Research Journal of Medical Science

The Organization of Medical Provision of the Population in Emergency Situations on the Example of Russia

[1]Sh. Ibrayevaa, [2]B.S. Turdaliyeva and [1]G.Ye. Aimbetova
[1]*Kazakh National Medical University named after S.D. Asfendiyarov, Almaty, Republic of Kazakhstan*
[2]*Department of Health Policy and Management, Republic of Kazakhstan*

Key words: Accidents, emergencies, population, situations, evacuation, activities, anti-epidemic, infectious, psycho-neurological, first medical assistance, victims

Corresponding Author:
Sh. Ibrayevaa
Kazakh National Medical University named after S.D. Asfendiyarov, Almaty, Republic of Kazakhstan

Page No.: 15-25
Volume: 15, Issue 1, 2021
ISSN: 1815-9346
Research Journal of Medical Sciences

Abstract: Accidents, catastrophes and natural disasters that occurred in recent years in Russia and abroad, accompanied by significant human casualties, make us reconsider many of the traditional approaches to the organization and provision of emergency medical care in emergency situations. Elimination of the health consequences of emergencies includes the implementation of a set of medical evacuation, sanitary and hygienic and anti-epidemic measures to eliminate the immediate danger to life and health of people in the system of emergency rescue and other work in the event of emergencies, and to create favorable conditions for the successful subsequent treatment and rehabilitation as well as to restore the life-support of the population.

INTRODUCTION

The implementation of these measures is a priority task of the Unified State System for the Prevention and Elimination of Emergencies.

By the Decree of the Government of the Russian Federation No. 420 dated May 3, 1994, the All-Russian Catastrophe Medicine Service (RCMS) was established, which develops methodological approaches to the organization and operation of medical units and institutions in emergency situations.

Problems of organization of medical provision of the population in emergency situations require in-depth training of students of medical universities and doctors of various specialties. It is based on the study of the organization of emergency medical care in emergency situations of civil and military time.

Principles of organization and tasks of the service of disaster medicine. The Emergency Medicine Service of the Ministry of Health of the Russian Federation (EMS) is an integral part of health care with its leadership, management bodies, forces, means, forms and methods of work that ensure timely provision of health care to the population in emergency situations.

It is a functional subsystem of the Unified State system of Prevention and Liquidation of Emergency Situations (USPLES). The principles of the EMS of the Russian Federation are based on the following principles.

The EMS is of a state and priority nature. Its state character is ensured by the decisions of the Government, decrees of the President orders of the Ministry of Health. The priority character of the EMS is ensured by the provision of the most favorable conditions for the provision of Emergency Medical Care (EMC).

The EMS is organized according to the territorial-production and regional principle and is represented by a three-level structure: federal, regional and territorial[1].

Management and organization of the EMS are provided by a reasonable combination of centralized and decentralized management. Two-stage system of EMC organization.

Medical sorting as one of the fundamental principles of the timely provision of EMC in emergencies. Separation and maneuver by forces and means of EMC. Interaction of EMC with honey forces of other ministries and departments, services of the USPLES.

Timeliness, continuity and effectiveness of EMC provision. The principle of one-man management in the liquidation of medical consequences of emergencies, i.e., alone, within its competence, to make a decision in accordance with the suggestions of subordinates. The principle of universality.

Reasonable sufficiency of EMS forces and resources and economic feasibility. Material interest and legal responsibility, legal and social protection of service specialists. Preparation of the population, as well as persons with occupations of increased risk for action and first aid in emergency situations

The tasks of the medicine of catastrophes: Carrying out activities aimed at preventing, localizing and eliminating the health consequences of possible disasters.

Organization, preparation and maintenance in a high degree of readiness of management bodies, institutions, formations and personnel of the service to work to eliminate the medical and sanitary consequences of emergencies.

Timely provision of medical care, evacuation and treatment of the affected, restoring their health in order to return them to a normal lifestyle as soon as possible, to maximally reduce disability and mortality.

Conducting therapeutic and preventive measures aimed at the prevention and reduction of the psycho-neurological and emotional impact of the disaster on the population and its fastest rehabilitation.

Ensuring the sanitary well-being of the population in the disaster areas, preventing the emergence and spread of mass infectious diseases among the population in the disaster zones and adjacent territories.

Maintaining the health of the service personnel during the liquidation of the medical and sanitary consequences of emergencies, providing medical assistance to the personnel of rescue units. Conducting forensic medical examination of the dead, forensic medical examination of the affected with the purpose of determining the degree of severity of the lesion and predicting the ability to work. The solution of the tasks facing the EMS can be ensured by the following activities[2].

Creation, equipping, preparation and maintenance of the forces and means of service in a high degree of readiness, development and introduction into the practice of public health of theoretical, methodical and organizational bases of medical provision of the population in emergency situations. Accumulation, storage, refreshment, accounting and control of medical equipment necessary for the work of units and service agencies in the emergency situations. Preparation of medical staff for work in emergency situations and training of the entire population for first aid and rules for adequate behavior in various disasters.

Operative management of the EMS forces, maneuvering them and interaction. For the successful implementation of the tasks facing the EMS, the existing and additionally created forces of the EMS are used. They include formations, institutions, management bodies and management.

