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Restorative Treatment and Medical Rehabilitation of People Affected by Emergencies

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Abstract: An emergency situation is an outwardly unexpected, suddenly arising situation characterized by a sharp disruption to the established process or phenomenon and having a significant negative impact on people's livelihoods, the functioning of the economy, the social sphere and the natural environment. In peacetime such situations can arise as a result of industrial accidents, catastrophes, natural disasters, ecological disasters (catastrophes), sabotage or factors of a military-political nature.

INTRODUCTION

For practical purposes, the general classification of emergencies (ES) is most appropriate to build on the types and types of extraordinary events underlying them; In this case, it is possible to use in part or in other parts of the classification structure membership, causality or scale of emergencies. For such a set of characteristics, all PE peacetime is divided into five groups:

- Accompanied by the release of hazardous substances into the environment
- Associated with the occurrence of fires, explosions and their consequences
- On transport communications
- Caused by natural disasters
- Military-political nature

The main task in the fight against natural disasters and catastrophes is to prevent or minimize human losses, the number of victims and reduce their suffering. There are several main areas of disaster management:

- Minimizing the number of victims, if the disaster can't be prevented; carrying out protective measures, including medical protection
- Rescue of victims of the disaster
- Timely provision of first aid
- Providing the wounded with the following types of (first aid and first medical) medical assistance with evacuation to medical institutions
- Provision of qualified and specialized medical care
- The creation of normal conditions for life

Effective means to reduce the harmful effects of a natural disaster or disaster are also medical preventive measures:

- Providing adequate shelter for the victims
- Creating conditions for the implementation of basic standards of personal hygiene
- Ensuring the delivery of drinking water
- Supply of benign food

The causes of traumatization, morbidity and mortality in natural disasters and catastrophes can be

grouped into 4 main groups: traumatic (thermal) injuries, psycho-emotional stresses, epidemic (endemic) diseases, combined lesions. The ratio of death to injury is different depending on the type of disaster and (or) disaster. The number of injuries and diseases usually exceeds the number of deaths in fires, floods, earthquakes, epidemics. The number of deaths is often higher in hurricanes, volcanic eruptions, landslides, avalanches[1].

Emergency medical assistance is especially needed during the first 6-24 h after the disaster. Treatment of victims in the event of natural disasters and other disasters can be conducted either in the place or in the nearest medical institutions or in health facilities located far from the site of the catastrophe. The experience of medical provision of various disasters shows that both these options as well as their combination can be successfully applied in certain emergencies, depending on their medical and tactical characteristics. In case of short-term emergency situations (hurricanes, tornadoes, explosions, etc.), the possibility of providing medical assistance is only provided after the end of the action of the striking facts and for long-term current (fires, floods, epidemics, etc.), medical assistance is organized directly at the time of the damaging factors. Moreover, such natural disasters and technogenic catastrophes such as earthquakes, cases of mass poisoning, etc., may require the attraction of significant forces and resources for the provision of medical care[2].

Natural disasters have always caused enormous material damage to mankind and led to the mass death of people. Among the most significant natural disasters are earthquakes, volcanic eruptions, floods, landslides, mud flows, hurricanes (storms), extreme frosts, droughts, fires, etc. Seismic natural disasters are earthquakes which are fluctuations in the earth's crust. Earthquakes with an intensity of 6-7 points or more disrupt the normal life activity of people and pose a danger to their health and life. Human losses and material damage in the event of an earthquake are primarily due to the degree of destruction of buildings, so, at an intensity of >9 points within a few min and even seconds, massive loss of life is possible. The most complex situation occurs in large cities when buildings, structures, communications, gas, water and sewerage systems are destroyed as a result of an earthquake, fires occur and a significant number of victims with trauma, burns and prolonged squeezing syndromes appear.

