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SAFETY OF VITAL ACTIVITY

METHODICAL INSTRUCTIONS FOR THE DISCIPLINE FOR ENGLISH SPEAKING STUDENTS

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The manual is prepared in accordance with the working program of the discipline "Safety of vital activity". The structure includes guidelines for each topic studied according to the plan of extracurricular independent work. The methodical manual is intended for specialties 31.05.01 - General medicine, 31.05.02 - Pediatrics, 33.05.01 - Pharmacy.

Content

Explanatory note

The guidelines are intended to provide training for students studying in English in the curriculum "Safety of Life activity."

The goals of mastering: teaching students the rules of behavior, basic ways of protection and actions in emergency and extreme situations, learning about the theoretical basics of life safety.

Mastering tasks:

To educate students about the sources and main characteristics of the hazardous and harmful factors in the production environment;

To teach protection against natural and artificial hazards;

To train the basic rules of staff in emergency situations;

Encourage students to strive for a healthy and active lifestyle.

In order to master the discipline, the student must have the following input knowledge, skills, skills and competences:

Knowledge of basic professional concepts and definitions in general biology, human physiology and ecology;

The ability to use the basic provisions and methods of human sciences

The ability to analyse major environmental problems and processes

Ownership of general issues of the impact of the production environment on the individual;

The results of the discipline will be necessary for the further learning process within the framework of the phased formation of competencies in the study of the following special disciplines:

Bioethics,

The basics of entrepreneuriallaw

Psychology andpedagogy,

The basics of projectmanagement

Praktic: design activity,

A biopsychosocial approach to medicalrehabilitation,

Extrememedicine,

Clinical practice (Hospital Physician Assistant),

Practical application of the International Classification of Functioning in Rehabilitation in Various Pathologies,

Disaster medicine,

Current issues of internal diseases,

Preparing for passing and passing the stateexam.

Key questions of the lecture course

1. Topic "Professional harms of the production environment"

The production environment is the space in which a person's work is carried out.

The production environment is a part of the human environment, including natural and climatic and professional factors (noise, vibration, toxic vapors, gases, dust, ionizing radiation, etc.), called harmful and dangerous factors.

Danger is a negative property of living and inanimate matter, which can cause damage to matter itself: people, natural environment, material values

Dangerous are factors that can under certain conditions cause acute health problems and death of the body; harmful factors that adversely affect performance or cause occupational diseases and other adverse effects.

Classification of harmful and dangerous factors:

1. chemicalsthat come from toxic substances that can cause adverse effects on the body;

2. physical, which can be caused by noise, vibration and other types of vibrational influences, non-ionizing and ionizing radiation, climatic parameters (temperature, humidity and air mobility), atmospheric pressure, light level, as well as fibrogenic dust;

3. biological, caused by pathogens, microbial drugs, biological pesticides, saprophyte spore-forming microflora (in livestock premises), microorganisms, which are products of microbiological drugs.

4. physical (static and dynamic) overload - lifting and carrying weights, uncomfortable body position, prolonged pressure on the skin, joints, muscles and bones;

5. physiological - insufficient motor activity (hypocinesia);

6. nervous-mental overload - mental overexertion, emotional overload, overexertion of analyzers.

Working condition:

1. Optimal working conditions ensure maximum productivity and minimal stress of the human body.

2. Acceptable working conditions are characterized by levels of environmental and labour factors that do not exceed the standards of hygiene for jobs.

3. Harmful working conditions are characterized by levels of harmful production factors that exceed hygiene standards and have adverse effects on the worker's body and/or offspring.

4. Extreme working conditions are characterized by levels of production factors, the impact of which during the work shift (or part of it) is life-threatening, a high risk of severe forms of acute occupational lesions.

2. Topic "Physiological basics of work and prevention of fatigue"

Fatigue means a special physiological state of the body, which arises after the work done and is expressed in a temporary decrease in performance.

One of the objective signs is a decrease in productivity, but subjectively it is usually expressed in a feeling of fatigue, i.e. unwillingness or even impossibility to continue work. Fatigue can occur in any activity. Fatigue is associated with changes in the physiological state of the whole body, and certain importance are disorders that occur in the central nervous system.

With long-term exposure to harmful factors in the production environment, overwork can develop, sometimes called chronic fatigue, when night rest does not completely restore the reduced performance during the day.