Forming the EMS of the Ministry of Health of the Russian Federation: ambulance brigades-AB (line and specialized), designed to provide EMC in the pre-hospital disaster area.

Emergency medical teams AB (medical and nursing and pre-medical), their main purpose is to strengthen the ambulance service at the pre-hospital stage in the disaster area.

Medical units (MOs), consisting of EMF teams; serve to provide emergency first-aid at the prehospital stage Specialized Medical Teams of Constant readiness (SMTC) and emergency specialized medical care teams (AB) are part of the centers of medicine of catastrophes and are intended to strengthen health facilities that provide qualified and specialized medical care.

Autonomous out-patient medical hospitals (AOPMH) are designed to provide the first medical and qualified medical assistance in the outbreaks of catastrophes or in their immediate vicinity.

With a view to maximally prompt nomination to the disaster site, a number of territorial catastrophe medicine services in their composition are further deployed:

- Operational Control Groups (OCG)
- Sanitary Aviation (SA)
- Mobile Complexes of Medicine of Catastrophes (MCMC) on the basis of automobile chassis
- Air-Borne Medical Evacuation Complexes (ABMEC) based on the Mi-17Mb helicopter

To carry out sanitary and hygienic and anti-epidemic measures in the areas of large-scale disasters, mobile units are being created on the basis of Center for State Sanitary and Epidemiological Surveillance (CSSES):

- Sanitary-Epidemiological Units (SEU)
- Sanitary-Epidemiological Brigades (SEB)
- Anti-Epidemiological Brigades (AEB)
- Specialized Anti-Epidemiological Brigades (SAEB)
- Groups of Epidemiological Intelligence (GEI)

Institutions service:

- All-Russian Center MK "Protection" and its clinical base
- Regional centers of MK (Novosibirsk, Khabarovsk, Moscow, Chita, Ekaterinburg, Kazan, Rostov, St. Petersburg, Krasnoyarsk, Samara)
- Territorial centers of the MK (regional, provincial, city)
- Inter-district (zonal) centers of the MK
- Clinics of regional (territorial) centers of MK
- Territorial health facilities (according to the emergency plan)
- Bases, special warehouses ware-houses
- Educational institutions for the training of medical personnel (primary and postgraduate) in medicine for disasters

The bodies of management and management of the MK service:

- Ministry of Health of the Russian Federation (MK Department)
- Territorial management bodies (branches of the MK) of the territories of the Russian Federation
- Interagency coordinating commissions
- Headquarters of the All-Russian Service of the MK
- Staffs of the medical service of civil protection

The head of the All-Russian QMS is the Minister of Health of the Russian Federation.

Goals and organization of medical service: Medical Service of Civil Defense (MSCD) is a special organization in the health system designed to provide medical care to the affected population in wartime, as well as in the aftermath of natural disasters, major industrial accidents and disasters in peacetime. The main tasks of MSCD:

Providing all types of medical assistance to the affected population in the outbreak centers with a view to the speediest return of those affected to work, the maximum reduction in disability and lethality.

Sanitary and hygienic and anti-epidemic measures aimed at preventing the occurrence and spread of mass infectious diseases. Carrying out complex measures to protect the population and personnel of the MSCD from the impact of the damaging factors of modern combat weapons and man-made disasters.

To solve these problems in the emergency situation of civil and military time, MSCD has a corresponding organizational structure. The MSCD consists of: management, management bodies, forces and means[3].

The leadership includes the heads of MSCD. They are the heads of relevant health authorities at all levels. The management bodies are represented by the staffs of MSCD and the organization of the hospital base management of the hospital base.

MSCD forces include: medical non-military formations and institutions. The following principles are based on the organization of MSCD forces and resources:

- Territorial and production principle (created mainly on the basis of existing institutions and health authorities)
- The principle of universalization of training (that is, they are intended for work in any centers of mass lesions)
- The principle of functional purpose (i.e., for each formation and institution, a priority functional purpose is determined)

Medical formations

Sanitary Post (SP): Consists of 4 people the head of the post and 3 servants of SP. In peacetime and wartime, the joint ventures are designed to provide 1st medical assistance, sanitary and hygienic and anti-epidemic measures. They also carry out care for the affected and sick in medical centers on the Collective Evacuation Point (CEP), Reception Point of Evacuation (RPE), along the evacuation route. JV for 10 h of work in the centers of mass destruction can render 1st medical aid 100 affected (without search and removal).

Sanitary Team (ST): The ST staff includes: the squad leader, his deputy, the liaison officer (also the manager) and 5 links for 4 persons; at the head of each of them is the commander of the link, appointed from his staff. In total there are 23 people in ST. In addition, a truck with a driver can be attached. They are equipped with ST on the same time-sheets at the expense of the institutions on the basis of which they are created. During 5 h of operation ST can help up to 250 people affected (in a nuclear hearth) or up to 200 in a chemical source. ST are designed for independent work in the lesions, as well as in the formations and institutions of the MSCD and general purpose military units (combined detachment, rescue team)[4].