To carry out measures to eliminate the consequences of emergency situations, it is necessary to activate all the forces and means of the medical service and provide a 24-h mode of operation. In the disaster zone, the first medical assistance is provided during rescue operations. It is carried out in the order of self-and mutual assistance as well as the personnel of the rescue teams. At the affected sites, this type of assistance turns out to be health centers and in residential areas-mobile formations of a gathering and evacuation point. An important task is assigned to the doctors of the brigades who were the first to arrive in the center of the disaster. They must orient themselves in the scale and nature of the catastrophe, the number and type of defeats, find opportunities for informing health authorities, etc. In addition to the first medical (pre-hospital) care in the outbreak, the first medical aid with the possible elements of qualified care is also provided. After the first medical assistance, the victims are immediately taken to the nearest hospitals to provide them with qualified and specialized medical care and necessary treatment[3].

Among the climatic disasters the most significant is flooding-temporary flooding with water of a significant part of the land adjacent to the river, lake or reservoir. From the flood more than from any other natural disaster, the population suffers as it leads to the flooding of populated areas, roads, agricultural lands, etc. In floods of any kind, typical medical consequences are noted: drowning (asphyxia), mechanical trauma, inflammatory diseases from the pulmonary system, the appearance of a considerable part of the population of neuropsychic overstrain, exacerbation of various chronic diseases. Hypothermia is noted in connection with hypothermia, the sanitary-hygienic and sanitary-epidemiological state of the affected region worsens. When flooding or catastrophic flooding of settlements with water in large areas, the tactics of health care activities and the use of medical facilities and facilities have their own characteristics. In this case, the scale of the flooding area is of primary importance and the fact that a large number of people are without shelter, drinking water and food are exposed to cold, wind and other meteorological factors[4].

The magnitude and structure of losses will vary depending on the population density in the flooding zone, the timeliness of the alert, the distance of the settlement from the place where the flood begins and the location of medical facilities, the temperature of water and ambient air, time of day and other characteristics. The sanitary and epidemic state of the disaster zone plays a major role in eliminating the medical consequences where the water supply, sewerage, drainage systems, etc. can be destroyed. All this as well as the accumulation of people in a limited area with a significant deterioration in their living conditions will contribute to the emergence and spread of infectious diseases[5].

Experience shows that following the catastrophic flooding, traditional intestinal infections (dysentery, salmonellosis, hepatitis) are activated first, followed by a wave of zoonoses (leptospirosis, tularemia). The first medical assistance to victims of flooding includes primarily warming, artificial ventilation of the lungs, indirect cardiac massage as well as bandages in case of trauma, transport immobilization in fractures and the administration of pain medications. The first medical aid

includes the simplest measures aimed at maintaining the vital functions of the body-the introduction of cardiac and sedative agents, inhalation of oxygen, in fractures transport immobilization, warming, administration of painkillers, etc.

In hospitals, where the victims are evacuated, for them, wards are prepared in the main therapeutic profile, necessary equipment is installed, a stock of certain funds is created. To organize sanitary and hygienic and anti-epidemic measures in the zones of catastrophic flooding, sanitary epidemiological teams and brigades of urgent sanitary and preventive care are sent which are created on the basis of hygiene and epidemiology centers of different levels. Natural disasters also include fires-the spontaneous spread of fire that has escaped the control of a person. They carry huge material damage and often lead to the death of people, cause burns and injuries, carbon monoxide poisoning and have a traumatic effect on the population. When eliminating the consequences of fires, the salvation of the victims is of paramount importance:

- A thorough search of the victims in a smoke-filled area inside burning premises which is most often carried out by fire and rescue units
- Provision of first aid to the affected (if possible) and (or) emergency evacuation of them from the smoke atmosphere
- Maximum approach and rendering of the first medical aid
- The need to provide medical care to a large number of burned as well as affected by the poisoning of combustion products including carbon monoxide (in 70% of cases)

The latter requires the strengthening of medical institutions by burn teams and additional provision with the necessary medicines, equipment and equipment. Forest fire, the area of which is >2 km^2 is considered large and as a rule, combines elements of various types of fires. Under especially favorable conditions, forest top fires can develop into fire storms when ambient air is sucked to the center of the fire with hurricane speed and a large temperature and a huge height of the flame completely destroy everything. Steppe fires have the appearance of a moving edge of combustion. With a strong wind, the front of the fire can move at a speed of up to 30 km h^{-1} and in the mountainous terrain (up)-up to 50 km h^{-1}.

