
Haskovo	High	High	Moderate	High	High
Shumen	Moderate	Moderate	Low	Moderate	Moderate
Yambol	High	Moderate	Moderate	Moderate	Low

Table 1.
The earthquake risk assessment in Bulgaria by regions (sources: BAS).

available resources the participation of international organizations, rescue teams and means of medical specialist is a possible option [10].

As a particular type of EDS, large magnitude earthquakes are characterized not only with mass casualty but also with the diversity of damage among the population of any natural community [2, 7–9].

According to the World Health Organization (WHO) evidence-based databases, around the world more than million earthshakings annually are occured, of which about 100,000 have a magnitude of 3–8 Richter and are felt by humans. Some of the strongest earthquakes in the world are: the Assam (June 12, 1897) in Northeast India; The Japanese (September 1923), in which the cities of Tokyo and Yokohama were destroyed; Gobi - Altai (December 4, 1957); Chilean (May 29, 1960); the Alaska Earthquake (March 28, 1964); the Armenian Earthquake (December 7, 1988); the earthquake of December 26, 2004 after which almost 230,000 missing and presumed dead [11]; the earthquake in Haiti (January 12, 2010) that killed more than 230,000 people and another 300,000 were injured [12]; the earthquake in Japan (March 11, 2011), which killed more than 15,800 people, injured more than 6000 and disappeared more than 2500 people [13]. The earthquake risk assessment in Bulgaria is made by regions. The number of regions in Bulgaria is 28 in total (**Table 1**).

The data indicate that the probability is low in only five regions in Bulgaria (almost 18%). In contrast, the probability is high in 12 regions (almost 43%) and moderate level in 11 regions (around 39%). It is interesting to note that in 12 regions the risk of a strong earthquake is rated as high and only in 4 is indicated as low. According to prognostic data, human losses are assessed as high only in Sofia-city region. On the one hand only in Sofia-city region is reported high values prognosis for each of the indicators. On the other hand in two of them (Montana and Vidin) a low risk assessment is given.

2. Medical provision of the population - goals, principles and tasks

The medical provision of the population (MPP) is an element of activity of the health system especially due to EDS. In case of emergencies it is based as much as possible on the existing health care system and only with an organizational approach moves to a new mode of work with available staff and sources. MPP according to real practice, results of an epidemiological survey and documentary research is defined as a complex of interconnected organizational, medical and hygienic-anti-epidemic measures [7–10, 14].

It seems that the Aim of MPP is organized in a few groups of actions:

1. *Preservation of the health* and strengthening of the physical condition and working capacity of the population.

2. *Saving the lives* of the affected people and reducing mortality and disability and the fastest recovery of health and work ability.

3. *Prevention of long-term* and infection diseases.

The occurrence of different types of traumatic defeat due to huge EDS, which are characterized by diverse in nature injuries and mass effect determine the main principles of MPP [1, 2, 7–10, 14, 15].

The main Principles of MPP due to contemporary scientific knowledge are collected in some main key points [1, 2, 7–10, 14–16]:

1. *Universality* of using of medical resources.

2. *Maximum allowable economy* of using of available resources.

3. *Implementation of the medical evacuation* into a MPP activity.

4. To *use correctly* Unified rescue system with unified emergency number for providing MPP.

5. To use *unified doctrine* for rendering medical aid and treatment from the epicenter of defeat to the ends in the multi-profile and specialized medical establishments until the final outcome.

For the correct understanding and optimization of the activities connected with EDS **the tasks** of the MPP are divided into three groups depending on the time for their implementation – before, during and after disaster strike [1, 2, 7–10, 14–18]:

1. Before a disaster occurs:

   - Study of the devastating effect of various factors in EDS and the means for prevention, diagnosis and treatment.
   - Planning the activities of the health system for MPP.
   - Construction and maintenance of formations and resources of the MPP.
   - Creation of the medical and sanitary property.
   - Training, drills, workshops for preparing medical staff to react as better as possible.
   - Constant and regular current hygienic control.

2. In case of threatening and an ongoing EDS:

   - Deployment of the medical formations according to the operational plan, keeping them ready for work and protection.
   - Bringing the health risk management system into readiness.
   - Strengthening the medical provision (MP) system and teams and start MP of the evacuated population from epicenter, during transport to emergency room.
   - Strengthening and targeting the operational and special preparation of medical staff to starting and working into epicenter.
   - Strengthening the epidemiological surveillance of the territory.

