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https://pbn.nauka.gov.pl/sedno-webapp/works/864259

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Care of injured during disasters

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Abstract

Disasters are very big challenge for health services around the world. The media almost daily inform mass accidents or disasters. In Poland, the issue of responding to events mass rests largely on the State Emergency Medical System. The paper presents the activities carried out by emergency medical services on health in emergency situations. The paper characterized conducting rescue operations and the problems and errors occurring during the conduct of rescue operations.

Key words: disaster victims; assistance; evacuation

Introduction

Help in the disaster area is not an individual benefit, but results from the cooperation of many departments cleaning, technical, medical, administrative, and many others. Emergency medical services is only a small part of the national rescue system.

Generally accepted definitions resulting from the disaster medicine, "accident mass - any sudden event giving rise to a sufficiently large number of victims, to disrupt the normal operation of emergency services and hospitals" and "disaster - an event that causes so much damage and casualties, the efforts and measures covered by her community are not enough to control it is needed outside help "is not precisely determine the nature of the event and the number of victims. In contrast, they highlight the disparity between the emerging needs on the part of the victims, and the possibilities of helping the local rescue system [1].

Keep in mind that disasters are always unusual state. They exceed the normal limits of human activity, the storm infrastructure, equipment, bring chaos and panic. Operation of emergency services in cases of mass disasters and must lead to the logical implementation of assistance and the funds collected and to quickly organize a situation which often exceeds the limits of normal human activity, the storm infrastructure, equipment, introduces chaos and panic. Are needed before the project prepared by competent professionals regarding threat assessments, aid organizations, transport and logistical tasks [2].

The tasks of health care in mass events and emergency situations due to the specific nature of each disaster, which determines the scale of needs and necessary to overcome the difficulties. However, in each of these emergencies there are some common features, which include mainly: "Sanitary massive losses, injury to multiple victims, emotional reactions in victims of disasters; delay in treatment and transportation of victims of disasters, loss of emergency services personnel, damage to buildings and health care, the threat of epidemic, population movements [3].

Mass accidents and disasters require emergency services development and practical application of different methods of proceeding in both the support and in the prehospital hospital treatment [4]. The tasks of health care in securing mass events and emergency situations are to: adapt the health system to the functioning of legal norms; participation in the preparation of the relevant territorial plans for medical rescue operations in case of accidents and mass disasters, which should include the analysis of security threats and the possible logistics of mass events; verifying and modifying the plans elaborated by participating in

exercises with the participation of other entities of the national rescue system; conducting postgraduate training before and for all staff to learn the practical specifics of rescue proceedings in cases of mass loss; being selected with survival skills, medical knowledge, leadership abilities and mental Coordinators Medical Rescue Action; participate in the development and subsequent work centers to coordinate rescue operations outside of the disaster; possession of reliable and compatible with other emergency communications system; organize a well-functioning system of evacuation of victims from the crash site; preparation of hospitals to deal with a mass influx of victims of the disaster area; providing medical and psychological assistance for rescue workers participating in the activities in the disaster area.

Rescue operations carried out at the scene of mass and disasters are characterized by three phases: insulation (10-15 minutes), the phases rescue (60 minutes) and the reconstruction phase (days-weeks) [5].

The first phase of the rescue operation is also called "platinum minutes". This period is very often the most important minutes in the life of the witnesses and participants of the event. During this period, you should seek specialist and take the first rescue operations at the scene. Severe injuries created by an accident can be accompanied by circulatory and respiratory disorders, hemorrhage or loss of consciousness. Increasingly, there are also burns and electric shock. In these cases, rapid response may determine the survival of the victim. Even the best organized rescue system - in the richest countries of the world - it will take several minutes or longer until the arrival of the ambulance or medical emergency that could provide expert assistance at the accident site. Patency of the upper airway. take cardiopulmonary resuscitation, laying in a side position, obstruction of massive external bleeding, anti-shock simple procedure could save the lives of many victims. Currently it is estimated that 5 to 10% of the victims could have been saved only by the intervention of instant on-site accident or disaster. In countries where the level of public awareness about the basic ways of life support is high - there are more than 45% survival rate of cardiac arrest victims in ventricular fibrillation [6]. That 5 to 10% of the victims could have been saved only by the intervention of instant on-site accident or disaster. In countries where the level of public awareness about the basic ways of life support is high - there are more than 45% survival rate of cardiac arrest victims in ventricular fibrillation [6]. That 5 to 10% of the victims could have been saved only by the intervention of instant on-site accident or disaster. In countries where the level of public awareness about the basic ways of life support is high - there are more than 45% survival rate of cardiac arrest victims in ventricular fibrillation [6].

