

Ministry of Health of Ukraine  
Ukrainian Medical Stomatological Academy

APPROVED  
at a meeting of the department  
disaster medicine  
and military medicine  
«\_\_\_\_» \_\_\_\_\_ 2020  
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Head of Department

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**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 № 2	Essentials of Civil and Combat Medical Support
Topic of the lesson	Tasks, Organization and Urgency of Ukrainian Army Medical Service in war time.
Course	2
Faculty	foreign students training specialty "Medicine", "Stomatology".

## **1. Relevance of the topic:**

The activities of the medical service are subordinated to the interests of the armed forces and are aimed at maintaining their combat capability and combat readiness at the appropriate level by preserving, strengthening and restoring the health of military personnel. The solution of this main task is achieved by performing a number of partial tasks, the content and method of solving which may vary depending on the development of the armed forces, socio-political system of the state, its economic status, military affairs, medicine and health care.

The main tasks of the medical service for wartime have been formulated for a long time, for half a century, but their content remains unchanged and is only detailed and supplemented depending on changes in the conditions of the medical service.

Modern military operations are characterized by determination, high maneuverability and tension, rapid and abrupt changes in the situation, their conduct on the ground and in the air, on a wide front, at great depth and at a high pace. In the modern war, the activity of the medical service is significantly affected by the possibility of the simultaneous occurrence of mass sanitary losses both along the entire depth of the construction of the military order of troops and in the rear (center) of the country. Wartime conditions worsen the sanitary and epidemiological condition of the population, troops and areas of hostilities, which can cause epidemic outbreaks of various infectious diseases. The use of electronic warfare, disruption of constant communications will create significant difficulties in the management of forces and means of medical service, in the implementation of medical supplies and the organization of medical evacuation. The above proves that in the conditions of modern war (armed conflict) the medical service will perform tasks in an extremely difficult situation.

## **2. Specific objectives:**

Examine:

- main tasks of the medical service of the Armed Forces of Ukraine in the conditions of armed conflicts, their content and significance.

-conditions of medical service and their impact on the organization of medical support of troops.

-the role and place of medical service of the Armed Forces of Ukraine in the national system of medical care in armed conflicts.

-influence of the size and structure of sanitary losses on the organization of medical support of troops.

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, abilities, skills necessary for studying the topic (interdisciplinary integration):**

Name of previous disciplines	Acquired skills
<p><b>1. The history of medicine.</b></p> <p><b>2. Civil protection.</b></p> <p><b>3. The basics of law.</b></p> <p><b>4. Human anatomy, normal physiology.</b></p> <p><b>5. General hygiene and ecology.</b></p>	<p>1. Know the role of domestic scientists in the development and organization of emergency medicine.</p> <p>2. Basic measures to protect the population and territories in case of emergency.</p> <p>3. To be able to use general legal principles to explain the actions and actions of a doctor in the event of an emergency.</p> <p>4. The structure and physiological basis of the functioning of human organs and systems. Determine the severity and location of the lesion.</p>

<p><b>6. Internal diseases.</b></p>	<p>5. To justify the need for optimal interaction between humans and the environment in order to maintain health.</p> <p>6. To be able to assess the general condition of the patient, to examine and sort the victims according to severity.</p>
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**4. Tasks for independent work in preparation for the lesson and in the lesson.**

1. The main tasks of the medical service of the Armed Forces of Ukraine in conditions of armed conflict, their content and significance.
2. Conditions of the medical service and their impact on the organization of medical support for troops.
3. The organizational structure of the medical service of the Armed Forces of Ukraine. Categories of medical personnel.
4. The role and place of medical service of the Armed Forces of Ukraine in the national system of medical care in situations of armed conflict.
5. The concept of the loss of personnel of the troops.
6. Definition and classification of sanitary losses, their characteristics. The magnitude of sanitary losses, factors affecting their size.
7. The modern structure of sanitary losses, its dependence on weapons used by the enemy.
8. A brief description of the damaging factors of modern weapons.
9. The influence of the magnitude and structure of sanitary losses on the organization of medical support for troops.

**4.1. The list of basic terms, parameters, characteristics that a student must learn in preparation for the lesson:**

Term	Definition
<b>Medical Service Units</b>	<p>these are medical units that are included in the state of military units.</p> <p>these are medical units, which include medical units (institutions), as well as parts of logistics, which have their own single governing body.</p>
<b>Medical Device Connections</b>	<p>a situation in which the number of injured injured, as well as the severity of injuries and diseases, is beyond the scope of the medical service, mainly in providing the</p>



#### **4.3. Practical work (tasks) that run in class:**

1. The conditions of the medical service and their impact on the organization of medical support of troops.
2. The organizational structure of medical service of the Armed Forces of Ukraine. Categories of personnel of the medical service.
3. Modern structure of sanitary losses, its reliance on weapons used by the enemy.
4. Brief characteristics of the damaging factors of modern weapons.

The contents of the topic:

The main tasks of the medical service of Armed forces of Ukraine in time of war, their content and value.

The activities of the medical service are subordinated to the interests of the armed forces and aimed at maintaining their combat capability and readiness at the proper level by maintaining, enhancing and restoring the health of military personnel. The solution of this main task is achieved by the implementation of a number of particular tasks, the contents and method of solution which may change depending on the development of the armed forces, the socio-political system, economic status, military Affairs, medicine and health. The main tasks of the medical service in time of war formulated a long time, for half a century, but the content remains unchanged and only complemented by detailed and depending on changes of conditions of activity of the medical service. Modern fighting forces are characterized by determination, high flexibility and tension, rapid and sharp changes in the situation, keeping them on the ground and in the air, on a broad front, in great depth and at a high pace. In modern warfare on the activities of the medical service significantly influences the possibility of simultaneous occurrence of massive sanitary losses throughout the depth of the constructing order of battle troops, and in the rear (center) of the country. War-time conditions worsen sanitary-and-epidemiologic condition of the population, troops and combat areas, which can cause outbreaks of different infectious diseases.

The use of electronic warfare, the violation of regular communications pose significant challenges in the management of forces and means of medical service, implementation of medical supply and medical evacuation. Given proves that in a modern war (armed conflict) the medical service will carry out tasks in extremely difficult circumstances.

The medical service of the Armed Forces of Ukraine in time of war are the following main tasks, the solution of which depends the success of medical support in General.

1. Organization and conducting of system of actions for rendering of medical aid to the wounded and sick, treatment for the purpose of saving life and speedy recovery of combat capability and disability.

Forms and methods of implementation of this task depends on the adopted system of medical-evacuation and medical support of troops in war time.

Traditionally, for analysis of efficiency of organization of medical service use

indicators such as the number of wounded who died on the battlefield without medical care; the mortality among the sick and wounded received on the stages of medical evacuation; timely provision of medical care; the number of wounded and sick who returned to the same system or dismissed for unfitness for action. Of particular importance for the successful implementation of the specified tasks of the medical service acquires the time and the quality of medical care and speed the evacuation of casualties to medical aid and further treatment. The delay in the provision of medical care leads to an increase in wound complications (especially shock) and even to the death of the wounded and sick.

The experience of the great Patriotic war of 1941-1945 showed that the number of wounded who died on the battlefield, not all had wounds incompatible with life. According to V. A. Bjelica have died on the battlefield from wounds of the extremities in most cases (73.8 per cent) had "conditionally lethal" injuries, i.e. injuries that did not exclude the preservation of life in very favorable conditions, with timely first aid and early removal from the battlefield to medical units. Moreover, 26.2% of the cases there were wounds to the extremities that the nature of injuries and their localization was harmless. These wounds became fatal in the power of delayed first aid. Famous military medics M. M. Gurvich,

M. I. Zavalishin, E. A. Semak, VA Bialik emphasized that among the dead on the battlefield, 10% died from external bleeding, other authors (A. I. Vasiliev, M. F. Glazunov) also pointed out that among those killed, only 50% had injuries incompatible with life, the other died from hemorrhage and shock.

Starting 5-6 h after the injury, regardless of the quality of skilled surgical care, increase intensity of mortality and disability, and the number of those who do not bounce back, rising.

An important task of the medical service - mortality in the provision of medical care and treatment of wounded and sick. Assessing positively the organization of surgical care in the years of the great Patriotic war of 1941-1945. (back to the Stroy of 72.3% of the wounded), it is impossible not to take into account that in the treatment of wounds some sites had very high rates of mortality and disability compared with other wars. The maximum reduction of terms of delivery of qualified surgical care to all categories of wounded, the use of effective means of pain relief and anti-shock therapy, massive blood transfusions, the use of broad-spectrum antibiotics, starting from the field, allowed the researchers during the local conflicts in recent decades to significantly improve treatment outcomes. Critically evaluating such high results of treatment of the wounded in local wars, it should be emphasized that they achieved through the implementation of new methods and means of treatment of the wounded in the early stages and to the maximum extent that is certainly progressive.

In modern conditions the task of saving lives, the restoration of the combat capability of the wounded and sick, their imminent return to the ranks or to work in the national economy becomes even more important. Thus, the use of highly toxic, fast-acting toxic substances such as organophosphorus requires first aid in the first few minutes (10 min.) from the time of injury, and the provision of first aid - the first in the next 2 hours, otherwise the help will be ineffective. In addition to the restoration of the combat capability of the wounded and sick and their return into operation, the medical service should seek to achieve early rehabilitation of those wounded and sick, according to the severity and nature of their injuries (diseases) shall be released from the army. Rehabilitation treatment is one of the important places in the whole complex of tasks of the medical service and is of national importance. Use cured the wounded and sick in the national economy improves military-economic potential of the state. If the wars of the XIX century to provide the army with everything necessary was enough for one soldier at the front worked 1 person in the rear, in the period of the Second world war, it needed the work of 5-8 people. In modern conditions the need of material means to ensure that the front had grown immeasurably. For example, a pilot in the sky in modern conditions provides the labor of 30 people on earth. Therefore, the restoration of health and the affected patients through reducing disability among them is of great national importance and is a critical task of the medical service.

1. The organization and implementation of medical events with the aim of preserving the combat capability, strengthen the health of personnel, prevent the occurrence and spread of diseases.

This line of work consists of the medical service:

- systematic medical monitoring of the health of the personnel; and sanitary supervision of all aspects of life, way of life and combat activity of troops (forces);
- sanitary-hygienic and anti-epidemic measures.

