

Ministry of Education and Science of Ukraine  
V. N. Karazin Kharkiv National University

# **MEDICAL TRIAGE**

Methodical recommendations for the preparation of the 5th year students  
for practical classes of the Discipline  
"Emergency and urgent medical care"

*Electronic resource*

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M 46

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**M 46** **Medical triage** : methodical recommendations for the preparation of the 5th year students for practical classes of the Discipline "Emergency and urgent medical care" [Electronic resource] / compilers Olga Oliinyk, Mariia Matvieienko. – Kharkiv : V. N. Karazin KhNU, 2024. – (PDF 61 c.)

The methodical recommendations outline the conduct of medical evacuation measures: in emergency situations, including martial law, during the advanced stages of medical evacuation, taking into account the existing system of medical and evacuation support, organization of medical and evacuation measures among the population and military personnel . For students of the 5th year to prepare a practical lesson in the discipline "Emergency and urgent medical care".

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## **LIST OF ABBREVIATIONS**

CPR - cardiopulmonary resuscitation

BP - blood pressure

Intensive care unit - intensive care unit

WHO - World Health Organization

GDN - acute respiratory failure

GM - the brain

DSMK - State Disaster Medicine Service

A road accident is a traffic accident

ECG - electrocardiogram

EMD - emergency medical care

LEZ - medical and evacuation support

The hospital is a medical and preventive institution

Ministry of Internal Affairs - Ministry of Internal Affairs

Ministry of Emergency Situations - Ministry of Emergency Situations

Ministry of Defense - Ministry of Defense

Ministry of Health - Ministry of Health

An emergency is an emergency situation

OGK - chest organs

ORA - musculoskeletal system

BCC - volume of circulating blood

OCP - organs of the abdominal cavity

PE - anti-epidemic (measures)

PT - polytrauma

SG - sanitary and hygienic (measures)

SDOR - potent poisonous substances

SES - sanitary and epidemiological station

CM - spinal cord

TBD - tracheobronchial tree

CNS - central nervous system

ChDR - frequency of respiratory movements

TBI - craniocerebral injury

Heart rate - heart rate

Ventilator - artificial lung ventilation

AI - shock index

SHKG - scale of Glasgow coma

ShMD - emergency medical assistance

## 1. NECESSARY BASIC KNOWLEDGE, SKILLS, SKILLS TO STUDY THE TOPIC

**Learning objectives** : the student's acquisition of competence, knowledge, abilities and skills to carry out professional activities in the specialty:

- to determine the main principles of the organization and provision of emergency and urgent medical care in Ukraine;
- master the skills of diagnosing emergency conditions at the scene as part of the emergency medical care team (leader, participant) and the emergency medical care department of a multidisciplinary hospital
- to learn to recognize emergency situations in the work of a doctor of a general practice outpatient clinic
  - family medicine, polyclinic, hospital department;
- learn to determine the emergency medicine protocol that most closely matches the symptoms of the victim (patient);
- provide emergency medical care in accordance with the established protocol emergency medicine with adequate manipulations.
- to master the organizational principles of providing emergency and urgent medical care and emergency situations in peacetime;
- study the sequence of actions of emergency medical aid teams in case of mass injuries;
- learn how to medically triage victims.

Prerequisites study disciplines ( interdisciplinary connections ) . Emergency and urgent medical care as an educational discipline:

a) it is based on the study of human anatomy by students; histology, biochemistry, physiology, pathomorphology; pathophysiology; surgery, internal medicine, pediatrics, pharmacology and integrates with these disciplines;

b) is an integral part of all clinical disciplines and includes their most important sections, including internal medicine, pediatrics, surgery, traumatology and orthopedics, neurosurgery, urology, obstetrics and gynecology and other educational disciplines, which involves the integration of teaching with these disciplines and the formation the ability to apply knowledge in the process of further education and professional activity;

c) provides an opportunity to acquire practical skills and develop professional skills for diagnosis and provision of emergency medical care and intensive therapy in certain pathological conditions and during the period of patient care;

d) forms methodological bases of clinical thinking.

**Expected learning outcomes** .

As a result of studying the discipline, students have:

- Be able to examine and examine patients in the intensive care unit with discussion of the plan and tactics of their treatment;
- Demonstrate knowledge of etiology, pathogenesis, pathophysiology and intensive therapy of emergency conditions;
- Demonstrate mastery of the skills of diagnosing clinical death and performing resuscitation measures;
- Use knowledge of mastering special practical skills on phantoms and mannequins, practical use of diagnostic methods and intensive treatment;
- Demonstrate mastery of methods of diagnosis and assistance in the main syndromes of vital functions disorders;
- Determine the scope of examinations and demonstrate their evaluation in case of violation of vital functions;
- To analyze diagnostic methods and the clinical course of the main syndromes accompanying severe violations of vital functions;
- Formulate the choice of intensive therapy algorithms for various emergency conditions.
- Solve clinical situational problems and tests.

According to the requirements of the educational and professional program, students must:

**KNOW:**

- basic concepts of general nosology: health, disease, pathological process, typical pathological process, pathological reaction, pathological condition, etiology, pathogenesis;
- various types of water-electrolyte metabolism and acid-base disorders;
- the main syndromes characteristic of liver and kidney failure;
- clinical manifestations of comatose states of various genesis;
- various types of acute poisoning;
- stages of cardiopulmonary and cerebral resuscitation;
- methods of providing assistance in emergency situations caused by factors of the external environment;
- principles of severity assessment, monitoring and assistance to patients with craniocerebral, thoracic and skeletal injuries;
- basic principles of pathogenesis, diagnosis and intensive therapy of traumatic, septic, burn shock;
- understanding of the basic principles of rational antibiotic prophylaxis and antibiotic therapy;
- understanding the etiology and pathogenesis of critical conditions associated with allergic reactions. Demonstrate the ability to provide emergency care to a patient with anaphylactic shock;

- basic principles of clinical pharmacology of drugs used in pain therapy (NSAIDs, narcotic analgesics, local anesthetics).

**BE ABLE:**

- demonstrate the technique of maintaining airway patency, artificial lung ventilation and closed heart massage, electrical defibrillation;

- assess the severity of the condition of a patient with an injury, plan the tactics of providing assistance to a patient with combined injuries;

- demonstrate the ability to plan infusion and transfusion therapy for critically ill patients;

- demonstrate the technique of maintaining airway patency, artificial lung ventilation and closed heart massage, electrical defibrillation;

- formulate the basic principles of correction and intensive therapy of various types of water-electrolyte metabolism and acid-base disorders;

- draw up infusion therapy schemes for various disorders of homeostasis;

- to formulate the basic principles of intensive therapy of comatose states of various origins;

- to interpret the regularities of the occurrence of violations of the vital functions of the body in case of acute poisoning;

- solving clinical situational problems and tests

- diagnosis of emergency conditions:

under any circumstances (at home, on the street, in a medical institution, etc.), in conditions of lack of information and limited time, using standard examination methods and data of possible anamnesis, knowledge about a person, his organs and systems, observing the relevant ethical and legal norms, by making a reasoned decision and assessing a person's condition to make a diagnosis;

- carrying out medical evacuation measures: in emergency situations, including martial law, during the deployed stages of medical evacuation, taking into account the existing system of medical and evacuation support, to organize medical and evacuation measures among the population and military personnel;

- determining the tactics of providing emergency medical aid: under any circumstances, using knowledge about a person, his organs and systems, observing relevant ethical and legal norms, by making a reasoned decision, based on the diagnosis of an emergency condition in a limited time using standard schemes to determine emergency medical care tactics.

## 2. INTRODUCTION

Medical sorting of the wounded and sick is the most important measure that ensures a clear organization of the stages of medical evacuation to provide medical assistance to the wounded and sick. Its importance is especially increasing when there is a mass influx of wounded and sick people. The experience of many tactical special exercises in recent years emphasizes that medical triage should not be an end in itself: its task is to ensure the fastest possible provision of medical care to the maximum number of wounded and sick people who need it.

The value of medical triage increases especially during the stages of medical evacuation in the conditions of the enemy's use of weapons of mass destruction.

The content of sorting depends on the tasks assigned to certain functional units and stages of medical evacuation as a whole, as well as on the conditions of the combat and medical situation. The purpose of medical triage is to provide the wounded and sick with timely medical and preventive measures and their subsequent evacuation.

## 3. DEFINITION

### Terms

"Triage" is a French word that means "sorting". It comes from the French verb "trier", which means "to sort".

The concept was initiated by a pioneering French doctor; Dominique Jean Larrey (1766 – 1842), who was a French surgeon in Napoleon's army and an important innovator in battlefield medicine.

*Medical triage or triage* (fr. triage , sorting) is the distribution of victims and patients (hereinafter - victims) into categories with signs of the need for uniform medical and preventive and evacuation measures in accordance with medical indications, the amount of medical care provided at each stage of medical evacuation and evacuation order. Medical triage is carried out taking into account the need to apply specific medical measures: reducing the consequences of injuries (diseases) that threaten the life of the victims; preventing the development of complications, reducing their severity; preparation and evacuation.

Medical triage of victims at the pre-hospital stage and in reception departments (emergency medical care departments) of health care institutions (hereinafter - reception department), including during hospitalization of victims as a result of an emergency (hereinafter - medical triage), is carried out in order to provide timely medical assistance to the maximum number of victims in the amount

that ensures the restoration of sudden loss of vital functions and contributes to the preservation of the health of the victims.

Medical triage is carried out according to uniform principles regarding diagnosis, treatment and prognosis of the results of treatment of victims.

Medical sorting allows for overdiagnosis. Thus, the condition of injured children and pregnant women, even without visible injuries, is always assessed as severe, their evacuation and provision of medical assistance is carried out in the first place.

Main sorting features:

- the victim's danger to others;
- the victim's need for medical facilities;
- the victim's need to evacuate.

Depending on the tasks to be solved, two types of medical sorting are distinguished:

1. Evacuation and transport - distribution of victims into three groups:
  - subject to evacuation (Where? By what means of transport? In what position? In what order?);
  - need help on the spot;
  - do not require further medical measures, that is, those that can be released.
2. Intra-point - distribution of victims into groups to make a decision on the provision of medical assistance (Where to provide it? In which order? In what amount?).

The following three groups of victims are distinguished:

- need urgent medical care;
- those for whom medical assistance may be delayed;
- need palliative therapy.

Difficulty is caused by persons who are dangerous for others. They are subject to sanitary treatment or temporary isolation, and their clothes and property are subject to decontamination, degassing, disinfection, but these measures do not exclude their need for medical and evacuation support.

The modern system of medical sorting (triage) is based on the division of all victims into four groups, each of which is assigned its own color code:

- Emergency care is red
- Urgent care is yellow
- Non-urgent care is green
- The morgue is black.

This system is designed to determine the sequence of medical assistance and transportation to the hospital in the presence of a large number of victims, but a limited number of medical personnel and means of transportation. The entire process of assessing the victim's condition takes, as a rule, 60 seconds.

After the assessment of the condition is completed, the affected are marked with the color of one of the four sorting categories in the form of a special colored tag or a colored wrist bracelet or a colored flashlight (in the dark time of the day), or simply a colored tape.

The condition of the victim, after the initial triage, may deteriorate or improve, therefore sorting continues throughout the rescue operation and victims may be reclassified from one category to another at any time. In the middle of one category, preference is given to children and pregnant women.

#### **4. PRIMARE MEDICAL TRIAGE ACCORDING TO THE START SYSTEM**

Currently, several sorting systems are being implemented around the world. Some of the better known algorithms include START (Simple Triage and Rapid Treatment), SALT (Triage, Assessment, Lifesaving Interventions, Treatment/Triage), STM (Sacco Triage Method), Care Flight Triage, and SAVE (Secondary Assessment). end point of the victim). Limited data are available to support one system over another. However, it is important to choose one and stick to its algorithm to maintain an orderly approach.

One of the most popular is the START (Simple Triage and Rapid Treatment) system, developed by Hoag Hospital and the Newport Beach Fire Department (Newport Beach, California) in 1983. It served for use by fire and emergency services in the event of an accidental earthquake or other global natural disaster. However, in the future, it also became the standard method of medical triage when providing assistance to victims of terrorist acts, as well as crashes of trains, buses, planes and other cases with a large number of victims.

START relies on a rapid assessment (*taking less than one minute*) of each patient's breathing, pulse and mental status (collectively called RPM) to assign the patient to one of four categories (see below).

The triage responders do NOT stop to perform anything other than the most basic intervention. If they try to treat every patient before triage is complete, they won't be able to assess the remaining patients and determine top priorities. The job of triagers is to categorize patients so that paramedics can treat the sickest patients first. The sad reality is that in a disaster, you probably won't save everyone. The goal is to save as many people as possible.

