In the last two decades, the natural disasters have registered a death toll of around 3 millions lives worldwide, affected approximately 800 millions people and had produced material damages of approximate 50 billions USD. [13]. The recent earthquake of 7.2 magnitude from Kobe, Japan, resulted in over 5000 deaths. In United States, the big earthquake in the long of New Madrid vault in the Mississippi river valley from 1812 conducted to churches bells hearing in Boston and had reversed the course of the Mississippi river that lasts for three days. [3, 17] If an earthquake with a magnitude of 8.3 would occur along the San Andreas vault, this estimates that over 25.0000 people would die and over 100.000 would be seriously wounded. [1, 2, 12]

The recent researches suggest that the primary prevention is the most efficient reduction measure of the casualties after an earthquake [10] For that we must pay a maximum attention and priority to seismic safety in land using planning and in building design. [6] A medical response well planned, even it is important, is only a component of a success strategy for mortality reduction in earthquakes. Undoubtedly The Seismic Safety Commission from California had made a report in 1995 that had suggested at that date that structural retrofitting of existing buildings would reduce the seismic risk that is in normal conditions, this approach reducing the death toll in earthquake conditions.[28] Are the great death tolls in the future events inevitable? Unfortunately the actual response plans that are deigned for local hospitals and medical teams could be insufficient to prevent the big mortality. Despite that there are a number of measures that could be applied to enhance the survival rates.

The revision of the situation

In emergency medical care, the response moment is critical. The observations made in Tangshan earthquake, China (1976), Campania–Irpinia, Italy (1980), and Armenia (1988) indicated that 85 to 95 % of surviving casualties even they was entrapped in the rubble, were extricated in the first 24 hours.[16, 24] The Turkey and China earthquakes studies indicates that at 2 to 6 ours after entrapment less that 50% form the buried under the rubble people are surviving. [7, 8, 9] Safar, studying the 1980 earthquake from south of Italy concluded that 25 to 50 % from the wounded that had died could be saved if the first aid could be rendered immediately.[22]. Pretto and al., studies of the Armenian earthquake (1988) and Costa Rica (1991) identifies people’s who’s death could be prevented if the would receive medical attention in the first 6 hours after an earthquake. [20, 21] The casualties identified in this studies as potential salvageable would not be that casualties that had died due to catastrophic wounds like massive wounds of head and chest. The fatalities registered after that type of wound are classified as immediate deaths; it is presumed that these casualties could survive if the trauma care system of trauma casualties has survived in whole and intensive care was available in the first hours after wound. Many times that the potential salvageable casualties were the casualties that had slowly died in hours due carrying situations like hemo-pneumothorax or due slow exsanguinations due a crush limb. The studies suggest that initial needs of emergency medicine are better satisfied by the local healthcare providers. [14, 15] The outside country medical assistance usual arrives to late for the immediate healthcare, and only after providing of emergency medical assistance by the local health services.[9, 11]

In a big earthquake with a huge number of casualties, the biggest request for casualties care is in the first 24 to 48 hours after the disaster. [29]. After the earthquake from Armenia over 97% form the 902 casualties that had necessitated hospital admittance were admitted in the first 6 days after the quake. [14] The mobile field hospitals were installed after a week or more were installed to late to reduce the early mortality.

The community’s disaster plans identifies often the hospitals as main healthcare providers after catastrophic events. The plans must be revised in the light of recent expertise. So in the San Fernando earthquake from 1971 the deaths from 50 to 64 had been produced when the building occupants were crushed by collapsing hospital structures. Four big institutions were seriously affected and must be evacuated and...
Geological Survey estimated that one third of that casualties of a big earthquake from San Francisco Bay were serious wounded in a hospital collapse [20, 26]. In the Metropolitan area of Los Angeles, probably 25% from all hospital beds would be destroyed and impossible to be used in a major earthquake [26]. Moreover, in the Northridge (California) earthquake from 1994 was unexpected building collapse of building with a steel structure [11]. Unfortunately, many hospitals supposedly earthquake resistant had a structure insufficient designed.