In modern conditions in connection with equipping the armed forces with complex and diverse automated technology has radically changed the conditions of military work and life of the personnel. The new conditions led to the emergence of a number of factors that affect military personnel (noise, vibration, changes in atmospheric pressure and temperature change of the air environment, ionizing radiation, electromagnetic field of microwave range, etc.). Experience shows that these factors, being different in intensity and the degree of impact on the personnel, if not take the necessary preventive measures that can cause difficult adverse pathological changes in the body and significantly reduce its functionality and effectiveness. Before the medical service tasked detailed investigation of the influence of modern military equipment and weapons on personnel, the timely development of evidence-based recommendations for the prevention of occurrence of unfavorable

working conditions and their consequences, the search for the most optimal operation modes of different samples of military equipment. Particularly relevant for the period of hostilities are sanitary-hygienic and anti-epidemic measures. Historical experience shows that periods of wars and military conflicts are accompanied, as a rule, the emergence of limited outbreaks or epidemics of infectious diseases with substantial variability in the structure incidence and number of deaths. Infectious disease in the sanitary losses in the army has always occupied one of the first places after combat disease. So, according to some authors, health loss infectious patients during the great Patriotic war of 1941-1945 was nearly 34%, and during the war in Afghanistan 1979-1989 increased to 78% of the total sanitary losses of troops, i.e. the number of infectious diseases among the troops in 3-4 times exceeded the number of wounded. During the years of world war II in the U.S. army in Europe, losses from infectious diseases was 4 times higher than from wounds during the Vietnam war 1965-1974 gg - 5 times in Korea 1950-1953 - 6-8 times. In the British troops during the war in tropical countries, the ratio of the number of infectious diseases to the number of wounded ranged from 13: 1 to 70: 1.

Infectious diseases accounted for 68.7% of the total structure of the incidence of Soviet troops in Afghanistan, with 40.8% of viral hepatitis, 10.1% of typhoid and paratyphoid infections, 3.2% of malaria, and 3.0% of amoebiasis. In the structure of the actual infectious morbidity, intestinal infections occupy a significant place: typhoid fever, paratyphoid A and B, dysentery, cholera, etc. For example, during the Great Patriotic War of 1941-1945. the incidence of intestinal infections was 25.0-30.0%, during the war in Afghanistan - 54.0-78.0%. Thus, the epidemic well-being of troops (forces) can be maintained only if there is an effective system of sanitary-hygienic and anti-epidemic measures.

1. Activities for the protection of the troops, medical units, units and institutions of weapons of mass destruction and the affecting factors in the destruction of potentially dangerous objects nuclear and chemical industries.

Despite the fact that Ukraine proclaimed non-nuclear status, many countries in the world still retain a powerful enough nuclear capability. In addition, developments are underway of new modern weapons (neutron guns, weapons, explosives, laser weapons, weapons using infrared and microwave radiation, etc.). The protection of personnel from these weapons is still insufficiently studied. The population of Ukraine is about 1% of all humanity in the world, its territory is metabolized to 5% of the total world minerals, and the load of contaminants on the environment is higher than in Western Europe 3.2 times and 6.2 times than in the US.

In Ukraine there are over 1500 different businesses that use or store toxic industrial chemicals. Main number (95%) of them are objects that contain ammonia and chlorine. In addition, the clock Railways of Ukraine transported

nearly 15,000 pieces of rolling stock with poisonous substances. Thus, the presence in Ukraine of a large number of chemical companies, combined with the high accident rate of the industry in General, there is a real risk of a large-scale cell of chemical contamination and mass destruction of the population. The effect of highly toxic substances on the population and the personnel of the forces is possible not only during accidents during their production, storage or transport, especially in wartime, when destruction of enemy facilities in chemical, petrochemical, pulp and paper and other industries, storage, powerful cooling installations and wociagi structures, gas and product pipelines, vehicles servicing these industries and facilities.

So, the result of the military action even by conventional means in terms of destruction of objects can be simultaneously the occurrence of significant sanitary losses of troops. By the use of special medical devices medical device should warn or to weaken the damaging effects of these factors on the personnel of troops (forces), as well as to prevent the defeat of the wounded and sick on the stages of medical evacuation.

Event medical service to protect personnel from weapons of mass destruction and the affecting factors in the destruction of potentially dangerous objects are divided into two parts: before use and after use. Event medical service for the protection of the troops against weapons of mass destruction prior to the application include:

- providing the troops with special medicines and individual means of protection;
- training of military personnel, rules and methods use of personal protective equipment when providing first aid;
- participation in the psychological preparation of military personnel for actions in the conditions of use by the enemy of weapons of mass destruction;
- holding of sanitary and anti-epidemic measures, focused on preventing or reducing the damaging effects of weapons of mass destruction on personnel;
- the allocation of forces and means of medical service for participation in liquidation of consequences of application by the enemy of weapons of mass destruction. Event medical services after the application of enemy weapons of mass destruction include:

- participation in the evaluation of the effects of enemy weapons of mass destruction;
- participation in developing treatment evacuation, sanitary hygienic and anti-epidemic measures in the foci;
- medical monitoring of military personnel exposed to weapons of mass destruction, but retaining combat capability.

The basic terms of the medical service in time of war are:

first, the surprise attack, that is the way of war, an unexpected attack, the medical service is in the most adverse conditions, because it needs to restore its

combat capability (loss), to participate in the aftermath of the attack, arrange for medical support of combat operations;

second, the losses on land, at sea, in the hinterland requires the medical service of high combat readiness, handling and vzaimozavisimost of its units, as well as clear interaction.

thirdly, the uneven and odnomomentnoe the occurrence of sanitary losses will dramatically increase their inconsistency, especially early in the war, with available forces and means of medical service, that is, as a rule, needs to be a lot, but little strength;

the fourth condition -the simultaneous occurrence of massive sanitary losses even without the use of nuclear and chemical weapons. The use of modern weapons (precision weapons, explosive ordnance, explosives, cluster munitions), with the continuous improvement of aviation artillery, mines and small arms and the ability to guarantee hitting this weapon targets the entire depth of the operational formation of troops cause considerable growth losses from conventional weapons. The results of the research while conducting combat action without the use of weapons of mass destruction, the average daily sanitary losses of troops of expeditious unification with modern defensive operation can be from 0.8% to 3.4% of the total number of personnel. At this sanitary losses of troops will be characterized by irregularity of occurrence in the operational associations, operating directions, and time of their occurrence.

In a modern defensive operation in connection with the conduct of enemy air and ground operations significant sanitary losses will be borne troops of the second echelon operational formation of the troops of enterprises, part of them may be from 35 to 40% of the total sanitary losses of the Association;

fifth, outdoorsy combat conditions, characterized by extremely high variability, emergency situations (threat of captivity, the destruction of the units or establishments, radioactive or chemical contamination of the territory, etc.) and a variety of terrain conditions (forest, mountains, roads, etc.), time of year, meteorological factors (heat, cold, rain, snow, etc.). Hiking-combat circumstances significantly complicate not only the work units, but also the conditions of accommodation of personnel of the medical service, the wounded and sick on the stages of medical evacuation. Military field medicine has this definition - "good medicine in bad conditions." This refers to the important requirement to provide medical assistance to the wounded in war: full use in a combat situation achievements of clinical medicine of peace.

the sixth condition which affects the organization of medical support of troops is the threat of the emergence and spread of infectious diseases in the army, facilitated the concentration of large numbers of troops in a limited area and pollution, the migration of the civilian population, uhudshenie his material living conditions and the possibility of using the enemy biological (bacteriological) weapons;

the seventh condition, which distinguishes the conditions of the medical service in the war, is a feature of the structure of the lesions and damage, the flow of

combat pathology, pathogenesis and clinic of combat injuries and diseases. Just noticed it the time of M. I. Pirogov "Trauma affects the whole organism much deeper and more than have an idea about this. And the body and the soul of the wounded is much more susceptible to suffering different kind." In modern operations using only conventional weapons among sanitary losses, a sharp increase in the proportion of severe and very severe injuries of a mechanical, thermal and shell contusion is expected, including damage to the parenchymatous and other internal organs, especially from ammunition of a volume explosion. So, sanitary personnel losses from ammunition with a volume-detonating mixture can be characterized by the following structure in severity: mild injuries - 45.0%, moderate severity - 40.0%, severe - 10.0% and very severe - 5, 0%. The percentage of combined wounds is up to 20.0%. American experts believe that in modern military conflicts, seriously injured account for 15.0-25.0% of the total number of wounded. The experience of the Great Patriotic War of 1941-1945. and the local war in Afghanistan (1979-1989) shows a big difference in the course of wounds and diseases of peacetime and war (complications of anaerobic and purulent infections, massive damage to the body - tears, tears, crushing, etc.), a high frequency of shock conditions, the emergence of specific "military" diseases ("trench foot", etc.), which leads to an increase in the term of treatment, an increase in the mortality rate, mortality and disability of military personnel; the eighth feature, which determines the conditions for the activity of the medical service, is the danger of defeat of units and parts of the medical service by enemy military means.

The organizational structure of medical service of the Armed Forces of Ukraine. The concept of units, units and establishments of medical service. Categories of personnel of the medical service.

Medical service of the Armed Forces of Ukraine is a special organization that includes medical units, institutions, connections, and controls designed for the medical support of troops (forces) in peacetime and wartime. The organizational structure of the medical service depends on the organizational structures, tasks, and nature of combat actions of the armed forces, especially its medical support, as well as the tasks that are assigned to the respective formation of the medical service.

Division of medical services is a medical form that is included in the state units. These include medical aid stations of battalions and separate regiments, the medical company of mechanized (tank) brigades. Medical units are the basis of the military unit medical service. They carried out the provision of pre-hospital, first medical and urgent measures skilled medical care. Lead and work in medical units the medical assistants, physician assistants, General practitioners, family medicine, and physicians in the specialties - surgeons, internists, anesthesiologists, etc. Parts (institutions) of the medical service are separate (independent) medical units are included in the medical compounds and

medical services operational (operational and strategic) entities are directly responsible to the medical service of the armed forces, operational commands and centre (of the health Department of the Ministry of defense of Ukraine). They have their own room, their own military household and print. Such groups include private health company, sanitary and transportation units, military mobile field hospitals, military sanatoriums, sanitary-epidemiological institutions, medical logistics, military medical educational institutions and the like. Head medical unit commanders, and institutions - chiefs. All the leaders of these medical units are officers of the medical service.

Connection of medical service is the medical units, comprising medical (institutions), as well as parts logistics, which have their own authority. These include: the medical team of the army corps, base hospital. The General management of the military medical service by the health Department of the Ministry of defense of Ukraine (DOSE MOU). DOSE MOU reports directly to the Deputy Minister of defence of Ukraine. Headed by DOSES MOU - Director of the Department of health MOU. In wartime DOSES MOU is the leading management body of the system of medical support of the armed forces of Ukraine and carries out the planning and organizing the medical support of the strategic operations through the Central management of the medical program (ZUMA) of the armed forces of Ukraine. In peacetime DOSES MOU accordance with the instructions of the First Deputy Minister of defence of Ukraine is responsible for strategic and General planning and mobilization combat readiness of the medical service of armed forces of Ukraine, oversees the work on the issues in the operational command and the armed forces, cooperates with the departments of the Ministry of defence and the General staff of the armed forces, ministries and departments of Ukraine. The medical service of the armed forces of Ukraine consists of: DOSE MOU as the management body; the sanitary-epidemiological service, has its own managerial hierarchy; the medical service of the armed forces; medical service operational commands; medical units and establishments of direct subordination. For organization and event medical support troops directly subordinate to DOSES MOU provides for the management bodies of the medical-evacuation providing regional and territorial levels; base, mobile, hospital, medical-preventive and sanitary-epidemic establishments, bodies of military-medical and is judicial-medical examination, military medical depots and bases, sanitary and transport parts, military-medical schools and research institutions of direct subordination. The management of medical service formations and units of the Naval Forces, Air defense Forces carry out the appropriate chiefs of medical services. Medical units and establishments of direct subordination to belong to the Kiev military-medical center, Ukrainian military medical Academy, research Institute of military medicine, Central pathology laboratory, Centre for forensic examinations, the Central military-medical Commission, Central medical stores, military sanatoriums and the like. The military mobilized additional controls medical-evacuation support of troops (forces): administrative and local

evacuation centers; sanitary transport part: automotive sanitary battalions, the military-sanitary trains and the briefing aviation, sanitary and transport squadrons and the like.