START method , the rescuers who first arrived at the scene of the accident first separate the lightly injured from other victims. For this, everyone who is able to move on their own is asked to move away from other victims and collect them in a designated place, where they are marked with green sorting means. This contingent either received minor injuries or none at all. Help is provided to them already after providing help to the more seriously injured.

Next, the rescuers examine the victims who are unable to move and determine the presence of breathing, blood circulation and neurological functions in them, on the basis of which they are divided into three categories: those in need of urgent medical care, those in need of urgent care and dead.

First of all, the rescuers determine whether the victim is breathing. If he is not breathing, they check the patency of his airways and remove obstructions to breathing. If the victim's breathing is not restored after that, it is considered that the victim is dead and the body is marked with black color.

If the victim is breathing, the rescuers count the frequency of his respiratory movements. If it is more than 30 per minute, then the victim is marked in red, requiring urgent help, because an increase in the frequency of respiratory movements is one of the signs of shock.

After that, the rescuers determine the victim's presence of a pulse on the radial artery. If the pulse is not palpable, then the victim is marked in red, and if there is a pulse, a test of capillary vessels is carried out by pressing the nail of the finger until it turns white, and then counting how many seconds the blood will return to the finger. If the nail does not turn pink within two seconds, then the victim is marked with red color, and if it acquires a normal color earlier, then they proceed to the next test - neurological functions.

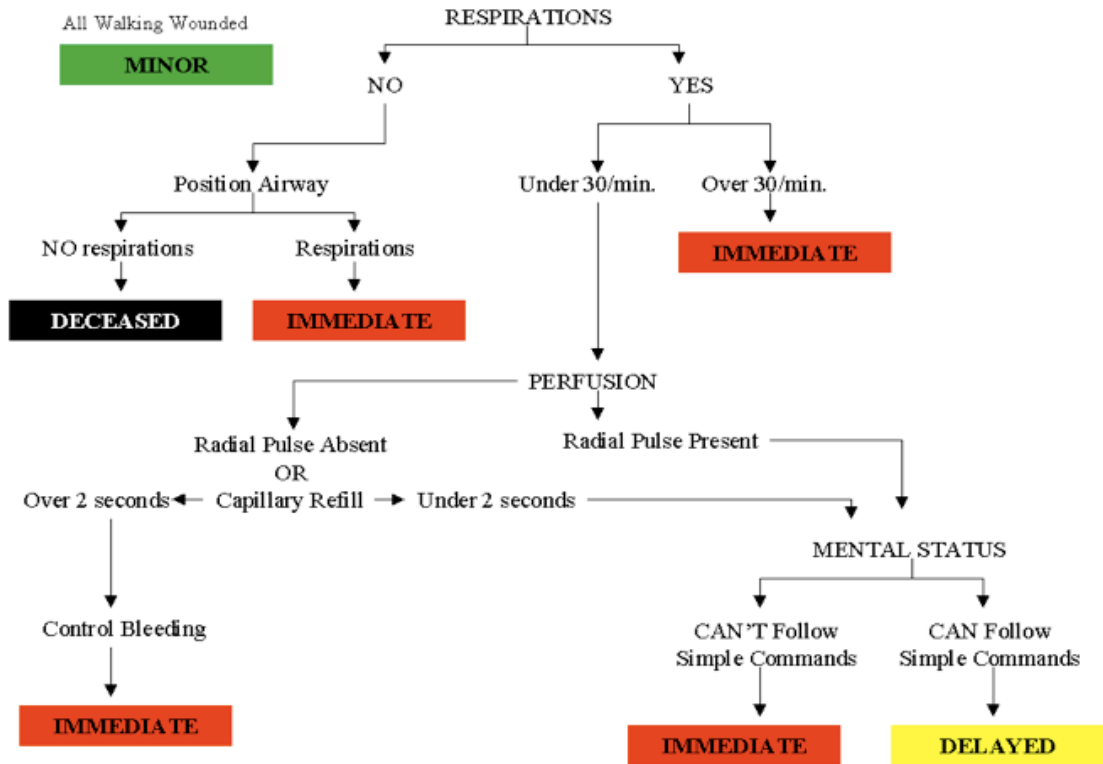
Rescuers ask the victim to perform any simple action. If he responds adequately to their instructions, he is marked in yellow. If the victim does not respond to others, he is marked with red color, because such a condition may be life-threatening.

START method has proven itself well among rescuers due to its ease of use, accessible even to persons without professional medical training.

Professional doctors, performing medical triage, as a rule, use more complex methods that allow them to mark in black not only the dead, but also those whose wounds, according to their conclusion, are not compatible with life.

In 1995, based on the START method , Dr. Lou Romich of Florida Children's Hospital in Miami developed the Jump medical triage method START for pediatric patients, which later became the standard for triage of children in the United States.

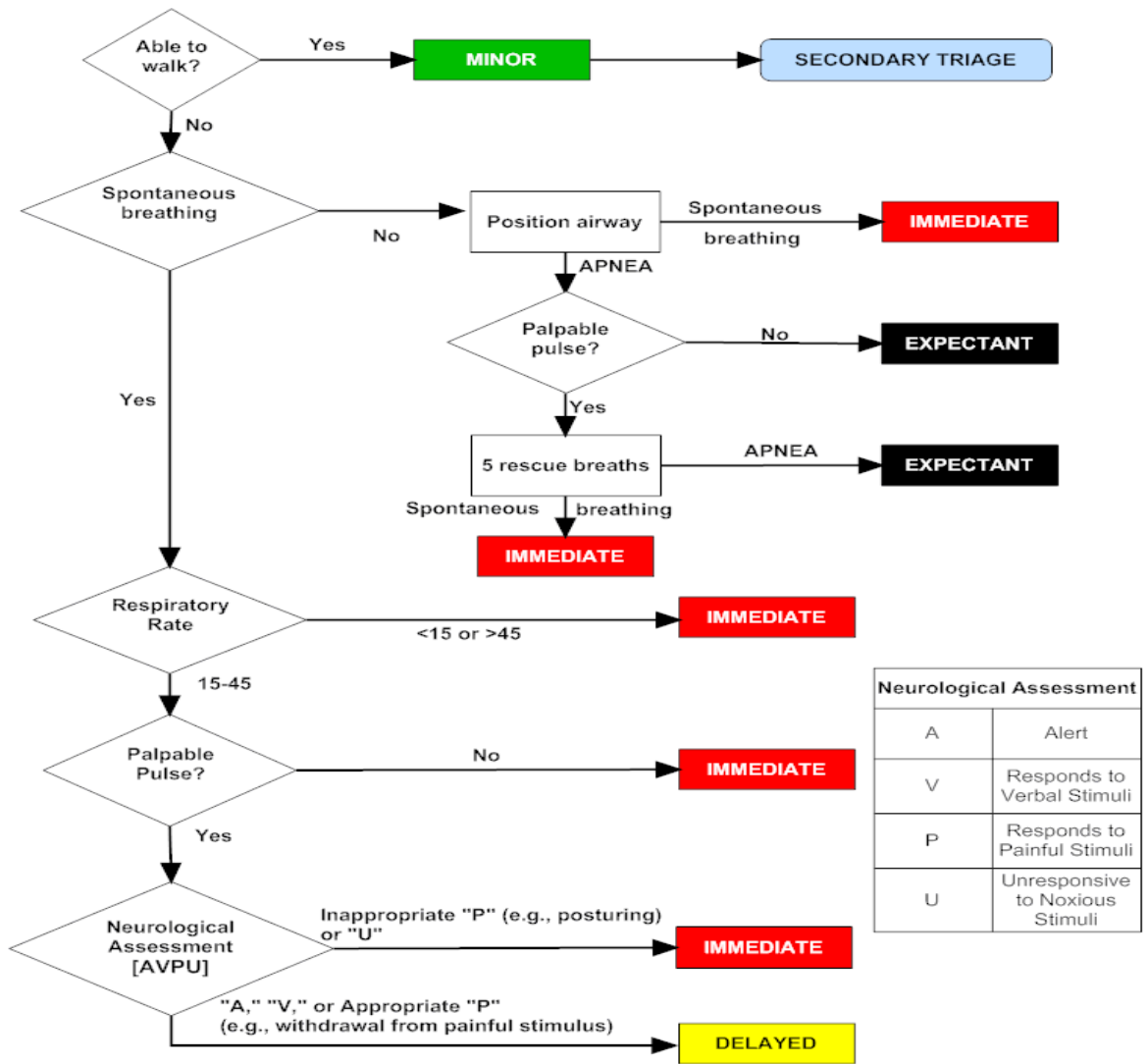
## START block diagram



START Triage			
<i>Assess, Treat, (use bystanders)</i>			
When you have a color			
STOP - TAG - MOVE ON			
<b>M I N O R</b>	<b>D E C E A S E D</b>	<b>I M M E D I A T E</b>	-- <b>Move Walking Wounded</b>
			-- No RESPIRATIONS after <i>head tilt</i>
			-- <b>Breathing</b> but UNCONSCIOUS
			-- <b>Respirations</b> - over 30
			-- <b>Perfusion</b> Capillary refill > 2 or NO RADIAL PULSE <i>Control bleeding</i>
			-- <b>Mental Status</b> Unable to follow simple commands
<b>D E L A Y E D</b>	-- Otherwise		
	<b>REMEMBER:</b>  Respirations - 30 Perfusion - 2 Mental Status - Can Do		

## Jump Start block diagram

## JumpSTART Pediatric Multiple Casualty Incident Triage



Use JumpSTART if the Patient appears to be a child.

Use an adult system, such as START, if the patient appears to be a young adult.

### Triage Categories

<div style="background-color: black; color: white; padding: 5px; margin-bottom: 10px;"><b>EXPECTANT</b></div> <p style="margin: 0;">Black Triage Tag Color</p> <ul style="list-style-type: none"> <li>Victim unlikely to survive given severity of injuries, level of available care, or both</li> <li>Palliative care and pain relief should be provided</li> </ul>	<div style="background-color: yellow; padding: 5px; margin-bottom: 10px;"><b>DELAYED</b></div> <p style="margin: 0;">Yellow Triage Tag Color</p> <ul style="list-style-type: none"> <li>Victim's transport can be delayed</li> <li>Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours</li> </ul>
<div style="background-color: red; color: white; padding: 5px; margin-bottom: 10px;"><b>IMMEDIATE</b></div> <p style="margin: 0;">Red Triage Tag Color</p> <ul style="list-style-type: none"> <li>Victim can be helped by immediate intervention and transport</li> <li>Requires medical attention within minutes for survival (up to 60)</li> <li>Includes compromises to patient's Airway, Breathing, Circulation</li> </ul>	<div style="background-color: green; color: white; padding: 5px; margin-bottom: 10px;"><b>MINOR</b></div> <p style="margin: 0;">Green Triage Tag Color</p> <ul style="list-style-type: none"> <li>Victim with relatively minor injuries</li> <li>Status unlikely to deteriorate over days</li> <li>May be able to assist in own care: "Walking Wounded"</li> </ul>

The triage process in general is dynamic, as the assigned category for each patient may change, so repeated evaluation to determine the triage category is very important. A patient initially classified as yellow may deteriorate and now need to be classified as red.

Sorting systems are not perfect; they depend on the internal characteristics of the sorting system itself and on the subjective variability of judgments among the respondents performing the sorting. This manifests itself in undersorting (assigning a lower sort category where it should be higher) which happens occasionally, but mostly through oversorting (assigning a higher sort category where it should be lower) which happens often. One study evaluating the START system found that approximately 50% of triaged patients were overtriaged.

## **5. STAGES OF MEDICAL SORTING**

1. The first stage of medical triage is carried out near the emergency situation, but at a safe distance from its impact factors. At this stage of medical triage, the first contact of the medical worker conducting medical triage with the victim occurs.

1.1. When conducting the first stage of medical triage, the following basic amount of medical assistance is defined:

- in adults, the presence of breathing is checked and, if necessary, the patency of the respiratory tract is restored;
- determine the capillary pulse;
- determine the state of consciousness;
- in children under 8 years of age, 5 artificial breaths are performed to restore the patency of the respiratory tract in the absence of breathing.

1.2. The duration of the first stage of medical sorting is no more than 60 seconds. At the first stage of medical triage, the medical staff marks the victim with a triage bracelet.

2. The second stage of medical triage is carried out at the urgently prepared triage site, during the transportation of the victim to the health care facility, in the reception departments.

