

MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS  
EDUCATIONAL INSTITUTION  
BELARUSIAN STATE MEDICAL UNIVERSITY

Контрольный  
экземпляр



APPROVED

by First Vice-Rector, Professor  
I.N.Moroz

12.08. 2023

Reg. # UD-Л.12/2324/edu. sub.

**ANESTHESIOLOGY AND REANIMATOLOGY**

**Curriculum of educational institution in the educational discipline for the  
specialty 1-79 01 01 «General Medicine»**

**Sub-Residency «General Clinical Practice»**

Minsk 2023

Curriculum is based on the educational program of educational institution in the educational discipline «Anesthesiology and Reanimatology» for the Sub-Residency «General Clinical Practice (for foreign citizens)», approved 11.08.2023, registration # УД-L.12/2324 /yч. сьб.

**COMPILERS:**

A.A.Shmatava, Associate Professor of the Anesthesiology and Reanimatology Department of the Educational Institution «Belarusian State Medical University», PhD, Associate Professor

**RECOMMENDED FOR APPROVAL:**

by the Anesthesiology and Reanimatology Department of the Educational Institution «Belarusian State Medical University»  
(protocol #15 of 30.06.2023);

by the Scientific and Methodological Council of the Educational Institution «Belarusian State Medical University»  
(protocol # 7 of 10.08.2023)

## EXPLANATORY NOTE

«Anesthesiology and Reanimatology» is the educational discipline containing systematized scientific knowledge about methods of organism protection from surgical traumas with application of anaesthesia, management or temporary replacement of the patient's vital functions during surgical interventions in the immediate postoperative period; treatment methods of patients with severe impairment of vital functions in terminal and critical conditions.

The aim of teaching the educational discipline «Anesthesiology and Reanimatology» for the sub-residency «General Clinical Practice» consists of formation of academic, social, personal and professional competencies for providing medical care to patients with various diseases in critical and terminal conditions.

The tasks of teaching the educational discipline consist of formation of scientific knowledge on etiology, pathogenesis, clinical manifestations of internal organs diseases, skills required for:

- examinations of patients in terminal and critical conditions;
- diagnosis of the most important violations of vital functions;
- interpretation of the results of laboratory and instrumental research methods;
- resuscitation and intensive care.

Teaching and successful learning of the discipline «Anesthesiology and Reanimatology» for the sub-residency «General Clinical Practice» is carried out on the basis of the knowledge and skills previously acquired by the students in the following disciplines:

General Chemistry. Electrolytic blood composition, blood buffer systems. Acid-base balance.

Biological Chemistry. Blood coagulation and anticoagulative systems. Hemostasis mechanisms.

Normal Physiology. Principles of cells, tissues, organs and systems functioning and mechanisms of their regulation. Functional parameters of the healthy organism used in practical medicine and their normal range.

Pathological Anatomy. Reasons, mechanisms and the major manifestations of typical general pathological processes. Body adaptation and compensation mechanisms arising in response to influence of pathogenic factors and changing environmental conditions.

Pathological Physiology. Haemodynamics and gas exchange infringements in case of shock.

Internal Diseases. Urgent situations in cardiology and pulmonology.

Surgical Diseases. Urgent surgical diseases, technical characteristics of various surgical interventions, their influence on hemodynamics and respiration of the patient during the perioperative period.

As a result of studying the educational discipline «Anesthesiology and Reanimatology» for the sub-residency «General Clinical Practice» the student should

**know:**

principles of medical ethics and deontology in dealing with patients and their relatives;

basic concepts of anesthesiology and reanimatology;

causes and mechanisms of typical vital function impairment;

types and methods of anesthesia, anesthesia complications;

medicines and methods of anesthesia maintenance in case of invasive and surgical methods application;

regulation principles and correction methods of haemodynamics, breath and metabolism dysfunctions in terminal (cardiopulmonary resuscitation) and critical conditions, surgical interventions, etc.;

fundamentals of infusion treatment, parenteral nutrition;

methods of diagnosis, emergency care and medical behavior in critical conditions;

methods of treatment in case of poisoning with medicinal and toxic substances;