Management of forces and means of medical service Western and southern OK is performed by the chiefs of military medical departments operational commands. These officials are the direct chiefs of the medical service of the respective operational commands. Wherein said bosses have a special control - military-medical Department, which provides senior professionals on key topics of military medicine surgeon, internist, toxicologist-radiologist, etc., directly subordinate To the military medical departments operational commands are the controls of medical evacuation in wartime: evacuation points operational commands, controls mobile hospital bases; medical institutions: military medical centres (VIC), base and garrison military hospitals (BVG, SHG), the military sanatorium (sun) special medical units and institutions: the military-medical Commission (VVK), the pathological anatomy laboratory (PAL), forensic laboratory (SML), medical stores (CU). By means of these forces and means chief of military medical Directorate arranges and conducts events on medical support of troops. On special issues to the chief military medical Department of the operational command subordinate to the chiefs of the medical departments of the army corps and the chief of medical services, formations and units of the operational command.

Organ of the medical Department of the operational enterprises (army corps) is the military medical Department. For hull forces and means of medical service are actually body forces and means directly subordinate to the chief military medical Department of the corps, particularly the medical team of the army corps. The medical service of a military Alliance (army corps) consists of all regular medical forces and means of direct structural subordination and military units and subdivisions. The organization of the medical service of these forces depends on the task forces, their staffing and accommodation. Mechanized and armored brigades of the Land forces have the medical company, separate regiments and battalions of the medical items. In the company of contained by state medical orderly, a platoon - Rifleman-medic. Forces and means of medical service brigades and separate parts together constitute the military unit medical service. The organizational construction of medical service is the interchangeability of individual units and parts is ensured by the presence of similar formations (e.g., private medical companies and HPAI). This provides increased survivability of the medical support system of the troops. In modern conditions, the issues of the most appropriate organizational structure of units, parts and institutions of the medical service, their rational use is becoming especially acute. Therefore, the second important requirement for the organizational structure of the medical service is to create opportunities to strengthen the lower level of the medical service due to the higher. This, so-called, "maneuver from the depths." In this case, there is a concentration of a sufficient amount of forces and means of the medical service in the hands of the

highest boss and their centralized use in the interests of the entire subordinate service. For this purpose, mobile units are provided, for example, medical reinforcement groups in the medical brigade of the army corps, ambulance units, mobile sanitary and epidemiological laboratories, etc., which can be sent to those parts where regular forces and medical services cannot cope with the amount of work that arose in a particular setting

Categories of personnel of the medical service.

Categories of personnel of the military medical services identified:

1. Medical staff (doctors).

Medical office personnel are equipped with military doctors and medical officers, medical service reserves, mostly drafted into the armed forces during the war. Military doctors working in the medical service brigades and separate parts, as a rule, doctors in General practice and family medicine. Among the medical positions in the medical service operational associations (AK) is the doctors of different specialties: surgeons, internists, dentists, anesthesiologists-Intensivists, neurologists, hygienists, epidemiologists, toxicologists, radiologists, war and others (more than 60 specialties). Every military doctor must: be ready to organize and to personally provide appropriate medical assistance according to its provision, equipment and fighting situation; to have solid management skills health service management and medical divisions, parts, establishments. Of particular importance for the effective management of the medical service acquires training, retraining and constant improvement of the governing structure of the medical doctors occupying posts of the chief medical service of the unit and above.

2. Average medical staff.

Intended for manning the posts of paramedical staff. It is treated the assistants of the military doctors, paramedics, medical and surgical nurses, pharmacists, anaesthetist, technicians and others are appointed To these positions persons with medical education on educational-qualification level of bachelor, Junior specialist and satisfy the requirements of recruitment (contract, contract or by conscription) armed forces.

3. Junior medical staff.

For the posts of Junior medical staff assigned in the main persons urgent (extended) service with educational qualification level of skilled workers and have received training in special units (sanitary instructors, disinfectors) or have no special medical training (nurses). Persons of officers, ensigns (warrant officers) and each medical worker in the service in the armed forces or in the reserve, is assigned a personal military rank.

For the military personnel of military-medical service has established the following military ranks:

> non-commissioned officers - Junior Sergeant, Sergeant, senior Sergeant, Sergeant major;

- > ensigns (warrant officers) - ensign (warrant officer), senior warrant officer (senior warrant officer).
- > Junior officers - Junior Lieutenant of medical service Lieutenant of medical service, senior Lieutenant of medical service, captain of medical service.
- > senior officers - major of medical service, Lieutenant Colonel of medical service, Colonel of medical service.
- > senior officers - major General of medical service, General-Lieutenant of medical service.

The role and place of medical service in the national system of medical care in wartime.

In the day of creation of armed forces of Ukraine and during the first years of their existence the military medical service (functional component) in time of war was actually a fragment of the military medical services of the armed forces of the USSR and was focused on the organization of medical support of troops in a possible third world war.

Its main provisions were:

- > orientation on offensive war on a large scale and in large open spaces;
- > ignoring the needs of the civilian population in medical care, virtually unlimited use of resources civil health, both human and material that were involved for the medical support of the armed forces. A direct consequence of these outdated and inappropriate conditions of Ukraine as an independent state, was a departmental approach in the unified system of military medicine, the availability of independent bodies of management of medical service, health departments and institutions, military units in various ministries and departments and, in fact, Autonomous functioning.

Another negative factor was the lack of coordination between the bodies of medical support of the armed forces and law enforcement ministries and departments, on the one hand, and the Ministry of health of Ukraine on the other. The mobilization of considerable forces and means of civil medicine in the interests of the military-medical service according to the requirements of the departmental approach is actually destroying the system of medical support of the civilian population. So, in time of war subject to mobilization 63% of surgeons, and in some specialties the figure was 83-85% (neurosurgeons, thoracic surgeons). To solve the above problems in 1995, a joint Board of the Ministry of defence and the Ministry of health of Ukraine. On the basis of materials of the Board of the Cabinet of Ministers of Ukraine adopted the Resolution dated October 16, 1995 No. 819 "On the interaction of medical services of the armed forces and other military formations of Ukraine on the national health system and the establishment of a national system of emergency medicine". The resolution determined for the first time the fundamental provisions of the cooperation system civilian health and medical formations of the power ministries and departments of Ukraine during extreme situations, emergencies and wartime. Joint participation in the creation of a national

system of emergency medicine (disaster medicine) is the first and main integration direction.

According to the requirements of the above Regulations and the joint orders of the Minister of health (MOH) of Ukraine and the defense Ministry of Ukraine dated 15.12.1995 G. No233/332 and from 18.07.1996 G. No 215/202 in higher medical schools of Ukraine envisages the creation of departments of extreme and military medicine, who are entrusted with the education of all students, interns and students to the issues of organization of medical support of population in emergency situations in peacetime and wartime, than created the basis for the preparation of relevant medical specialists. With the adoption of the Basic Law (Constitution) of Ukraine began a new stage of integration processes. According to article 37 of the fundamentals of legislation of Ukraine about health care and with the aim of creating a unified state system of medical assistance in case of extreme situations on the territory of Ukraine, the Cabinet of Ministers of Ukraine dated 14 April 1997, No. 343 created the State service of medicine of catastrophes (GSMK). This Decree defined the organizational principles of the system of disaster medicine in Ukraine — centralized public service, functionally combining medical forces and means of Ministry of Ukraine, the Ministry of defense of Ukraine and other ministries and agencies. A quick restoration of the health of the injured, returning to working capacity, and a maximum reduction in the indicators of disability and mortality in extreme situations by forces and means of only civilian health protection is impossible. In order to achieve this goal and improve the quality of emergency medical care in emergency situations (natural disaster, catastrophes, accidents, mass poisoning, epidemics, epizootics, radiation, bacteriological and chemical pollution of the territory, etc.), the integrated military medical service of the Armed Forces of Ukraine. In accordance with the requirements of the Decree of the Cabinet of Ministers, both structural and functional principles for the construction of governing bodies and the corresponding medical forces and means for fulfilling the tasks have been determined. During the formation of the State Mining and Metallurgical Complex, central and territorial coordination commissions were formed to conduct effective management and coordination of the actions of medical forces and assets of various ministries, which included representatives of the military medical service on a territorial basis.

The order MZ of Ukraine from November 20, 1997 No 334 in coordination with the Ministry of defense of Ukraine in the structure of medical forces and means GSMK territorial level is determined by the forces and means of the military medical service: the Main military clinical hospital (gvkg), Ministry of foreign Affairs, where he formed a 4 freelance specialized brigades of permanent readiness (neurosurgical, kombustiologiya, toxicology and intensive care) with an allocation of 100 surgical beds and 50 beds of a therapeutic profile and 386 military hospital of Simferopol with the allocation of 50

surgical, 50 trauma, 50 Toxicological combustiological and 20 beds of permanent readiness. In addition, the Directive of the General staff (GON) the armed forces of Ukraine of 20 June 1996, No DGS-21 defined forces and means of military medical services (mobile units of disaster medicine and emergency mobile medical and nursing teams), which are formed additionally in the Central military clinical hospital (CVCG) Jugok (Odessa), ZVKG Sapok (Lviv), 384 military hospital (VG) (Kharkiv), 385 VG (Dnepropetrovsk), 762 VG (White Church), 376 VG (Chernivtsi). Mobile medical and nursing teams established in separate military units. In garrison, base hospitals, military sanatoriums formed teams to provide skilled care (1-2 for each military medical facility). The purpose of utilizing the forces and resources is primarily a medical support of units of the armed forces of Ukraine, which are involved in liquidation of consequences of emergency situations and provide medical assistance to the civilian population in the centres of mass destruction. The second major area of integration of the medical services of the armed forces of Ukraine medical and prophylactic institutions of the Ministry of health of Ukraine is a joint participation in implementation of the requirements of the Cabinet of Ministers of 30 November 1998 lays down the healing agencies of the MOH of Ukraine, who will participate in the delivery of health care in wartime.

The resolution provides for the creation of regional hospital centers (ARGB) the Ministry of health of Ukraine, who will participate in the delivery of health care in the special period. To do this, the MOH of Ukraine allocates the appropriate number of medical institutions. Senior staff of the military medical service developed guidance documents that are promulgated by orders of the Ministry of defense of Ukraine and the Ministry of health of Ukraine. Among them, the "regulations on the territorial bases of hospital MOH Ukraine", "manual mobilization of the territorial hospital database", "regulations on the management bodies of the territorial hospital bases". ARGB MOH is designed to provide in time of war the wounded and sick soldiers and their population of skilled and specialized medical care, treatment and rehabilitation in the operational and strategic rear, and in peacetime - in case of emergency or an emergency. ARGB are organized on the basis of medical institutions of Ministry of health, MOH of the Autonomous Republic of Crimea, departments of health of regional state administrations and military hospitals, sanatoriums of the Ministry of defense of Ukraine, which are located within the same region. ARGB is entrusted with the following main objectives:

- > reception, medical sorting of the wounded and sick, their distribution across hospitals (territorial hospitals) of ARGB, accommodation and registration;
- > the provision of the wounded and sick qualified and specialized medical care, treatment and rehabilitation to full recovery;
- > of the wounded and sick, military medical and mediko-social examination;
- > material support and household assistance of the wounded and sick.