2.1. When conducting the second stage of medical triage, the following basic amount of medical assistance was determined:

- Safar's triple reception;
- manual cleaning of the oral cavity and larynx;
- cleaning the oropharynx with an aspirator;
- reception of Heimlik;
- introduction of the air duct;

- endotracheal intubation;
- cricotomy (conicotomy);
- puncture of the cricothyroid ligament;
- tracheostomy;
- performing artificial respiration, including using an "AMBU" type bag;
- inhalation of oxygen;
- indirect heart massage;
- defibrillation;
- stopping external bleeding (venous, arterial);
- use of anti-shock clothing;
- imposition of a cervical collar;
- mobilization of fractures with the help of splints;
- fixation of the victim on the transport board;
- applying bandages;
- subcutaneous injections;
- intramuscular injections;
- intravenous injections;
- intraosseous puncture (access) for the introduction of infusion solutions;
- catheterization of peripheral veins;
- catheterization of central veins;
- use of medicines during resuscitation measures in adults;
- use of medicines during resuscitation measures in children;
- tamponade of the nasal cavity in case of massive bleeding;
- administration of local anesthesia;
- therapeutic blockade.

## 2.2. Basic scope of medical examination:

- definition:
- blood pressure;
- pulse on central and peripheral arteries;
- respiratory rate;
- capillary pulse;
- monitoring of vital signs;
- blood saturation

At the second stage of medical triage, the accounting statistical form of medical documentation No. 109-2/o "Medical triage card" (hereinafter - the medical triage card) is filled out for each victim.

In the event that the victims apply to a health care institution without prior medical triage at the pre-hospital stage, the head of this institution organizes the first and second stages of medical triage in accordance with Section VI of these General Requirements.

## 6. SORTING CATEGORIES AND COLOR CODING

1. During the medical triage, the victims are divided into four triage categories according to the state of health and the need for uniform medical and evacuation measures in accordance with medical indications. To visualize the sorting categories of victims during medical triage, the corresponding color codes are used, given in the table:

Color designations in medical sorting

Category (corresponding color)	The state of health of the victim	Medical measures
And (red)	Life is in danger. Immediate threat to life, which can be eliminated with immediate medical assistance, evacuation and further treatment	Provision of immediate medical assistance. Hospitalization first
II (yellow)	Severely wounded or ill. The condition of the victim with stable vital signs, allowing to wait and receive medical assistance in the second instance	Provision of medical assistance and hospitalization in the second place
III (green)	Easily injured or sick. Minor health damage with a satisfactory general condition of the victim with the possibility of waiting for medical assistance for a longer period	Provision of assistance in the third instance with further (ambulatory) treatment
IV (dark purple/ black)	No chance of life. Damage to the victim's health incompatible with life	Care. Palliative medical care with possible evacuation to a medical institution
	Corpse	Identification. Declaration of death

2. Determination of sorting categories of victims is carried out according to the following criteria:

Sorting category (corresponding color)	Consciousness (according to the GLASGOW scale)	Respiration (respiratory rate)	Blood circulation
1	2	3	4
I (red)	10 or less points	Less than 10 or more than 30 in 1 min.	Capillary pulse for more than 2 seconds. There is no peripheral pulse
II (yellow)	14 - 11 points	No less than 8 and no more than 30 in 1 minute.	Capillary pulse less than 2 seconds. The pulse on the peripheral arteries is present
III (green)	Consciousness without disturbance	Breathing without disturbance	Blood circulation without disturbance
IV (dark purple/black)	Consciousness is absent	Consciousness is absent	Consciousness is absent
		There is no breathing	There is no pulse on the main arteries

3. Medical sorting is carried out by medical workers (doctors, paramedics, nurses). During medical triage, the belonging of each victim to the appropriate triage category is marked with a triage bracelet (the first stage of medical triage) and a medical triage card is filled out (the second stage of medical triage).

4. Medical triage is carried out continuously during the entire process of providing medical assistance and evacuation. The sorting category of the victim may change if his health condition improves or worsens. The relevant information must be noted in the medical triage card and the triage bracelet of the appropriate color is replaced.

## 7. SORTING PLATFORM

1. The sorting area is located at the closest but safe distance from the emergency situation and its impacting factors.

2. The sorting area is deployed on the most even terrain or in a free room with a size of at least 25 x 15 meters and is conditionally divided into six zones that differ in functions.

3. Visualization of triage areas is carried out with two gray cloths for receiving victims (the first stage of medical triage) and for placing medical property and equipment, and with the appropriate color of triage cloths (red, yellow, green, dark purple/black) for placing victims who medical assistance is provided according to the defined triage category (the second stage of medical triage).

4. The sorting cloth must be made of moisture-resistant material and have a size of at least 6 x 4.5 meters for the possibility of placing up to 10 victims on stretchers.

5. There is a distance between the zones of the sorting area (sorting panels) for the possibility of moving and carrying the injured on stretchers. The triage area should have two free ways for receiving and evacuating the injured.

6. In cases where a large number of victims require urgent medical measures (treatment, re-sorting) at the site exceeding the capacity of the available triage site, a medical hospital is created, which is also located as close as possible to the scene.

## **8. SEQUENCE OF HOSPITALIZATION OF VICTIMS DURING MEDICFL TRIAGE AT THE PRE-HOSPITAL STRAGE**

1. During medical triage and evacuation, children and women should be given first aid within their triage category.

2. Adults who belong to the red sorting category are provided with medical assistance and evacuation to a health care facility in the first place. In the case when the time of transportation of the victim to a multidisciplinary hospital may lead to deterioration of his general health, hospitalization is carried out in the nearest health care facility that has sufficient resources to provide the necessary amount of medical care or stabilize the health of the victim and prepare before transfer to a specialized hospital.

3. Adults who belong to the yellow sorting category are provided with medical assistance in accordance with the scope determined by subsection 2.1 of clause 2 of Section II of these General Requirements, and evacuation is carried out after the victims of the red sorting category. Hospitalization is carried out in a health care facility that has sufficient resources to provide the required amount of medical care.

4. Adults who belong to the green sorting category are given medical care in the third place. If necessary, hospitalization is carried out in health care institutions.

5. Casualties with non-life-threatening injuries but with signs of life are marked with dark purple triage bracelets and belong to the dark purple/black triage

category. They are provided with palliative medical care (care). Evacuation is carried out in the second place, provided that the victims of the red sorting category are hospitalized.

6. The bodies of the deceased are marked with sorting bracelets of black color, belong to the dark purple/black sorting category and are sent to morgues or pathological-anatomical bureaus/forensic medical examination bureaus if there is a sufficient number of vehicles and there is no need to evacuate victims of other sorting categories.

7. In case of suspicion that the victims have a dangerous infectious disease, medical triage is carried out with the implementation of anti-epidemic measures.

8. In case of contamination of the victims by biological, chemical agents or radiation factors, the contaminated surface of the clothing (body) of the victim is decontaminated by special units, whose employees are dressed in appropriate protective clothing. The direction of the victims to the triage site for medical triage is carried out after the decontamination of the victims.

## **9. CONDUCTING MEDICAL TRIAGE IN RECEPTION DEPARTMENTS OF HEALTH CARE INSTITUTIONS DURING MASS HOSPITALIZATION OF VICTIMS AS A RESULT OF AN EMERGENCY SITUATION**

1. If a large number of victims are admitted to a health care facility directly from the site of an emergency, medical triage is carried out in its reception department in accordance with Sections I - III of these General Requirements.

2. Sorting groups of medical workers from among full-time employees of the health care institution are formed in the reception department for medical triage, the data of which are included in the action plan of the health care institution in emergency situations. The composition of the sorting group: a doctor, a paramedic (nurse), two casualty registrars (a paramedic, a nurse), porters (four people).

3. In the presence of a large number of victims, additional triage groups are formed from the number of medical workers from other departments of the health care facility.

4. Medical sorting in the reception department begins with an external examination of the injured and assigning them the color of sorting bracelets corresponding to the indicators of the state of health. The procedure for conducting medical triage is set out in sections I - III of these General Requirements.

5. In the case of medical triage in the reception department, it is recommended to involve at least 2 surgeons, 2 anesthesiologists or resuscitators, 10 nurses or paramedics and 10 paramedics or volunteers to work in the red triage zone.

6. It is recommended to involve 2 surgeons, 2 therapists, 10 nurses or paramedics and at least 10 paramedics or volunteers to work in the yellow sorting area.

7. To work in the green sorting area, it is recommended to involve 1 surgeon, 2 therapists, 5 nurses or paramedics and at least 5 orderlies or volunteers. If possible, specialists who can provide psychological assistance work.

8. To work in the dark purple/black sorting area, it is recommended to involve 1 doctor, 2 nurses or paramedics and 4 orderlies or volunteers.

9. The number of personnel serving the injured in triage zones may change at the decision of the head of the reception department or the medical worker acting as the head of medical triage.

## **10. ORGANIZATION OF WORK OF MEDICAL PERSONNEL DURING MEDICAL TRIAGE**

1. To provide medical assistance, including medical triage, first-line emergency teams (emergency medical aid teams) and second-line specialized teams of the Territorial Disaster Medicine Service are sent to the scene of an emergency.

2. Sequence of actions during the medical triage of victims:

2.1. At the scene of an emergency, medical workers who are involved in the elimination of the medical consequences of an emergency begin work with the first stage of medical triage, in accordance with the emergency medical care standard "Medical triage of patients of different age groups in the emergency (urgent) medical care department" according to the order of the Ministry of Health of Ukraine dated February 3, 2022 No. 210 .

2.2. At the first stage of medical sorting, which is carried out on the gray sorting cloth of the sorting site, the victims are provided with medical aid, taking into account the basic amount of medical aid for this stage of medical sorting, provided for in clause 1 of section II of these General Requirements.

After providing assistance, the victims are divided into sorting categories in accordance with the criteria specified in Clause 2 of Section III of these General Requirements. Establishing the sorting category for the victim should be carried out in the shortest possible time, but no more than 60 seconds. After establishing the sorting category, a sorting bracelet of the appropriate color is put on the victim's right hand.

With assigned triage bracelets, the casualty is carried or directed to the triage mat, the color of which corresponds to the color of the triage bracelet, which indicates the triage category to which the casualty was assigned based on the results of the first stage of medical triage. The first queue is given to the red sorting

category, then yellow. Injured people who are assigned to the green triage category are sent for independent movement to the triage platform or are accompanied by medical workers. The moment of arrival/transfer of the victim to the triage platform of the triage site is the end of the first stage of medical triage.

2.3. At the second stage of medical triage, medical workers (doctor, paramedic, nurse) provide medical assistance to the injured, taking into account the basic amount of medical assistance for this stage, provided for in clause 2 of Section II of these General Requirements. At this stage, a medical triage card is filled out for each victim who underwent medical triage. Experienced medical personnel should be involved to provide medical assistance on sorting floors.

3. The work of medical personnel at triage sites is managed by a trained and qualified specialist (hereinafter referred to as the head of the triage site), who organizes the work of medical workers, has information about the network of health care facilities in the district or city, and can organize the timely evacuation of victims, cooperate with rescue services, police officers, representatives of other services. In the event that an emergency medical team first arrives at the scene of an emergency, the organization and conduct of medical triage in accordance with Sections II - V of these General Requirements shall be provided by a doctor or paramedic of the emergency medical team.

4. After receiving information about the total number of victims, the manager of the triage site, if necessary, determines the need to attract an additional number of emergency medical teams from his own service area at the rate of 2 teams for 3 victims, 3 teams for 5 victims, 5 teams for 10 victims. If there are 50 or more victims, the number of emergency medical teams should be on average at least 20% of the number of victims.

5. If the expected number of victims is greater than the number of emergency medical aid teams that can be allocated by the territorial emergency medical aid station for their service, the latter informs the relevant territorial center of emergency medical aid and disaster medicine in order to attract additional teams of first-line permanent readiness (brigades emergency medical aid), and, if necessary, specialized teams of the second line.

6. After the completion of the medical triage of the victims and their evacuation to health care facilities, the manager of the triage site prepares written information, presented in an arbitrary form, which should contain the following data:

- date, time and place of emergency;
- the beginning (defined from the moment the first casualty arrives on the gray cloth (the first stage of medical triage) until the end of medical triage (determined when the last casualty is evacuated));

- the number of victims and their distribution according to sorting categories;
- the number of medical workers who were involved in medical triage;
- the number of emergency medical teams that were involved in the elimination of the medical consequences of an emergency situation.

The information is submitted to the head of the health care institution and the head of the relevant state administration, on the territory of which the emergency occurred. Together with the written information, the manager of the triage site submits to the statistics department of the health care institution where he works, the detachable elements of the medical triage cards, the number of which must coincide with the number of issued medical triage cards.

## **11. USE OF SORTING BRACELETS FOR MEDICAL SORTING**

1. During medical triage, triage bracelets of five colors are used, which are worn on the victim's right hand, and if this is not possible, on the left hand. The sorting bracelet must have a bright color that corresponds to the sorting category, the size is not less than 4 cm the width and 20 cm length, and it is easy to put on.

2. There are sorting bracelets of five colors:

red - for victims of the first sorting category;

yellow - for victims of the second sorting category;

green - for victims of the third sorting category;

dark purple - for victims of the fourth sorting category;

black - for victims of the fourth sorting category.