Peat fires on peat bogs and peat bogs can arise from spontaneous combustion or the result of a violation of the rules for the operation of machinery with the help of which peat is extracted; in dry weather can arise from any spark. Secondary consequences of fires can be explosions and leaks of poisonous or polluting substances into the environment. In addition, a large amount of damage to the premises and the objects stored in them can be caused by the water used to extinguish the fire. Major accidents occurring in industrial and other facilities, in terms of destruction and human casualties and in the nature of the consequences can be very serious, comparable to the impact of modern weapons. Especially dangerous are accidents at nuclear power plants where the destruction of power plants (reactors) with nuclear fuel can lead not only to radiation contamination of large areas but also to the formation of a shock wave. To date, there have been >150 accidents in nuclear power plants in the world with leakage of radioactivity.

In the case of a radiation accident, 5 zones are considered that have different degrees of danger to human health and are characterized by a possible radiation dose. The zone of emergency measures of protection of the population is the territory within which the dose of external g-irradiation of the population during the formation of the radioactive ejection trace in the event of an accident at radiation hazardous objects may exceed 75 rad and the dose of internal irradiation of the thyroid gland due to the receipt of radioactive iodine in the human body is 250 glad[6].

The zone of preventive measures is the territory within which the dose of external g-irradiation of the population during the formation of the radioactive ejection trace in the event of an accident at radiation hazardous objects may exceed 25 radians (but >75) and the dose of internal thyroid irradiation with radioactive iodine may exceed 30 rad (but not >250). The zone of restrictions is the territory within which the dose of external g-exposure of the population during the formation of the radioactive ejection trace in the event of an accident may exceed 10 rad (but not >25) and the dose of internal thyroid irradiation with radioactive iodine does not exceed 30 rad[7].

The area of possible dangerous radioactive contamination is the area within which the dose loads exceeding 10 rem per year are projected. The radiation accident zone is the area on which the dose limits and the annual intake limits can be exceeded. The largest release of radioactive substances occurred in the Chernobyl accident on April 26, 1986. By May 6, 1986, it amounted to about 63 kg which corresponds to 3.5% of the total number of radio-nuclides in the reactor at the time of the accident (Nuclides are any atoms that differ in the composition of nuclei, that is either with a different number of nucleons or with the same number of nucleons by different ratios between the number of protons and neutrons, and nucleons are the common name for protons and neutrons). The scale and duration of infection in an accident at chemical facilities are determined by:

- Physical and chemical properties of substances
- The amount of harmful substances released to the terrain, into the atmosphere and into water sources
- Meteorological conditions
- Promptness of notification and action
- Preparedness of maintenance personnel to eliminate the consequences of spills of substances

The characteristics of the contamination objects (for the terrain-the presence and nature of the vegetation cover, places of possible air stagnation, for water sources surface area, depth, flow velocity, availability of groundwater, shore conditions, characteristics of coastal soils, for the population-degree of protection from chemical attack substances, the nature of the activity, for material means-the characteristics of materials that have been infected, including their porosity, the presence and composition of paint and varnish coatings th). Area of spread-the area of chemical contamination of air outside the area of the accident, created as a result of the movement of a cloud of vapors (or aerosols) of chemicals in the direction of the wind and limited by an isoline of mean values[8].