3. After a disaster occurs:

   - Medical reconnaissance.

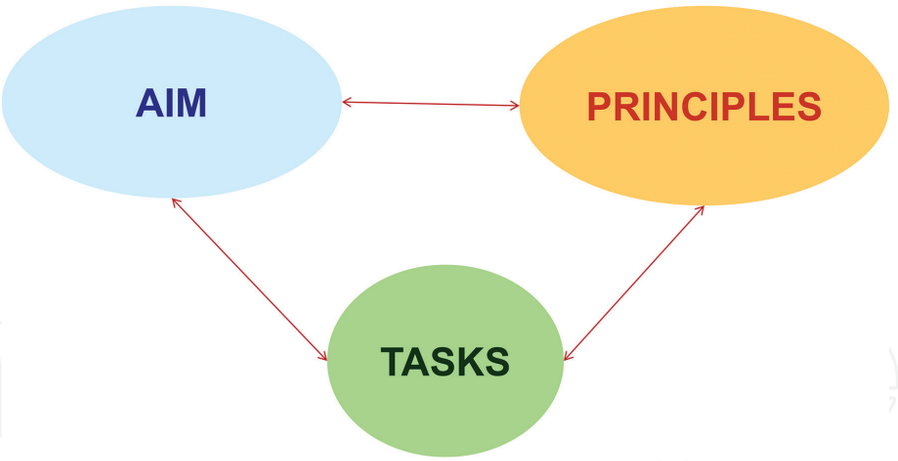


Figure 1.
Main interconnected components of successful medical provision of the population.

- Introduction of the formations in the center of defeat.
- Organization and rendering of timely first medical aid in the center of defeat.
- Removal and evacuation of the victims for appropriate medical care and subsequent treatment.
- Provision of complex of hygienic and anti-epidemic measures.
- Continuous management and maneuver for the most appropriate use of the medical forces and means.
- Conducting a forensic medical examination of the victims and their identification.

Proper performance of these tasks is a prerequisite for providing in the shortest possible time the optimal amount of medical care to the largest possible number of victims [2, 7–11, 14, 16–18]. The good success of medical provision of the effected population is guaranteed with a clear goal, streamlined tasks and by following the basic principles (**Figure 1**).

3. Earthquakes as an outbreak of traumatic damage: risks and consequences

3.1 Mass destruction after earthquakes

Affecting large areas with mass destruction and mass loss is a typical effect after hug magnitude earthquakes. A typical example of possible consequences in large-magnitude earthquakes is presented in **Figure 2** as number of victims and financial losses due to some of the most destructive earthquakes in XX century (**Figure 2**) [2–6]. Industrial sites, homes, hospitals, public buildings, utilities, underground and aboveground technical facilities, transport hubs, etc., are damaged or destroyed [2, 7–10, 13, 19–22]. This significantly impedes rescue operations, effective enough immediately after the earthquake occurs.