3. Until the triage card is filled out, the triage bracelet is an indicator of the victim's compliance with a specific triage category. The presence of a sorting bracelet is an indicator of the sequence of providing medical aid to the injured and the sequence of evacuation and hospitalization.

## **12. LIST OF PROPERTY AT EMERGENCY MEDICAL AID STATIONS AND CENTERS OF EMERGENCY MEDICAL AID AND DISASTER MEDICINE**

for medical sorting

1. Colored fabrics:

red color - 1 pc.;

yellow color - 1 pc.;

green color - 1 pc.;

dark purple/black color - 1 pc.;

- gray color - 2 pcs.
- 2. Medical sorting cards: not less than 125 pcs.
- 3. Color sorting bracelets:
  - red color - 25 pcs.;
  - yellow color - 25 pcs.;
  - green color - 25 pcs.;
  - dark purple color - 25 pcs.;
  - black - 25 pcs.
- 4. Markings of the sorting area and ambulance parking areas (the type of marking is determined on the spot).
- 5. A medical triage kit for an ambulance crew, in addition to the basic equipment:
  - sanitary bag - 1 pc.;
  - sorting bracelets - 50 pcs. (10 pieces of red, yellow, green, dark purple and black colors each);
  - medical scissors with blunt ends - 1 pc.;
  - flashlight with a set of batteries - 1 pc.;
  - inspection gloves - 4 pairs;
  - ball pen - 2 pcs.

### **13. INTERACTION OF AMBULANCE TEAMS WITH RESCUE SERVICES. THE RESPONSIBILITY OF EACH OF THEM**

Emergency rescue operations in the center of an emergency situation of man-made or natural origin include search and rescue and immediate emergency recovery operations.

Search and rescue operations consist of reconnaissance of the emergency zone, search for victims, termination of impact factors on them, prevention of re-injury, provision of emergency medical aid and evacuation from the emergency center to medical institutions. These works should be carried out by rescuers from the formations of the Ministry of Emergency Situations in close cooperation with emergency (emergency) medical aid teams.

The cooperation of all emergency response services is ensured by the state automated emergency dispatch service - 112 (DSP-112). A component of the automated system is the information and dispatch service "Ambulance - 103", which coordinates its actions and integrates with all emergency response services: police, firefighters, communal services, energy supply, gas supply, etc. It takes place through the exchange of information, analysis of the situation, which ensures a quick response.

The task of rescuers from the Ministry of Emergency Situations is to provide first aid and, if necessary, first aid.

For this purpose, specialists without medical education (employees of the Ministry of Internal Affairs, transport, rescuers of the emergency rescue service and others in accordance with the Order "On the organization of training of certain categories of non-medical workers in skills, provision of first emergency medical aid") undergo appropriate training and are involved in the provision of medical aid to hospital stage.

First aid is urgent actions and organizational measures aimed at saving a person's life. Such as: freeing the victims from the rubble, extinguishing the burning clothes on them, taking them to a safe distance, i.e. creating conditions for the provision of first medical aid, which becomes an organic extension of first aid and saves the life of a person in an emergency, minimizes the consequences negative impact of damage on health.

If rescuers of the Ministry of Emergency Situations (employees of the Ministry of Internal Affairs) were the first to arrive at the scene of the incident, they carry out **introductory sorting**. It consists in determining the indicators of vital activity, which are provided by the appropriate sorting system, and marking the victims with colors.

First of all, rescuers of the Ministry of Emergency Situations (employees of the Ministry of Internal Affairs) take out the injured who are walking on their own. According to most sorting systems, such victims belong to the easily affected - "green". In the future, those who are no longer brought to consciousness (not breathing and no pulse) are identified, they are marked "yellow" color, others - "red". For legal and ethical reasons, rescuers of the Ministry of Emergency Situations (employees of the Ministry of Internal Affairs) do not have the right to declare death and, in the absence of a doctor, mark people with black.

After conducting an initial triage, the rescuers of the Ministry of Emergency Situations first of all evacuate the "red" from the affected area, if possible, providing them with first aid (first emergency aid), and then the "yellow". In case of impossibility of triage, evacuate the largest number of victims out of the danger zone (collection point for the wounded), where initial triage, first aid and further **primary medical triage**. Victims should be placed in this area in such a way that there is free access for both triage and medical care (since the area is safe), in particular at a distance 1,5 meters from each other. Before the arrival of medical workers, rescuers of the Ministry of Emergency Situations (employees of the Ministry of Internal Affairs) provide first aid (first emergency aid) to the "reds". Yellow first aid (first emergency aid) rescuers of the Ministry of Emergency Situations (employees of the Ministry of Internal Affairs) is provided in the second place.

The head of the rescue operation must:

- 1) have a distinctive element in their uniform (optimally a distinctive helmet and the inscription "Leader" on the back, etc.), which will allow the doctor of the first brigade of medical emergency services that arrived at the scene to identify him;
- 2) is responsible for preserving the life and health of the ShMD brigades from the influence of dangerous factors of the event that caused the mass accident;
- 3) defines the danger zone;
- 4) the place of grouping of victims who can walk and belong to the "green" groups;
- 5) area for conducting medical triage by medical workers;
- 6) zone for the deployment of a medical point - the territory for the provision of medical assistance, which, as a rule, is the place of grouping of victims from "red" and "yellow" groups;
- 7) places where bodies are stored - victims who died during rescue operations, and bodies that complicate their conduct (the remaining bodies of the victims remain in place for the purpose of the investigation), and ensuring appropriate supervision of the dead;
- 8) the area where ambulances will arrive, which is of great organizational importance for the smooth and unhindered movement of ambulances;
- 9) helicopter landing pad;
- 10) is responsible for the life and health of the victims, in addition to this for possible damage and secondary injuries that occurred during their movement from the affected area.

With the arrival of medical aid teams to the affected area, to the safe zone, where the victims will be taken by rescue services, the provision of emergency medical care to patients and injured medical workers at the pre-hospital stage begins.

Provision of pre-hospital types of care is also carried out during the transportation of the injured to specialized health care institutions.

Medical and non-medical workers, eliminating the consequences of an emergency, have the highest priority of saving human life. Their cooperation should benefit the affected person.

#### **14. THE PROCEDURE (WORK ALGORITHM) OF MEDICAL WORKERS OF EMERGENCY MEDICAL TEAMS, WHO WERE THE FIRST TO ARRIVE AT THE CENTER OF MASS DESTRUCTION**

The first doctor who arrived at the scene (or a person more competent in medical rescue than the doctors of the ShMD brigade) must assume the responsibilities of the coordinator of medical and rescue operations and constantly

cooperate with the rescuers of the Ministry of Emergency Situations, in particular with the head of the rescue operation. It is advisable for such a medical worker to wear a vest with the inscription "Coordinator" on top of his uniform. It will become clear to everyone who to contact for all organizational and medical issues that will arise during the rescue operation.

Upon the appearance of the first emergency medical team, all rescue services, performing their immediate duties in the emergency zone, are guided by the main principle - to create the most favorable conditions for the organization and provision of medical assistance.

**Situation 1. The lesion is dangerous (does not require decontamination).**

**Step 1.** First of all, the coordinator determines the head of the rescue operation, learns from him the medical and tactical situation:

- what happened?
- how many victims?
- where is a safe place for the organization of the triage zone, the medical assistance zone and the transport zone.

**Step 2.** Subsequently, the coordinator confirms to the dispatcher the presence of a large number of cases, emphasizes the potential need to attract an additional number of teams from his own service area at the rate of 2 teams for 3 victims, 3 teams for 5 victims, 5 teams for 10 victims. If there are 50 or more victims, the number of teams should be at least 20% of the number of victims on average.

The share of victims of different sorting groups	The number of victims		
	up to 100 people	up to 250 people	more than 1000 people
I (red), %	20	10	20
II (yellow), %	40	20	40
III (green), %	20	10	20
IV (black), %	20	10	20

The main principle is the desire to provide one red casualty with one fire brigade, therefore the final number of brigades will be determined during the rescue operation.

If the expected or actual number of victims is greater than the territorial station of the ShMD can identify, the latter informs the nearest Territorial Center of the

EMD and MK in order to attract additional first-line permanent readiness teams of the regional, and if necessary, the state level, in accordance with the emergency response plan. The quality of such a plan and its thorough observance by all executors is the main organizational principle of liquidation of the medical consequences of emergency situations.

**Step 3.** From among the employees of the EMS team, the coordinator determines a paramedic to carry out medical triage, a nurse to organize a medical point and provide medical assistance (" red" and " yellow" ) and a driver - to receive other EMS teams. In this situation, organizational principles are more important than the direct provision of medical aid, because only thanks to them can the largest number of victims be saved.

A paramedic is assigned to triage. He wears a vest with the words " Sorter" (" Triage" ). The head of the rescue operation is informed about the need to take all the victims to the sorter who performs **primary medical triage** with the definition of " red" , really " yellow" and " black" victims

The nurse organizes a medical station - a collection point for "red" and " yellow" victims, with the help of a driver, arranges medical equipment from the ShMD carriage for the provision of emergency medical care and performs it within the limits of her competence - BLS+AED in the red group. The medical point is indicated by flags of the appropriate color (red or yellow) on a pole. It is appropriate to spread the sticky material on the ground of the corresponding color. If necessary (winter season, bad weather), nearby premises, vehicles (bus) or tents are deployed by the Ministry of Emergency Situations workers to organize a medical point.

The driver places the ambulance carriage in the transport zone, ensures the meeting of other ambulance carriages, their parking and directs ambulance crews to the medical center.

**Step 4.** After the completion of the initial medical triage, the coordinator finally informs the dispatcher about the nature of the " numerous" event or " massive" , which will make it possible to make corrections in the nature of the organization of the liquidation of the medical consequences of the incident and to prepare hospitals for the reception of victims.

Before the arrival of the other SMD brigades, he involves the employees of the Ministry of Emergency Situations, who are not engaged in the rescue operation, to provide medical assistance to the " red" victims within the framework of their competence.

Organizes supervision and care of victims of " green" and "yellow" groups, since over time a victim who can move on his own may, due to injuries or health conditions, belong to " yellow" or " red" groups

The practical principle of caring for victims from the "green" group is to group them in a sitting position (if possible, warming them with blankets, thermal foil, improvised means) in such a way that the rescuer (an employee of the Ministry of Internal Affairs or any person involved in this) has the opportunity to constantly see their face. It should be noted that the victims of the "green" groups as a result of mental stress can behave irrationally, and the conditions for assessing the state of health cannot be unambiguous during a mass event and do not exclude internal injuries. In order to maintain order in the "green" group and avoid complaints, the help of psychological services, employees of the "Red" can be indispensable of the "cross" and law enforcement agencies.

When caring for "yellows", it is optimal to monitor their vital signs (not involved in rescue operations by a representative of the Ministry of Emergency Situations, the Ministry of Internal Affairs, other rescue services certified in first aid), grouping them in a warm room (tent) to wait for the turn to provide medical assistance and evacuation.

**Step 5.** After the arrival of other brigades of the ShMD, the coordinator directs them first of all to the "reds".

In the presence of two or more victims from the "red" group, the doctor of the second brigade of the Medical Center, as well as each subsequent one, conducts **a secondary medical triage** in order to determine the priority victim from this group for the provision of immediate medical assistance. Secondary medical sorting, if possible, can be performed by the coordinator or another medical worker of the first brigade that arrived on call, and direct the next brigade to the priority victim.

**Step 6.** From the moment of the arrival of the second and subsequent teams, the coordinator is obliged to receive information from the dispatcher or an employee of the Disaster Medicine Center about the places of hospitalization of the victims and to transfer this information to the driver responsible for the transport, or to personally inform other teams where to take the victims of the "red" group.

The coordinator keeps a permanent record of the number of victims from the lesion of different triage groups in the corresponding map, notes the number of their triage card and the medical institution to which the evacuation is carried out, as well as the change of the triage group of the victim.

A situation may arise when the next arriving brigades are still waiting to remove the victims from a dangerous focus of damage. In this situation, the coordinator ensures the transfer of transport boards, neck collars and other necessary means to rescuers of the Ministry of Emergency Situations from the arriving brigades of the Emergency Medical Service to optimize the provision of first aid and their transportation from the affected area.

After carrying out the appropriate medical procedures for the " red" group, and before the start of the final transportation, the doctors of the arriving ShMD brigades perform **evacuation sorting** (re-determination of indicators of vital activity, mode of transport and hospital). Some victims as a result of quality treatment are classified as " yellow" group, some, despite the use of intensive medical measures, die at the scene, then the team is involved in providing assistance to another " red" group .

After the evacuation of the " reds" , help is provided to the " yellows" and in the future " green" .