Brigade of First Medical Assistance (BFMA): It is designed to provide 1st medical assistance to the affected in the outbreaks (at the border) mass sanitary losses. The detachment is formed on the basis of one medical and preventive institution. The squad enrolls men aged 16-60 years and women (16-55 years) with the exception of unarmored persons who are not armored, persons with disabilities 1 and 2, pregnant women and women with children under 8 years of age and women with middle and high education having children up to 2 years of age. By the decision of the "SZ" District Administration, the

sanitary squads (two), the Mobile Food Station (MFS), the Mobile Warehousing Center (MWHC), the road transport with the drivers as well as the buildings for deployment are attributed to the detachment. Provision is also made for the placement of Operational and Preventive Measures (OPM) in tents. The staff includes: 146 personnel, including: 8 doctors, 38 nurses and paramedics, 2 sanitary squads and 52 service personnel.

For the work in the outbreak the detachment deploys: control, sorting and evacuation department, separation of the partial dignity, processing and decontamination of clothing and footwear, surgical dressing department, hospital department with isolators for infectious patients (for two infections) and for those with acute mental disorders, the department of honey, supply (pharmacy), laboratory department, business department, morgue.

For 12 h of operation, the OPM can take, hold a honey. sorting out, providing first medical aid and preparing for evacuation 500 affected.

Brigades of Specialized Medical Care (BSMC) are designed to provide specialized medical care assistance to the affected and sick of the appropriate profile in hospitals MSCD suburban area which they reinforce. The brigade consists of 2 doctors, 2 nurses and a driver.

Specialized Medical Care Unit (SMCU): Consists of 8 BSMC and management (detachment chief, his deputy, driver-connected). Toxico-Therapeutic Mobile Hospital (TTMH): designed to provide qualified and specialized medical care and treatment of affected by Highly Toxic Substances (HTS); unfolds near the source of chemical attack.

Infectious Mobile Hospital (IMG): Designed to provide qualified and specialized medical care and treatment of infectious patients, providing medical advice. personnel working in the centers of dangerous infections, conducting laboratory identification of bacterial agents.

Specialized Anti-Epidemic Teams (SAET): Designed to carry out anti-epidemic measures in the centers of dangerous infections and areas of large-scale disasters as catastrophe.

A Group of Epidemiological Intelligence (GEI): Designed to conduct an epidemiological survey of infectious foci, an epidemic. Intelligence and objects of samples from objects of the external environment.

Institutions of MSCD: Medical institutions (MSCD countryside hospitals), blood transfusion stations, State Sanitary and Epidemiological Supervision Centers (SSESC), medical supply depots, pharmacies, educational institutions for primary and postgraduate medical education, workers on MSCD and others[5].

MSCD treatment facilities are designed to provide affected skilled and specialized medical care and treatment to their final outcomes. The medical institutions existing in peacetime do not fully correspond to the conditions for changing work with mass entry in them affected with specific pathology. Therefore, their early preparation will be required: expansion of bed capacity, the deployment of specific units for this pathology, training of personnel for work in new conditions, the withdrawal of health facilities in the suburban area. Simultaneously with this restructuring, some of the beds of these hospitals are kept for servicing transportable patients and non-transportable patients who were taken out of the city by the hospital from the city, left in the city (about 10% of all the sick people in the city). In addition, infectious, psycho-neurological, pediatric and maternity beds remain. Part of the staff goes to work in medical units.

Nevertheless, in all cases, it is necessary to preserve the functional and administrative integrity of the hospital and to expand its hospital capacity by at least 2 times, using its own area and additionally assigned public buildings at the rate of 3 m^2 per bed. It is possible to distribute the affected and among the local population (2 affected by 1 family).

MSCD hospitals can be Multi-disciplinary Head Hospitals (MHH), multi-profile hospitals-MPH) and single-profile (profiled hospitals): Traumatology Profile Hospitals (TPH), Therapeutic Profile Hospitals (TPH), Infectious Profile Hospitals (IPH) and Psycho-Neurological (PNH).

The aggregate of the health facilities of the MSCD suburban area, united by a single management body and intended to provide the full volume of medical care to the affected population has received the name of a hospital base (BB). Organizationally, the hospital consists of Treatment and Evacuation Areas (TEA).

The body that organizes work in the TEA is the Head Hospital (HH): It accepts the affected on the main way of their removal from the hotbed of mass sanitary losses, sorts, the most difficult is rendered with urgent help and distributes the rest to the profile hospitals of this TEA. The head hospital prior to entering the hospital base on the main evacuation route exposes the Medical Distribution Post (MDP). Here the injured are examined on transport and the transport can be immediately directed to the profile hospital by passing the HH (in the case of single-profiling of the affected). At the entrance to the HH an auxiliary distribution post is put up (DP).

Given that the formation and establishment of MSCD and Quality Management System (QMS) are practically created on the same basis as well as the uniformity of

their tasks in peacetime and wartime, it seems advisable to organize their work in the liquidation of consequences in the centers of mass losses under a single management body protection.

Basis of medical-evacuation support of the affected population in emergency situations: The system of medical-evacuation provision of the population in emergency situations includes a set of scientifically-grounded principles of organizational and practical measures for rendering medical assistance and treatment to the affected population for the evacuation outside the zone of the disaster and the disaster medicine service.