The basis for the occurrence of overwork is the discrepancy between the duration and severity of work and rest time. In addition, the development of overwork can contribute to poor working conditions, poor living conditions, poor nutrition.

Symptoms of overwork are various disorders on the part of the neuropsychiatric sphere, such as loss of attention and memory. In addition, overworked people have headaches, sleep disorders (insomnia), decreased appetite and increased irritability.

In addition, chronic overwork usually causes weakening of the body, reducing its resistance to external influences, which is expressed in the increase in morbidity and injury. Often this condition predisposes to the development of neurasthenia and hysteria.

Measures to prevent fatigue:

1. Physiological rationalization of the labor process to save and limit movement at work;
2. Even distribution of load between different muscle groups;
3. Conformity of production movements to the usual human movements;
4. Rationalization of the work posture;
5. Exemption from unnecessary emergency operations.
6. Mechanization and automation of production,
7. Sanitary improvement of production facilities (volume of premises, microclimatic conditions, ventilation, lighting, aesthetic design).

3. Topic “Emergency concept”

Economic activity leads to a violation of ecological equilibrium, the emergence of anomalous natural and man-made situations: natural disasters, disasters and accidents with numerous human casualties, huge material loss and disruption of normal living conditions.

According to the UN, over 3 million people have died as a result of natural disasters and disasters on our planet in the last 20 years.

Emergency prevention and response (emergency) is one of the pressing problems of our time. Skillful actions to save people, provide them with the

necessary assistance, carry out rescue work in the hotbeds of defeat slash ingestions can reduce the number of dead, preserve the health of the victims, reduce material losses.

Any activity is potentially dangerous.

Analysis of emergencies that have taken place in Russia in recent years, has allowed to highlight *the causes of accidents and injuries:*

1. human factor is 50.1%;
2. equipment, equipment - 18.1%;
3. technology is 7.8%;
4. environmental conditions - 16.6%;
5. other factors is 7.4%.

The main causes of emergency are:

- internal: complexity of technology, lack of staff skills, design and development flaws, physical and moral wear and tear of equipment, low labor and technological discipline;
- external: natural disasters, sudden interruption of electricity supply, gas, technological products, terrorism, war.

At present, there has been a marked increase in the proportion of accidents caused by misconduct by maintenance technicians (over 50%).

Accidents and disasters are associated with the construction of facilities with notoriously backward technology, with savings in the provision of necessary security, with the construction of enterprises in places vulnerable in socio-economic terms (e.g., proximity particular fragility of ecosystems).

Emergencies can occur under the following circumstances:

- the presence of a source of risk (pressure, explosives, radioactive substances);
- the action of risk factors (gas release, explosion, fire);
- being in the pockets of human destruction, farm animals and land.

The Russian Federation annually spends 1-2% of gross product on the elimination of the consequences of various kinds of emergencies. In the future, this share could rise to 4 to 5%, which would exceed items such as health and the environment combined.

In this regard, the solution to the problems of safety of life should provide:

1. improving the training of the entire Russian population;
2. ensure that all types of emergencies and their consequences are taken into account;
3. a full picture of how to protect against dangers;
4. the provision of personal and collective security regimes under normal emergency conditions and conditions.

Analysis of the causes and course of the development of emergency of different nature revealed their common trait - stage.

There are five stages (periods) of emergency development:

I . the accumulation of negative effects leading to an accident;

II. period of the disaster;

III. extreme period, in which the bulk of energy is released;

IV. period of fading;

V. the period of remediation.

In the Russian Dictionary, the word "extraordinary" is interpreted as "exceptional, very large, superior to all." The phrase "emergency" defines dangerous events or phenomena that lead to disruption of life's safety.

Emergencies are the circumstances arising from natural natural disasters, accidents and disasters of man-made, ecological origin, military, social and political nature, causing a sharp deviation from the norms of people's livelihoods, economy, social or natural services

The concept of extreme situations

"Extreme situation" is a concept that reflects the impact on humans of dangerous and harmful factors that led to an accident or excessive negative emotional and psychological impact. Extreme situations (ES) include injuries at work, fires, explosions, road accidents, and circumstances that can lead to injuries of varying severity.