Explosions are a particular danger from the point of view of possible losses and material damage. Explosion is the release of a large amount of energy in a limited volume in a short period of time. It leads to the formation of a highly heated gas (plasma) with a very high pressure which during instant expansion has a shock mechanical effect on the surrounding bodies. Explosion in a solid medium is accompanied by its destruction and fragmentation, into air or hydraulic shock waves which have a destructive effect on the objects placed in them. The main damaging factors of the explosion are. An air shock wave arising from nuclear explosions of initiating and detonating substances, explosive transformations of clouds of fuel-air mixtures, explosions of tanks with superheated liquid and pressure tanks. Fragmentation fields created by flying fragments of various kinds of technological equipment, construction parts, etc.

Explosive object is an object on which substances are stored, used, manufactured, transported which under certain conditions, acquire the ability to explode. Explosive facilities include: defense, oil production, oil refining, petrochemical, chemical, gas, grain, textile and pharmaceutical industries, warehouses of flammable and combustible liquids, liquefied gases. In fires and explosions people get thermal and mechanical damage; the most common burns[9].

The organization of medical and evacuation support for victims provides for a two-stage system of medical care and treatment for those affected with their evacuation for the intended purpose. In this case, the victims are provided with the following strictly regulated types of emergency medical care: prehospital-first medical, pre-medical, first medical and specialized medical assistance[10].

The first stage of medical evacuation is the provision of pre-medical and first medical assistance which is carried out by medical institutions that have been preserved in the disaster zone, temporary medical posts, medical emergency teams, paramedic and nurse-nursing teams directed to the center of the disaster from nearby medical institutions and medical units of military units[11].

The first medical aid is assistance that is rendered directly at the place where the injury was received (in the hearth) or close to it, mainly in self-help and mutual assistance as well as by the personnel of the rescue teams, by medical personnel of health posts (health units). For its rendering as a rule, no deployment of any regular medical units is required and medical and improvised means are used. It consists in carrying out the simplest medical and other activities that are aimed at saving the life of the victim, preventing serious complications (asphyxia, shock, bleeding, wound infection, etc.) as well as in preparing the victims for evacuation[12].

Among the first aid measures, special importance is acquired by temporary stopping of external bleeding, administration of pain medications, removal of asphyxia, artificial respiration and indirect heart massage with the purpose of restoring respiratory and cardiac activity, immobilization of damaged limbs, closure of wound surfaces with aseptic dressings, use of drugs from the first aid kit AI-2 and others. It should be noted that the first medical aid should be provided in the shortest possible time, not later than the first 30 min, regardless of the scale and type of the catastrophe because with the passage of time, saving the lives of the affected is becoming problematic[13].

According to the WHO, an hour after the accident, 30% of those who died were dying who did not receive the first medical aid in a timely manner, after 3 h-60% and in 6 h-90%. With the delay in the provision of first aid, the frequency of complications in the wounded is also rapidly increasing. Therefore, the first medical aid is provided already in the course of conducting rescue operations which are carried out round the clock and throughout the area of the disaster area. In this case, it is necessary to take into account the radiation and chemical situation which in some cases requires the use of personal protective equipment (respirators, gas masks, skin protection products, etc.)

Thus, the main purpose of the first medical aid-saving the life of the affected-can be achieved after eliminating the continuing impact of the damaging factor, eliminating the consequences of the defeat and rapid evacuation of the victim from the danger zone. In the area of the catastrophe, the work on rendering medical assistance to the affected can be conditionally divided into three periods (phases):

- Isolation-from the moment of occurrence of the disaster to the beginning of the organized conduct of rescue operations
- Salvation-from the beginning of rescue operations to the completion of the evacuation of those affected outside the hearth
- Recovery-from a medical point of view is characterized by the implementation of planned treatment and rehabilitation of victims until the final outcome