The territorial base includes hospital management ARGB, medical institutions of Ministry of defense of Ukraine, territorial hospitals, and support.

For the management of territorial databases of hospital in a particular period are created:

the health Ministry of Ukraine - Main Department for management of Thergb;  
the Ministry of health of the Autonomous Republic of Crimea, managements of health protection of regional state administrations, Kyiv and Sevastopol Department of ARGB.

The number of medical institutions that are members of each of ARGB different and depends on the number and capacity of medical institutions particular region, its geographical location within the territory of Ukraine and Territorial hospitals etc. are formed by the medical staff, funds and infrastructure of medical institutions of the Ministry of health of Ukraine in structure:

- > territorial surgical hospital;
- > territorial trauma hospital;
- > territorial neurosurgical hospital;
- > territorial neuropsychiatric hospital;
- > territorial toracoabdominale hospital;
- > territorial therapeutic hospital (rehabilitation center). They must be kept in constant readiness to perform tasks in accordance with their purpose. Each medical institution (territorial hospital) and corresponding number, it has its own seal and stamp. Responsible for the manning, road transport, logistical, medical assets, maintaining mobilization readiness of the medical institutions of ARGB is vested in the Ministry of health of Ukraine.

The defense Ministry of Ukraine carries out the control over mobilisation preparation of the management bodies and medical institutions. So, today is almost the fundamentals and legal framework for the organization of close interaction between the civil system of medical care and systems of medical provision of military units and the creation of "single medical space" in time of war.

The concept of total losses in the troops. Definition and classification of sanitary losses, their characteristics.

All the loss of personnel of troops (forces) that emerged during the fighting, called a total loss. They are divided into deadweight loss and health.

Deadweight loss is a loss, including those killed, those missing and those who were captured.

To health loss treat the wounded with various weapons and have lost their combat effectiveness (efficiency) is not less than a day, arrived on the stages of medical evacuation (medical units, medical company or medical institutions) were registered there, and received medical assistance.

In the great Patriotic war of 1941-1945, the total losses of the Soviet Army were 26853448 people (100%), of which the deadweight - 8509300 people (31.7 per cent) and health and 18344148 people (68.3 per cent), or in the ratio

of 1: 2. Total losses of the Army of the United States during a local war in Vietnam, 1964-1973, was 362 538 people, including irrevocable - 59 363 persons (16,4%) and sanitary -303175 people (83,6%), in the ratio 1 : 5.

Depending on the causes of the loss of combat capability (disability), medical losses divided into combat and non-combat. Combat medical losses (collective term - wounded) is the loss of personnel forces, caused by the action of any weapon or other impressive factor during the execution of combat missions. To combat health losses also include soldiers who have been in combat frostbite.

At the etiopathogenic basis of combat medical losses are divided into 6 classes:

I - mechanical damage;

II - thermal destruction;

III - radiation lesions;

IV - the defeat of toxic substances (S);

V - defeat Biol (BZ);

VI - reactive States from using weapons of mass destruction. According to the existing classification and nomenclature of military defeats each class is divided into groups, which contain individual nosological forms of lesions depending on their nature and localization. For example, class I (mechanical damage) of the group involved, taking into account the localization of damage their character (penetrating, non-penetrating, with damage or without damage to bones, etc.). Class II (thermal injury) contains two groups-burns and frostbite, which in turn are divided by the depth (degree) and area of damage. Class III (radiation poisoning) brought these two groups - acute and chronic lesions, which are divided by severity.

IV (lesion of toxic substances) class distribute on the pathogenetic action of toxic substances (S) into 5 groups: lesions with OV nervously-paralytic action, obscheyadovitym, blister, suffocating. V class (lesion bacteriological means) are divided into groups depending on the used form of the pathogen, and class VI (reactive state) depending on the timing of actions are divided into short and long.

Depending on the action of various types of weapons or destructive factors of the same kind of weapons are distinguished and combined, multiple and combined damage. I think the combined damage caused by different types of weapons, for example, gunshot wounds and lesion S, the burn and the defeat of BZ or different striking factors of the same weapons, for example, burn, trauma and lesions to ionizing radiation in a nuclear explosion.

Multiple damage - damage to different areas of the body due to the action of one type of weapon (for example, shrapnel wounds of several anatomical regions, multiple body burns, the defeat of poisonous substances of the skin and internal organs). Combined damage - damage one impressive agent of two or more adjacent organs or anatomic sites (cavities) of the body (eg, thoracoabdominal). Non-combat sanitary losses (the collective concept is "sick") include personnel who have lost combat effectiveness due to reasons

not related to enemy actions or the performance of a combat mission (patients and those who received non-combat injuries).

In official documents, combat and non-combat sanitary losses are of course indicated by the terms "wounded and sick," respectively. When planning medical support for military operations (military operations) and making appropriate calculations, different categories of sanitary losses can be grouped depending on the type of damaging factors on those affected by firearms, nuclear, chemical, bacteriological (biological) weapons and the like. For the medical and evacuation characteristics of the wounded and sick, 79 use the classification according to severity - lightly wounded (30-40%), moderate wounded (35-40%), seriously wounded (25-0%).

The category of the seriously wounded (severely ill) are wounded (patients) damage (disease) to vital organs or systems (skull, spine, chest and abdomen), large blood vessels, nerve trunks, bones with phenomena that threaten life or that can lead to a severe dysfunction of the whole organism.

The category of the wounded (patients) average weight are wounded (patients) with injuries of the trunk and extremities or diseases of the internal organs in the absence of life-threatening, but require long time of treatment (not less than 2 months).

To lehtoranta (lehtolainen) include persons having easy mechanical, thermal, radiation or other injury, temporarily lost the battle and efficiency, but retained the ability to self-movement and self-care, do not have pronounced disorders of vital functions, with no real threat of complications, and treatment and rehabilitation which must be completed over a period of up to 60 days, after which they will be suitable for military service. Walking wounded should not have penetrating wounds of body cavities (including the eyeball and large joints), damage to major vessels and nerves, fractures of long tubular bones, burns 1 and 2 degrees more than 10% of the body surface, deep thermal burns. Military medical doctrine, NATO is the concept of "walking wounded" includes the concept of medical loss that can be returned to duty (eng. - return to duty, i.e., the wounded who are able to return to duty). They are distributed only on terms that predict the return.

The term "slightly wounded" at the time of M. I. Pirogov was used as an evacuation concept, during the great Patriotic war of 1941-1945 was "screening" purposes.

The allocation of the category of walking wounded in the Soviet military medical doctrine due to the shortage of forces and means of medical service in the scale of the fighting, when the victims, preserved some forms of activity do not require a strict regime medical hospital and can in the treatment to organize their own life. Currently, this concept is mainly medical and tactical, organizational but not clinical in nature and reflects more the problem of returned losses, defines one of the purposes of the activities of the medical service. In the medical service of Armed forces of Ukraine proposed the

concept of "bystrovozvodimye sanitary losses", which are understood category of persons who have changes of internal organs, lesions or wounds of the body in connection with the nature of the disease or other external factors are moderate, bystrovany nature and, with appropriate early diagnosis and proper treatment are completed with the restoration of the morphological integrity and functional state of the body, decrease or elimination of clinical symptoms within 30 days.

> The wounded and sick who are unable to move independently and, of course, do not need bedrest. This category of victims-level military level of medical service, as a rule, 40-50% of all sanitary losses;

> Wounded and the sick on stretchers, which are able to condition of independent travel and during transport should be in the supine position, they respectively account for 50-60% of all sanitary losses in military care service. Beyond the injuries and necessary medical care to all categories of sanitary losses can be grouped on the victims, surgical patients and victims of therapeutic profile. Thus, in the structure of sanitary losses at a specific military operation in the condition of mass flow of the wounded and sick, victims surgery can range from about 91.8% to 99.9%, therapeutic - from 0.1% to 8.2%.

The term "mass sanitary losses" understand the situation in which the number of casualties affected and the severity of the injuries and illnesses beyond the capabilities of the medical services, mainly for the provision of necessary medical assistance and transportation of victims to medical units and hospitals. The medical service examines the nature of irreversible losses and immediate causes of death of victims on the battlefield, during transport and at stages of medical evacuation with the aim of further improvement of methods of prevention of military defeats, organization and methods of medical care.

The size of sanitary losses, the factors influencing their size. Modern structure of sanitary losses, its reliance on weapons used by the enemy.

Defining indicators of sanitary losses that mainly affect the organization of medical support is their size and structure. Under the size understand the size of sanitary losses in absolute numbers (the number of the wounded and sick) or as a percentage of the number of personnel of troops (forces).

The structure of the sanitary loss - is the percentage of the different categories of wounded and sick among the total number of sanitary losses from all or certain types of weapons.

The size of sanitary losses depends on a number of factors, most important of which are: the correlation of forces and means of the parties opposing; the nature and duration of the battle (operation); task military formation; the intensity of the fighting; the nature of the terrain; time of year, weather; military training, physical, morale of staff and, of course, experience and skill of the commanders (commanders) in the preparation and conduct of military combat (operations).

The use of modern weapons (precision weapons, explosive ordnance, explosives, cluster munitions), with the continuous improvement of aviation and artillery, mines and small arms and the ability to guarantee hitting this weapon targets the entire depth of the operational formation of the enemy cause significant growth losses from conventional weapons.

During the great Patriotic war, the regiment the day the battle was lost wounded from 2-3% to 20-25% of the personnel. Sanitary losses of troops were also uneven during the day. The loss of patients was measured in a relatively small range and were, on average, of 0.08-0.1% of the number of personnel per day. In modern conditions the conduct of the first military operations of the size and structure of possible sanitary losses will depend on the types of weapons used by the enemy, the composition of the groups of troops (forces), their separation, the degree of protection of its forces and form of combat (defence, attack). The analysis of the major wars of the XX century, starting with world war II and ending the Arab-Israeli, showed that the average loss in them was 0.1-1.5% of personnel depending on the military units, military tasks, which it performs, and how it is run.

Military doctors of the Bundeswehr expect during defensive combat actions without using nuclear weapons, the average daily sanitary losses in the brigades (divisions) - 3,2% - 4,8% (2,1 - 3,2%). According to German experts, for the first 7 days of fighting, sanitary losses will further increase by 50.0 per cent (this is due to the high intensity of the fighting in this period, as well as lack of experience of the armed struggle of the personnel). For operational calculations of the sanitary service of the Bundeswehr deemed it expedient to assume 1% of the wounded from the number of individuals participating in the fighting in one day of fighting. This means that the participation in the fighting 100 thousand personnel of the medical assistance will need 1 thousand people (wounded and sick) per day.