The second phase of the rescue operation begins at the moment of arrival to the scene emergency services, such as fire and rescue units of the State Fire Service. This phase is the time to master the chaos and capturing the rescue operations in the organizational framework. During this period, Triage is performed, immediate life-saving treatments and - if need be - decontamination of the wounded and sick. Victims receive specialist help and are prepared for evacuation to the appropriate hospital according to the "golden hour". A huge role in this phase plays a continuous assessment of the situation, coordination of work and mobilization of emergency services adequate to the needs of forces and means [7]. Please note that emergency medical procedure at the accident scene and mass disaster is in many ways different than any standalone emergency. The doctrine of the proceedings in the losses of mass states that the provision of medical care in mass loss requires a complete change in ways of thinking and withdrawal from the generally accepted principles and standards of treatment. Then there is the implementation of conditions, although the part of the procedure required in each individual case. You have to abandon the accepted rules of conduct (eg. Relieve aseptic techniques, refrain from performing allergic tests, store massive external bleeding instead of dressing - with an elastic bandage), since the resulting complications are less serious consequences than any delay in saving the greatest number of victims. Due to the limited forces and means to protect health in the event of a sudden there is no possibility of providing medical assistance to all those in need at the same time. Some of them will be forced to wait for assistance. There is a constant need for medical segregation victims, to give her the first, which is essential at a time. This aid must be effective. The loss of mass treatment strategies should be based on negotiations. You have to bring relief to the dying and desperately wounded, but the whole rescue activities must be directed at those who have the greatest chance of survival. According to this principle do not receive medical aid wounded promising unsuccessful - will die despite the use of the best methods of treatment. At the crash site will not get you as its victims, promising successfully, who require long-term, labor-intensive treatments. In the event of loss of mass it is necessary to reduce medical cases to less time-consuming. It is a logical procedure, but will always be aroused moral resistance. Limited range of forces and resources dictate the need to do what is best for the greatest number of wounded and sick. Initial emergency medical operations should be performed in a place where there are victims. I think that the place is dangerous, you cannot protect it and prevent medical assistance. Then move the injured to the point of organized medical assistance, which receive qualified medical assistance will be protected from the weather, the card will be written Record-evacuation, will be waiting for evacuation. Triage is one of the most important

and often the only health project allows you to quickly master the situation in the area of mass accident or disaster. Triage consists in dividing the wounded and patients by requiring a uniform procedure and medical evacuation. Currently, medical emergency services around the world usually use a three-segregation, distinguished by the first, second and third order of treatment and evacuation. They match them with appropriate color codes and graphic symbols. The color red is the first, the second yellow, green third order of the treatment and evacuation. Black color is a dead [8].

The most important task of the rescuers performing initial segregation is to search among all those victims who need immediate help (a group of "red"). They are wounded in the states direct threat to life, and therefore, those who require assistance in the first place, at the site of the accident. Carrying out simple emergency treatments gives them a good chance of survival. First the urgency aid is coercion immediate treatment. In the event of mass first arrived on the scene, commanding the emergency medical team should include responsibilities Coordinator of Medical Rescue Action and play them until the arrival of a person having authority to assume command. Its tasks include primarily: safety assessment of the situation and place of the event, recognizing the amount of victims, preliminary assessment of the type of injury to the wounded, Triage victims, ordering paramedics perform rescue operations. Secondly, you will receive help victims who have suffered serious injuries requiring hospital treatment, but without the prospect of a general deterioration, if the treatment and evacuation will be postponed (a group of "yellow"). The delay of several hours until the start of specialist treatment does not adversely affect their chances of survival or increase the risk of permanent disability. The second degree of urgency aid is a need for rapid treatment. In the third place will receive help victims with minor injuries are often not require hospital treatment and who, after examining the supply will be able to be treated on an outpatient basis (a group of "green").