**be able to:**

define indications for resuscitation and criteria of its termination, to make the «brain death» diagnosis;

provide resuscitation in case of clinical death with application of the closed and open-chest cardiac massage, artificial ventilation of lungs with the elementary methods (a mouth-to-mouth, a mouth-to-nose), manually through a mask, with the help of AMBU-bag, intravascular injections;

check the central venous pressure (CVP);

define and correct deficiency of water and electrolyte balance, pathology in protein and carbohydrate metabolism, in the acid-base balance;

define indications for mechanical ventilation (MV);

cope with a painful syndrome;

**master:**

the skills of Basic Life Support (the methods of airway management, artificial lung ventilation, closed cardiac massage).

Total number of hours for the study of the discipline is 42 academic hours. Classroom hours according to the types of studies: practical classes - 28 hours, student-independent work (self-study) - 14 hours.

Current assessment is carried out according to the syllabus of the specialty in the form of a credit (12 semester).

Form of higher education – full-time.



## THEMATIC PLAN

Section (topic) name	Number of class hours
	practical
1. Terminal Conditions. Cardio-pulmonary Resuscitation	7
2. Intensive Therapy of Acute Circulatory Disorders	7
3. Intensive Therapy of Acute Respiratory Failure	7
4. Intensive Therapy of Acute Poisoning	7
<b>Total hours</b>	<b>28</b>

### CONTENT OF THE EDUCATIONAL MATERIAL

#### 1. Terminal Conditions. Cardio-pulmonary Resuscitation

Definition of the term «terminal state», diagnostics. Types and mechanisms of circulatory arrest. Principles of medical ethics and deontology when communicating with patients and their relatives. Epidemiological safety in the provision of medical care.

Basic cardiopulmonary resuscitation. Ways to restore the patency of the respiratory tract. Ventilation by mouth-to-mouth, mouth-to-nose methods, with an Ambu-type breathing bag. Methods of heart massage, complications. Resuscitation efficiency indicators.

Qualified cardiopulmonary resuscitation. Electro-pulse therapy (defibrillation, cardioversion, electrical pacing), indications, methodology, performance indicators and complications. Pharmacological support of resuscitation measures.

Methods of monitoring the condition of vital organs and systems of the patient's body during resuscitation.

Biological death, clinical picture. Indications for termination of resuscitation measures. Questions of deontology at the termination of resuscitation. Ethical and socio-legal problems associated with the termination of resuscitation. The concept of "brain death".

Conducting (on simulation equipment) basic and qualified cardiopulmonary resuscitation (restoration of airway patency, ventilation by mouth-to-mouth, mouth-to-nose methods, an Ambu-type breathing bag, indirect heart massage, electric pulse therapy).

Diagnosis of clinical death. Assessment of the level of consciousness, respiration, blood circulation. Performing a complex of basic and qualified cardiopulmonary resuscitation. Determination of criteria for the effectiveness and termination of resuscitation. Registration of medical documentation.

#### 2. Intensive Therapy of Acute Circulatory Disorders

Shock: definition of the concept, pathophysiology, classification, clinical manifestations. Methods of diagnostics of tissue perfusion disorders. Features of pathophysiology, clinical picture and intensive therapy of cardiogenic, vasogenic, hypovolemic and septic shocks.

Hypertensive crisis: pathophysiology, clinical picture, intensive care.

Pulmonary embolism: pathogenesis, clinical signs, diagnosis, intensive care.

Acute left ventricular failure or pulmonary edema. Features of intensive therapy of pulmonary edema on the background of hypertension and hypotension, with a combination of cardiac and bronchial asthma.

Intensive therapy of myocardial infarction. Thrombolytic therapy. Cardiac arrhythmias: intensive therapy, electro-pulse therapy.