In modern conditions the tendency of redistribution of the size of sanitary losses in the elements of battle order of units and formations. If in the last great Patriotic war of 1941-1945 years basic sanitary losses were in subdivisions, units and formations of the first echelon order of battle (operational formation) of troops and only a small portion (10-15%) occurred in the second tier, then the conduct of the enemy of modern air-land battles and operations of significant sanitary losses will be borne troops of the second echelon operational formation of the troops of enterprises and their share can be up to 40%. Non-alignment Ukraine low probability of large-scale external aggression, a significant decrease in the ability to conduct on the territory of our state fighting with weapons of mass destruction (nuclear, chemical and biological weapons) have significantly changed not only the forms and methods of warfare, and the functional and structural base of the armed forces of Ukraine.

Basic indicators for calculation of possible sanitary losses are the nature of the fighting, the degree of protection of the personnel, giving directions, where the

troops can bear the greatest losses, the probable destruction of potentially dangerous objects.

Calculations of sanitary losses is quite complex and tentative. It is therefore extremely important for activities of the chief medical officer of any level is to continuously obtain reliable information about the nature of warfare, the size of losses, their size and structure. In the case of cells of mass destruction, the chief medical officer is taking steps to clarify the size of sanitary losses and based on these data, determines the approximate requirement of forces and means of medical service necessary for the organization and conduct of medical evacuation and other events. In this regard, for the correct determination of the size and structure of sanitary losses, you need to thoroughly analyze the situation in each case.

Currently, when calculating the magnitude of possible sanitary losses using temporary methodology of calculation of losses of personnel in time of war, approved by the chief of the General staff on 9 March 2002, which takes into account the intensity of the operation (combat actions), the degree of participation of units in operations (combat actions), and the coefficients of possible average health loss for each business unit. Parts and groups involved in the operation (combat actions). Structure of sanitary losses.

The success of medical support of troops (forces) largely depends on the correct determination of the probable structure of sanitary losses by category of victims is the basis for the planning of appropriate treatment and recovery activities, identifying the needs in medical manpower and equipment, in particular the extent and types of specialized medical care.

The ratio of the major categories of wounded and sick in the General structure of sanitary losses was different in various wars and armed conflicts. Use in armed conflicts of recent decades, new types of firearms has led to a significant change in the structure of gunshot wounds. So, during the Vietnam war, when using pellet bombs, compared with those of the great Patriotic war of 1941-1945, significantly increased the proportion of wounds of the head, spine, chest and abdomen with a simultaneous decrease in the proportion of wounds of the extremities. In recent years, units and parts Armed forces of Ukraine actively participate in international exercises with the military forces of the NATO countries. Therefore, the officers of the medical service of the Armed Forces of Ukraine need to know and use in their practice the estimated indicators of sanitary losses of troops taken in the armies of the countries-members of NATO.

Directive of the General Command of the NATO allied forces in Europe from 26 October 1993 No. 85-8 "Principles, policy and scheduling parameters of medical support of the allied command Europe" the total combat losses (OBP), which consist of the dead (U) in 84 wounded and missing (Plz), wounded in battle (P), and those suffering from combat stress (BS). In modern warfare, one should expect substantial changes in the nature and structure of sanitary losses, the emergence of new types of military pathology. At the same time, a sharp

increase in the specific gravity of severe and very severe injuries of a mechanical, thermal and contusion nature, including damage to parenchymatous and other internal organs, especially from ammunition of a volume explosion, is possible. So, sanitary personnel losses from ammunition with a "volume-detonating mixture" can be characterized by the severity of the following structure:

damage mild — 45,0%, moderate - 40.0%, and serious - 10.0% and very heavy at 5.0%. The share of combined damages would amount to 20.0%. In the structure of sanitary losses from high-precision weapons, the expected prevalence of very severe injuries (to 70.0%), damage of heavy and average degree can be about 3.0%, easy - to 27,0%. During the war in Afghanistan, the number of serious and very serious injuries amounted to 42,0% of the total number of gunshot wounds, mainly due to the mine damage, the proportion of which reached 25,0 — 30,0%. Among the wounded during the armed conflict in the Republic of Chechnya, the share of very serious injuries accounted for approximately 25.0 per cent (24.8 per cent). The analysis of the structure of sanitary losses in local wars and military conflicts of the XX century has allowed to reveal a significant increase in the number of mentally injured. According to the American and German data they are 20,0 - 30,0%, earlier this indicator did not exceed 5,0 -7,0%.

Thus, the sanitary losses of troops in the conditions of modern warfare will differ considerable size, complexity, diversity, structure and extent of the injuries.

Brief description of modern weapons.

The scale and nature of the damage modern weapons divided into weapon of mass destruction and conventional. Existing types of weapons of mass destruction include nuclear, chemical and bacteriological (biological) weapons. The concept of "conventional weapons" appeared only in the 70-ies of XX century as a reflection of the antithesis of weapons of mass destruction. To conventional weapons include firearms, precision weapons, ammunition, explosives and explosive action, incendiary mixture.

The term "loss from firearms" as a rule, use in relation to the period of the Second world war, as the casualties from these weapons had a significant advantage over losses from other types of weapons. To firearms at the time attributed everything that went beyond the "cold weapons". At the present stage of development of military Affairs ognestrela weapons is considered only one of the varieties of conventional arms and it is inappropriate to refer to the losses from the losses from other types of conventional weapons - mine, missile, incendiary, and the like.

Nuclear weapons include nuclear, thermonuclear and neutron ammunition. The feature of nuclear weapons is that the energy of the explosion is formed by an instantaneous fission of uranium or plutonium when casting masses of these elements to the supercritical state. Fusion ammunition in a huge explosion

occurs due to fusion of hydrogen isotopes-deuterium and tritium into heavier elements. Neutron ammo - thermonuclear warheads of low power (0.5 to 2 kilotons of TNT equivalent) have an increased radiation of high-energy neutrons. In combat to incapacitate personnel will be used more often for ground and air explosions. The defeat of the troops under nuclear explosions can be of a large area and to be widespread. Together with the action of damaging factors in the area of a nuclear explosion personnel can only be exposed in areas contaminated by radioactive substances (PB). Nuclear explosions will have a strong psychological impact on the personnel that need to be considered when the organization of medical support of combat operations.

Nuclear weapons are the main means of destruction of the enemy. In the short term, it can cause mass destruction of people, equipment, on large planes destroy buildings and other objects that infects the area radioaktivnymi substances carries a strong psychological impact on personnel. With the explosion of a nuclear weapon, there are five affecting factors: the shock wave; light radiation; the penetrating radiation; radioactive contamination of the terrain and objects; electromagnetic pulse.

The shock wave represents an area of highly compressed air, rasprostranyayushchikhsya in all directions from the place of a nuclear explosion with supersonic speed. It is the most powerful factor of a nuclear explosion. About 50% of the energy of the ground and the air blast is consumed in the formation of a shock wave. The main parameters of the shock wave, which characterizes its damaging properties, is the overpressure in front, speed, pressure and duration. Casualties will occur as a result of direct action of a shock wave or propelling her actions. Depending on the power and type of the explosion and the extent of the protection of military combat equipment, protective structures, damage will occur from the epicenter at a distance of within 5 km, i.e. within the zones of placement of various objects.

The action of the shock wave at people - it's caused them injuries and bruises. The mechanism of the traumatic impact of the shock waves is primarily to create the body the so-called deformation waves, which cause traumatic damage in the first place of the heart, lungs, intestines, liver, spleen, and brain ventricles. Internal injuries are often accompanied by severe shock.

At the time of blast there are the following types of damage:

- > contusion of different severity (the most frequent type of damage);
- > to barotrauma (considered as a separate species);
- > sound or acoustic trauma;
- > vibration injury.

Light radiation a nuclear explosion arises from the fact that the temperature of the explosion reaches several million t ° C, and the damaging effects of light radiation depends on the thermal pulse - the quantity of thermal energy falling on 1 m of the surface during the illumination. On the physical properties of the light pulse is a powerful stream of ultraviolet visible range and infrared

radiation. On the light emission consumes more than 30% of the energy of a nuclear explosion. Time Parasceva of action of this factor of 10 - 20 seconds. The light has high intensity lights of different objects and can cause people burns at a considerable distance from the nuclear explosion (from 1 to 25 km). During ground burst light emission is exercising its lethality at a shorter distance than during the air blast. The cause of burns is the direct action of light radiation and the resultant fires. Burns from direct exposure to light radiation occur in the open areas of the body, facing toward the center of a nuclear explosion. Burns caused by burning clothes and fire, can be very diverse in localization and extent. So, the explosion of nuclear bombs in Hiroshima (Japan, 1945) burns occurred at 87.9% of all victims, while 20 to 30% of cases are fatal. The severity of injuries from light radiation is determined largely by the location and position of the victim. Not less important role is played by the color of the clothes and the thickness of the fabric. Clinical picture burns from direct exposure to light radiation do not differ from the heat.

It should be noted that during a nuclear explosion there may be burns to their eyes, their temporary blindness. This can be the burns of the eyelids and anterior segment of the eye, burns of the ocular fundus, adaptive blindness (in the dark) and nuclear ophthalmia. In the latter case, the lesion caused by ultraviolet radiation. Military equipment, defenses (trenches, trenches, trenches, etc.), as well as ditches, pits, craters from explosions of shells can be a reliable protection from the harmful effect of the shock wave. Storage bunkers, covered with cracks exclude damage people light emission and shock wave, if not destroyed. In the settlements the action of light radiation is reduced by shielding its buildings and other structures.

Hazmat kit, complete protective suit, gas mask protect from burns if they are used in a timely manner the staff. Penetrating radiation (5% of the explosion energy) arises at the moment of a nuclear explosion, and a stream of gamma radiation and neutrons from the area of nuclear (thermonuclear) explosion. The total time of the action of ionizing radiation is a few seconds when the explosions of ammunition of small calibre and 15 - 20 seconds - with the explosions of ammunition of large caliber. The radius of influence of penetrating radiation is 1800 -2000, gamma-radiation - 1 - 3 km (depending on power of explosion). When passing through a medium easily captured by nuclei of light elements (hydrogen, oxygen, carbon, sodium, etc.). The latter become sources of ionizing radiation. In some materials of military equipment and soil under the influence of neutrons radioactive isotopes occur. This phenomenon is called induced activity, which is also dangerous to the human body.

Radioactive contamination of the terrain and objects (10% of the explosion energy) - the fourth striking factor. Contamination occurs mainly during the ground (underground, underwater) and, to a lesser extent, in air explosions. A surface explosion of a large number radioaktivnyh substances mixed in with the soil and rises to a great height. Small pieces rise up, and the large remain in the stem of the mushroom cloud. As the temperature in the cloud is the speed of

ascent is reduced, and the particles under the force of gravity begin to fall on the ground. Cloud transported by wind and gradually dissipated. On the path of motion of the cloud of radioactive materials are deposited, creating radioactive contamination of the terrain and objects. In this case, the pollution is not only the area of the explosion and the area directly adjacent to it, but the terrain and the objects deleted from the blast for hundreds of kilometers. The size of sanitary losses is in direct proportion to the power of the explosion, the type and degree of protection of the personnel. The use of neutron ammunition and nuclear warheads of low and ultra-low power (tactical nuclear weapons) will cause part of unprotected personnel acute radiation syndrome (ARS) of different severity of concussive injuries (injury). The defeat of light radiation (burns) will be celebrated in a small number of victims. The use of nuclear weapons of medium and high power will create centers of mass sanitary losses, and a significant part of the affected personnel (25%) will occur in combined injuries, namely trauma, burns and GPC.