Psychological, physical and other forms of training of persons who may find themselves in ES are necessary to reduce the negative impact of adverse factors, to maintain self-control, endurance, and self-help capacity. ES is usually associated with a small number of people and has a local character.

Emergencies are events of considerable magnitude, covering a large area and threatening large numbers of people.

Accidents are damage to a car, a flow line, an energy supply system, equipment, a vehicle, a building or a structure.

Disaster

The disaster is an event with tragic consequences, a major accident with loss of life.

According to WHO, a disaster is an unforeseen and unexpected situation that the affected population is unable to cope with on its own.

Types of disasters:

1. Environmental disaster - a natural disaster major industrial or transport accident (disaster), which led to extremely adverse changes in the field of habitat and, as a rule, to the mass destruction of flora, fauna, soil, air environment and nature in general.

2. A production or transport accident is a major accident that has caused loss of life and considerable material damage.

3. A technological disaster is a sudden, unspecified release of mechanical, chemical, thermal, radiation and other energy.

Disaster relief is understood as measures that can limit or change the consequences of a disaster.

Natural disasters are dangerous phenomena or processes of geophysical, geological, hydrological, atmospheric and other origin of such magnitude, in which catastrophic situations are characterized by sudden disturbance people's livelihoods, destruction and destruction of material property.

Natural disasters tend to cause accidents and disasters in industry, transport, utilities and other areas of human life.

4. Topic: "Protecting personnel in emergency situations"

The first stage of emergency action: taking emergency measures to protect staff, prevent the development of emergencies.

Emergency measures to protect the staff of the facility include:

1. Alerting and informing of the rules of conduct;
2. Medical prevention and the use of protective equipment based on the situation;
3. Evacuation of workers from sites where there is a risk of human beings being killed;
4. providing first aid and other types of assistance to the victims.
5. Actions to localize the accident when stopping or changing the process of production, as well as to prevent explosions and fires.
6. Reconnaissance and assessment of the current situation, measures to protect personnel and eliminate emergencies are being clarified.
7. Search for victims, removal of them from the rubble of burning buildings, damaged vehicles and evacuation (removal, withdrawal, removal) of people from dangerous areas (dangerous places).

The second stage of emergency action:

The primary livelihood of the people affected by the disaster. Work is under way to restore power and utility networks, communication lines, roads and facilities to ensure rescue work and the primary livelihood of the population. Sanitary treatment of people, decontamination, degassing, disinfection of clothing and shoes, transport, equipment, roads, structures, the territory of the facility is carried out. The necessary conditions are created for the life support of the affected population, the preservation and maintenance of the health and health of people when they are in emergency zones and during evacuation (temporary eviction).

The main measures on life support of the affected and evacuated population:

1. Temporary accommodation for the homeless;
2. Providing people with uncontaminated (uncontaminated) food, water and basic necessities;
3. Creating the conditions for normal activities before. Public utilities, transport and health facilities;
4. Organizing the accounting and distribution of material aid;
5. Carrying out the necessary medical, sanitary and hygienic and anti-epidemic measures;
6. Work among the population to reduce the effects of mental health, eliminate shock conditions;

Sustainability

Sustainability of the organization is:

The ability of it in emergency situations to withstand the effects of striking factors in order to maintain the output of products in the planned volume and itemization;

Limiting or preventing threats to the lives and health of staff, the public, and material damage to the organization;

Ensuring the restoration of human health and disrupted production in the shortest possible time.

The main criterion in assessing sustainability is the limit of the organization's resilience to the parameters of the striking factors of emergency, namely:

To the mechanical striking factor;

to thermal (light) radiation:

to chemical contamination (defeat):

to radioactive contamination (exposure):

to the moral and psychological impact.

Identification of the most likely emergencies is determined on the basis of the type of organization, the nature of the process, the characteristics of the geographical area, the internal layout and development of the territory, the flexibility and reliability of communications and management systems.

Assessment of the sustainability of the organization's work in the event of a chemical emergency:

1. Determining the time during which the territory of the organization will be dangerous for people to stay;

2. Analysis of the chemical environment affecting the performance of production processes;

3. Identification of staff protection.

Assessment of the sustainability of the organization's work in conditions of radioactive contamination (contamination) includes:

1. radiation assessment;

2. Determining staff radiation doses;

3. Radiation loss and disability.

The limits of the psycho-emotional stability of the production staff to the striking factors of the emergency is the time when the person adapts to the conditions of the emergency stability factor.