The duration of the isolation period can be from a few minutes as was the case with the explosions in Sverdlovsk and Arzamas, up to several hours-with the Earthquake in Armenia (1988). Taking this into account, it should be noted that the entire population should be trained in the rules of behavior in the emergency situation and in particular, in the methods of providing first aid in self-help and mutual assistance. The main measures of the first medical aid in terms of urgency are divided into urgent and activities, the fulfillment of which in the current situation may be forced to be postponed or transferred to the next stage of medical evacuation. Urgent activities include:

- Elimination of asphyxia
- Stopping external bleeding
- Carrying out anti-shock measures
- Clipping of the limb hanging on the flap of soft tissues
- Catheterization or capillary puncture of the bladder with urinary evacuation in case of urinary retention
- Carrying out measures aimed at eliminating the desorption of chemicals or clothing and allowing the removal of a gas mask from people who have come from a source of chemical damage
- Administration of antidotes, use of anticonvulsants, bronchodilators and antiemetics
- Degassing the wound with contamination of its resistance with chemicals
- Washing the stomach with a probe in case of chemical and radioactive substances entering the stomach
- Use of antitoxic serum for poisoning with bacterial toxins and nonspecific prophylaxis of infectious diseases

Actions that can be delayed include eliminating the shortcomings of first and first aid (correction of dressings, improvement of transport immobilization). Medical-evacuation measures are one of the main and most labor-intensive types of health care activities in the liquidation of medical consequences in emergency situations. The principles of organization of emergency medical care for victims of emergencies reflect the medical and social characteristics of this period and are based on general provisions for the protection of public health. In this regard, for the organization of medical and evacuation support for those affected in the disaster zones, there was a need to use a special system of medical evacuation measures and appropriate formations and institutions of the emergency medical service for its implementation as well as the development of new forms and methods of the service[14].

It provides for the provision of a large contingent of victims in the shortest possible time and in optimal amounts of medical care. To achieve these goals, it is necessary to carry out a number of organizational measures, united by the concept of “medical-evacuation provision of the population in emergency situations”.

The experience of the medical service in past wars and in regional natural disasters shows that the outcome of many types of lesions depends on the time elapsed from the time of injury to medical care. However, in the area of a disaster or a natural disaster, conditions as practice has shown are almost always lacking for medical assistance and treatment to the victims. The surviving medical workers and medical and preventive institutions near the center of the catastrophe as a rule are completely inadequate and it is almost impossible to move a large number of healthcare institutions from the outside to the disaster center in the short term. In connection with this, it is now recognized that it is advisable to dismember the single process of rendering assistance and treatment at the place and time, i.e., combine assistance with the evacuation of victims which was called medical-evacuation provision.

Treatment and evacuation support is a system of scientifically based measures to provide medical care to victims, their treatment with simultaneous evacuation to specialized institutions to continue treatment until the final outcome. Treatment-evacuation measures are one of the main and most labor-intensive types of health care activities when liquidating medical consequences in emergencies. The principles of organization of emergency medical assistance to victims in the system of medical and evacuation activities in the emergency situation reflect the medical and social characteristics of this period and are based on general provisions for the protection of public health. In this regard, for the organization of medical and evacuation activities affected in the disaster zones, there was a need to use a special system of medical evacuation measures and appropriate formations and institutions of the emergency medical service for its implementation as well as the development of new forms and methods of the service.

The structure of institutions providing health care in emergencies at the federal level consists of the All-Russian Center for Disaster Medicine “Protection” of the Ministry of Health of Russia with its incoming headquarters, units, emergency and consultative services to the population, specialized formations and institutions of the State Sanitary and Epidemiological Service and the Federal management of “Medbioextrem”; The All-Army Center for Emergency Medical Aid and Medical Special Forces of the Ministry of Defense of Russia, institutions and units of the federal subordination of the Ministry of Internal Affairs of Russia, the Ministry of Railways of Russia and other ministries and departments intended to participate in the liquidation of the health consequences of emergencies; clinical base intended for liquidation of

medical and sanitary consequences of an emergency situation, provision of emergency, planned, consultative, emergency and urgent medical assistance to the population.