The specificity of disaster victims to occur at multiple injuries. In making such segregation of the wounded need to assess their condition, to assess any injuries and make the urgency of the treatment of the heaviest damage. Triage properly carried out at the scene of mass disasters, and very often determines the success of the medical rescue operations [10].

Developed in 1984 in the US system of START (Simple Triage and Rapid Treatment - simple and fast segregation treatment) due to its simplicity, allows you to quickly select the total number of victims of those who require medical attention in the first place. Segregation by a more detailed definition of the severity of injury would require more time, which would

negate the meaning of segregation. The decision to classify the various groups of the wounded to the order of aid is never final. General condition of the victims may be subject to change, particularly dangerous is its significant deterioration. Then eg. A person qualified in advance to the "green" and "yellow" because currently present symptoms will require classification to the group of higher priority therapeutically-evacuate. Segregation is a continuous process.

The mass accidents and disasters are expected to have five types of emotional reactions, for which paramedics must follow the appropriate course of action. These are the correct responses, panic, depressive reactions, reactions of over-stimulation, serious somatic reactions. The most dangerous is panic. It should eliminate it in the bud. The mass loss of one person in a panic can lead to a chain reaction, causing incalculable damage to the other participants in the event of a sudden. Such person should be isolated from the environment and, where necessary to overpower the force [12].

The implementation of the principle of the "golden hour" in the event of disasters is particularly difficult. One of the main tasks of health care in securing mass events and emergency situations is to organize a well-functioning system of evacuation of victims. To increase the chance to save lives and reduce the time of treatment should be limited to: perform life-saving treatments at the scene, before deciding to transport the victims (the principle of "stay and play"), to develop points of medical care in the immediate vicinity of the crash, outside the danger zone, to evacuate affected by the degree of urgency of treatment, transportation to eligible victims always giving: the transport position, the type of means of transport and the speed of transport to evacuate the wounded to hospitals directly senior (Trauma Center)

In the third phase a rescue victims must get help and qualified specialist in the hospital. Ability of the hospital to the adoption of disaster victims is related to the number of beds available in conjunction with the ability to provide qualified medical assistance as well as the possibility of broadening the base bed. Each hospital should have a plan for emergency response, which should include: an analysis of the system to mobilize medical staff, technical and administrative mobilization system hardware resources and material, rules directing the hospital, tactics for dealing with victims, a way to inform the authorities, the victims' families and the media, rules of cooperation with all the actors of the national rescue system, the entire system of training of the hospital staff [13].

The most common errors and problems in the course of rescue operations in mass accidents and catastrophes include: abnormal calling emergency services by witnesses and participants of the emergency situation, not to grant first aid by witnesses and participants of

sudden events, inadequate protection of the disaster area, inadequate or lack of command action rescue, incorrectly performed Triage by lifeguards, not having sets segregated by rescue teams, failure in practice cards segregation and color codes segregation, failure in practice numerical rating scales injury victims, the lack of initial stabilization of the general condition of the injured at the scene, the use of time-consuming procedures medicinal at the scene, lack of or improper preparation of a field medical facility, too fast decisions about starting the evacuation of the injured, the wrong order the evacuation of victims, evacuation of victims to inadequate hospitals lack of psychological care of the victims and medical personnel, the lack of efficient use of resources and measures in the disaster area, the lack of plans emergency response in the event of mass events and disasters, lack of knowledge of these plans by the medical personnel, the lack of a uniform doctrine conduct chemical disasters, lack of coordination of medical rescue operations with hospitals and other emergency services, the lack of common communication channels rescue system entities, too little training or inadequate training of health personnel in the handling of mass in the case of accidents and disasters lack of two-sided power supply hospitals, lack of backup power supply operating rooms in hospitals, lack of uninterruptible power supplies in hospitals or manually switching units in hospitals, poor technical condition of the power generators in hospitals, lack of reserve water supply hospitals, lack of or inadequate training of Polish society in the provision of first aid at the accident site [14,15].

