

Ministry of Health of Ukraine  
Ukrainian Medical Stomatological Academy

APPROVED  
at a meeting of the department  
disaster medicine  
and military medicine  
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Head of Department

K.V. Shepitko

**Methodical instructions  
for independent work of students  
during preparation for a practical (seminar) lesson  
and in class**

Academic discipline	<b>Training of reserve officers</b>
Module № 1	Pre medical care in extreme situations
Topic of the lesson	Premedical care in extreme and combat conditions as a discipline. The principle of providing pre medical care.
Course	2
Faculty	foreign students training specialty "Medicine", "Stomatology".

1. TOPIC 1. Pre medical care in extreme and combat conditions, as a discipline. The principle of providing pre medical care.

### 1. Relevance of the topic:

First pre medical care is important to save lives and restore health. As a rule, only timely implementation of the simplest manipulations on the spot can save the life of the victim and prevent the development of serious complications. On the battlefield, pre medical care is the main guarantee of saving the life of the wounded. Analysis of the causes of death of soldiers during hostilities indicates that a significant part of them could be saved with timely and high-quality pre medical care.

### 2. Specific objectives:

General:

- be able to assess the scene;
- ensure their own safety;
- assess the situation as a whole;
- assess the condition of the victims.
- determine the main assessments of the condition of victims of emergencies (EM);
- determine the basic assessments of the condition of victims in situations of man-made and natural nature;
- determine the basic assessments of the condition of victims in combat conditions ;.
- Ensure their own safety for themselves and the victim;
- correctly assess the state of the disaster;
- correctly assess the state of emergency;
- determine the nature of the emergency;
- determine the nature of the emergency;
- determine the condition of the victim in combat;
- assess the condition of the victim in combat
- set priorities in providing assistance to the wounded
- determine the place of evacuation in the firing zone

Competences and learning outcomes, the formation of which is facilitated by the discipline (the relationship with the normative content of training of higher education, formulated in terms of learning outcomes in the Standard).

In accordance with the requirements of the standard, the discipline provides students with the acquisition of competencies:

**-integral:** The ability to solve typical and complex specialized problems and practical problems in professional activities in the field of health care, or in the learning process, which involves research and / or innovation and is characterized by complexity and uncertainty of conditions and requirements. The ability of the individual to organize an integrated humanitarian educational space, the formation of a single image of culture or a holistic picture of the world.

**-general:** The ability to apply knowledge in practical situations. Ability to exercise self-regulation, lead a healthy lifestyle, ability to adapt and act in a new situation. Ability to choose a communication strategy; ability to work in a team; interpersonal skills. Ability to abstract thinking, analysis and synthesis, the ability to learn and be modernly trained. Definiteness and perseverance in terms of tasks and responsibilities.

**-special (professional, subject):** Ability to carry out medical and evacuation measures. Ability to determine the tactics of emergency medical care. Emergency care skills. Skills to perform medical manipulations.

### **3. Basic knowledge, skills, abilities necessary for studying the topic (interdisciplinary integration)**

<b>Discipline</b>	<b>Know</b>
Anatomy	The structure of the circulatory system
Physiology	Functioning of the circulatory system
Pathophysiology	Etiopathogenesis of the development of small cardiac output syndrome and microcirculation disorders

#### **Tasks for independent work in preparation for class and in class:**

1. Pre medical in extreme conditions as a discipline, its relevance, content.
2. The concept of pre medical care in extreme conditions (peacetime and combat conditions).
3. Inspection of the scene in non-combat conditions, ensuring personal safety, determining the number of victims and the probable cause of their defeat, calling the ambulance and other rescue services in a dangerous situation, involving random witnesses in the organization of pre medical care. Contact with the victim.