The main conditions are influenced by the following main conditions: the type of catastrophe, the size of the lesion, the number of injured, the nature of the pathology, the degree of failure of the forces and means of health in the disaster zone, the material and technical equipment of the QMS and the level of training, factors by Radioactive Substances (RS) and Highly Toxic Substances (HTS).

The general principle of medical evacuation in emergency situations is basically a two-stage system of medical care and treatment for those affected with their evacuation for the intended purpose.

Medical units and medical institutions deployed on the evacuation routes of the affected area (area) of the catastrophe and intended for mass reception, medical sorting, rendering medical assistance to the stricken, preparing them for evacuation and treatment were named "Phase of Medical Evacuation".

The first stage of medical evacuation, intended primarily for the provision of first medical and first medical assistance is the medical institutions that remained in the emergency zone, the points of collection of the injured, ambulances deployed by the brigades and the medical and nursing teams that arrived in the emergency zone from nearby medical institutions.

The second stage of medical evacuation is the existing and functioning outside the emergency zone as well as additional medical facilities designed to provide comprehensive types of medical care qualified and specialized and to treat those affected before the final outcome[6].

Each stage of medical evacuation establishes a certain amount of medical care (a list of medical and preventive measures). The main types of assistance in the outbreak or on its border are the 1st medical, pre-medical and 1st medical help. Depending on the situation, here, in some categories of affected persons, elements of qualified medical care can be performed. At the second stage of medical evacuation, provision of qualified and specialized medical assistance in full, treatment until final outcome and rehabilitation is provided. Thus. the following types of medical assistance are available in the Medical and Evacuation Supplies (MES): first medical aid, first aid, first medical aid, qualified medical care, specialized medical care.

A characteristic feature of the provision of medical care to the affected is the dismemberment, dispersal (separation) of its delivery in time and in the terrain as evacuation of the catastrophe affected to the hospital into stationary medical institutions. The degree of dismemberment (separation) of medical care varies depending on the medical situation in the disaster zone. The volume of medical assistance can also vary and may widen or narrow. However, measures must always be taken to save the life of the affected person and reduce (prevent) the development of dangerous complications.
Each stage of medical evacuation has its own characteristics in the organization of work. However, in its composition it is necessary to create conditions for reception, accommodation and medical sorting of the affected, premises for rendering assistance, temporary isolation, san. treatment, temporary or final hospitalization, waiting for evacuation and a service unit.

To provide 1st medical and pre-medical care on the site where the injury is received or near it as well as separate activities of the 1st medical assistance, there is no need to deploy on-site functional departments.

The need for the organization of the first stage of medical evacuation is due to the fact that the distance between the disaster area and inpatient medical institutions can be significant. A certain proportion of the affected will not survive a prolonged evacuation directly from the center of the catastrophe after providing them with only the first medical aid received in the outbreak or on its border.

In the emergency medical care service in the emergency, two areas of the honey delivery system are objectively identified. assistance to the affected and their treatment in extreme conditions:

- When rendering honey. It is possible to provide assistance to the affected in full with the help of object and local territorial health services
- When to eliminate honey. consequences of a major catastrophe it is necessary to put forward mobile forces and funds from other regions and regions

In connection with the fact that with a two-stage system, the Medical and Evacuation Supplies (MES) of the population in emergency situations is med. Assistance is dismembered, the following two basic requirements are imposed on its delivery: continuity in consistently conducted medical and preventive measures and timeliness of their implementation[7].

Continuity in the provision of medical care and treatment is provided by: Presence of unity of

understanding of origin and development of pathological process and also uniform in advance regulated and obligatory for medical staff principles of medical care, care and treatment.

The presence of clear documentation accompanying the affected. Such documentation is: the primary medical card of the civil defense (in wartime) and the primary medical record of the affected (sick) in an emergency situation (in peacetime), a coupon for hospitalization, a medical history. The primary medical card of the Civil Defense (CD) (the primary medical record of the person affected in the emergency situation) is registered for all patients affected by the 1st medical assistance if they are subject to further evacuation, and if they are delayed for treatment more than one day, it is used as a medical history (or invested in the latter).

When evacuated, these documents are followed with him. Timeliness in rendering honey. assistance is achieved by a good organization of tracing, removal and removal (evacuation) of the affected from the outbreak to the stages of medical evacuation, the maximum approach of the 1st stage to the areas of occurrence of losses, the correct organization of work and the correct organization of medical sorting.

As already mentioned above, the following types of medical assistance are available in the Medical and Evacuation System (MES): first medical aid, first aid, first medical aid, qualified medical care, specialized medical care.

As a type of medical assistance-First Medical Assistance (FMA) is aimed to prevent further impact on the affected striking factor, to prevent the development of serious complications and thereby to save the life of the stricken person. It is effective when it turns out immediately or as soon as possible after the defeat.

According to the WHO, every 20 out of 100 people killed as a result of an accident in peacetime could be saved if medical assistance was provided to them on the scene. Of the deaths in the tornado zone in Ivanovo, 16% would have to live if timely and qualitatively rendered to them the first medical aid in case of bleeding, fractures of bones and asphyxia. With an increase in the duration of the first medical aid, the frequency of complications in the affected population also increases rapidly.