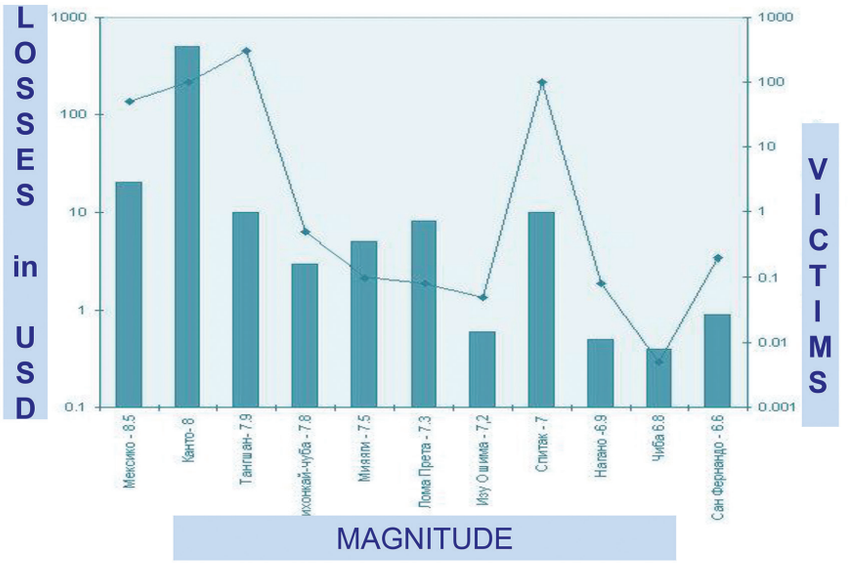


Figure 2.
Victims and financial losses (USD) due to some of the most destructive earthquakes in XX century (resources: Primary data from USGS, 2005 г.)

3.2 Secondary disasters due to earthquakes

Analysis of primary and secondary statistical data shows that occurrence of secondary defeats after an earthquake is a common effect. This increases number of risks factors and character of injuries among the affected population. According to analysis some of possible secondary disasters after earthquakes are [2, 7–10, 13, 19–21, 23–26]:

1. *An outbreak of chemical contamination* by industrial poisons. Observed in the area of the incident due to the destruction of chemical enterprises, warehouses with agricultural or industrial poisons. The chemicals produce not only acute intoxication but also long-term heath effect and cancer diseases as well [7, 10, 19].

2. Occurrence *of explosions and fires* due to destruction of flammable or explosive objects as petrol station after large magnitude earthquakes. They can develop dangerous additional consequences as fire burn, chemical burn, traumas, toxicological injuries etc [7, 10].

3. Destruction of buildings and severe *air pollution* with fine dust particles in large enough areas because of an earthquake leading to casualties, poisoning and suffocation [7, 10, 13, 19, 23–26].

4. *An outbreak of nuclear damage* such as Fukushima Daiichi nuclear accident, 2011 due to the large earthquake and tsunami is a real possible consequences. Radiation as danger risk factor produce some particular health problems, which can be acute, or chronic, somatic or genetic, stochastic and non-stochastic diseases, and long-term effects [7, 10, 13, 23–26].

5. *A tsunami* is generated when undersea earthquakes occurs. Fukushima 2011 and Haiti 2010 are significant examples and it is shows that many health problems influence not only primary effected county, but also much more people around the world for many years [1, 7–13].

6. Occurrence of *catastrophic floods* [1, 7–9, 11–13] after earthquakes can increase number of traumas due to new risk factors with leading place and role for the speed and depth of the water flow. On the other hand can cause hypothermia [7, 10, 27] especially for infants, adults, for the chronically ill and for people with special needs like people with compromised vision or limbs. Can be formed a new defeat of waterborne disease such as Cholera as well (like Haiti, 2010) [1, 7–12].

7. *An outbreak of biological contamination* and infectious diseases can be created after a destructive earthquake within or without a tsunami wave (Like Haiti, 2010; like Nepal, 2015) [1, 7–12, 21, 22].

8. Occurrence *of landslides and avalanches* (like Nepal, 2015) [1, 7–12, 21, 22].

9. *An ecological disaster* and even local environment can be changed totally (like Kresna, Bulgaria, April, 1904, with 7,8 M) [7–9].

10. *A volcano* generated by an earthquake. It is believed that mixed of danger toxic substances after that can affect society due to discarded volcanic ash into the environment [7–9].

11. *Traffic accidents* due to earthquakes [7–10].

12. *Social related and financial crisis* due to earthquakes [1, 7–10, 13, 17].

3.3 Victims: main structure and frequency of traumatic health related effects

It seems that after huge earthquakes, a large number of victims and injuries are occurred. According to experts, many numbers of victims need emergency medical care at the same time [7–10]. Nature and structure of the injuries can be very diverse [7, 13]. Injuries to the musculoskeletal system, extensive burns, prolonged compression syndrome due to prolonged compression of individual limbs or parts of the body, injuries to large blood vessels predominate [7–10]. Significant percentage of victims may be in a state of shock [7, 10, 27], with acute respiratory and cardiovascular insufficiency, in need of urgent respiratory and cardiovascular resuscitation [7, 10], neuropsychiatric disorder due to the experienced mental stress and others. According to scientific research [7, 10], by severity, medical losses are divided into the following groups: lightly injured (40%), moderately severely and severely injured (60%), of which 20% need specialized medical care.