#### **The list of the basic terms, parameters, characteristics which the student should master at preparation for employment:**

<b>Term</b>	<b>Definition</b>
<b>1. Pre medical care</b>	A set of simple, purposeful medical measures performed at or near the site of injury in the order of self- or mutual assistance by personnel of emergency rescue formations using regular or improvised medical means, in order to eliminate further impact of the factor, saving the lives of victims, prevention of serious complications . Save the life of the victim, eliminate the impact of the impact factor, which continues to operate, and rapid evacuation from the disaster area.
<b>2. The main goal pre medical care</b>	-temporary cessation of external bleeding by applying a tourniquet (standard or improvised), twisting or

<p><b>3. Basic measures of pre-medical care</b></p>	<p>tight bandage, finger pressure on the main vessels;          -prevention or elimination of asphyxia by freeing the upper respiratory tract from mucus, blood, foreign objects; tongue fixation;          -artificial lung ventilation using an S-shaped tube, mouth-to-mouth, mouth-to-nose, Ambu bag;          -indirect heart massage, etc.</p>
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**Theoretical questions for the lesson:**

1. Pre-medical care in extreme conditions as a discipline, its relevance, content.
2. The concept of pre-medical care in extreme conditions (peacetime and combat conditions).
3. Legal aspects of pre-medical care.
4. Place and volume of pre-medical care in combat and non-combat conditions.
5. Inspection of the scene in non-combat conditions, ensuring personal safety, determining the number of victims and the probable cause of their defeat, calling the ambulance and other rescue services in a dangerous situation, involving random witnesses in the organization of pre-medical care. Contact with the victim.

**Practical work (tasks) performed in class:**

- 1. Implementation of pre-medical care in combat.**
- 2. Implementation of pre-medical care in peacetime.**
- 3. Overview of the scene in non-combat conditions.**

**Topic content:**

**1. LAW OF UKRAINE №5081-VI of 05.07.2012 on emergency medical care**

a) pre-medical care - urgent actions and organizational measures aimed at saving and preserving the life of a person in an emergency and minimizing the impact of such a condition on his health, carried out at the scene by persons without medical education, but by their officials responsibilities must have basic practical skills to save and save the life of a person in an emergency, and in accordance with the law must carry out such actions and measures;

b) emergency medical care - medical care, which consists in the implementation by employees of the emergency medical care system in accordance with this Law of urgent organizational, diagnostic and therapeutic measures aimed at saving and saving human life in an emergency and minimizing the impact of such a condition on his health. I;

c) scene - the territory, premises or any other location of a person in an emergency at the time of the call for emergency medical care;

d) urgent state of a person - a sudden deterioration of physical or mental health, which poses a direct and imminent threat to life and health of a person or people around him and occurs due to illness, injury, poisoning or other internal or external causes

**The main tasks of the emergency medical care system are the organization and provision of:**

- provision of affordable, free, timely and high-quality emergency medical care in accordance with this Law, including during emergencies and elimination of their consequences;

- medical and sanitary support of mass events and events with the participation of persons in respect of whom state protection is carried out;

- interaction with emergency rescue units of ministries, other central and local executive bodies during emergencies and liquidation of their consequences.

Providing pre-medical care in combat and non-combat conditions is the main guarantee of saving the life of the wounded. Analysis of the causes of death of soldiers during hostilities indicates that a significant part of them could be saved with timely and high-quality home care. This number ranges from 9% (Chechen campaign) to more than 25% (the war in Iraq and Afghanistan). About 90% of deaths in combat occur before the wounded are taken to a medical facility. Most injuries and wounds are incompatible with life (amputation of the head, etc.). However, some conditions, such as bleeding from a wound on the arm or leg, severe pneumothorax, and airway problems can be corrected on the battlefield. Such assistance is the difference between a soldier's death on the battlefield and his recovery in a medical facility. With proper self-help, mutual aid, and rescue skills, fatalities on the battlefield can be reduced by 15-18%.