The time of adaptation depends on the state of the human nervous system and is characterized by stages:

1. Vital reaction - behavior aimed at saving lives (15minutes);

2. psycho-emotional shock, in which the critical assessment of the situation is reduced (3-5hours);

3. psychological demobilization, panic mood (up to 3 days);

4. stabilization of well-being (3-10 days.).

The psycho-emotional resilience of society in emergency is the ability to effectively carry out rescue work.

It can be enhanced by psychophysiological selection of people, practical training of people to develop skills in a particular emergency and training on the use of personal protective equipment.

In the conditions of emergency, stress and mental trauma are possible, leading to the appearance of "disaster syndrome" (exposed to 75% of people).

These problems can be reduced by exhaustive speech information, the creation of "safety zones," the intake of anti-anxiety medicines and the involvement in active activities to eliminate emergencies.

For the organization to function properly, it needs to manage the emergency in a stable way.

The limit of stability of management is the time during which the alert, communication and security are provided smoothly.

Once the sustainability limit has been determined, the following measures to improve its sustainability are outlined and implemented:

1. Preventing the causes of an emergency;
2. Emergency prevention;
3. Mitigation of the consequences of an emergency;
4. Provide protection against possible impacts.

The main measures to improve the sustainability of the organization can be assessed as efficiency and cost-effectiveness.

Efficiency is achieved by a comprehensive assessment of all the striking factors of the emergency.

Economics is achieved by linking emergency prevention activities with the organization's day-to-day operations.

5. Topic: “Determining the risk of emergency”

The risk is a combination of the likelihood of damage and the severity of the damage.

The modern world has moved from the concept of absolute security to the concept of acceptable (acceptable) risk, the essence of which is to strive for the kind of security that society accepts at this time.

The public's perception of risk and danger is subjective.

An acceptable risk is a low rate of death, injury or disability for workers that does not affect the economic performance of the enterprise, industry or the state.

Acceptable risk includes technical, economic, social and political aspects and represents some trade-off between the level of security and the possibilities of achieving it.

Types of risk:

1. Individual risk characterizes the risk of a certain species to an individual.

2. Social or group is a risk to a group of people. Social risk can be the relationship between the frequency of events and the number of people affected. The risk (R) can be calculated by formula

$$R = \frac{n}{N},$$

Where n - number of accidents; N- total number of people.

3.Technical;
4.Environmental;
5.Economic

The risk and risk assessment includes three phases:

1. Workplace inspection to identify hazardous and harmful production factors; types of work in which workers may be exposed to hazardous factors.

2. Gathering of information on hazardous and harmful production factors; assessment of exposure to harmful factors and the time of its action compared to regulatory factors

3. Assessment of the possibility of eliminating the danger or reducing it to the minimum allowable level or to a level that will not lead to a health disturbance with long-term exposure during the working period

Riskmanagement:

- Eliminating a dangerous factor or risk;
- Combating a dangerous factor or risk at the source;
- Reducing the level of the dangerous factor or introducing safe systems of operation;
- If the residual risk of personal protective equipment is maintained.

Risk prevention measures:

1. Regular monitoring of working conditions;

2. regular monitoring of the health of employees (preliminary and periodic medical examinations, dispensary surveillance teams, targeted medical examinations, etc.);

3. Regular control of protective devices and the use of personal protective equipment;

4. Systematic informing workers about the existing risk of health problems, the necessary protection and prevention measures;

5. Promoting a healthy lifestyle (fighting bad habits, exercising, etc.).

6. Topic: "Fire safety"

Fire is a burning, which destroys or damages material values, creates a danger to the life and health of people.

Burning is a rapidly flowing chemical process of oxidation or connection of flammable matter and air oxygen, accompanied by the release of gas, heat and light. It is known burning and without oxygen air with the formation of heat and light. Thus, burning is not only a chemical reaction of the compound, but also decomposition.

The most likely burning occurs in pure oxygen. As the oxygen concentration decreases, the combustion process slows down, the lowest rate of combustion at the oxygen content in the air is 14-15%.

Terms of fire:

1. combustible materials,
2. oxidizer
3. source of arson.