The first medical aid is a complex of the simplest medical measures carried out at the place of receiving damage mainly in self-help and mutual assistance as well as by participants in rescue operations, using personnel and improvised means to eliminate the continuing impact of the damaging factor, save lives, reduce and prevent development of severe complications[8].

The optimal period is up to 30 min after getting an injury. The 1st medical help affected is by syndrome, based on the nature, severity and location of damage. The organization of emergency medical care for the affected is closely related to the phase nature of the processes in the disaster area. So, during the isolation phase, lasting from several minutes to several hours, the first medical aid can be provided only by the victims themselves in the order of self-help and mutual assistance. And here the great importance is the training of the population, the ability to use improvised means to help. And only the rescue teams arriving in the outskirts begin to use the time-table equipment to provide 1st medical aid. Volume of the first medical assistance:

In case of catastrophes with the predominance of mechanical (dynamic) damaging factors: extraction of victims from the rubble (before releasing the limb from compression, a tourniquet is placed on its base, which is removed only after a tight bandage of the limb from the periphery to the bundle has been made), the conclusion of the extinguishing of burning clothes or those caught on body of burning mixtures.

Fight against asphyxiation by freeing the respiratory tract from mucus, blood and possible foreign bodies. With the sinking of the tongue, vomiting, the injured person's nosebleeds are laid on his side when the tongue sinks, it is pierced with a pin, which is fixed from the side of the outer arch with a bandage to the neck or chin. Artificial ventilation by mouth-in-mouth or mouth-to-nose, and also using an S-shaped tube:

- Giving a physiologically advantageous position to the victim
- Closed heart massage
- Temporary stop of bleeding by all available means: pressing bandage, finger pressing, tourniquet, etc.
- Immobilization of the damaged area by the simplest means
- Application of aseptic dressing to the wound and burn surface
- Administration of an anesthetic or antidote with a syringe tube
- Giving water-salt (1/2 tsp of soda and salt per 1 L of liquid) or tonic hot drinks (tea, coffee, alcohol)-in the absence of vomiting and data for trauma to the abdominal organs
- Prevention of overcooling or overheating
- Sparing early removal (removal) of the victims from the outbreak and their concentration in designated shelters
- Preparation and monitoring of the evacuation of victims to the nearest medical center or places of loading affected by transport

In foci with the predominance of thermal trauma, in addition to the listed activities, the following shall be carried out:

- Extinguishing burning clothing
- Wrapping the victim with clean sheets
- In case of catastrophes with the release into the environment of the SDSV additionally:
- Protection of the respiratory, eye and skin from direct exposure to them

- Partial sanitization of open body parts (running water, 2% soda solution, etc.) and if possible, degassing of clothing adjacent to them
- Giving sorbents for oral poisoning, milk, drinking plenty, washing the stomach with a "restaurant" method
- The early removal of the poisoned from the zone

In case of accidents involving the release of radioactive substances:

- Iodine prophylaxis and the use, if possible, of a population of radio-protectors
- Partial decontamination of clothes and shoes
- Rendering of the first medical aid to the population in the above-mentioned volume upon its evacuation from the zones of radioactive contamination

For mass infectious diseases in the foci of bacteriological (biological) infection:

- Use of improvised and (or) personal protective equipment
- Active detection and isolation of temperature-dependent patients who are suspicious of an infectious disease
- Use of emergency prevention
- Conducting a partial or full dignity processing

Two-help-a complex of medical manipulations carried out by medical personnel (nurse, paramedic) using medical means. It is aimed at saving lives of the affected and preventing the development of complications. The optimal time for giving pre-medical care is 1 h after the injury.

In addition to the activities of the 1st medical aid, the volume of pre-medical care includes:

- Introduction of airway, ventilation with the aid of the apparatus of the type "Ambu"
- Donning a gas mask (cotton-gauze bandage, respirator) to the affected person while finding it on the contaminated area
- Control of cardiovascular activity (measurement of blood pressure, pulse character) and respiratory function (frequency and depth of breathing) in the affected
- Infusion of infusion devices
- Administration of analgesics and cardiovascular drugs
- Administration and administration of antibiotics, anti-inflammatory drugs
- Introduction and administration of sedative, anticonvulsant and antiemetic drugs
- Giving of sorbents, antidotes, etc.
- Control of the correctness of applying harnesses, bandages, tires, if necessary correcting them and adding them with medical devices
- Application of aseptic and occlusive dressings[9]

First medical assistance is a complex of medical and preventive measures performed by doctors at the first (pre-hospital) stage of medical evacuation with the aim of eliminating the consequences of a lesion that directly threatens the life of the affected person, preventing further development of infectious complications in the wound and preparing the victims for evacuation.

Should be provided in the first 4-6 h from the moment of defeat. The first medical aid for urgent life indications will require an average of 25% of all sanitary losses. The leading causes of death on days 1 and 2 are severe mechanical trauma, shock, bleeding and respiratory failure with 30% of these affected dying within 1 h, 60% after 3 h and if assistance is delayed by 6 h, then 90% of the seriously ill are already dying. Among the deceased, about 10% were injured incompatible with life and death was inevitable, regardless of how soon they received medical care[10].