3.4 Pollution from different origin as health risk factor

Creating a severe hygienic-epidemiological situation on the territory of the outbreak of traumatic defeat is defined as a big health risk factor. Prerequisite for this is the pollution of the territory from the destruction of water supply and sewerage systems, difficulties in finding the corpses of dead people and animals, the appearance of rodents, insects etc. The appearance of diseases of infectious and non-infectious origin is possible, as well as the appearance of epidemics - typhoid fever, paratyphoid fever A and B, salmonellosis, hepatitis, cholera etc [7–10].

4. Health risk management: essential principles

4.1 Role and place of the medical forces and resources for MPIP

4.1.1 Emergency care system (ECS)

Usually the signals for victims of an accident or disaster are received by the medical director (manager) of the emergency room and emergency hospitals as medical institution from ECS. Firstly, emergency medical care center (EMCC) as a front line of health system is informed by Unified rescue and emergency number 112. The teams of EMCC are the first to go to the place and take place of the scene of the EDS as event [7–10, 14, 16–18, 27].

In large-scale disasters, the EMCC teams are not enough to provide the necessary amount of medical care to those in need. This requires in advance formation, preparation and equipment additional teams of staff of medical institutions for their inclusion in the provision of medical care. In addition to these medical teams for the population, especially in earthquake-prone areas or areas with chemical sites in anticipation of numerous medical losses, emergency hospital medical teams and emergency military teams can be used. These are medical formations built on a functional principle with opportunities to provide emergency qualified therapeutic and surgical care for vital indications [7, 14, 16–18, 27].

4.1.2 Hospitals

The main tasks of the hospitals in EDS are the provision of medical care and treatment of the victims and hygienic and anti-epidemic provision of the affected regions, and by order of the chairman of the respective commission (district, municipal) and neighboring regions [7].

The network of health facilities and their infrastructure must be ready to provide timely emergency and specialized medical care to the population in emergency and disaster situations [2, 7–9, 16–18, 27].

Knowledge of the factors that can lead to damage to health or endanger the lives of people in EDS allows them to predict the medical consequences, to clarify ways to combat them, to take the necessary preventive measures to limit the medical consequences, to organizing emergency medical measures and eliminating the consequences of emergencies [7, 8].

The hospitals provide the necessary human and material-technical resources, create an effective organization and keep in constant readiness the forces for immediate action in EDS [2, 8].

Before the occurrence of the disaster, the head of the medical institution – hospital must make a comprehensive assessment of the condition and the ability of the health institution to work in such a situation. During this period, the action plan for the EDS and the work of the medical institution for the medical provision of the population of the respective territorial unit must be developed, in accordance with the plan of the Ministry of Health [2, 8, 16–18, 27].

The plan is developed in different variants depending on the expected nature and severity of the medical losses and includes the following [7, 8]:

1. Creation and maintenance of a system for notification of the employees of the hospital.

2. Calculation of the medical losses and of the necessary forces and means for rendering medical aid to the victims.

3. Necessary medical teams and formations for rendering emergency and urgent medical aid, as well as inpatient medical care.

4. Creation of an appropriate structure (restructuring) of the bed base of the medical institution if necessary.

5. Organizational scheme for providing medical care at the site of the lesion, during transportation and in the medical institution.

4.1.3 Regional health inspectorates (RHI)

The Regional Health Inspectorates (RHI) are developing a work plan for the Hygiene and Epidemiological Provision and Inspectorate in the disaster area. It must be in accordance with the plan for conducting rescue and other urgent works of the regional and municipal commission [7, 8].

In case of disasters, the director of RHI clarifies the place and nature of the event, then organizes and conducts research and control of environmental hygiene parameters in the affected areas, in industrial and other sites in terms of toxic substances, dust, noise, vibration, microclimate, radiation and other harmful factors. This activity is carried out by pre-formed and trained anti-epidemic teams of RHI on the territory of the disaster [7, 16–18, 27].

The main task of the RHI is the organization and implementation of disinfection, disinsection, deratization and control of the degassing and decontamination activities in the affected areas after the normalization of the situation [8].