In practice, there is a complete and incomplete burning. Full combustion is achieved with enough oxygen, and incomplete - with lack of oxygen. In incomplete combustion, as a rule, caustic, poisonous and explosive mixtures are formed.

Fire prevention is a set of organizational and technical measures to prevent, localize and eliminate fires, as well as to ensure the safe evacuation of people and property in the event of a fire.

The general planning of the territory of enterprises and organizations is essential for the conduct of fire-fighting activities. On the territory of enterprises there should be basic and auxiliary roads, allowing free access and approach to all buildings, structures and other facilities. The rules set the width of the main6 м() and auxiliary ()4 мroads.

Firefighting process:

1. Localization of fires - limiting the spread of fire and creating conditions for its elimination.
2. The elimination of fires understand the final extinguishing or complete cessation of burning and the exclusion of the possibility of re-occurrence of fire.

The success of rapid localization and elimination of the fire in its initial stage depends on the availability of fire extinguishing tools and the ability to use them, fire communication and alarm spree to call the fire brigade and activate automatic fire extinguishing units.

The main fire extinguishers and substances are water, foam, sand, inert gases, dry (solid) fire extinguishing substances, etc.

Water is the most common means of extinguishing. Covering the surface of substances, it absorbs a lot of heat and cools burning substances to a temperature at which it is impossible to burn them.

Inert gases (CO_2 and N_2) and vapors are effective fire extinguishers.

Production and administrative buildings prohibit:

1. Smoking and using open fire;

2. Install production equipment, furniture, safes and other items on evacuation routes;

3. Leave rooms with uncollected gasoline, kerosene and other flammable liquids;

4. Leave after the end of work the heating devices, televisions, radios, etc. included in the power grid;

5. apply household electric heating devices (electric kettles, boilers, irons, tiles, etc.) in places not set aside for this purpose;

6. Dry ingesrate and store materials on central heating devices;

7. Store and apply unsupervised flammable and combustible liquids;

8. use wiring with damaged insulation, as well as faulty electrical installations (sockets, switches, etc.);

9 wrap electric lights with paper, cloth and other combustible materials, as well as operate them with removed caps (dispersers);

10. To heat the frozen pipes of various systems with soldering lamps and any other way with open flames;

11. store waste paper;

12. to contain the light edicts of the "EXIT" in a malfunctioning state.

7. Topic “Basics of First Aid“

First aid is a set of urgent simple measures to save a person's life. Its purpose is to eliminate life-threatening phenomena, as well as to prevent further damage and possible complications.

Table

“The difference between first aid and health care”:

	First aid	**Medical care**
Who	Persons required to provide first aid under federal law or with a special rule and with appropriate training and/or skills	Medical care is provided by medical organizations: persons who have received medical or other education in the Russian Federation in accordance with FGOS having a certificate of accreditation of a specialist
Where is	At the scene	Outside of medical organization, outpatient, day hospital, inpatient
When	Prior to medical care for life-threatening conditions (accidents, injuries, poisonings)	In cases of sudden acute diseases, conditions, exacerbation of chronic diseases, accidents, injuries, poisonings that threaten the patient's life, as well as preventive measures, diseases and co-occupations, do not life-threatening patient

The list of first aid activities:

1. Measures to assess the situation and ensure that
Safe conditions for first aid:

Determining the life and health hazards of your own life and health;
Determining the life and health of the victim;
Eliminating life and health hazards;
cessation of damage to the victim;
Estimating the number of victims;
Removing the victim from the vehicle or other hard-to-reach areas;
the victim's movement.

2. Emergency medical calls, other special services whose employees are required to provide first aid in accordance with federal law or with a special rule.

3. Determining the presence of consciousness in the victim.

4. Measures to restore the passage of the airways and determine the signs of life in the victim:

Throwing the head with the lifting of the chin;
extension of the lower jaw;
Determining the presence of breathing through hearing, vision and touch;
determining the presence of blood circulation, checking the pulse on the main arteries.

5. Cardiopulmonary resuscitation (CPR) before signs of life:

pressure with his hands on the victim's sternum;
"Mouth to mouth" artificial breath;
" Mouth to nose" artificial breath;
artificial breathing using a device for artificial respiration.

6. Activities to maintain airway passage:

Making a stable side position
Throwing the head with the lifting of the chin;
extension of the lower jaw.