At the regional level, the necessary measures are carried out: regional centers for disaster medicine, interregional centers for emergency situations of the State Sanitary and Epidemiological Service in Moscow and Novosibirsk and regional level State Sanitary and Epidemiological Surveillance centers, the formation of regional subordination of the Ministry of Defense of Russia, the Ministry of Internal Affairs and Ministry of Railways of Russia, other agencies located in this territory in the liquidation of the health consequences of emergencies. The local level (on a scale of individual cities, districts) is formed from the formation of a disaster medicine service of a specific facility (sanitary posts, sanitary squads, brigades, etc.) designed to participate in the elimination of emergency situations.

The management of the emergency medicine service with the right of a legal entity is created by the order of the Ministry of Health of Russia and performs the functions of the headquarters of the All-Russian Disaster Medicine Service of the region. The functions of the regional centers are performed by the territorial centers of disaster medicine in Khabarovsk, Novosibirsk, Chita, Krasnoyarsk, Yekaterinburg, Samara, St. Petersburg, Rostov-on-Don.

The body of management of the disaster medicine service of a subject of the Russian Federation with the right of a legal entity studies and predicts the medical and sanitary situation in the event of an emergency on its territory, ensures the readiness of the All-Russian Catastrophe Medicine Service at this level, organizes and supports interaction and manages medical and sanitary support in the emergency response.

Formations of the All-Russian Disaster Medicine Service include mobile hospitals, detachments, brigades, groups and other formations created to solve the problems of the emergency medicine service in accordance with approved states from the staff of medical and preventive and research institutions and provided with special equipment and equipment. Are intended for work in zones (areas) of emergency situations can be regular and non-standard (existing and created in emergency situations) formations. Organized at all levels of the All-Russian Disaster Medicine Service. Federal and regional levels:

- Field multidisciplinary hospital of the All-Russian Center for Catastrophe Medicine “Protection”
- Brigades of specialized medical assistance of constant readiness: radiological, toxicological, psychiatric, infectious, children’s, surgical, burn, gynecological. Therapeutic, pediatric, etc.
- Medical detachments of special purpose of the Ministry of Defense of Russia
- Sanitary-epidemiological units, specialized anti-epidemiological brigades

Territorial and local levels:

- Emergency medical teams (medical, paramedic)
- Teams of special medical aid (surgical, traumatological, neurosurgical, pediatric, psychiatric, burn, transfusion, anaesthesiological, etc.)
- First aid brigades
- epidural survey groups
- Anti-epidemic teams, sanitary-epidemiological brigades
- Sanitary posts and sanitary squads (local level)

Objective level:

- Brigades of emergency medical care
- Sanitary posts and sanitary squads

Depending on the specific conditions, the list of the formation of all levels may not change. The Federal Law “On Protection of the Population and Territories from Natural and Man-made Emergencies” defines the main tasks that need to be addressed in emergency situations. Development and implementation of legal and economic norms related to ensuring the protection of the population and territories from emergency situations. Implementation of targeted and scientific and technical programs aimed at preventing emergencies and increasing the sustainability of the functioning of enterprises, institutions and organizations, regardless of their organizational and legal norms as well as subordinate industrial and social facilities in emergency situations:

- Provision of readiness for the actions of the management bodies, forces and means intended for the prevention and liquidation of emergency situations
- Liquidation of emergency situations
- Implementation of measures for the social protection of the population affected by emergencies and the conduct of humanitarian actions
- Preparation of the population for actions in emergency situations
- Forecasting and assessment of social and economic consequences of emergency situations
- Realization of the rights and obligations of the population in the field of protection from emergency situations, including those directly involved in their liquidation
- Creation of reserves for financial and material resources for the liquidation of emergency situations
- International cooperation in the field of protection of the population and the territory from emergency situations

The All-Russian Disaster Medicine Service is responsible for the following medical and evacuation activities: participation (together with rescue and other formations of the Unified State System for Prevention and Elimination of Emergencies) in providing the affected (sick) first aid and their evacuation from the lesion center, organization and the provision of qualified and specialized medical care, the creation of conditions for their subsequent treatment and rehabilitation, the organization of medical evacuation expression (patients) at the stage of medical evacuation.