Depending on the power of a nuclear weapon, its type and conditions of razmesheniya personnel of the combined damage will be different. When a public placement of personnel in the explosions of nuclear ammunition medium caliber often will meet a combination of burns and closed injuries (contusions, ruptures of internal organs) with ARS; the explosions of nuclear weapons of great power will arise to a greater extent the combination of trauma and burns. The personnel who is in undamaged armored vehicles will be affected ionizing radiation with the development of ARS. The duration of failure of the personnel depends on the received dose. So, when irradiation within a dose of 100 rad failure does not exceed the period 14-25 hours, 150-200 rad - in for one day, 300 - 500 rads or more, for a long time (weeks, months). On the track of a radioactive cloud damage of the personnel will be mainly, common external alpha and beta radiation and will be 12% of the total number of victims from among the personnel.

Radiological weapons known as technical devices, intended for cutting of combat radioactive substances (BRV). This weapon is characterized by the only impressive factor - radioactive contamination of the terrain and objects. Its application allows you to operate on people, causing them acute radiation sickness and store material values on the territory of the enemy. The starting material for the manufacture of BRV is a radioactive waste of nuclear power. BRV can be used in liquid, vapor and powder form and in the form of fog or be mixed with adhesive substances which stick to the surface of the skin, clothes, weapons. Shipping BRV to the area of use is possible with missile warheads, artillery shells, bombs, torpedoes etc. to Cut BRV perhaps even civil aircraft. A particular danger of BRV-specific properties - the absence of color, taste and smell. To determine the presence of BRV in this area is possible only by using radiation monitoring instruments (DP-5V, SE-64, etc.). Natural radioactive

decay eliminates the possibility of long-term storage in peacetime inventory RFS, their safety and combat use need special protection personnel.

A chemical weapon and its lethality. Despite the ban of its use of chemical weapons is today one of the weapons of mass destruction. It is used for mass casualties, contamination, buildings, equipment, water and provisions. With this aim, the widely studied toxic substances natural proiskhodzheniya such as toxins clubnature toadstools (Ammonites), the venom of the serpent (Cobra - apitoxin, rattlesnake - gratulationen), the venom of the marine plankton of dinoflagel - saxitoxin, puffer fish - tetrodotoxin. Widely studied, and bacterial toxins, as well as two groups of chemicals potentially usable for military purposes: the family of arolovich esters carbamino acid, structurally similar to the alkaloid physostigmine - antiholinesteraznami substances, comparable in toxicity with phosphororganic substances and toxic proteins (ricin, abrin). Lethal dose aerosols of crude toxin for a human is about the same as sarin.

Among the substances that cause temporary disability, with a focus on substance psychotomimetic action. The introduction of such chemical compounds in the body can cause a number of pathological disorders of higher nervous activity, which may be temporary and wear reversed. A search for psychotomimetic substances among structural analogues of serotonin - derivatives of lysergic acid, bufotenin, policemen. Among phenalkamines are the two most significant psychotomimetic substances - mescaline, and 3, 4, 5-TRIMET-xianlin. Great attention is paid to the use in hostilities of tranquilizers that affect human mental activity (there is lethargy and loss of balance) that impede the execution of combat missions. Intensively studied substances that cause temporary physical incapacitation of the person: irritating substance, substance, type miastenia (of myocilin, Clickatell), which cause small doses of relaxation of the muscles, and large - muscle paralysis, which is a few hours without treatment. Tremorin causes muscle tremors, salivation, miosis, and mild seizure. Provides information about substances that can reduce the acuteness of vision (due to corneal opacities), to cause dizziness, nausea, disorder of thermoregulation. Mention should be made of the herbicides that were widely used by the American army in Vietnam, injuring the vegetation on an area of 58 thousand km and got defeat about 1 million 300 thousand people. Armed with the USA possess herbicidal mixture: orange, purple, white and blue, named for the color marking stripes on the container. The main herbicides included in the mix, it's dioxins, - 2-4-dichlorophenoxyacetic acid, 2, 4, 5-trichlorophenoxyacetic acid, picloram and cakaudrove (dimethylarsinoyl acid). These compounds are long-lasting in the soil of its toxic properties and make it unsuitable for plant growth for a long time. The toxicity of toxic substances used in the form of gases, vapors, fog or smoke is characterized by their concentration in the air and exposure. The toxic effect of OM is manifested by the form and severity of poisoning. With fatal injuries, poisoned people die within a short time (from several tens of seconds to 2-3 days).

In severe forms of lesions have been poisoned need long-term hospitalization, and in patients with lesions of moderate severity - hospitalization for up to 2 weeks.

For the treatment of lesions mild enough 2-7 days. The versatility and breadth of toxic effects of chemical weapons are secured, on the one hand, the ability of toxic substances to act on various organs and cause concomitant lesions, and on the other a wide range of effective doses (from the relatively active to least lethal). The smaller this range is, the greater the toxicity of poisonous substances. Thus, the nature of chemical weapons, manpower, mass loss, duration of action are determined by toxic and other properties of toxic substances.

Bacteriological (biological) weapons (BW) call ammunition and other technical devices charged bacterial agents or other biological agents and is intended for destruction of people, animals or plants.

BO has the following significant properties:

- > the ability to cause mass sanitary losses;
- > the duration of which depends on the nature and composition;
- > the ability to spread on its own;
- > the presence of the hidden period;
- > the complexity and duration of the display;
- > the ability to penetrate into unsealed areas (bunkers, dugouts);
- > possibility to use at any time of the year;
- > cheap;
- > exceptional toxicity;
- > psychological impact on personnel.

Apply BO possible from airplanes (aerial bombs, aerosol generators, spray tanks devices, containers, insects, animals, etc.), guns (artillery projectiles, mines, missiles, etc.) and using special devices. The most likely objects of use of bacteriological methods of warfare are the troops that are on the formation, rest areas, missile part of strategic purpose, airfields, air bases, ships and naval bases, ports, railway junctions, industrial and administrative centers, agricultural areas, logistics bases, water sources, and the like. In addition to the aerogenic way of infection with bacterial agents, other: alimentary, contact, vector-borne. However, aerogenic the most effective way. The size and structure of sanitary losses from BO extremely variable and depend on a number of factors. Among them special place is occupied by: the size of the contaminated area, the number of personnel who fall under the BO, the duration of its action; the composition and nature used by the enemy of formulas (the type of agent, its stability in the environment), the degree of immunobiological protection of personnel, the availability and use of individual and collective protection, sanitary conditions, insulation-restrictive and other protective measures. According to foreign authors, primary medical losses from suddenly used bacteriological weapons can be 30-50% of the number of troops (the local population), which fell under the action of an aerosol cloud. To this contingent,

after some time, there may be secondary sanitary losses in the amount of 15-20% due to contact infections. Thus, sanitation loss of personnel from BO when using the infectious forms of pathogens can reach 50-60%. In the absence of factors of surprise and proper organization antibacteriological protect troops with average training of personnel in use of protective equipment, losses can be no more than 5-10%.

Structure of sanitary losses from BO will depend on the specific tactical tasks for the enemy. It is expected that the troops, leading the fighting in 60-70% of cases will be used toxins and in 30-40% of cases the causative agents of especially dangerous infectious diseases.

Firearms. The development of firearms is carried out mainly by the growth of its firepower, mobility, the creation of fundamentally new weapons and their sighting targets.

The main directions of the development of firearms at the present stage are as follows:

- > create high-speed, destructive projectiles;
- > create shells with semi-finished or ready-striking elements;
- > increased power of firearms;
- > creation of ammunition on a fundamentally new basis;
- > create high-precision weapons.

One of the trends in the development of firearms in modern conditions is improvement of the designs of the ammunition with the aim of maximum utilization of energy charges. It is well known that lethal force is the striking of the projectile is determined by the kinetic energy, which is calculated according to the formula:  $E = mv^2/2$ . As can be seen from the formula, the increase in energy is possible by increasing the speed or mass. The increase in speed gives a much greater increase of the kinetic energy than increasing mass of the projectile. Therefore, designers of firearms are on the way increase the speed of the projectile. An important stage in the development of small arms abroad was the adoption of the US Army 5.56 mm automatic rifle M-16A1. Compared with a 7.62 mm rifle, it has smaller dimensions, weight, recoil when shooting, a higher lethal force when shooting at a range of up to 400 meters. Reducing the mass of weapons and ammunition (bullet weight of 3.56 g) allows the infantryman to increase the supply of ammunition 2-3 times. In the early 80s, the 5.56 mm caliber was adopted as a standard NATO caliber of small arms. The initial speed of the indicated bullet reaches 960-1000 m / s (at 7.62 mm the speed of the bullet is 800 m / s). An increase in bullet speed significantly changes the nature of the wound.

The mechanism of action of any projectile that penetrates the tissues, there are three components:

- > the immediate impact of the projectile (rupture and fragmentation of tissues, having direct contact with the projectile);
- > shock wave;
- > the temporal void (throbbing emptiness (cavity)).

A projectile that penetrates the tissue, causing crushing of the tissues, which differ in side. While damaged, only those tissues that have direct contact with the projectile, and if the wound channel is not involved vital organs or major blood vessels, the severity of the injury to be minor. Another thing - increase the speed of a bullet. The sharp increase in the projectile speed in the first valid shock wave and a pulsing cavity. Punching a path through the solid (dense) tissue, the shell compresses the tissue in front of him. Under the influence of the shock wave area of the indentation, which has a spherical shape, shifting. The shock wave velocity equals the speed of sound in water (1500 m / sec) and although the pressure change that occurs when the shock wave is short-lived, it can reach 100 atmospheres. As a penetrating projectile releases its energy, it is transferred to the surrounding tissues, which quickly moved forward and back. Thanks to the speed and inertia of these fabrics continue to Rosaviatsia, exceeding somewhere in the 30-40 times the diameter of the projectile. Created cavity has a pressure below atmospheric, whereby the pieces of clothing and various debris are sucked into through the inlet and outlet openings. For a thousandth of a second cavity reaches its maximum size, and then pulsing fades. A projectile flying at high speed, almost cuts the fabric, quickly giving them their kinetic energy. This phenomenon is called cavitation. It occurs after the passage of the projectile, which explains the explosive nature of the wounds. The more energy that is transferred tissue-to us, the greater the temporary cavity and damage. Soft tissue turn into monogenic mass, small vessels crushed, bones are crushed into pieces. Larger blood vessels and nerves bounce in hand, their intimacy is damaged. Thrombosis and stasis in the blood vessels increases the volume of tissue necrosis, with intact vessels leaves the plasma, which causes a continuous swelling.