Given the nature of the pathology and the severity of trauma in catastrophes, the first medical assistance should be provided as early as possible.

It was found that a shock 1 h after the injury can be irreversible. When carrying out anti-shock measures in the first 6 h, mortality decreases by 25-30%.

Volume of first medical aid:

- Final stop of external bleeding
- Fight with shock (the introduction of painkillers and cardiovascular drugs, Novocain blockades, transport immobilization, transfusion of anti-shock and blood substitute fluids, etc.)
- Restoration of airway passages (tracheotomy, intubation of the trachea, fixation of the tongue, etc.)
- Application of an occlusive dressing with open pneumo-thorax, etc.
- Artificial respiration (manual and hardware methods)
- Closed cardiac massage
- Bandage of bandages, correction of immobilization, transport amputation (clipping of the limb hanging on the skin flap)
- catheterization or urinary bladder puncture with urinary retention
- Administration of antibiotics, tetanus toxoid, tetanus and anti-gangrenous sera and other drugs that delay and prevent the development of infection in the wound
- Obstetrical and gynecological care (hemostasis, wound toilet, premature birth, maintenance of pregnancy, etc.)
- Urgent therapeutic help (arresting the primary reaction to external radiation, administration of antidotes, etc.)
- Preparation of those affected for medical evacuation

The volume of the first medical aid may vary (expand or narrow), depending on the conditions of the situation, the number of patients who arrived, the time of their delivery, the distance to the nearest medical institutions, and the provision of transport for evacuation of the affected.

Provision of first medical assistance is the task of ambulance teams, medical and nursing teams, who did not stop their work at health facilities who found themselves in the places of concentration of the affected. In addition, it is planned to deploy medical posts in places where the affected are concentrated, as well as medical evacuation points. It should be remembered that transportation of seriously injured persons to a distance of >45-60 km (1.5-2 h) is possible only after the stabilization of vital functions, accompanied by medical workers, while carrying out the necessary intensive care measures.

It should be remembered that, other things being equal, priority is given to pregnant women and children in the order of emergency medical care at the pre-hospital stage and evacuation. In case of catastrophes, 20% enters the 2nd stage of medical evacuation in a state of shock. For 65-70% of the victims with a mechanical trauma and burns and up to 80% of the therapeutic profile, qualified medical care is the final kind.

In skilled and specialized medical care, in the second stage of evacuation, 25-30% of the affected will need urgent medical and prophylactic measures for vital signs. The need for hospitalization of those affected with a mechanical trauma will be up to 35% and with a burn injury-up to 97%.

After the first medical and first medical aid is rendered to the pre-hospital stage, they are sent to hospitals located outside the disaster areas where they must be provided with qualified and specialized medical care and where they will be on treatment until the final outcome. These types of medical care provide for the most complete use of the latest medical advances. Their implementation is completing the full volume of medical care, they are exhaustive.

Qualified medical assistance is complex of surgical and therapeutic measures performed by physicians of the appropriate training profile in the hospitals of medical institutions and aimed at eliminating the consequences of the defeat, primarily life-threatening, preventing possible complications and fighting the developed ones as well as ensuring routine treatment of those affected before the final outcome and creation of conditions for the restoration of disturbed functions of organs and systems. It should be provided as soon as possible but no later than 2 days[11].

It turns out that the doctors-specialists working in the hospitals of the countryside: surgeons qualified surgical care, therapists qualified therapeutic help. In some cases, in a favorable situation (cessation of mass receipt of victims and the first medical aid is provided to all who need it), qualified assistance can be provided to the Operational Preventive Measure (OPM).

According to the urgency of the event, qualified surgical care is divided into three groups:

The first group: Urgent measures for life indications, the refusal to perform which threatens the death of the affected in the next few hours.

The second group: Interventions, untimely implementation of which can lead to serious complications.

The third group: Surgery, postponing which, if antibiotics are used will not necessarily lead to dangerous complications.

If the situation is favorable, qualified surgical care should be provided in full (the operations of all three groups are performed). Reduction of the volume of qualified surgical care is carried out due to the refusal to implement the activities of the third group and in extremely unfavorable circumstances and at the expense of the activities of the 2nd group.

Qualified therapeutic help has as its goal the elimination of severe, life-threatening consequences of defeat (asphyxia, convulsions, collapse, pulmonary edema acute renal failure), prevention of possible complications and fighting with them to ensure further evacuation of the affected. The activities of qualified therapeutic care in the urgency of its provision are divided into two groups:

- Activities (urgent) in conditions threatening the life of the affected or accompanied by a sharp psychomotor agitation, intolerable skin itching with defeat of mustard gas or threatening severe disability (damage to the eye's eye, etc.)
- Activities that can be delayed

In an unfavorable situation, the volume of qualified therapeutic care can be reduced before the activities of the 1st group[12].