When liquidating the consequences of an emergency situation, medical and evacuation provision is carried out on the basis of a system of step-by-step treatment with evacuation of the affected (patients) to destination. The Medical Civil Defense Service (MCDS) is created on the basis of the territorial-production principle on the basis of peacetime health authorities and institutions, regardless of their departmental affiliation. Heads of the MCDS are the respective heads of the health authorities-ministers of health of the republics, heads of health departments (territories, regions, cities and urban areas), chief doctors of the central district hospitals in the countryside, chief doctors of polyclinics and health units at the facilities of the national economy. To guide the medical forces and funds, the heads of the medical staff are created with the heads of the health workers.

The medical service includes its management bodies MCDS headquarters and hospital base management), medical units and institutions as well as mass medical units-sanitary squads, detachments of sanitary guards, sanitary posts created at the facilities of the national economy. The main tasks of MCDS are: timely provision of all types of medical care to the affected and sick, their treatment with the aim of quick recovery of health and return to work.

Specialized anti-epidemiological brigades are created on the basis of specialized anti-epidemic institutions (institutes, stations) and are intended for work mainly in the centers of especially dangerous infections where they are assigned bacteriological exploration, laboratory bacteriological studies and participation in the organization and implementation of a complex of anti-epidemic measures. Groups of epidemiological intelligence are established on the basis of anti-epidemiological institutions. They are intended for epidemiological examination of foci of infectious diseases and sampling from objects of the external environment for the purpose of subsequent bacteriological studies in laboratories. Medical facilities of the service include medical institutions-profiled hospitals, head hospitals, sorting and evacuation hospitals, evacuation centers, infectious hospitals.

The specialized hospitals of MCDS are established on the basis of existing medical institutions. It is planned to create profiled hospitals-neurosurgical, thoraco-abdominal, traumatological for injured limbs, burn, toxicological, infectious and neuropsychiatric. In addition, at the points of collection for those who are easily assaulted, special hospitals are created to treat lungs. The specialized hospitals are assigned to provide specialized medical care to the affected and their treatment to the final outcome.

CONCLUSION

Specialists identify the main signs of emergency situations:

- Accompanied by the release of hazardous substances into the environment
- Associated with the occurrence of fires, explosions and their consequences; on transport communications
- Caused by natural disasters; military-political nature

The main task in combating natural disasters and catastrophes is to minimize human losses, the number of victims and reduce their suffering. The main directions of combating disasters: minimizing the number of victims, if the disaster can not be prevented, i. carrying out protective measures, including medical protection; rescue victims of the disaster; timely provision of first aid; providing the wounded with the following types of (first aid and first medical) medical assistance with evacuation to medical institutions; provision of qualified and specialized medical care; creation of normal conditions for life. To reduce the harmful effects of a natural disaster or disaster, medical preventive measures are:

- Providing adequate shelter for the victims
- Creating conditions for the implementation of basic standards of personal hygiene
- Ensuring the delivery of drinking water
- Supply of benign food

The main causes of traumatization, morbidity and mortality of people in natural disasters and catastrophes: traumatic (thermal) damage, psychoemotional stresses, epidemic (endemic) diseases, combined lesions. Medical and evacuation activities are conducted by the All-Russian Disaster Medicine Service. It participates (together with rescue and other formations of the Unified State System for the Prevention and Elimination of Emergencies) in providing the affected (sick) first aid and their evacuation from the lesion center, provides qualified and specialized medical care, creates conditions for their subsequent treatment and rehabilitation, organizes medical evacuation of the affected (sick) at the stage of medical evacuation.

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