In order for a health instructor to learn how to properly provide pre-medical extended care, he must know the main causes of death of servicemen as a result of hostilities (Fig. 48):

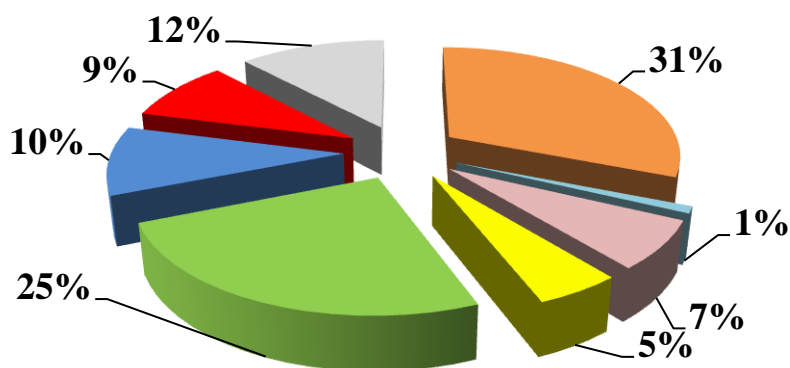


Fig. 48. The main causes of death on the battlefield

As we can see from the above, the most common cause of death on the battlefield is 31% - penetrating head injury; 25% - severe injury or trauma to the torso that cannot be treated with surgery; 10% - trauma potentially

treatable with surgery; 9% - blood loss from wounds after limb detachment; 7% - severe polytrauma received as a result of the explosion; 5% - intense pneumothorax; 1% - problems with airway patency; 12% other complications and severe injuries.

About 5% of deaths occur during evacuations from the battlefield to medical facilities and are mainly related to wound infections and complications from shock.

Experts have proven that of all the potential causes of death, about 90% of them can be avoided by simply using a tourniquet for bleeding from the extremities, restoring airway patency and rapid treatment of severe pneumothorax.

### **The concept of pre-medical care**

During military operations, in about 80% of cases, death occurs within the first 30 minutes after being wounded, when often the only medical care available is self-help or the help of a comrade (mutual aid). To save as many wounded as possible and prevent negative consequences, medical care should be provided immediately and in the necessary amount. Traumatic injuries result in blood loss, which results in hypovolemic shock, low circulating blood volume, and multiple organ failure.

In military medicine, there is a key concept of the "golden hour" for providing medical care to the wounded on the battlefield: if full medical care is provided within the first hour after the wound, it will save the lives of 90% of wounded servicemen. The delay in providing care for only two hours leads to the fact that the number of survivors of injuries falls sharply to 10%.

Pre-medical care - urgent actions and organizational measures aimed at saving and preserving the life of a person in an emergency and minimizing the impact of such a condition on his health, carried out on the battlefield by health instructors.

#### **Persons who are obliged to provide pre-medical care**

Persons who are obliged to provide pre-medical care to a person in an emergency are: rescuers of emergency services, employees of the state fire service, employees of law enforcement agencies, pharmaceutical workers, conductors of passenger cars, flight attendants and other persons without medical education, but according to their duties must have practical skills in providing home care.

#### **3. Basic principles of home care.**

Injuries that occur in modern armed conflicts significantly limit the time of home care on the battlefield:

at bleeding from the main vessels of extremities (femoral, shoulder) the wounded dies till 2 min. (localization of the wound - the shoulder (armpit) or thigh (groin)). Cause of death - rapid loss of a significant amount of blood;

with bleeding from the vessels of the neck (carotid artery, jugular vein) death also occurs up to 2 minutes (wound localization - neck area). Causes of death - rapid loss of significant amounts of blood, suction of air into large veins and blockage of blood vessels;

when bleeding from the vessels of the head, the wounded may die from a few

seconds to one hour (localization of the wound - the scalp). Causes of death - rapid loss of significant amounts of blood, suction of air into large veins and blockage of blood vessels;