Depending on the design of the vehicle, the injuries of the victims and the capabilities of the hospital, the issue of transporting more than one victim may be resolved. The council of doctors under the leadership of the coordinator makes it possible to determine the real chance of survival of individual victims as rationally as possible.

**Situation 2. The lesion is safe.**

**Steps 1 and 2** are identical.

**Step 3.** The coordinator prioritizes conducting medical triage in the focus of the lesion (for example Sknylivska tragedy). All medical workers of the brigade are allocated a sector on the territory, in which they must allocate " red" , " yellow" and " blacks" . Members of the brigade cover the entire territory in a zigzag route, marking the victims with the appropriate sorting cards.

It should be remembered that in this situation there may be a problem related to the arbitrarily replacing the " yellow" casualty with the " red" triage ticket in order to prioritize the provision of medical assistance.

**Step 4** is identical. In addition, all representatives of the rescue services (unaffiliated employees of the Ministry of Internal Affairs) are involved to provide first aid within their competence.

red" transport boards the injured are taken to the medical center. Newly arrived brigades work first of all with the already carried out " red" in the medical center and with unborn in a safe lesion. The coordinator, on the basis of secondary medical sorting, can indicate " red" that require immediate medical assistance in the first place. If there are no adequate means for providing first aid and transportation to a medical center, the priority is to provide medical aid at the site of the injury.

It should be noted that arriving ShMD carriages must be placed in the transport zone. There is no justification for driving an ambulance to the scene of medical care, even in a safe lesion.

Common to both situations is the fact that pregnant women and children who have been exposed to harmful factors have an unequivocal priority in the provision

of medical care (the " red" group ) and transportation due to their anatomical and physiological characteristics.

Unpromising persons who continue to be alive after providing first aid cannot be considered dead. Due to the limitation of assistance attempts in the conditions of a mass event, these people are given secondary medical and transport priority with mandatory evacuation to a medical institution.

In order to make the most efficient use of forces and means in the event of the death of the victims during transportation to the hospital, the SMD team must return to the scene, transfer the deceased to the place where the bodies are stored and rejoin the rescue operations.

There are possible cases of emotional and mental disorders among rescuers of the Ministry of Emergency Situations (employees of the Ministry of Internal Affairs) and doctors, which require immediate intervention, which consists in removing them from the measures. Such a case should be perceived as a physical injury that makes further participation in these activities impossible, without excluding the lifeguard's suitability for service.

In case of injuries, rescuers of the Ministry of Emergency Situations (employees of the Ministry of Internal Affairs) should be provided with medical assistance as a priority, and those working in protective clothing and equipment should be immediately excluded from rescue operations.

When transportation from the scene to the hospital where the victim can be treated takes more than 30 min , it is necessary to use an air liner. At the same time, the right to call him belongs to the coordinating doctor or the management of the SMD service (Territorial Center of EMD and MK ), on the territory of which the incident occurred.

In general, all persons injured as a result of the events must be hospitalized, where they will be examined, treated or released. However, in practice it is not possible to deprive a person of " green" or even " yellow" group in generally good physical and mental condition, without visible injuries, able to move freely, nor leave the scene of the event. In such cases, the relevant documentation that certifies the decision of the injured participant of the incident is of particular importance.

## **15. ENTRY SORTING CRITERIA**

In practice, rescuers of the Ministry of Emergency Situations (employees of the Ministry of Internal Affairs) must perform the following actions during the initial sorting:

1) In the focus of the damage, emphasize that help has arrived, all possibilities will be applied to save each victim. After that, give the command loudly: "Everyone

who can walk - get out . " Create conditions for their exit, meeting and removal to a safe zone with further warming, control of their condition and psychological support. It is important that rescuers of the Ministry of Emergency Situations (employees of the Ministry of Internal Affairs) acquired the skills of psychological support for victims in emergency situations, since the probability of mental disorders among the victims is significant in the " green" group.

2) The next step is to examine the place of the accident and mark the victims with sorting bracelets: in red - everyone who speaks, moans, cries, coughs, as well as those who are unconscious, but with available breathing, which is determined by a standard reception within 10 seconds (ensuring patency, listening to breathing noises near the victim's external airways). Victims who are not breathing after securing the airways are marked in yellow.

3) If the medical and tactical situation allows, the victims of the red group in the fire are provided with first aid, followed by removal to a safe zone - a collection point for the wounded. The optimal for carrying is the use of shields, as an exception - a burden. All victims of the red group, without exception, if possible, are given a neck collar and wrapped in thermal foil before transportation .

4) Victims of the yellow group are carried out as a last resort without carrying out resuscitation measures at the site of damage.

#### **Criteria for primary medical sorting.**

Criteria for medical triage should include signs of primary examination (ABCD). The most common for adults (from 8 years) is the START system.

Does it work, if " yes" - " green" .

If not, is it breathing, if " no" - ensure patency, if " yes" - " red" , if " no" - " black" . If he is breathing, find out his breathing rate. If it is greater than 30 and less than 10 min<sup>-1</sup> in an adult - " red" . If the respiratory rate is normal, assess the state of perfusion: capillary filling or pulse on the radial artery. If capillary filling lasts more than two seconds or there is no pulse on the radial artery - control the external bleeding (if necessary, stop it) - the patient is " red" . If the state of perfusion is stable (capillary filling for less than two seconds or a pulse on the radial artery is present) - assess the state of consciousness - ask to perform a simple task. If yes, the patient is " yellow" , if " no" - " red" .

Similarly, with a small correction, the **JumpSTART** system is effective for children aged 1 to 8 years.

Does it work, if " yes" - " green" .

If no, is he breathing, if " no" - ensure patency, if " yes" - " red" , if " no" find out the pulse on the carotid artery. If he is present, perform 5 resuscitation breaths in 15 seconds. If the patient does not start breathing - " black" , if he starts - " red" . If there is no breathing and pulse - " black" .

If he is breathing, find out his breathing rate. If it is greater than 45 and less than 15 min<sup>-1</sup> in an adult or irregular - " red" . If the respiratory rate is normal, assess the state of perfusion: capillary filling or pulse on the radial artery. If capillary filling lasts more than two seconds or there is no pulse on the radial artery - control the external bleeding (if necessary, stop it) - the patient is " red" . If the state of perfusion is stable (capillary filling is less than two seconds or a pulse on the radial artery is present), assess the state of consciousness. The AVPU scale is taken into account. A is conscious, performs simple tasks; V – reacts to sound, for example, to patting near the ear; P – responds to pain ( localizes or does not localize ), U – unconscious. If the patient is conscious, or reacts to the sound, or localizes the pain, it is " yellow" . If the patient does not localize the pain or is unconscious - " red" .

It should be noted that in the course of medical triage, it is inappropriate to carry out medical actions, since there are other unsorted victims in the queue. It is possible to ensure only the patency of the respiratory tract with an oropharyngeal tube and temporarily stop the bleeding by an available method (pressure on the wound, pressure on the vessel at a distance, tourniquet).

#### **Criteria for secondary medical sorting.**

For the purpose of secondary sorting, modified criteria of the Revised Trauma Scale ( RTS ) are used, which includes the sum of points on the GLAZO scale, as well as on the scale of respiratory rate and systolic blood pressure.

If the patient has a total of 10 points or less - the first stage, 11 points - the second stage, 12 points - the third stage.

**Criteria for evacuation sorting.** After preparing the victim for evacuation, his condition is re-checked according to the criteria of primary medical triage with a note in the triage card of vital signs. If, after appropriate treatment, the victim began to belong to the yellow group, he is moved to the place of concentration of victims of the yellow group. If it continues to be red, it is evacuated immediately. At the same time, the following are taken into account: type of transport (sanitary, casual), escort (medical staff, relatives), place of hospitalization. These issues are coordinated by the doctor who directly provides medical care and the coordinator.

#### **Sorting ticket (attached).**

the decontamination procedure . If the " decontamination" mark is circled – this procedure is completed, if not, the patient must be decontaminated in a medical institution or on the way to it in a designated place.

The sorting ticket during a mass defeat plays the role of the primary review card of the field brigade of the ShMD. In the case of multiple damage, a regular exit card is filled out, to which a sorting slip is attached.

The triage card is filled out before the victim is transferred to the emergency department. Only those columns that the ShMD team managed to install are noted.

## **Peculiarities of medical triage in the case of a dangerous lesion with the need for decontamination of victims.**

**Intro sorting.** The peculiarity of conducting the initial sorting is that it is carried out exclusively by rescuers in insulating protective suits. At the same time, it is possible to single out a group of walking victims who are removed first. Victims who have visual signs of vital activity (talking, moaning, crying, coughing, breathing, which can be determined visually) are taken to the second place. The rest of the victims are carried out in the third place.

**Introductory medical triage.** In front of the decontamination tent, an initial medical triage is performed by a medical worker with the status of a rescuer, dressed in an appropriate protective suit. The purpose of the initial medical triage is to identify victims of the black triage group among children and adults (not breathing after ensuring the patency of the airways) and those who should perform specified medical rescue actions during the decontamination procedure.

**Primary medical triage** . Occurs in a safe place after decontamination victims It is conducted for all walking and non-walking victims. For walking victims, an additional criterion is added: the presence of specific signs of poisoning. If so" - injured yellow. For those who are not walking, after assessing the breath, find out the presence of specific signs of poisoning. If so" - injured red.

**Secondary medical and evacuation triage** takes place in normal mode.

## **16. CARRYING OUT MEDICAL TRIAGE OF THE AFFECTED (IMITATION COUPONS) AND FILLING OUT THE MEDICAL TRIAGE CARD**

### **Filling out the accounting form of medical documentation "109-2/o (medical sorting card).**

The medical triage card is designed to collect information about the injured and sick for the period of the 2012 European Football Championship. This card was approved by order of the Ministry of Health of Ukraine No. 366 dated 18.05.2012 and is currently used in the event of natural and man-made emergencies. It is filled by a medical worker of emergency medical aid teams, teams of territorial Centers of (emergency) medical aid and disaster medicine at the pre-hospital stage, medical workers in reception departments of health care institutions.

If the victim (patient) is hospitalized, the medical card is glued to the medical card of the inpatient and kept for 25 years. The card is filled out legibly on the front and back. Card dimensions (including tear-offs): 12 cmwidth and 24 cmlength. The card has a through hole in the middle of the top, so that it can be attached to the neck or sleeve of the victim/sick person with the help of a tape. The front side of the card

is shown in Figure 1. It distinguishes the main part (1) and the detachable parts (2, 3), which are shown in Figure 1.

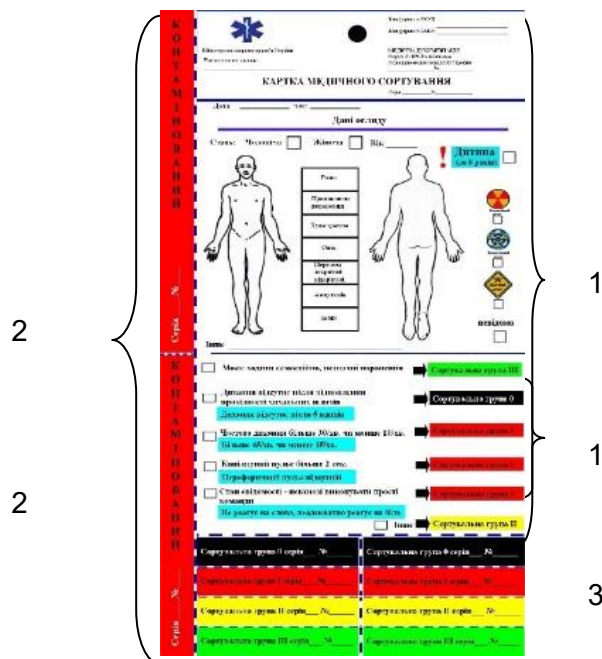


Fig. 1. Front side of the card (f. 109-2/o).

In the upper left corner of the medical triage card, the name of the health care institution, whose employees perform medical triage, is entered. On the right, under the inscription "Medical triage card", enter the series and number of the card corresponding to the administrative and territorial system of Ukraine (for example, Vinnytsia region - VNC series, No. 02):

Autonomous Republic of Crimea =>> Mykolayiv region =>> MYK  
ARC

Vinnytsia region =>> VNC

Odesa region =>> ODE

Volyn region =>> VLN

Poltava region =>> PLT

Dnipropetrovsk region =>> DNP

Rivne region =>> RVN

Donetsk region =>> DON

Sevastopol =>> SEV

Zhytomyr Region =>> ZYR

Sumy region =>> SUM

Transcarpathian region =>> ZAP

Ternopil region =>> TER

Ivano-Frankivsk Region =>> IMF

Kharkiv region =>> Kharkiv region

Kyiv =>> KYIV

Kherson region =>> Khrs

Kyiv region =>> KIO

Khmelnyskyi region =>> Khme

Kirovohrad region =>> KRO

Cherkasy Oblast =>> ChRK

Luhansk region =>> LUG

Chernivtsi region =>> CRV

Lviv region =>> Lviv

Chernihiv Oblast =>> ChNG

Below the bold line on the left in the upper corner, indicate the date and time of the victim's examination, gender and age. Between the schematic outlines of a person there is a table with a list of injuries: wound, penetrating wound, blunt trauma, burn, open, closed fracture, amputation, bruise. During medical triage, the medical worker notes the type of damage and indicates its location with an arrow, in the "other" column, the existing damage, manifestations of the disease, as well as data that may affect the scope of medical assistance (allergy to novocaine, other) are indicated as shown in Figure 2 .