Effect on muscle - lose fascia casings over a large area. Hydrodynamic shock leads to rupture of cavitory organs (gallbladder, stomach, bones of the skull). Additional damage is applied to the secondary striking projectiles (pieces of bones, fragments of copper jacket bullets), as well as "rollover" of the bullet, trapped in the body. Inlet when perforating wounds are small, but the output can be quite large. Wounds accompanied by significant immune-biological changes in the body that leads to early wound infection.

Ammunition explosive action (BIA) is now called non-nuclear means of mass destruction. These include anti-personnel and anti-tank mines, grenades, artillery shells, bombs, fighting heads of missiles, ammunition of volume explosion. New explosives exceed the amazing effect of TNT on 20,0-60,0%, and even to 200.0% due to the increase in the specific energy of explosion, speed, and density of detonation. The calculation of the large-scale use in modern warfare of explosive ordnance, including mines, is not so much on achieving a high percentage of irrecoverable losses, how to limit the scope of the personnel, most of which, saving lives, after a long and complicated treatment with a maximum load of forces and means of medical service in operation all the same will not be refunded. The result of the use of BIA

significantly increased the number of multiple and combined injuries, which complicates the medical-evacuation providing the wounded and considerably increases the cost of medical property. British experts to the events in the Persian Gulf made a prediction that in future military conflicts with the use of conventional weapons of high lethality wounded will determine what munitions explosive action. Part of the sanitary losses of explosive ordnance during the war in Afghanistan reached 25,0-30,0% of the total number wounded, which gave grounds to consider mine blast injury even as a separate (independent) martial pathology. In General, during the Vietnam war, shrapnel wounds in 1968-1970 reached 57,0-70,0%. During the war in Afghanistan, the ratio of bullet and shrapnel wounds in 1980 was up to 2: 1, and in 1988 is 1: 2.5. According to the British 32 field hospital during operations in the Persian Gulf (1990) of all wounded admitted to hospitals, and 81.0% had multiple shrapnel damage and 19.0% - bullet wounds .

Cluster artillery shells designed to defeat manpower and equipment, as well as for remote mining areas. Such shells designed for 155 and 203.2 mm howitzers. For example, 155 mm cluster bomb M692 has 36 antipersonnel mines each weighing 450 g At a given altitude the mines are ejected from the projectile and upon impact on the ground from her thrown of nitrogen elements which throw mine on the height of human growth, then the mine explodes. The radius of fragments 4-6 meters. Shells M449A1 have elements M43A3 that contain splinters in the form of balls. When you fall to the ground elements are broken and the beads scattered in a radius of 7 meters. Cluster munitions are for reactive systems of volley fire (MLRS). So, MLRS "FIROS-25" (Italy) has a cluster of anti-personnel warhead, charged 66th anti-personnel mines or shaped-charge fragmentation grenade, 240 mm 12-barreled multiple-launch rocket system MLRS (USA), charged cluster warhead, which has 644 shaped-charge fragmentation elements. Weapons of mine. One of the areas of development of mines is the creation of an anti-personnel Claymore-type directional mines. All types of such mines have a flat plastic casing, sliver element with multiple layers of stulneva balls and an explosive charge. Landmines, mostly, affect the lower limbs (up to their traumatic amputation) cause serious damage to the genitals, peritoneum, lower part of the abdomen. The wound contaminated land. Mine blast wounds are often combined in nature. Injuries associated with landmines during the war in Korea was noted in 3% casualties of the total number of sanitary losses, and in 1968 in Vietnam is 10.5%, and in 1970 - at 34.9%. Lately in the practice of medicine the term "defeat from the mines" define the action not only damaging factors in the area of the shock wave and debris out of this zone. With the explosion of the mines created a bunch of shrapnel, which affected the unprotected manpower in the sector of 60-90 degrees at a distance of 25-100 m and more. For example, when a mine of the "Kleiner" (USA), a beam fragments (700 metal balls), which fly at a distance of 180 m in the sector of 60 degrees. Such damage, according to the Arab-Israeli

war (1973), was 85.0% and 80.0% of during hostilities around the Falkland (Malvinas) Islands (1982).

There was an increase in frequency of defeat of the min - to 20.0-42,0% the conduct of the defense of the fighting and guerrilla warfare.

High-precision weapons (WTO) - driven weapon capable of hitting the target (object) the first start-up (shot) at any distance within reach.

VPP consists of:

- > weapons;
- > management tools and guidance;
- > means of intelligence.

Means of destruction VTZ are: anti-tank missiles (ATGM) ground-based and air-based; guided air bombs (ASD) and aviation magazine, charged self-driving combat elements; artillery shells and mines that are in the final segment of the flight path; guided missiles (CR) of different classes.

The means of control and guidance VTZ include: automatic control systems (management information system); airborne and stationary controls.

Reconnaissance, which are used in the composition VTZ: unmanned aerial vehicles (UAVS), radar station (radar), aircraft reconnaissance; space reconnaissance; ground reconnaissance. Modern representatives of the VPP, which bring together all of its component parts are:

- > reconnaissance-strike complexes (OWNER);
- > reconnaissance-fire complexes (RVC).

The principles of the VPP are based on the use of laser, television, thermal imaging, infrared, radar, and various combined systems targeting. Due to the presence of automatic control systems, these tools operate on the principle "shot and forgot". The operator performs only a primary aim (capture objectives) and more in the process of restoring the damaging parts of the VPP to the target is not involved. The main advantages of VPP over other types of weapons include the following: first, when the mass use VTZ its combat effectiveness is equated with the effectiveness of the nuclear weapon of low power; second, the selectivity of the selection of targets for destruction, greater precision and absence of contamination, allow you to fire at any distance from the front edge without fear of accidental destruction of his troops; third, it eliminates the need for zeroing characteristic of unguided weapons, increases the rapidity of the fire strike. Use VTZ possible from areas that are not amenable to unexposed enemy through the removal of the positions VTZ from the front lines and through the use of storage in difficult areas; fourth, the application of VPP significantly reduced the number of forces and means used to solve combat tasks that can reduce losses in manpower and technology, will facilitate logistical support troops.

Considering VTZ from a medical point of view regarding the possible structure and size of sanitary losses that it causes, it is necessary to note the following:

1. With the broad use of the enemy's HANDS, we should expect the appearance of mass sanitary losses as the teams directly conducting military operations and deployed in the depth of the rear band of the army corps (operational command), thereby defeat possible to the depth of the combat order.

2. The use of VPP will be accompanied by a sharp increase in parts of deadly lesions (70%) of the total number of losses and sanitary losses among (30%) a sharp increase in the proportion of severe and very severe lesions which are distributed as follows:

- > easy degree - 15%;
- > moderate - 15%;
- > severe - 20%;
- > extremely heavy - 50%.

Ammunition of volume explosion (CWA). The basis of using this kind of conventional weapons is the ability to melkodispersnykh explosion of the fuel-air suspension space-detonating systems (ODS). The principle of CWA, has a certain analogy with the random explosions that occur in the chemical industry, in granaries, grain elevators, coal mines, at home. In these cases the explosion has the same mechanism of formation of aerosol mixture of volatile liquids with high caloric content that do accidentally, or through triggers. At the same time, in conditions which depend primarily on the concentration and physico-chemical properties of the fuel in the fuel-air cloud may be the process of detonation. Affecting factors BOV:

- > the shock wave of the dust explosion;
- > thermal pulse;
- > poisoning by carbon monoxide and nitrogen.

The action of the shock wave:

- > the direct impact of a sudden drop of pressure in the environment;
- > throwing action - body injuries obtained during the movement of the waves relative to the subjects of the environment and soil;
- > tangential action wounded soldiers of various objects (secondary shells) that are fond of moving a mass of air waves. BOV second and third generation with methane charge 1000 kg to allow the pressure in the shock front at 0.9 kg/cm at a distance of 65 m from the border of detonation, and 0.42 kg / cm at a distance of from 120 to 250 m. the severity of the damage depends on the pressure in the shock wave front.
- > 0.2-0.3 kg/cm minor injuries;
- > 0,3-0,6 kg/cm moderate;
- > 0,6-1,0 kg/cm heavy damage.

As a result of BOV can have such types of mechanical lesions isolated and combined. Combined damage in turn are divided into mechanical and heat, mechanotaxis, mehanoremontnyi. The defeat of the BOV may have different localization and severity. You need to keep in mind that with the defeat of the BOV in the first place will corrupt a critical organ such as the ear. It also

marked the defeat comacina-nature contusion, hemorrhage in brain, lungs, ruptures and crushing of parenchymatous and hollow organs. Thermal pulse can cause burns of varying severity. In the closed fortifications soldiers can get poisoned by carbon monoxide and oxides of nitrogen.

Incendiary mixture. The basis of this type of weapon is the use of various types of incendiary mixtures (substances), which is based on their ability to easily engage and develop a high temperature when burning. According to modern classification, all modern incendiary mixtures are divided into three main groups:

- > incendiary mixtures, petroleum-based - Napalm;
- > metallic incendiary - pyrogene;
- > thermite incendiary - termites.

They are characterized by high combustion temperature: 900-1200 ° C, the Napalm, up to 1800 ° C - pyrogene to 2200 ° C - termites. Well jump to different surfaces and create a sustainable fire. For the use of incendiary mixtures are used such funds: flamethrowers, grenade launchers, incendiary ammo (bombs, cassettes). The massive use of incendiary devices leads to the emergence of large groups affected with deep thermal burns, which are characterized by some peculiarities in the clinical course. Napalm burns are localized mainly in open areas of the body, and more than 75% of the cases affected person. The most common combination is the defeat of the head and of the brush, indicated in 66.6% of cases. Napalm burns III and IV degree account for 75,5%, II degree - with 24.3%, 1st - very rare. If in contrast to conventional thermal burns, in which loss of consciousness happens only in the case of very large damages, then the use of Napalm loss of consciousness occurs when affects less than 10% of the body surface. Napalm burns several times more often than terminie, complicated by shock, which is characterized by high mortality. Napalm burns are often combined with asphyxia, which is caused by edema of the larynx, glottis, and toxaemia due to combustion products. The improvement of this type of conventional weapon is carried out in the following areas:

- > improving the combat characteristics of incendiary mixtures by increasing the temperature and burning time, increasing adhesion to various objects;
- > development of self-igniting mixtures in air and when combined with water.

The development of new types of weapons.

In recent years, there have been reports on the creation of infrasound, microwave, radiation (laser), genetic, ethnic, and other types of weapons. The most dangerous types of weapons of mass destruction that can be created in the future, have weapons based on other, unlike fission and fusion, types of reactions (nucleon reaction, the reaction of annihilation). Nucleon reaction - the splitting of nucleons (protons, neutrons) at the sub-elementary particles - quarks. During this process it is assumed a release of energy a thousand times more than the modern nuclear reactions.

Annihilation reaction is a mix of matter and antimatter, resulting in a quantum of light with an efficiency close to 100%. This releases the maximum amount of energy (per unit mass is 1000 times more than the thermonuclear reaction). It is assumed that the annihilation reaction can be a major source of energy for interplanetary astronomical communication in the future.