Conclusions

The functioning of the national rescue system must be based on legal norms. Proper organization of the rescue system in the disaster area may provide adequate strength of all links in the chain of survival, and thus help to reduce the number of victims of emergencies. Develop and update emergency response plans for disasters and participation of entities participating in the national rescue coordination exercises is necessary to prepare for a situation emergency before the hypothetical catastrophic event. Training rescue - to provide health care to all the sick and injured in the disaster area by the doctrine of conduct mass loss - They must be carried out according to the curriculum. The training should put emphasis on practical learning and segregation of medical evacuation and victims assessment of victims according to the same criteria. Directing part of the medical rescue requires appropriate qualifications and psychological predispositions. Just prior to the selection of suitable candidates and their subsequent training can ensure proper management of medical activities

in the disaster area. Emergency Notification Centers should maintain a permanent analysis of the therapeutic potential of individual health care institutions included in the system and entities cooperating with the system. Each hospital must be prepared to conduct a proper rescue in the event of a mass influx of victims. Adopted in the emergency response plan for the hospital solutions must be continuously improved through training and ongoing cooperation with all emergency services. Pyramid success is based on emergency first aid. It should be promoted among the masses first aid on the spot emergency.

References:

1. Chomiczewski K., Gall W., Grzybowski J., Epidemiologia działań wojennych i katastrof. Alfa Medica Press, Bielsko-Biała 2001, s. 86.
2. Brongel L., K. Duda K. (red.): Mnogie i wielonarządowe obrażenia ciała. Wydawnictwo Lekarskie PZWL, Warszawa 2001, s. 45.
3. Brzeziński T., Historia medycyny. Wydawnictwo Lekarskie PZWL, Warszawa 1988.
4. Goniewicz M, Nogalski A, Khayesi M, Lübek T, Zuchora B, Goniewicz K, Miśkiewicz P. Pattern of road traffic injuries in Lublin County, Poland. Cent Eur J Public Health. 2012; 20(2):116-120.
5. Konieczny J., Zarządzanie w sytuacjach kryzysowych, wypadkach i katastrofach. Wyd. Garmond. Oficyna Wydawnicza, Poznań – Warszawa 2009.
6. Latalski M., Medycyna katastrof jako samodzielna dyscyplina naukowa. [w:] Latalski M. (red.): Medycyna katastrof. Akademia Medyczna w Lublinie, Lublin 2000, s. 15-25.
7. Plantz S. H., Adler J.N.: Medycyna ratunkowa (NMS). Urban & Partner, Wrocław 2008.
8. Trzos A., Triage: segregacja medyczna. „Ogólnopolski Przegląd Medyczny" nr 6, 2004. s. 32-34.
9. Trzos A., Ratownictwo medyczne w zdarzeniach masowych i katastrofach. „Ogólnopolski Przegląd Medyczny" nr 4, 2004. s. 23-27.
10. Trunkey D. D., Trauma. Scientific American, Portland 1983. s. 20-27.
11. Goniewicz, K., Goniewicz, M., Pawłowski, W. et al. Eur J Trauma Emerg Surg (2016) 42: 433. https://doi.org/10.1007/s00068-015-0544-6

12. Goniewicz, K., Goniewicz, M., Pawłowski, W., Fiedor, P., Lasota, D. Risk of road traffic accidents in children. Medical Studies/Studia Medyczne, 2017;33(2), 155-160.
13. Goniewicz K., et al. "The analysis of activities and social campaigns aimed at reducing children's risk of traffic incidents." Journal of Education, Health and Sport 7.8 (2017): 1494-1505.
14. Sever, M. S., Vanholder, R., & Lameire, N. (2006). Management of crush-related injuries after disasters. New England Journal of Medicine, 354(10), 1052-1063.
15. Chan, T. C., Killeen, J., Griswold, W., & Lenert, L. (2004). Information technology and emergency medical care during disasters. Academic emergency medicine, 11(11), 1229-1236.