Fig. 2. Schematic representation of injuries on the medical triage card (front side)



On the right, below the inscription "Child", there are colored markings corresponding to radiation (1), biological (2), chemical (3) agents and the inscription "unknown" (4). Below each sign and the inscription "unknown" there are squares, where a mark is placed after decontamination during medical sorting, for example, after decontamination, a cross is placed in the square below the sign of the radiation agent (see Fig. 3).

Fig. 3. Schematic representation of the designation of the action of various harmful factors.

On the left side of the medical triage card along its entire length, there is a tear-off part, divided into two levels by the size of the part. The inscription "CONTAMINATED" and the series and number of the card are written on a red

background in large letters vertically relative to the entire card. If contamination was not carried out, then this part of the medical sorting card is completely torn off. In the event that the specialists of the special division have established the fact of the presence of biological pathogenic agents, chemical or radioactive substances and sanitary treatment (decontamination) of the victim has been carried out, the medical worker during medical sorting tears off the lower part, which remains on the sorting platform, and the upper part remains unchanged.

Below the depicted human silhouettes, the victim's vital signs are indicated: breathing, capillary pulse, state of consciousness. During medical sorting, a mark is

placed in the corresponding square according to the sorting category (I, II, III, 0). Vital signs on a blue background correspond to affected children under the age of 8. After determining the triage group to which the casualty belongs, the health care worker notes the series and number of the medical triage card on its corresponding tear-off element, which remains with the health care worker conducting the triage. The tear-off part must correspond to the information of the main part of the medical triage card. A completed medical triage card is shown in Figure 4.

The image shows a completed medical triage card. At the top, it includes fields for hospital codes (Kод форми за ІКС/Л and Код форми за ІВТО) and the name of the medical center (МЕДИЧНА ДІАГНОСТИКА ФОРМА № 100/2 в обласній Закарпатській області МОС України). The title is "КАРТКА МЕДИЧНОГО СОРТУВАННЯ".

Personal data: Date (Дата: 14.05.2018), Time (час: 12:00), Sex (Стать: Чоловіча), Age (Вік: 45). A red exclamation mark icon indicates "Дитина (до 8 років)".

Diagnosis section: "Дані огляду" with checkboxes for "Голова", "Проникливі поранення", "Тула травма", "Опік", "Переломи закритий відкритий", "Ампутація", and "Забій". There are also icons for "Невідомо", "Хімічно небезпечно", "Біологічно небезпечно", and "Радіоактивно небезпечно".

Vital signs and triage group assignments:

- Може ходити самостійно, незначні поранення → Сортувальна група III
- Дихання відсутнє після відновлення прохідності дихальних шляхів → Сортувальна група 0
- Дихання відсутнє після 5 влихів → Сортувальна група 0
- Частота дихання більше 30/хв. чи менше 10/хв. → Сортувальна група I
- Більше 45/хв. чи менше 15/хв. → Сортувальна група I
- Капілярний пульс більше 2 сек. → Сортувальна група I
- Периферичний пульс відсутній → Сортувальна група I
- Стан свідомості - неможливо виконувати прості команди → Сортувальна група I
- Не реагує на слова, неадекватно реагує на біль → Сортувальна група II
- Інше → Сортувальна група II

At the bottom, there are two sections for recording the card number: "Сортувальна група 0 Серія №" and "Сортувальна група I Серія №".

Fig. 4. Completed medical triage card.

On the reverse side of the card there is a table "Parameters of vital activity", where the following are indicated: time, consciousness (GLASGOW scale - Fig. 5), respiratory rate per minute, heart rate per minute, blood pressure, capillary pulse in seconds. It is filled by medical workers conducting the second stage of medical triage and during the evacuation of the injured/sick person to a medical and preventive institution.

Параметри			життєдіяльності		
Час	Свідомість (шкала ГЛАЗГО)	Частота дихання в хв.	Пульс в хв.	Артеріальний тиск	Бітурнарий тиск сес.
<b>Шкала ком ГЛАЗГО</b>					
1. Відкриття очей		2. Вербальна відповідь		3. Моторна відповідь	
Спонтанно - 4	Орієнтований - 5	Виконує команди - 6			
На голос - 3	Дезорієнтований - 4	Цілеспрямовано на біль - 5			
На біль - 2	Незрозумілі слова - 3	Не цілеспрямовано на біль - 4			
Відсутні - 1	Незрозумілі звуки - 2	Тонічні згинання на біль - 3			
	Немає відповіді - 1	Тонічні розгинання на біль - 2			
		Відсутня реакція - 1			
15 балів - норма		14-13 балів - оглушення		12-9 балів - сонор	
8-4 бали - кома		3 бали - смерть мозку			
<b>Проведення лікування, маніпуляції</b>					
№	Час	Препарат/маніпуляція	Доза	Місце введення	
1.					
2.					
3.					
4.					
5.					
Зміна сортувальної групи <b>СГ I</b> <b>СГ II</b> <b>СГ III</b> <b>СГ 0</b>					
Бригада ШМД					
Особисті дані постраждалого/хворого					
П.І.П					
Адреса:					
Телефон:					
Час смерті <input type="text"/> год <input type="text"/> хв.		Час смерті <input type="text"/> год <input type="text"/> хв.			
<b>СГ I</b>		<b>СГ I</b>			
<b>СГ II</b>		<b>СГ II</b>			
<b>СГ III</b>		<b>СГ III</b>			

Fig. 5. Medical triage card (back side)

I", "SGH II", "SGH III", "SGH 0".

It is necessary to conduct an examination of the injured/sick immediately after entering the triage area and at least once every 30 minutes.

Below the table is the GLASGOW COM scale, and even lower (see the table) "Carried out treatment, manipulations", where the time, name of the drug, manipulation, dose, place of administration are indicated.

There is a change of sorting groups during sorting ("SG I", "SG II", "SG III", "SG 0"), which is carried out at the second stage or at the stage of evacuation, while the color bracelet changes.

Under the table, data on the emergency medical team or the territorial Center of EMD and MK are indicated.

In the column "Personal data of the victim/sick person", fill in: name, surname, patronymic of the victim/sick person; location, phone number. If the victim/sick person is unknown, information about this is entered in the "P.I.P." column.

The lower tear-off part contains colored fields, similar to the front part. The inscription "time of death, h. min". On other elements there are inscriptions indicating sorting groups: "SGH

## LIST

### clinical conditions in adult patients and children according to separate sorting groups

Category	Clinical conditions	
	in adult patients	in children
Category 1 (red)	1. Sudden stoppage of blood circulation, including during the hospitalization of such a patient by the EMD team.	1. Fainting. 2. Violation of airway patency. Stridor

	<p>2. Stopping breathing.</p> <p>3. The frequency of breathing (<i>hereinafter</i> — BH) is less than 10 in 1 minute.</p> <p>4. Severe respiratory failure or central cyanosis.</p> <p>5. Blood pressure is lower than 80 mm Hg.</p> <p>6. The rating according to SHKG is less than 9 points.</p> <p>7. Capillary filling time <math>\geq 3</math> s, in the presence of other signs (clinical conditions) from this category.</p> <p>8. Massive external bleeding that continues.</p> <p>9. Heart rate (<i>hereinafter</i> - heart rate) <math>&lt; 50</math> or <math>&gt; 150</math>/min.</p> <p>10. Convulsions that continue.</p> <p>11. Hypoglycemia.</p> <p>12. A combination of at least two of these features:</p> <ul style="list-style-type: none"> <li>• disturbance of mental state;</li> <li>• stiffness of neck muscles;</li> <li>• hypothermia or fever;</li> <li>• headache.</li> </ul> <p>13. High risk injury*.</p>	<p>3. Capillary filling time <math>\geq 3</math> s in the presence of other signs (clinical conditions) from this category.</p> <p>4. Weak and frequent pulse.</p> <p>5. Massive blood loss.</p> <p>6. Cold extremities, paleness, marbling.</p> <p>7. Respiratory failure.</p> <p>8. Any two of these signs:</p> <ul style="list-style-type: none"> <li>• drowsiness;</li> <li>• sunken eyes;</li> <li>• reduced skin turgor;</li> <li>• dehydration.</li> </ul> <p>9. Convulsions at the time of hospitalization.</p> <p>10. Disturbance of consciousness (confusion, delirium, restlessness, constant irritability or drowsiness) with muscle stiffness neck, hypothermia or fever</p> <p>11. Hypoglycemia (if confirmed).</p> <p>12. O<sub>2</sub> saturation of capillary blood <math>\leq 90\%</math>.</p> <p>13. SHKG <math>\leq 12</math> points.</p> <p>14. The age of seven days and less, regardless of vital parameters.</p> <p>15. Age two months and less, provided the body temperature is <math>\geq 36</math> °C or <math>\geq 39</math> °C.</p> <p>16. High risk injury*.</p>
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	<p>14. Poisoning/use or contact with hazardous chemicals without appropriate protective equipment*.</p> <p>15. Threat of losing a limb*.</p> <p>16. Snake bite.</p> <p>17. Intravenous overdose (for example, of powerful substances, narcotics, etc.), accompanied by fainting and/or hypoventilation.</p> <p>18. Agitation or aggressive behavior that poses a threat to oneself and/or the environment (acute mental disorders).</p> <p>19. Pregnant women with the following symptoms (at least one):</p> <ul style="list-style-type: none"> <li>• massive bleeding;</li> <li>• intense pain in the abdominal cavity;</li> <li>• convulsions or disturbance (alteration) of consciousness;</li> <li>• severe headache;</li> <li>• JSC Syst. <math>\geq</math> 160 mm Hg. Art. or BP diast. <math>\geq</math> 110 mm Hg. art.;</li> <li>• active childbirth;</li> <li>• trauma</li> </ul>	<p>17. Threat of losing a limb / organ of sight.</p> <p>18. Acute pain in the testicles/scrotum or priapism.</p> <p>19. Snake bite.</p> <p>20. Use of dangerous chemicals.</p> <p>21. Pregnant (criteria are similar to adults).</p> <p>22. Pathological indicators of vital activity **.</p> <p>23. Sudden stoppage of blood circulation, including during hospitalization of such a patient by the EMD team.</p> <p>24. A diagnosis has been established that requires immediate surgical intervention</p>
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\*A detailed description of the criteria is provided in Appendix 1 to the Emergency Medical Care Standard "Medical sorting of patients of different age groups in the emergency (urgent) medical care department", approved by the order of the Ministry of Health dated 02.03.2022 No. 210 ( *hereinafter* - the Standard).

\*\* A detailed description of the criteria is given in Appendix 2 to the Standard.