Specialized medical assistance is set of therapeutic and preventive measures performed by medical specialists in specialized medical institutions (departments) using special equipment and equipment to maximize the recovery of lost functions of organs and systems, treatment of victims before the final outcome including rehabilitation. Should be provided as soon as possible but not later than 3 days. For the organization of specialized assistance, factors are necessary:

- Availability of specialists
- Availability of equipment
- Availability of appropriate conditions (hospitals in the suburban area)

The 70% of all affected will need special medical care:

- With damage to the head, neck, spine, large vessels
- thoraco-abdominal group
- Burn injured
- Affected with ARS
- Affected OS or SDYAV
- Infectious patients
- Affected with abnormalities of the psyche
- Chronic somatic diseases in exacerbation

With the simultaneous occurrence of massive losses among the population with a shortage of medical forces and resources, it is impossible to render assistance in a timely manner to all affected. Still N.I. Pirogov wrote: "Here desperate and hopeless cases first stand out ... and that hour passes to the wounded who hope for a cure and focus on them all.

The principle of medical sorting is the choice of two evils smaller: In emergency situations, there is always a discrepancy between the need for medical care and the possibility of providing it. Medical sorting is one of the means to achieve timeliness in the provision of medical care to the victims.

Medical sorting is a method of distributing victims to groups according to the need for homogeneous medical, preventive and evacuation measures, depending on medical indications and specific conditions of the situation. It is carried out from the moment of the first medical aid on the spot (in the zone) of the emergency situation and in the pre-hospital period outside the zone of defeat as well as when the injured are admitted to treatment and prophylactic institutions to receive the full volume of medical care and treatment to the final outcome. Medical sorting is carried out on the basis of diagnosis and prognosis. It determines the scope and type of care.

Medical sorting is specific, continuous (emergency categories can change rapidly), a recurring and successive process in providing victims with all types of medical care. It is based on diagnosis and prognosis. It determines the scope and type of care.

In the lesion center, in the place where the injury is obtained, the simplest elements of medical sorting are performed in the interests of rendering the 1st medical assistance. As the medical personnel (ambulance brigades, medical-nursing teams, emergency medical teams) arrive in the disaster area, the sorting continues, becomes concrete and deepens.

The specific grouping of those affected in the process of medical sorting varies depending on the type and volume of medical care provided. The volume of medical assistance in turn is determined not only by the medical indications and qualifications of medical personnel but mainly by the conditions of the situation[13].

Depending on the tasks to be performed in the process of sorting, it is customary to allocate two types of honey sorting:

Intra-point: Distribution of medical evacuations affected by the units of this stage (i.e, where, in what order and to what extent assistance will be provided at this stage).

Evacuation and transport: Distribution according to evacuation purpose, means, methods and priority of further evacuation (i.e., in what queue, what kind of transport, in what position and where).

At the heart of the sorting, three basic Pirogov`s sorting attributes still retain their effectiveness:

- Danger to others
- Therapeutic
- Evacuation

The danger for others determines the degree of need of victims in sanitary or special treatment, isolation. Depending on this, the victims are divided into groups:

- In need of special (sanitary) treatment (partial or full)
- Temporary isolation
- Not requiring special (sanitary) treatment.

Therapeutic sign the degree of need of the victims in medical care, priority and location (medical unit) of its provision. According to the degree of need for medical care, the affected are:

- In need of emergency medical care
- Those who do not need medical assistance at this stage (assistance may be delayed)
- Affected in terminal conditions that require symptomatic care with trauma incompatible with life

The evacuation sign is the necessity, the order of evacuation, the mode of transport and the position of the victim on transport, the evacuation purpose. Proceeding from this sign of the affected are divided into groups.

To be evacuated to other territorial, regional medical institutions or the center of the country, taking into account the evacuation purpose, priority, the method of evacuation (lying or sitting), mode of transport.

Subject to leaving in a given medical institution (severity of condition) temporarily or until the final outcome. Subject to return to the place of residence (settlement) of the population for outpatient treatment or medical supervision.

For the successful conduct of medical sorting, it is necessary to create appropriate conditions at the stages of medical evacuation. It is necessary to allocate the necessary number of medical personnel, creating from it

sorting brigades, provided with appropriate instruments, devices, means of fixing the results of sorting, etc. The staff of the sorting brigades should be assigned to experienced physicians of relevant specialties, capable of quickly assessing the condition of the affected, diagnose, determine the prognosis and character necessary medical assistance. To calculate the need for sorting teams, the following formula can be used:

Medical personnel of any level of training and professional competence must first perform a selective sorting: to identify the injured dangerous for others. Then, through a cursory examination of the affected, to identify the most in need of medical care (the presence of external bleeding, asphyxia, convulsions, parturient children, children, etc.).

Priority remains for those in need of emergency medical care: After a selective sorting method, the sorting team proceeds to consecutive examination of the affected. The team simultaneously examines two affected: one has a doctor, a nurse and a registrar and the second a paramedic (nurse and registrar). The doctor, having accepted the sorting decision for the 1st affected, goes to the 2nd and receives information about him from the paramedic. Having made the decision, passes to the 3rd stricken, receiving information from the nurse. The paramedic at this time examines the 4-th injured, etc. The link of the porters implements the decision of the doctor in accordance with the sorting mark. With this "conveyor" method of work, one sorting brigade can sort out up to 30-40 stretchers with traumatologic injuries or affected by Highly Toxic Substances (HTS) with emergency care within an hour.