The number and nature of foodstuffs affected by the disaster, the type and quantity and the nature of the damage must be clarified, and enhanced sanitary control must be organized over all foodstuffs in the disaster area. This requires organizing and conducting intensive laboratory control over the affected catering establishments and food industry establishments.

Based on the conclusions of the analysis, the RHI prescribes measures for compliance with hygiene standards and requirements for all factors of the working environment. After conducting a control for hygienic efficiency of the conducted measures, a conclusion is given for safe working conditions with a view to resuming regular operation of the affected sites [7].

4.2 Organization of MPIP

4.2.1 Surgical and trauma care

The relevant clinics from the Multidisciplinary Hospital for Active Treatment (MPHAT) and Hospital for Emergency Medicine, as well as the clinical departments of surgery, orthopedics and traumatology, resuscitation and anesthesiology in the district, regional and municipal hospitals are used as a base. If necessary, the bed capacity of the same hospitals is used. In some cases, staff and facilities from other surgical units (ophthalmology, maxillofacial surgery, etc.) of hospitals can be used. This allows in EDS for a short time and without significant difficulties to be included in the organizational scheme of medical care. About 60% of the inpatients can be discharged and a specialized bed stock can be released for the needs of the victims. For work in a trauma center, if necessary, medical teams (trauma, surgical, etc.) are formed on a functional principle, without seriously violating the readiness of these wards for admission and treatment of victims. These teams must arrive at the scene no later than one hour after the emergency medical teams. At this time, the medical situation, the scope of work and the

possible number of required specialized surgical teams should be clarified. If necessary, they can be strengthened with teams from medical institutions in neighboring regions [7, 8].

4.2.2 Radiological care

In case of accidents at the NPP, in case of incidents with sources of ionizing radiation, in case of cross-border transfer of radioactive substances in the therapeutic wards of the MPHAT, an opportunity must be created to provide radiological assistance to the victims. All therapeutic wards of the medical establishments, in the vicinity of the NPP, must be ready for possible admission of radiation patients and those with combined radiation injuries. For this purpose, it is necessary for physicians-therapists to have radiobiological training and in case of radiation conditions to organize the work of the ward in radiological terms and to conduct radio protective measures in the medical institution. The existing departments of radiotherapy and isotope diagnostics, based most often in oncology dispensaries, oncology hospitals, etc., have a corresponding place in this functional radiological system. The medical staff from these radiology departments are involved in providing radiological assistance to the victims [7, 20–26].

The duty and responsibilities according to the International Atomic Energy Agency (IAEA) require doctors to have the relevant knowledge of radiation protection, which enables them to initiate preliminary treatment and provide assistance to specialized units in the event of a radiation accident. Another task of health care in the section of radiological care is the control of the radiation parameters of the working and living environment, which directly affect the person [22]. The radiation control department must organize and conduct the necessary radiation-hygienic measures on the given territory.

The organization of the radiological assistance is related to the plan for radiation protection of the country in case of an accident at the NPP, which ensures the implementation of the plan in its medical section [7, 20–26].

4.2.3 Toxicological care

The organization of toxicological care uses a mixed approach, including the establishment of staff and functional units. The expanding chemical pathology necessitated the establishment of full-time clinics and toxicology departments in the settlements with large sites of the chemical industry. These units, in addition to providing toxicological assistance to the population, also serve to train medical personnel in this field. In the other hospitals, the therapeutic wards are re-profiled into toxico-therapeutic ones for admission of toxicologically ill patients for emergency toxicological care. Good interaction should be ensured with the intensive care unit of the hospital [7, 10].

On the basis of the staff clinics and toxicology departments, specialized medical teams are established, provided with medical and sanitary equipment and transport. These teams must be constantly prepared to work in a chemical outbreak or to strengthen the therapeutic wards of neighboring hospitals where toxicologically ill patients are hospitalized [7–10].

4.2.4 In outbreak of biological contamination (OBC)

When creating an outbreak of biological infection all types of medical care (first medical, first medical, qualified and specialized) are within the area of the outbreak. For this purpose, the medical and prophylactic establishments on the territory in the OBC mainly are used [7–10].

4.2.5 In the outbreak of combined defeat

The first medical and qualified medical care for vital indications is provided at the medical center according to various schemes. Most often, two groups of medical forces are created for rescue operations in the center of a combined defeat: in the biologically infected area and outside it [2, 7–10].