<p>Category 2 (orange)</p>	<ol style="list-style-type: none"> <li>1. Risk of impaired airway patency (stridor or drooling with distress).</li> <li>2. Any swelling/swelling in the mouth, throat or neck.</li> <li>3. Vomiting or constant diarrhea.</li> <li>4. Recent loss of consciousness.</li> <li>5. Acute pain in the chest, probably of cardiac nature, or in the abdominal cavity.</li> <li>6. ECG with signs of acute ischemia (if performed).</li> <li>7. Signs of a stroke.</li> <li>8. Acute focal neurological symptoms.</li> <li>9. Sharp visual impairment.</li> <li>10. Severe pain (in the absence of criteria of the first category).</li> <li>11. Changes in mental state or excitement (in the absence of criteria of the first category).</li> <li>12. Score according to the SHKG — 12 points or less.</li> <li>13. Inability to swallow solid food or liquid.</li> <li>14. Pronounced general weakness.</li> <li>15. New rashes on the skin that progress dynamically within a few hours (in the absence of criteria of the first category).</li> </ol>	<ol style="list-style-type: none"> <li>1. Severe pain (7-10 on the pain scale).</li> <li>2. Score according to SHKG — 13 or 14 points.</li> <li>3. Pathological values of vital parameters (in accordance with the indicators given in the appendix)**.</li> <li>4. Signs of compensated shock.</li> <li>5. Blood saturation <math>\leq 92\%</math>.</li> <li>6. Risk of respiratory tract obstruction.</li> <li>7. Any swelling/tumors in the mouth, throat or neck.</li> <li>8. Presence of whistling auscultatory phenomena in the absence of criteria of the first category.</li> <li>9. Constant vomiting.</li> <li>10. Ongoing diarrhea.</li> <li>11. Inability to swallow liquid or solid food.</li> <li>12. Expressed pallor (in the absence of criteria of the first category).</li> <li>13. Dehydration.</li> <li>14. Disturbance of consciousness: confusion, restlessness, constant irritability or drowsiness.</li> <li>15. The age of the child is from eight days to six months.</li> </ol>
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	<p>16. Visually noticeable post-traumatic limb deformation.</p> <p>17. Open fracture.</p> <p>18. A diagnosis requiring urgent surgical intervention has been established.</p> <p>19. Rape.</p> <p>20. Acute pain in the testicles/scrotum or priapism.</p> <p>21. Pregnancy (in the absence of criteria of the first category).</p> <p>22. Suspicion of sepsis, presence of febrile neutropenia, fever with lethargy.</p> <p>23. Emergency conditions with high risk: consumption of poisonous substances, bites of poisonous insects, animals, etc.</p> <p>24. Severe pain (rating on the pain scale — 7-10)</p>	<p>16. Malnutrition with visible pronounced weight loss or swelling of both lower extremities.</p> <p>17. Trauma/burns (in the absence of criteria of the first category).</p> <p>18. Sexual violence.</p> <p>19. A diagnosis requiring urgent surgical intervention has been established.</p> <p>20. Pregnancy (in the absence of criteria of the first category).</p> <p>21. Headache (in the absence of criteria of the first category).</p> <p>22. Injuries/conditions requiring monitoring or prevention (eg animal bites).</p> <p>23. New rash within hours (no red criteria)</p>
<p>Category 3 (yellow)</p>	<p>1. Acute hypertension.</p> <p>2. Bleeding with moderate blood loss, which has no signs of continuation.</p> <p>3. Moderate respiratory failure.</p> <p>4. Periodic vomiting.</p> <p>5. Dehydration.</p> <p>6. State after seizures.</p> <p>7. Suspicion of sepsis if the patient is in a stable condition.</p> <p>8. Acute pain.</p>	<p>1. Moderate pain (rating on the pain scale — 4-6).</p> <p>2. Slight controlled bleeding.</p> <p>3. Abnormal vital parameters according to age**.</p> <p>4. Loss of consciousness in anamnesis</p>

	<p>9. Limb injuries without deformity and signs of potential limb loss.</p> <p>10. Patients with behavioral disorders that can harm themselves or are aggressive towards others</p>	
Category 4 (blue)	<p>1. Slight controlled bleeding.</p> <p>2. Aspiration of a foreign body without respiratory disorders.</p> <p>3. Chest trauma without rib fractures or respiratory disorders.</p> <p>4. Minor head injuries without loss of consciousness and coordination.</p> <p>5. Pain of medium intensity.</p> <p>6. Periodic vomiting or diarrhea without dehydration.</p> <p>7. Ingress of liquids or foreign bodies into the eye without visual impairment and signs of penetration.</p> <p>8. Minor trauma to the limbs (sprains, simple fractures, uncomplicated wounds with normal welcoming parameters).</p> <p>9. Edema, erythema of joint areas.</p> <p>10. Existing mental disorders in the patient without risk to the department staff or accompanying persons</p>	<p>1. Weak pain (rating on the pain scale — 1-3).</p> <p>2. Illness lasts &lt; 48 hours</p>

<p>Category 5 (green)</p>	<p>1. Mild pain without risk factors. 2. Minor symptoms of diseases. 3. Minor injuries, cuts. 4. Patients with chronic diseases and their exacerbation without signs of the previous categories</p>	<p>Medical problem lasts &gt; 48 hours without criteria of higher categories</p>
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**Note** . According to tables 2 and 3 of the Standard.

### **17. QUESTIONS FOR SELF-CONTROL**

1. Organization of EMS in Ukraine.
2. Organizational structure, main tasks and functions of the center of emergency medical care and disaster medicine.
- 3 . Ergonomic principles in the work of the team (when working indoors, outdoors), work in the team.
4. Providing medical care during the initial examination. Determine further tactics at the scene.
5. The task of the secondary examination. Indications for a secondary examination at the scene and during the evacuation. Secondary examination (ABCDE) of the victim.
6. Patency of the respiratory tract in the trauma of the cervical spine.
7. Revision and cleansing of the oral cavity manual and hardware methods.
8. The use of alternative methods of ensuring the patterns of the respiratory tract with a help of a laryngeal mask, a laryngeal tube, a combitube.
9. Symptoms of partial and complete airways obstruction by a foreign body, methods of its restoration. Heimlich's maneuver.
10. Indications and techniques of conicopuncture and conicotomy.
11. Algorithm of the action of the emergency medical team in a car accident.
12. General principles of detoxification therapy at the pre-hospital stage. Use of antidotes.

13. The order of the action of the emergency medical team in MCI.
14. Primary medical triage using the START system.
15. Triage bracelets and tags.
16. A teams of permanent readiness, specialized teams of second-round permanent readiness, mobile "field" teams, their formation and tasks.
17. The role of emergency departments of multidisciplinary hospitals in optimizing the provision of medical care for mass injuries.

## **18. TESTS**

### **1) What colors indicate the sorting categories of victims?**

- A. Red, yellow, green, dark purple, black
- B. Red, yellow, blue, green, black
- C. Red, yellow, green, white, black
- D. Red, orange, green, dark purple, black
- E. Red, yellow, green, dark purple, orange

### **2) By what criteria are the sorting categories of victims determined?**

- A. Consciousness, breathing, blood circulation
- B. Bleeding, fractures, breathing
- C. Consciousness, bleeding, burns
- D. Pain, blood circulation, active movements
- E. Pain, breathing, passive movements

### **3) What is the number of points on the Glasgow Com scale in the red sorting category?**

- A. 10 and less
- B. 8 and less
- C. 12 and less
- D. 6 and less
- E. 14 and under

### **4) What is the number of points on the scale of Glasgow Com in the yellow sorting category?**

- A. 14-11
- B. 13-10

- C. 12-9
- D. 11-8
- E. 9-7

**5) What is the number of points on the Glasgow Com scale in the green sorting category?**

- A. 15
- B. 14-13
- C. 13-12
- D. 12-11
- E. 11-10

**6) What is the frequency of breathing in 1 min. in victims of the red sorting category?**

- A. Less than 10 or more than 30
- B. Less than 15 or more than 45
- C. Less than 20 or more than 40
- D. Less than 5 or more than 20
- E. Less than 6 or more than 24

**7) What is the frequency of breathing in 1 min. in victims of the yellow sorting category?**

- A. Not less than 8 and not more than 30
- B. Not less than 12 and not more than 20
- C. Not less than 10 and not more than 28
- D. Not less than 14 and not more than 30
- E. Not less than 13 and not more than 25

**8) What is the breathing of victims of the green sorting category?**

- A. Without violation
- B. Tachypnea
- C. Bradipnoe
- D. Gasping
- E. Kussmaul

**9) What is the duration in seconds of the capillary pulse and the characteristics of the peripheral pulse in victims of the red sorting category?**

- A. Capillary for more than 2 sec., peripheral absent
- B. Capillary less than 2 sec., peripheral absent

- C. Capillary more than 2 sec., peripheral present
- D. Capillary more than 3 sec., peripheral present
- E. Capillary more than 4 sec., peripheral absent

**10) What is the duration of the capillary pulse and the characteristics of the peripheral pulse in victims of the yellow sorting category?**

- A. Capillary less than 2 sec., peripheral present
- B. Capillary less than 2 sec., peripheral absent
- C. Capillary less than 3 sec., peripheral absent
- D. Capillary less than 4 sec., peripheral present
- E. Capillary less than 5 sec., peripheral present

**11) At what stage of the medical triage are victims put on a triage bracelet?**

- A. To the first
- B. To the second
- C. To the third
- D. The fourth
- E. Fifth

**12) At what stage of medical triage is the medical triage card filled out?**

- A. To the second
- B. To the first
- C. To the third
- D. The fourth
- E. Fifth

**13) At least what size should the sorting area be?**

- A. 25 \*15 m
- B. 20 \*15 m
- C. 25 -10 m
- D. 20 -20 m
- E. 25 \*25 m

**14) At least what size should the sorting cloth be?**

- A. 6 \*4.5 m
- B. 8 \* 6.5 m
- C. 7 \* 5.5 m
- D. 6 \* 6.5 m
- E. 7 \* 4.5 m

**15) Where is the first stage of medical sorting carried out?**

- A. On a gray cloth
- B. On a white cloth
- C. On a red cloth
- D. On a yellow cloth
- E. On a green cloth

**16) At what stage of medical triage are victims provided with the basic amount of medical assistance?**

- A. To the second
- B. To the first
- C. To the third
- D. The fourth
- E. Fifth

**17) What is the estimated number of EMD teams needed for three victims?**

- A. Two
- B. Three
- C. Four
- D. One
- E. Five

**18) What is the estimated number of EMD teams needed for five victims?**

- A. Three
- B. Two
- C. Four
- D. Five
- E. Six

**19) What is the estimated number of EMD teams needed for ten victims?**

- A. Five
- V. Six
- S. Sim
- D. Eight
- E. Nine

**20) What is the estimated number of EMD teams needed for 50 victims?**

- A. At least 20%
- B. At least 15%

- C. At least 25%
- D. At least 30%
- E. At least 40%

**21) What type of medical triage is performed by rescuers of the Ministry of Emergency Situations?**

- A. Introduction
- B. Primary
- C. Previous
- D. Estimated
- E. Domedichne

**22) Who determines the danger zone in the center of mass impression?**

- A. Head of the rescue operation
- B. Police
- C. Doctor BEMD
- D. Representative of local authorities
- E. Head of the EMD and MK center

**23) Who determines the area for medical triage at the scene of a mass casualty?**

- A. Head of the rescue operation
- B. Head of the EMD and MK center
- C. Doctor BEMD
- D. Police
- E. Representative of local authorities

**24) During medical triage, who is responsible for the life, health and secondary injuries of victims that occurred during their movement from the affected area?**

- A. Head of the rescue operation
- B. Head of the EMD and MK center
- C. Doctor BEMD
- D. Police
- E. Representative of local authorities

**25) Who carries out the evacuation sorting of victims in the event of a mass impact?**

- A. Doctors of EMD brigades

- B. The head of the rescue operation
- C. Head of the EMD and MK center
- D. Hospital doctors
- E. Family doctors

**26) When conducting medical triage according to the START system , what is determined in the first place?**

- A. Ability to walk
- B. Consciousness
- C. Breathing
- D. Blood circulation
- E. Puls

**27) What accounting medical form is filled out for each victim of a mass casualty?**

- A. Medical sorting card
- B. Card of medical sorting
- C. Help of medical triage
- D. Conclusion of medical triage
- E. Conclusion of medical triage

**ANSWERS: 1.A; 2.A; 3.A; 4.A; 5.A; 6.A;7.A; 8.A; 9.A; 10.A; 11.A; 12.A; 13.A; 14.A; 15.A;16.A; 17.A; 18.A; 19.A; 20.A; 21.A;22.A; 23.A; 24.A; 25.A; 26.A; 27.A.**

## **19. SITUATIONAL TASKS**

### **Task № 1**

The epicenter of the earthquake was crushed by the debris of the destroyed building. Pulled after 12 hours. Objectively: excited, poorly oriented in the environment. Pulse 88 beats per minute, blue-purple spots on the outer surface of the thighs and lower legs. There are no movements in the knee and ankle joints.

### **Task №2**

During the earthquake, he fell and hit his head. He regained consciousness 2 hours after the injury. Complains of headache, dizziness. Objectively: retarded, general condition of medium severity. Pulse 64 beats per minute. AT-135/90 mm

Hg. The pupils are uniformly narrowed, the reaction to light is lively. Corneal reflex is preserved. Smoothing of the left nasolabial fold, deviation of the tongue to the left, nystagmus is determined.

### **Task №3**

An hour ago, he was injured by shards of glass. Objectively: general condition of medium severity. The skin is pale. Pulse 80 beats per minute, satisfactory properties. Blood pressure - 115/70 mm Hg. On the front surface of the left leg in the middle third of the wound. The left thigh was pulled with a belt. When the belt is loosened, bleeding increases.

### **Task №4**

The epicenter of the earthquake was wounded by shards of glass. The condition is difficult. The skin is pale. Drops of sweat on the face. Thirst. Yawn. The pulse is 140 beats per minute, weak. AT-80/55 mm Hg. There is a bleeding wound in the middle third of the left shoulder. Pulsation on the left radial artery is not determined. There is no pathological mobility in the area of the left shoulder.