7. Activities to examine the victim and temporarily stop the external bleeding:
Examination of the victim for bleeding;
finger compression of the artery;

The imposition of the harness
Maximum flexion of the limb in the joint;
Direct pressure on the wound;
putting on a pressure bandage.

8. Activities to examine the victim in detail to identify signs of injuries, poisonings and other conditions that threaten his life and health, and to provide first aid if these conditions are identified:

A head check-up;
Neck inspection;
Breast examination;
A back examination;
Examination of the abdomen and pelvis;
Examination of limbs;
imposition of bandages in injuries to various areas of the body, including occlusion (sealing) in the wound of the chest;
Immobilization (by means of improvised means, autoimmune mobilization,medical products);
fixation of the cervical spine (manually, by improvised means, using medical products);
stopping the effects of dangerous chemicals on the victim (washing the stomach by taking water and causing vomiting, removing from the damaged surface and washing the damaged surface with running water);
local cooling in the event of injuries, thermal burns and other exposures to high temperatures or thermal radiation;
thermal insulation for frostbite and other effects of low temperatures.

9. Giving the victim the optimal position of the body.

10. Monitoring the victim's condition (consciousness, breathing, circulation) and providing psychological support.

11. Transfer the injured to the ambulance crew, to other special services whose staff are required to provide first aid in accordance with federal law or with a special rule.

Ambulance and rescue rules
1. If you are alone at the scene, first help should be provided and only then begin to call the ambulance crew.
2. To name the address of the scene: street, house number, the name of the organization.
3. Report what happened: electrocution, fall from a height, road accident, drowning, etc.

4. Report who the accident occurred with the man, woman, child, as well as the number of victims.

5. Indicate the condition of the victim and the nature of the injuries: conscious or unconscious, damage to limbs, bleeding, thermal or chemical burns, etc.

6. Call yourself and the time of the call, find out who accepted the call.

Emergency medical call:

Mobile: 112
By landline: 03

(only in Russia!)

Cardiopulmonary resuscitation before signs of life:

1) pressure with his hands on the sternum of the victim;
2) artificial breathing "Mouth to mouth";
3) artificial breathing "Mouth to nose";
4) Artificial breathing using a device for artificial respiration

Take your hands in the castle. You hold the compressions strictly vertically along the line connecting the sternum with the spine. Push smoothly, without sudden movements, the weight of the upper half of your body. The chest compression depth should be at least 5-6 см, the frequency of at least 100 pressures in 1 minute.

To carry out artificial respiration it is necessary to put the patient on his back, unbutton the clothes embarrassing chest and ensure the free passage of the

airways. If there is content in your mouth or throat, it should be quickly removed with your finger, napkin, handkerchief, or with any suction.

To free the airways, the victim's head should be taken back. It should be remembered that excessive head removal can lead to narrowing of the airways. To fully open the airways, you need to push the lower jaw forward.

Artificial breath "Mouth to mouth"

When breathing "mouth-to-mouth" the head of the victim is held in a certain position

Breathing resuscitation, taking a deep breath and tightly pressing his mouth to the patient's mouth, blows into his lungs air. At the same time, the hand, which is at the forehead of the victim, must clamp the nose. Exit is carried out passively, due to the elastic forces of the chest. The number of breaths per minute should be at least 16-20. The inhalation should be carried out quickly and abruptly (in children - less abruptly), so that the duration of inhalation was 2 times less than the time of exhalation.

It is necessary to ensure that the exhaled air does not lead to excessive stretching of the stomach. In this case, there is a danger of releasing food masses from the stomach and getting them into the bronchi. Of course, mouth-to-mouth breathing creates significant hygienic inconveniences. You can avoid direct contact with the patient's mouth by blowing air through a gauze napkin, handkerchief or any other untight matter. In this method of ventilation, ducts can be used.

When using the mouth-to-nose breathing method, air is blown through the nose. At the same time, the victim's mouth should be closed with his hand, which is simultaneously shifted jaw to the top to prevent the fall of the tongue.

Alternate 30 pressures with 2 breaths of artificial respiration, regardless of the number of people performing resuscitation.

Cardiopulmonary resuscitation can be stopped in the followingcases:

The victim has clear signs of life;

The arrival of the ambulance crew;

- the impossibility of continuing cardiopulmonary resuscitation due to physical fatigue.

List of recommended literature

Basic literature:

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