with external arterial bleeding from wounds of the forearm, leg or torso, death can occur within one hour. Causes of death - rapid loss of a significant amount of blood, the development of shock;

in the event of obstruction of the upper respiratory tract due to the sinking of the tongue in conditions of loss of consciousness (head injury, shock) in a supine position, the wounded die within 5 minutes. Cause of death - cardiac arrest due to insufficient oxygen supply;

with sudden cardiac arrest due to shock wave, closed chest injury, severe stress, death occurs after 5 minutes. Causes of death - cardiac arrest and, as a result, the cessation of oxygen transport to cells;

at penetrating wound of a thorax death comes to one hour (localization of a wound - a site of a thorax). Causes of death - exclusion of the lung from the wound from the act of breathing, loss of a significant amount of blood.

Modern views on the provision of home care have been formed in the so-called "tactical medicine", which provides a clear division of the amount of home care depending on the sector of the battlefield.

In order to clearly understand the possibilities for providing medical care to the wounded and the restrictions on the battlefield, the following sectors are conditionally distinguished:

sector of fire (red zone) - a zone of direct fire with a significant risk of bullet or other injury. Assistance to the wounded is provided only to eliminate critical bleeding.

shelter sector (yellow zone) - a place protected from direct enemy fire by elements of natural (hills, slopes) or artificial origin (walls, houses, protective engineering structures). It should be understood that the shelter sector in the event of hostilities at any time may become a sector of shelling, so the amount of home care is reduced;

evacuation sector (green zone) - places adapted or equipped for receiving, sorting the wounded and sick, providing them with home care, treatment and preparation for further evacuation of the wounded who need it.

The medical instructor of the company (battery) in the shelter sector is equipped with the medical post of the company (MPR) and (if necessary) in the evacuation sector - the post of sanitary transport (PST).

### **Volume of pre-medical care:**

in the shelling sector: transfer from the position on the back to the position on the abdomen; temporary cessation of external bleeding (neck, limbs);

in the shelter sector: control of bleeding, initial examination of the wounded (determination of signs of life), rapid examination from head to toe (search for existing injuries), if necessary - temporary cessation of bleeding, if it has not been stopped before (head, torso), restoration of patency upper respiratory tract, sealing of chest wounds (with pneumothorax), preparation for transportation of the wounded to a safe area;

in the evacuation sector (MRI): control of bleeding, re-examination of the wounded, detailed examination from head to toe (search for existing injuries),

bandaging wounds of the limb and torso, fixation of fractures and cervical spine, home care during transportation wounded to a medical institution (doctor).

1. Perform a combat mission.
  2. Check the reaction of the wounded to stimuli (consciousness - voice - pain - no reaction), as well as the patency of the upper respiratory tract and the presence of breathing and pulse in the carotid artery.
  3. If there is no reaction - consider the wounded dead and do not help.
  4. Check the imposed harness and determine the need for it.
- If there is a need for a tourniquet, and the bleeding continues, then tighten the tourniquet harder.

### **1. Specify the time of application of the tourniquet.**

A wounded person with a change of consciousness should be disarmed immediately in a state of excitement, as armed fighters with a change of consciousness or in a state of excitement may use their weapons inappropriately. Take away all available weapons - machine gun, pistol, knife, grenades, explosives. Explain to the wounded that you will keep the weapon until the health instructor examines it.

### **Materials for self-control:**

**Task 1.** In the alley of the park you accidentally found a man about 40 years old lying on his stomach. You are inspecting the scene. What do you need to find out first?

Sequence of implementation: take priority actions to provide DMD: find out whether the scene is safe for you, how many victims, whether others can help you, get a general impression of the victim: age, gender, social status, body position in space, the presence of visible damage, blood, foreign objects in the body, etc.

**Task 2.** During the inspection of the scene, the victim was found, who is lying horizontally on his stomach. The place is safe, what happened - it is unknown, the victim himself. There are people around who can help. Consciousness is preserved. Your actions when approaching the victim.