### **Task №5**

In the epicenter of the earthquake, he received a sharp, penetrating wound to the left half of his chest. Objectively: the condition is severe, the position is semi-sitting, the skin is pale, pronounced cyanosis of the lips and hands. Breathing is frequent, difficult. Air is sucked into the wound. Pulse 130 beats per minute, weak filling and tension. Blood pressure - 70/45 mm Hg.

### **Task №6**

It was suppressed by the roof of the building in the center of the earthquake. Pulled out from under the rubble. The right lower leg was under a concrete beam for 4 hours. Objectively: the skin is pale. Pulse 84 beats per minute. Blood pressure - 120/65 mm Hg. Moderate swelling of the right lower leg, scratches and individual blue spots on the skin. Peripheral artery pulsation is weakened.

### **Task №7**

In the epicenter of the natural disaster, he received a penetrating abdominal wound. Objectively: the condition is difficult. Pale, adynamic. Loops of intestine are visible in the wound. The stomach is tense. Pulse 140 beats per minute, weak filling and tension. Blood pressure - 80/50 mm Hg.

### **Task №8**

During the earthquake, he fell from a height of 7 meters. Objectively: the right lower extremity is rotated outward, shortened, an angular deformity is visible in the middle third of the thigh. Palpation reveals tenderness and pathological mobility in the middle third of the thigh. There are no active movements in the limb.

### **Task №9**

Pulled out after 4 hours from the rubble of the destroyed building. The left hand was crushed by the floor slab. Objectively: swelling of the left forearm and hand, scratches on the skin, separate blue spots. Pulsation of the radial artery is weakened. Pulse 82 beats per minute. Blood pressure - 115/70 mm Hg.

### **Task №10**

Wounded with an iron object in the center of the natural disaster. Objectively: pale. Pulse 150 beats per minute, weak filling and tension. AT-75/55 mm Hg In the area of the right buttock there is a wound with ragged edges. The wound is filled with clots and bleeds moderately.

### **Task №11**

In the epicenter of the disaster, he fell from a height of 5 meters onto an iron pipe. Objectively: the condition is severe, shortness of breath, cyanosis of the lips, hands, hemoptysis. Breathing on the right in the area of V - VI ribs behind a scratch with a diameter of up to 15 cm. Breathing on the right side is not heard by auscultation - breathing is vesicular, numerous dry and wet rales. Tones of the heart are deaf. Pulse 130 beats per minute. Blood pressure - 75/40 mm Hg.

### **Task №12**

He was wounded in his left thigh. Objectively: pale, pulse 115 beats per minute, blood pressure - 95/50 mm Hg. On the front surface of the left thigh in the middle third, wounds with ragged edges, soft tissues are swollen. The wound is contaminated with earth. Bone fragments are visible in the depth of the wound. Bleeding is moderate.

### **Task №13**

In the epicenter of the earthquake, a container with a poisonous substance was destroyed. Wounded by a container fragment in the left lower leg. Complaints of pain in the eyes, decreased vision, mucous secretions from the nose, a feeling of tightness in the chest and dysentery. Objectively: excited, covered in sweat. Pulse 48 beats per minute. Blood pressure - 85/50 mm Hg. In the upper third of the left

leg, there is a torn wound measuring 3x6 cm. Muscle fibrillation in the wound. Moderate bleeding.

#### **Task №14**

He was injured in the right knee joint in the center of the natural disaster. Objectively: significant bleeding. Bone fragments in the wound. Blood pressure - 70/40 mm Hg. Pulse 156 beats per minute. The skin is pale. Peripheral vascular pulsation is not determined.

#### **Task №15**

Wounded in the right half of the chest. Complaints of pain in the right half of the chest, difficulty breathing, blood is released when coughing. Objectively: the face and lips are cyanotic. In the region of the V and VI ribs on the right, there is a wound measuring 5x8 cm. During inhalation, the sound of air being sucked in is heard. The number of breaths is 40 per minute. Pulse 140 beats per minute. Blood pressure 70/50 mm Hg.

#### **Task №16**

Pulled out from under the rubble in the center of the natural disaster. Objectively: the condition is heavy, pale, inhibited. The face is covered with sticky sweat. Pulse 150 beats per minute. Blood pressure - 75/40 mm Hg. In the area of the right hypochondrium, there is a scratch, capillary bleeding. The abdomen is tense, painful on palpation. With percussion, dullness is determined in cold places, which moves when the position is changed. The Shottkin-Blumberg symptom is positive.

#### **Task №17**

In the center of the earthquake, the lower limbs were crushed by a concrete block. Pulled out from under the rubble after 20 hours. Objectively: inhibited. Orientation in the environment is disturbed. Pulse 90 beats per minute, weak filling and tension. The lower limbs are swollen, the skin is blue-purple. There are no movements in the joints of the lower limbs. Absence of urination.

#### **Task №18**

In the center of the natural disaster, he was crushed from the back by a fallen balcony. After being released, he could not get up. Complaints of girdle pain in the lumbar region. Objectively: pulse 96 beats per minute. Blood pressure - 120/65 mm Hg. There are no active movements in the lower limbs. There is a decrease in tactile and pain sensitivity on the lower limbs and in the perineum. Spinous processes III-

And V lumbar vertebrae protrude, painful on palpation. The bladder has increased in size. There are no urges to urinate.

### **Task №19**

He was wounded in the right half of the chest 20 minutes ago in the center of the natural disaster. Objectively: the condition is heavy, pale. The face is cyanotic. In the V intercostal space on the right, along the midclavicular line, there is a wound measuring 2x2 cm, which is closed with a blood clot. Heart sounds are sharply muffled. The limits of relative heart dullness are expanded across. Pulse 34 beats per minute, weak filling and tension. Blood pressure – 53/30 mm Hg.

### **Task №20**

Pulled out from under the rubble in the heart of the natural disaster. He received a non-penetrating abdominal wound. Complaints of abdominal pain. Objectively: the condition is satisfactory. Pulse 52 beats per minute. Blood pressure - 135/75 mm Hg. On the front wall of the abdomen in the hypogastric area on the right, there is a 7x4 cm wound. Muscles are visible in the wound. There is slight bleeding from the wound. Abdomen is soft, moderately painful. There are no symptoms of peritoneal irritation.

### **Task №21**

A container with a chemical substance was destroyed in the center of the natural disaster. The victim complains of dizziness, tinnitus, pulsation in the temples, severe pain in the heart area. 10 minutes before, he smelled bitter almonds. Objectively: the skin is red. Dilated pupils, exophthalmos. Pulse 50 beats per minute. Blood pressure - 140/80 mm Hg.

### **Task №22**

In the center of the natural disaster, there is a destroyed container with a poisonous substance. Objectively: the condition is difficult. Unconscious. Tonic-clonic convulsions. Cyanosis. The pupils are sharply narrowed. Significant discharge of mucus from the nose and mouth. Pulse 48 beats per minute. Blood pressure 90/50 mm Hg. Breathing is rare, superficial.

### **Task №23**

Wounded by shards of glass in the center of the earthquake. Objectively: the condition is difficult. The skin is pale. Drops of sweat on the face. Yawn. Thirst. Pulse 150 beats per minute. Blood pressure 70/40 mm Hg. In the upper third of the

left forearm, a wound of 2x4 cm. Significant bleeding. Pulsation on the radial artery is not determined.

#### **Task №24**

Pulled out from under the rubble of a destroyed building. The left half of the pelvis was wounded. Objectively: the condition is difficult. Pale, adynamia. Pulse 140 beats per minute. In the back surface of the wing of the left ilium, there is a wound 1x1.5 cm, a lacerated wound 3x4 cm above the pubic symphysis. Blood is released from the wound along with a mixture of urine and feces. Dullness is determined in the left iliac region upon percussion. The abdominal muscles in the lower areas are tense. The Shottkin-Blumberg symptom is positive. Cannot pass urine.

#### **Task №25**

Pulled out from under the rubble in the heart of the natural disaster. The left lower leg was affected. Objectively: the condition is difficult. Pale. Adynamia. Pulse 135 beats per minute, weak filling. Blood pressure - 70/40 mm Hg. The distal part of the lower leg is connected with a proximal thin skin-muscle flap. A fragment of the proximal fragment of the tibia protrudes from the laceration. Bleeding.

#### **Task №26**

Pulled out from under the rubble of a destroyed building. Complaints of pain in the right half of the pelvis. Objectively: pale, inhibited. Pulse 130 beats per minute, weak filling. Blood pressure - 70/40 mm Hg. The right lower extremity is rotated outward, it cannot be lifted by itself. On palpation, it is painful in the area of the pubic and buttock bones, the sacroiliac joint. The abdomen is tense, moderately distended, an enlarged bladder is palpable. There are traces of blood around the external opening of the urethra.

#### **Task №27**

The epicenter of the disaster was in the fire zone. When his clothes caught fire, he received burns to his face, chest, and both upper limbs. Objectively: the skin of the face, chest, and upper limbs is hyperemic. There are areas with thin, light brown scabs up to 3 palms wide and numerous places of blisters that have sloughed off.

#### **Task №28**

In the center of the natural disaster suffered from a fire. On the front and back surfaces of the body are the remains of clothes that burned. Objectively: a burn

wound with an area of 7 palms, has a mosaic character: skin areas with hyperemia and blisters alternate with areas with light and dark brown scabs. Pulse 150 beats per minute. BP – 80/60 mm Hg.

### **Task №29**

After 2 hours, he was pulled out from under the rubble in the center of the natural disaster. During this time, the left leg was crushed by a concrete flight of stairs. Objectively: the general condition is satisfactory, the skin is pale. Pulse 82 beats per minute. Blood pressure - 120/70 mm Hg. Locally: moderate swelling of the left lower leg, there are scratches and separate blue spots on the skin. Pulsation of peripheral arteries is weakened.

### **Task №30**

He was wounded in the left hand in the center of the natural disaster. Objectively: general condition of medium severity. The left shoulder is deformed. There is a torn wound in the middle third of the left shoulder, bleeding. Pulse 120 beats per minute. Blood pressure - 90/70 mm Hg. Pale, inhibited.

### **Task №31**

In the epicenter of the earthquake, the right lower limb was crushed by the debris of the destroyed building. Pulled after 12 hours. Objectively: the condition is heavy, pale. Pulse 130 beats per minute, weak filling and tension. The right thigh, lower leg and foot are sharply swollen. There are many scratches on the skin of the thigh, blue-purple spots. Pulsation of peripheral vessels is not determined.

### **Task №32**

During a natural disaster two hours ago, he was injured in the skull. Objectively: unconscious. There is a 2x3 cm wound in the right frontal-temporal area. Bone fragments are visible. Remains of emetic masses in the oral cavity. The tongue goes down. Breathing is difficult. Cyanosis of the lips. Pulse 48 beats per minute. Blood pressure - 100/60 mm Hg. Stiffness of the muscles of the back of the head. The tone of the right limbs is normal, the left limbs fall like a whip.

### **Task №33**

Wounded in the center of the disaster in the right leg. Objectively: the condition is satisfactory. The skin is pale. Pulse 90 beats per minute, satisfactory properties. Blood pressure - 105/65 mm Hg. On the front surface of the right lower leg, there is a 2x3 cm wound in the middle third. There is no deformation of the

lower leg. He pulled the right thigh with a belt himself. When the tape is loosened, significant bleeding appears.

#### **Task №34**

He was crushed by a slab. After 2 hours, it was pulled out from under the rubble. He complains of pain in the lower abdomen and inability to raise his legs. Objectively: pale. Pulse 110 beats per minute. Blood pressure - 100/40 mm Hg. The abdomen is soft, painful in the lower parts. The bladder is enlarged. Upon palpation, sharp pain and crepitation in the area of the pubic and buttock bones. He cannot urinate on his own.

#### **Task №35**

Wounded in the center of the disaster in the right buttock. Objectively: pale, inhibited, pulse 150 beats per minute. Blood pressure - 80/60 mm Hg. In the area of the right buttock, a wound of 8x6 cm with ragged edges, filled with blood clots, bleeds moderately.

#### **Task №36**

In the center of the natural disaster, 4 hours ago, he received a skull injury. Objectively: the condition is difficult. Unconscious. Breathing is more frequent, hoarse, shallow. The pulse is filamentous, 20 beats per minute. Blood pressure - 60/30 mm Hg. The pupils are dilated. The reaction to light is sluggish. Atony, areflexia. Urine is released involuntarily.

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Електронне навчальне видання комбінованого використання  
Можна використовувати в локальному та мережному режимі

**Олійник** Ольга Євгенівна  
**Матвєєнко** Марія Сергіївна

# **МЕДИЧНЕ СОРТУВАННЯ**

Методичні рекомендації до практичних занять для здобувачів вищої  
медичної освіти 5-го року навчання з дисципліни  
«Екстрена та невідкладна медична допомога»

*(Англ. мовою)*

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