Collection of patient complaints and anamnesis of the disease. Conducting a physical examination. Drawing up a plan for laboratory and instrumental examination. Interpretation of the results of laboratory and instrumental research methods. Formulation of the diagnosis. Drawing up an intensive care plan. Substantiation of indications for thrombolytic and electropulse therapy. Registration of medical documentation.

### **3. Intensive Therapy of Acute Respiratory Failure**

Definition of the concept of «acute respiratory failure», classification. Pathophysiology of disorders of oxygenation and elimination of carbon dioxide. Diagnosis, intensive therapy of acute respiratory failure. Indications and methods of oxygen therapy. Methods of ensuring the patency of the respiratory tract. ventilator. Methods of ventilation. Indications for the transfer of the patient to a ventilator. Indications for tracheostomy and conicotomy, complications.

Intensive therapy for acute respiratory failure, due to severe pneumonia, asthmatic status, pulmonary edema.

Foreign bodies of the upper respiratory tract, intensive care.

Collection of patient complaints and anamnesis of the disease. Conducting a physical examination. Drawing up a plan for laboratory and instrumental examination. Interpretation of the results of laboratory and instrumental research methods. Formulation of the diagnosis. Drawing up an intensive care plan. Justification of indications for ventilator. Ensuring the patency of the upper respiratory tract. Registration of medical documentation.

### **4. Intensive Therapy of Acute Poisoning**

Acute poisoning, classification. Poisons: classification, phases of toxic action, routes of entry into the body.

The main clinical syndromes in acute poisoning.

Intensive therapy for acute poisoning. Methods of preventing further absorption of poison, enhancing natural detoxification, antidote therapy, extracorporeal detoxification. The choice of detoxification method depends on the nature of the poison and the clinical situation.

Clinical picture and treatment of acute poisoning with hypnotic and psychotropic drugs, alcohol and its surrogates, cauterizing poisons, organophosphorus agents, chlorinated hydrocarbons, hemic poisons, heavy metal compounds and poisons of biological origin.

Collection of patient complaints and anamnesis of the disease. Conducting a physical examination. Drawing up a plan for laboratory and instrumental examination. Interpretation of the results of laboratory and instrumental research methods. Formulation of the diagnosis. Drawing up an intensive care plan. Registration of medical documentation.

**EDUCATIONAL METHODOLOGICAL CARD OF EDUCATIONAL DISCIPLINE «ANESTHESIOLOGY AND REANIMATOLOGY» FOR THE SUB-RESIDENCY «GENERAL CLINICAL PRACTICE»**

Section, topic #	Section (topic) name	Number of hours		Self-studies	Means of training	Literature	Form of control
		practical					
1	Terminal Conditions. Cardio-Pulmonary Resuscitation	7		3	1, 2, 4, 5	1, 2, 4-7	1-2, 4-6
2	Intensive Therapy of Acute Circulatory Disorders	7		3	1, 2, 3, 4, 6	1, 2, 5-7	1-2, 4-6
3	Intensive Therapy of Acute Respiratory Failure	7		4	1, 2, 3, 4, 6	1, 2, 5-7	1-2, 4-6
4	Intensive therapy of Acute Poisoning	7		4	1, 2, 3, 4, 6	1, 3, 5-7	1-6
	<b>Total</b>	<b>28</b>		<b>14</b>			



## INFORMATION AND INSTRUCTIONAL UNIT

### LITERATURE

#### Basic (relevant):

1. Бушма, К. М. Основы анестезиологии = Basics of anesthesiology : учебное пособие для иностранных студентов учреждений высшего образования по спец. «Лечебное дело»/ К. М. Бушма, Р. Е. Ржеутская. – Минск : Новое знание, 2020. – 111 с.

#### Additional:

2. Ржеутская, Р. Е. Интенсивная терапия в токсикологии = Intensive Care in Toxicology : учебно-методическое пособие / Р. Е. Ржеутская. – Минск : БГМУ, 2018. - 35 с.