Sequence of performance: perform priority actions, determine the level of consciousness on the AVPU scale, introduce yourself, explain that you have passed the DMD course, offer help, explain what you are preparing to do. Start providing DMD after the consent of the victim.

**Task 3.** During the inspection of the scene, the victim was found, who is lying horizontally on his stomach. The place is safe, what happened - it is unknown, the victim himself. There are people around who can help. There is no consciousness. Your actions when approaching the victim.

Sequence of execution: perform priority actions, determine the level of consciousness on the AVPU scale. Call someone present for help. Lack of consciousness allows to provide DMD without the consent of the victim.

**Task 4.** During the inspection of the scene, a 5-year-old child accompanied by his parents was found to have fallen from a bicycle. Name the sequence of your actions in providing DMD.

Sequence of performance: perform priority actions, introduce yourself to parents,



explain that you have passed the DMD course, offer help, in case of parents' consent explain what you are preparing to do, start providing DMD.

**Task 5.** During the inspection of the scene, the victim was found lying horizontally on his stomach near the electric pole. The victim groans. A broken wire nearby. The place is dangerous, what happened - obviously an electric shock, the victim himself. There are people around who can help. Your actions to provide DMD.

Sequence of execution: perform priority actions, do not approach the victim, get in touch with him, call the rescue service by phone "101".

**Task 6.** During the inspection of the scene, the victim was found, who is lying horizontally on his stomach. The place is safe, what happened - it is unknown, the victim himself. There are people around who can help. There is no consciousness. Breathing: 3 respiratory movements in 10 seconds. Your actions after approaching the victim.

Sequence of execution: perform priority actions, determine the level of consciousness on the AVPU scale. Call someone present for help. Carry out an initial examination according to the method of SAVS in the position in which the victim was found. Call EMD. Conduct a secondary examination. Provide DMD: ensure the temperature balance of the victim, stabilize the head and neck. Every 2 minutes before the arrival of the EMD carriage re-determine the presence of respiration.

**Task 7.** During the inspection of the scene, the victim was found, who is lying horizontally on his stomach. The place is safe, what happened - it is unknown, the victim himself. There are people around who can help. There is no consciousness. Breathing in the abdominal position is not listened to. Your actions after approaching the victim.

Sequence of execution: perform priority actions, determine the level of consciousness on the AVPU scale. Call someone present for help. Carry out an initial examination according to the method of SAVS in the position in which the victim was found. In the absence of breathing, turn the victim from the abdomen to the back. Re-perform ABC. Call EMD. If breathing is present, perform a secondary examination. Provide DMD: put the victim in a stable position on his side, ensure the temperature balance of the victim, in the presence of assistants - to stabilize the head and neck. Every 2 minutes before the arrival of the EMD carriage re-determine the presence of respiration.

### **Test tasks**

1. When approaching the scene, you found an adult victim conscious in a supine position. The place is safe. The victim is conscious. What are your priorities?

- A. Begin the review according to the SAVS method.
- B. Introduce yourself, explain that you are prepared to provide DMD, offer help, explain what you are preparing to do.
- C. Call an ambulance.
- D. Ensure airway patency.
- E. Find out if there is a first aid kit?

2. You have started to help the victim at the scene. The place is safe. He is lying on his stomach, unconscious. Which of the following actions will you perform in the first place?

- A. Ensure airway patency.
- B. Determine whether there are fractures
- C. Find out if the victim is breathing
- D. Check for heart rate
- E. Find out if there is massive bleeding

3. You have started to provide assistance to the victim at the scene in a supine position. In which case do you turn the victim on his back?

- A. The presence of an open fracture
- B. Upon obtaining permission from surrounding witnesses to the event
- C. Lack of breathing
- D. Absence of other witnesses to the accident
- E. All of the above

Standards of answers to tests:

- 1. In
- 2. E
- 3. C

## Literature

### Basic references

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