5. Medical triage in an OTD

Medical sorting is performed in the OTD. According to the severity of the OTD, the distribution of the victims by sorting groups allows for homogeneous treatment and prevention measures [7–10, 16–18, 27].

Depending on the severity of the injuries the victims are sorted into two main groups in Bulgaria [7, 10]:

a. Slightly injured (40%). This group includes victims of soft tissue injuries who do not need hospital treatment;

b. Moderately and severely injured (60%). These are victims who need urgent medical attention and inpatient treatment. This group can be divided into four subgroups (**Figure 3**):

- Group T4. Dying and agonizing;
- Group T3. Injured with some slightly graded cranio-cerebral injuries or some insignificant spinal cord injuries and others slightly injured (20–40%). These are persons with injuries of the small bones of the frontal part of the skull (mandible, nose), medium and small soft tissue injuries, etc.;
- Group T 2. Persons to whom medical care can be postponed for 6–8 hours (20%). These victims have an advantage of transportation, but do not need extreme treatment. These include victims with some surface thoracic or

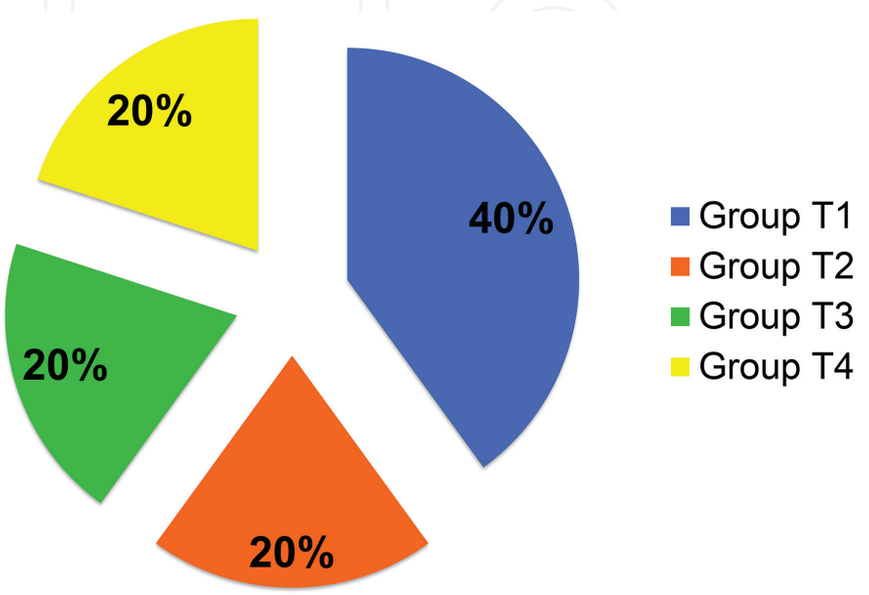


Figure 3.
Triage groups in an OTD. (the worst prognostic option).

abdominal injuries, or some not penetrating injuries to the uro-genital tract, or some negligible blood vessels rupture, burns less than 20% of the body surface in people of active age, but without other injuries;

- Group T 1. Persons whose trauma is defined by immediate vital disorders (20–40%). This group includes victims with respiratory failure, cardiac arrest, ventricular fibrillation, huge bleeding, shock, increased intracranial pressure, burns of the face and respiratory tract, or extensive burns occupying more than 20% of the body surface; poly-trauma, etc. The victims of this group receive emergency first aid in order to stabilize the basic vital functions and have the highest priority in treatment.

Particular attention in medical sorting should be paid to groups dangerous to others and in need of urgent medical attention. Dangerous for others are those infected with poisonous substances, radioactive substances, bacterial agents and patients with particularly dangerous infections (PDI), acutely unlocked or exacerbated chronic psychiatric diseases, some acute mental disorders etc. This danger imposes the need for sanitary treatment of the infected and isolation of patients with PDI, mental disorders as well.