Clear in an earthquake prone urban area, the possibility of a building collapse or unavailability of hospitals, the short time for casualties rescue and the inherent delay of external aid conducted to a reevaluation of medical initial response to an earthquake. A more attention must be directed to medical and rescue abilities development immediate available on a local level [21]. A potential solution to the problem of a complex healthcare after a catastrophic earthquake exists - is the medical response model to disasters [22, 23]. This model has two components: an operational plan that directs the initial management of personnel and casualties and training courses for healthcare provider’s healthcare regarding the specific problems of earthquake casualties.

**Operational plan**

The operational plan of the medical model of response to an earthquake organizes the healthcare providers that had survive in medical teams able to provide healthcare after a catastrophic earthquake. The aim of these teams is to stabilize the casualties in the field and to facilitate after that the transport to the local available hospitals or in the preestablished evacuation areas.

On an earthquake simulation basis [27] were identified the type and number of needed medical teams for the response management after an earthquake that we present bellow (Figure 1, Table 1, Table 2).

**The training courses**

In ensuring of an advanced healthcare to casualties in the first hours after a catastrophic earthquake the physicians nurses and other healthcare providers would encounter situations for that they were not prepared. For that are needed training courses. So it was highlighted in the disaster medical response model the topics covered by such a training would be: triage in mass casualties situations, airway management, IV administration of fluids, anesthesia and analgesia in the field, crush syndrome treatment and command and control [5, 25].

**Triage**

Triage in condition of a mass influx of casualties after an catastrophic earthquake differs in important aspects from a traditional triage: so after an earthquake the casualties are spreaded on a large area, the medical resources are limited; the length of the period in what a casualty can wait the medical help could be unpredictable; and the early evacuation could be unavailable. On a basis of a position document of Medical Society of Critical Care regarding critical patients triage [25] it was appreciated that patients with a survival rate of 50% would receive medical care [23].

This decision is assumed in extreme conditions with a huge number of casualties and without an immediate source of standard health care like it was the situation in Kobe earthquake from 1995. Clearly when the casualties are few and many hospitals are still functional like it was the situation in the Northridge earthquake from 1994, all the casualties could be treated. These recommendations undoubtedly are subjects of revision as new data and knowledge’s appear.
DISCUSSIONS

In our country the ability to respond to a big disaster is given by the improvement of local medical emergency system, by the System of General Inspectorate of Emergency Situations, by the urban Search and Rescue teams professional and volunteers and by Medical Disaster Response Teams.

At the moment there would remain to be solved the following aspects like the clarification of the most actual disaster response plans and the development of a national disaster response plan and for earthquakes and much more the clarification of response doctrine and practical configuration of advanced echelon of medical aid chain and place were would be rendered the first medical aid because from the international data available until now it is presumed that the place of first medical aid would be in the hospital. In a big earthquake it is clear that even the hospitals are vulnerable and for that the evaluation of seismic vulnerability of hospitals and their functionality after a disaster that is the PAHO initiative is of utmost importance for a real disaster planning that was executed at full in Moldova [18, 19]. The medical assistance form outside of affected area including the medical disaster teams would arrive rather late for a real help. For different reasons the outside medical help would be insufficient to treat all the casualties in 48-72 hours from the disaster. If the wounded or ill people do not receive medical care in the first hours, much of them would die as casualties with preventable death. Clearly the response would be planned for hospital healthcare supplementing until the disaster assistance teams arrive at the disaster scene. We must recognize that the medical response model applies only in developed countries and the situation in developing countries is quite different.

Applying the medical model of response in disasters is practical and possible to be applied if the financial allotting is available. The medical personnel and survivors are able to reach to wounded casualties in the first two hours after disaster [21]. Medical personnel would respond in force to a major disaster after the family safety is ensured [4].

In a disaster the emergency institutions would retain the authority and control over the medical response through the Incident Command System. If the hospitals would be incapacitated and medical response system is in function, all the people in charge would use the help centers as field hospitals for critical wounded casualty’s stabilization until evacuation would be available or medical disaster teams arrived. If the hospitals are functional the medical help centers would function as medical clinics treating the minor wounded casualties and avoiding the hospital overwhelming.

CONCLUSION

The presented data suggest strongly that a response plan as medical response model is feasible and could reduce the mortality after a serious earthquake. Owing in mind the research tend most appropriate further steps are establishment of a pilot project in an earthquake prone area. The medical community has in this manner the opportunity to dramatically improve the survival after the future catastrophic earthquakes.

References

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