Infrasound weapons - one of the possible types of weapons of mass destruction based on the use of directional radiation of infraspecific powerful vibrations with a frequency less than 16 Hz. Infrasonic vibrations excite the Central nervous system, the organs of digestion and sight. At a frequency of 6-7 Hz can almost instantly lead to death from cardiac arrest, destruction of blood vessels and internal organs. Higher frequencies induce a state of panic.

Microwave weapon. The use of microwave radiation with the aim of hitting personnel. The experiments proved that the intense ultrasonic radiation of decimetric is a picture of the internal of burn tissue coagulation (burns of skin, cornea, destruction of the retina). The generators of such radiation can be devices such as radar or laser.

Radiation (laser) weapons - one of the possible weapons based on the use of laser radiation. Powerful beams of light can cause a burn injury of the retina, the skin.

Genetic weapons - affects the genetic structure of the human body by exposure to mutagens - substances that can act on the genetic structure of man. These include mycotoxin produced by various fungi, as well as cheesy mustard gas, chlorine, pesticides, propazin.

Ethnic weapons - a kind of genetic weapon. The essence of a selective effect on certain ethnic groups of people. Toxic weapons use in means of combat the toxins about the products and particular life of some bacteria, plants, animals. The impact on the natural environment. Great successes of science and technology formed the opportunity not only deeply and truly to understand nature, but also to change it. Have the opportunity to influence the environment for military purposes. Appeared appropriate terms: "ecocide", the "terazid", "eco war", "geographical war". Geographic war means the use of natural forces for military purposes by active influence on the environment and on the physical processes occurring in the solid (lithosphere), liquid (hydrosphere), gaseous (atmosphere) shells of the earth. It is the creation of artificial earthquakes, powerful tide of the "tsunami" of rainfall, changes in temperature certain areas of land, creating avalanches, snow series.

Weather war - the use of weather control for military purposes. The primary method of conducting weather warfare is the dispersion in air of particles of substances (usually silver iodide or lead iodide), which cause rainfall. Real also considered the creation of an artificial fire storms, which can spread with considerable speed and cause tremendous damage. The influence of the size and structure of sanitary losses on the organization of medical support of troops. The study of patterns of occurrence, size and structure of sanitary losses in past and current wars is crucial for the organization of medical-evacuation support

of troops (forces), as the provision of medical assistance to the wounded and sick, evacuating them, and treatment is an important component of the medical service. On the basis of scientific analysis, a thorough scientific and practical research of the size and structure of sanitary losses is built (created) the system of medical support of the Armed Forces of Ukraine, in particular:

- > organizational structure of the medical service;
- > principles, forms and methods of medical-evacuation support of troops (forces);
- > development and implementation of practice support new samples of medicines, medical equipment and materials, means of evacuation of the wounded and sick;
- > the creation of specialized medical institutions (network institutions) with a corresponding hospital bed capacity;
- > development and implementation in practice of sanitary-hygienic and anti-epidemic measures, and medical measures to protect the troops from weapons of mass destruction and the like.

The influence of the value of health losses for the organization of medical support of troops.

With the use of modern conventional weapons is characterized by the emergence of pockets of mass destruction, which are closer in scale to those which arise in the application of nuclear weapons ultra low power. Mass sanitary losses among the troops in today's war - a new feature that cannot be disregarded when the organization of medical care. In all cases sanitary losses will be bright a certain unevenness by areas and time of their occurrence. Maximum sanitary losses can be expected in the first days of combat operations (transactions) and counterattack (counterattacks). In addition, in modern conditions of mass sanitary losses may occur in the troops of the second echelon in the army, stationed in the rear lane operational units. These circumstances should be taken into account in the planning and organization of medical support of troops in battle (operation). This allows, first, to be ready for a significant change in the workload, and secondly, to hold a sufficient reserve of forces and means of medical service. Simultaneity, mass, a variety of combat losses, especially of their origin forced to organize medical care and treatment of wounded and sick not in one facility, as is customary in practice in peacetime, and in a number of medical units and establishments, layered from the front to the rear, in combination with evacuation, and frequently at considerable distances. Health centres, medical companies, medical institutions, the medical transport according to the circumstances can get in the zone of combat means of the enemy. The medical staff will work in conditions of mortal danger that threatens both them and the wounded and patients who are at the stages of medical evacuation. When mass sanitary losses of medical units and institutions will have to take a large number of wounded, to provide them with medical care, food and others and be ready to move to a new location in accordance with the combat situation. When it comes to the stages of medical

evacuation (medical centres, medical companies, medical institutions) a significant number of the wounded and sick, exceeding the real capacities of these stages for all established types of care, volume of care varies considerably and are only carried out urgent measures appropriate type of care.

The effect of the structure of sanitary losses on the organization of medical support of troops.

A significant impact on the organization of medical support of forces is qualitatively new structure of sanitary losses as a result of the damaging effect of each type of weapon, and also at the same time complex application. It should be noted that the defeat of modern conventional weapons has a number of features of quantitative and qualitative character that distinguishes them from other types of wounds, but gunshot wounds from the past. The improvement in firearms, ammunition, explosive action, the use of different by design, submunitions (bullets of different caliber and weight, balls, spheres, cubes, "poluostrov" given the weight and size, etc.) has led to considerable diversity in external appearance and structure of gunshot wounds, the nature of tissue damage and their General effects on the body. It is possible to allocate following features of modern gunshot wounds:

- a considerable variety of types of wounds and the wounds;
- the formation of large tissue defects and non-uniformity of damage in the course of the wound channel;
- the presence of extensive areas of tissue with low support;
- the combination of damage of organs and tissues in different anatomical areas.
- multiple severe injuries, a significant overall effect on the body.

Therefore, of particular importance, the time and quality of medical care, the speed of evacuation of victims to provide qualified assistance and further treatment. The critical condition for determining the result of treatment, in equal conditions of rendering of medical aid is beginning provide qualified surgical assistance not later than 5-6 hours since the injury.

During the war in Afghanistan (1979-1989), despite early and adequate treatment of battle wounds with the removal of all visible necrotic tissue, irrigation of wounds, the protection of the tissues with antibiotics wound infection developed in wounds of the soft tissues in 5, 7% wounded breast - 24.8%, stomach - at 28.0%, of the limbs with fractures of the long bones - at 33.0%.

Purulent infection as a complication among the wounded met during:

- > The great Patriotic war of 1941-1945-at 21.0%;
- > the Arab-Israeli conflict - 15.4%;
- > war in Vietnam (USA) - 3.9%;
- > armed conflict around the Falkland Islands (Malvinas) - at 25.0%;
- > war in Afghanistan (1979-1989) - 8.7%.

The experience of the Soviet military medicine during combat operations in Afghanistan for the prevention of infectious complications of gunshot wounds clearly States that the leading preventive principle, as during the great Patriotic

war of 1941-1945., is the primary surgical treatment (PCO) of wounds. PWH of wounds during the war in Afghanistan was carried out in 70-72% of the wounded, while for 40% - in an emergency. After surgical interventions, almost 10% of the total number of all injured are non-transportable.

Estimated periods of temporary non-transportability by road ambulance are:

a) the wounded after surgery:

craniotomy - 21 days;

laparotomy - 10 days;

thoracotomy - 2-4 days;

amputation of limbs - 2-3 days;

b) affected therapeutic profile:

shell-shocked with respiratory, circulatory and convulsive disorders - 3-4 days;

patients with acute respiratory distress, cardiovascular activity and renal function - 2-3 days.

During the evacuation helicopters could be evacuated in the first days after the provision of qualified medical care for 25.0% of affected surgical patients and 90.0% of the affected therapeutic profile of patients; on the second day - 75,0% and 10.0%, respectively. Traditionally, the acute problem of wartime remains the treatment of theoretical pathology. The size of sanitary losses of the patients depends on such factors as the sanitary-epidemic situation, the level of conscripts ' health, climatic and geographical conditions of theater, the intensity and duration of hostilities, catering, water supply etc. So, in the wars of XIX - early XX century sanitary losses of the sick 2 to 3 times previously sanitary losses wounded. During the great Patriotic war of 1941-1945, they accounted for 34.7% of all sanitary losses. 40 the Army during the war in Afghanistan, the ratio of these losses is 10: 1 to 8: 1.

It is necessary to consider a large psychological impact on staff of modern means of armed struggle. In the structure of sanitary losses of a certain place is the so-called psychological losses, which are understood personnel who remained in the ranks, but lost the combat capability due to the action of strong traumatic factors. So, during the Israeli war (1973). Every fourth of the evacuees had only neuropsychiatric injury. It should be noted that this category of health loss lose combat capability in most cases for 2-3 days, and about 70% restored during the first day. From the rapid withdrawal of these persons from the state of psychological shock to a significant degree on the recovery time of the combat capability of the parts affected by the attacks of the enemy. Thus, the use of new weapons and the consequent change in the means and character of the armed struggle entail, first, a significant increase in the sanitary losses primarily by troops (forces), nahodyashihsya in the operational depth; secondly, qualitative changes in the nature of injuries and losses, a sharp rise in the number of persons in need of urgent and time-consuming methods of intensive therapy and management of shock. It is clear that the indicators of possible sanitary losses should be considered creatively, given the nature of the fighting,

weapons used by the enemy, state troops, climatic and other conditions. Note also that the indicators of size and structure of sanitary losses is variable. They are subject to significant changes in connection with the improvement of the means and methods of armed struggle. Neglect of the trend in the development of the theory and practice of military affairs, the mutual conditionality of means and methods of warfare can lead to the loss of clear ideas about the ratio of sanitary losses from various types of weapons, about the nature, structure and features of the appearance and clinical difference of modern combat defeats.

Specialists of the medical service of the Armed Forces of Ukraine should constantly study the experience of all wars and armed conflicts in order to understand the peculiarities of modern combat operations, the patterns of occurrence of personnel losses in various conditions of combat activity of troops (forces) and accumulate their own experience in improving the entire system of medical assistance to victims in wartime and in case of emergency

Materials for self-control:

1. Warning and informing as a way of protection of population in emergency situations is achieved:

- \* a) advance the creation and maintenance of permanent readiness for use of warning systems and informing the public and decision makers about the threat and appearance of emergency situations;
- b) training of the population and the ability to act in emergency situations;
- C) collecting and analyzing information about emergencies.

2. To methods of protection of population in emergency situations include:

- a) compliance with safety rules;
- b) observance of requirements of labor protection;
- \* b) engineering protection.

3. Evacuation, as a way of protection in emergency situations is achieved:

- \* a) organized withdrawal or removal of people from the lesions and placing them in safe areas;
- b) with the exception of the lesions, and shelter people in protective structures;
- b) advance education of the public and the ability to act in emergency situations.

4. The measures for state regulation of civil protection include:

- a) assessment of morbidity from infectious diseases;
- \* b) Declaration of safety of industrial objects;
- a) analysis of the seismic and weather conditions in the regions and plan appropriate activities.

5. The ionization method of detecting and measuring radioactive radiation is based on:

- a) the ability of gases under the influence of radiation, to pass the electric current;
- b) the ability of certain substances under the influence of radiation to emit light;
- C) the ability of radiation to cause darkening of photographic materials.

## Literature

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