In the process of sorting out all victims on the basis of an assessment of their general condition, the nature of the damage and the complications that arose, taking into account the forecast, they are divided into 5 sorting groups:

I marshalling group: Victims with extremely severe, incompatible lives as well as those who are in terminal condition (agonal) who need only symptomatic treatment. The forecast is unfavorable.

II sorting group: People with severe injuries accompanied by rapidly growing life-threatening disorders of the vital functions of the body, for the elimination of which urgent medical and preventive measures are needed. The prognosis can be favorable if they receive timely medical assistance. Patients of this group need help on urgent life indications.

III sorting group: Victims with severe and medium severity damage that do not pose an immediate threat to life, who are assisted in the second turn or may be deferred until they arrive at the next stage of medical evacuation.

IV sorting group: Victims with moderate injuries with poorly expressed functional disorders or they are absent.

V sorting group: Victims with minor injuries requiring out-patient treatment.

Medical evacuation is a system of measures for the removal from the disaster area of the affected, in need of medical care and treatment outside it. It begins with the organized removal, withdrawal and removal of victims from the disaster zone, where it provides first aid and ends with delivery to the medical institutions of the second stage of medical evacuation, which provides full medical assistance and final treatment. Rapid delivery of the medical evacuations struck at the first and final stages of medical evacuation is one of the main means of achieving timeliness in the provision of medical care and combining the medical and evacuation activities dispersed in the terrain and in time into one.

The ultimate goal of evacuation is the hospitalization of the victim of the relevant profile to a medical and preventive institution, where the victim will be provided with the full volume of medical care and final treatment (evacuation according to prescription).

Evacuation is carried out on a "self" basis (ambulance cars for medical and preventive institutions, emergency medical centers, etc.) and "on their own" (transport of the affected facility, rescue units, etc.).

The general rule when transporting struck on stretchers is the irremovability of stretchers, and their replacement from the exchange fund.

Load of transport, if possible in a single-profile manner (surgical, therapeutic, etc. profile) and localization of the lesion greatly facilitates the evacuation not only in the direction, but also to the destination, minimizing inter-hospital transportation.

When evacuating people affected in a state of mental arousal, measures are taken that exclude the possibility of their falling from the transport (fixing straps to stretchers, the introduction of sedative drugs, watching them easily-bred and sometimes identifying accompanying persons).

The evacuation of the HTS affected by the foci is organized in accordance with general principles, although it has some peculiarities. For example, in the bulk of severely affected HTS, treatment in the immediate vicinity of the disaster zone is required before they are removed from the non-transportable state, followed by evacuation to the nearest medical facility of the second stage of medical evacuation, giving priority to evaco-transport sorting[14].

CONCLUSION

Evacuation of patients from the foci of especially dangerous infectious diseases, as a rule, is not carried out or is sharply limited. If it is necessary to implement it, the requirements of the anti-epidemic regime must be met in order to prevent dispersion of the infection on the evacuation routes:

- Allocation of special evacuation routes
- Non-stop traffic through settlements, through the streets of cities
- Availability of means of disinfection in vehicles and collection of discharge in patients
- Support of transport by medical staff

The organization of sanitary check points at the exit from the outbreaks, etc.

REFERENCES

01. Altunina, A.T., 1980. Civil Defense/under the Society. Military Publishing, Moscow, Russia,.
02. Andreeva, G.M., 2006. Social Psychology. Izd. Moscow State University, Moscow, Russia, Pages: 129.
03. Atamanyuk, V.G., L.G. Shirshev and N.I. Akimov, 1986. Civil Defense. Higher School Publisher, Moscow, Russia,.
04. Borovskoy, Y.V., 1991. Civil Defense. Enlightenment, Moscow, Russia, Pages: 113.
05. Egorov, A.M., 2001. Life Safety. Wave Publisher, Moscow, Russia,.
06. Frolova, M.P., 2002. Foundations of Life Safety: A Textbook. Publishing House Astrel, Moscow, Russia, Pages: 382.
07. Kuhn, L., 1982. The General History of Physical Culture and Sports. Rainbow Publisher, Russia, Pages: 398.
08. Ministry of Railways of the Russian Federation, 1994. On measures to ensure traffic safety in railway transport. Ministry of Railways of the Russian Federation, Russia.
09. Petrovsky, B.V., 1987. Popular Medical Encyclopedia. Soviet Encyclopedia Publisher, Russia, Pages: 704.
10. Popov, S.N., 2005. Physical Rehabilitation. Phoenix Publisher, Rostov-on-Don, Russia, Pages: 603.
11. Sergeev, V.S., 2015. Protection of the population and territories in emergency situations. Global-Regulation Inc, Russia.
12. Tzumer, A.M. and O.L. Petrishina, 1971. Human Anatomy Physiology Hygiene. Prosveshcheniye Publishers, Russia, Pages: 255.
13. Uzdina, M.M., 2006. Railways General Course. Russian University of Transport, Moscow, Russia, Pages: 300.
14. Zalmanov, A.S., 1996. Secret Wisdom of the Human Body (Deep Medicine). Nauka Publisher, Moscow, Russia, Pages: 165.