6. Preventive measures for primary risk reduction

Prevention of the population in favor of public health and the future of the nation is fundament for stabilization of the health system in case of EDS [7–10, 16–18, 27]. Prophylaxis measures (PM) used for primary risk reduction is only first group of tasks and primary step for government and national health system. By **Figure 4** is presented risk reduction actions before, during and after earthquakes (**Figure 4**). Some of the most important groups of methods for prevention of public health are:

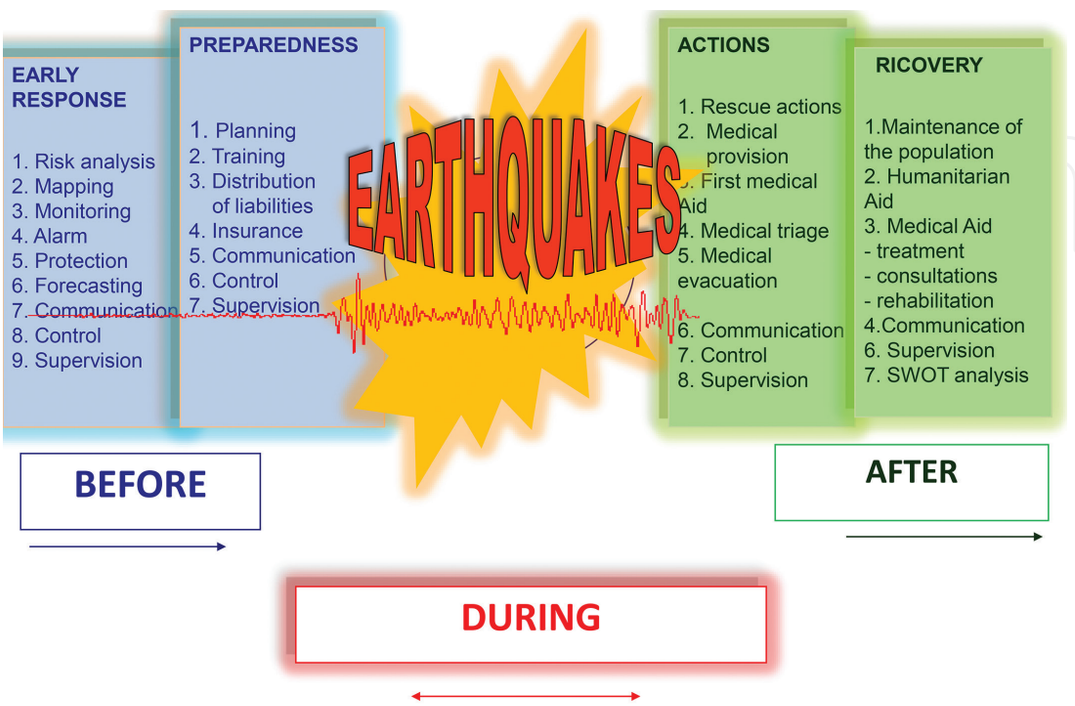


Figure 4.
Risk reduction actions before, during and after earthquakes.

1. Earthquake prognosis.

2. Establishment of well-equipped and prepared seismic stations and a notification system.

3. Scientifically based anti-seismic construction.

4. Compilation and timely updating of a map of OTD threats.

5. The approaches to the hospitals should be known and organized in case the entrances are covered with destructions. For each hospital, which is located in an area with high seismicity, a helipad should be provided.

6. Systematic training of medical staff.

7. Systematic preparation of the population to react and provide main first medical aid steps.

7. Conclusion

Unlike other disasters, earthquakes by sudden onset and rapid flow are characterized. Trough detailed analysis of earthquakes a number of specific features are described. First instance place, unlike other natural risks, in earthquakes the response time is practically a very limited resource. Good preparation and collaboration of various institutions with the healthcare system in case of the OTD with the multi-factorial nature of the risks due to an earthquake and the possible consequences is definitely connected. All levels of health risk management of the health care system for medical provision of the affected population are included. On the EMCC is based the field work on the medical provision of the injured people. A real staged process, but not a condition is proper medical triage and the provision of medical care in OTD. Two-stage system with evacuation by appointment as method for MPIP in case of traumatic defeat of EDS is used. A guarantee for the adequate provision of good medical practices in case of EDS is defined with good enough developed health risk management system, together with the necessary number and structure of resource capacity.

Conflict of interest

The author declares no conflict of interest.

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