3. Ржеутская, Р. Е. Основы интенсивной терапии = Basics of Intensive Care : учебно-методическое пособие / Р. Е. Ржеутская, И. И. Тихонович. – Минск : БГМУ, 2017. - 88 с.

4. Ржеутская, Р. Е. Основы анестезиологии и реаниматологии = Basics of Anesthesiology and reanimatology: учебно-методическое пособие / Р. Е. Ржеутская. – Минск : БГМУ, 2016. - 68 с.

### CHARACTERISTICS OF THE USED TRAINING METHODS

In the educational process traditional methods of teaching the academic discipline are used. They are practical classes, as well as elements of the students' independent work.

It is recommended to organize the educational process using traditional and modern educational technologies (simulation training technologies, «standardized patient» techniques, various forms of communication, variable models of independent work, rating training systems, test and other competence assessment systems, etc.) .

Practical classes are conducted in the intensive care units, operation rooms. During practical classes under the supervision of a teacher, students independently take patient's complaints and the case history, conduct a physical examination, learn to make a plan for a laboratory and instrumental examination, interpret the results of laboratory and instrumental tests correctly, make the diagnosis, draw up a treatment plan or intensive care and medical records. Practical training is provided by solving situational tasks, mastering patient examination skills, diseases diagnostics, conducting medical interventions using electronic-mechanical, simulators and communicative competence skills using a standardized (simulated) patient.

Self-independent work consists in studying the main and additional literature, preparing presentations and short reports on the most important issues of resuscitation and intensive therapy.

Students get acquainted with safe working conditions, requirements and ethical norms during cardiopulmonary resuscitation and intensive care.



### LIST OF TRAINING MEANS

1. Multimedia presentations.
2. Video films.
3. Medical records of inpatients.
4. Results of additional examination methods.
5. Simulation equipment.
6. «Standardized» patients.

### LIST OF AVAILABLE DIAGNOSTIC TOOLS

Assessment of student's educational achievements is carried out by using different evaluation tools and technologies of higher education institution. The assessment of students' achievements includes:

typical tasks in various forms (oral, written, test, situational, simulation);  
 medical records of inpatients and results of additional methods of examination (laboratory, functional tests).

The following forms are used for competences assessment:

Oral form:

1. Interview.

Written form:

2. Tests.

Oral-written form:

3. Credit.
4. Situational tasks.

Technical form:

5. Electronic tests.

Simulation form:

6. Evaluation using electronic-mechanical simulators.


### LIST OF PRACTICAL SKILLS

1. Diagnosis of clinical death.
2. Assessment of the level of consciousness.
3. Assessment of respiration.
4. Assessment of blood circulation.
5. Basic Life Support performance (one resuscitator).
6. Basic Life Support performance (two resuscitators).
7. Airway opening using the triple Safar manure.
8. Airway management with Gwedel airway.
9. Mouth-to-mouth and mouth-to-nose artificial ventilation.
10. Artificial lung ventilation with Ambu bag device.
11. Closed cardiac massage.
12. Determination of resuscitation efficiency indicators.
13. Determination of criteria for termination of resuscitation.
14. Drugs administration for Advanced Life Support.
15. Defibrillation performance with monophasic defibrillator.

16. Defibrillation performance with a biphasic defibrillator.
17. Defibrillation performance with medications.
18. Defibrillation performance with automatic external defibrillator.

**COMPILERS/AUTHORS:**


Assistant Professor of the  
Anesthesiology and Reanimatology  
Department of the Educational  
Institution «Belarusian State Medical  
University», PhD, Assistant Professor



---

A.A.Shmatava

Head of the Anesthesiology and  
Reanimatology Department of  
the Educational Institution «Belarusian  
State Medical University», PhD,  
Associate Professor



---

S.S.Grachev

Curriculum content, composition and the accompanying documents comply with established requirements.

Dean of the Medical Faculty for  
International Students of the  
educational institution «Belarusian  
State Medical University»

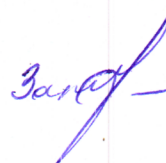
09.08. 2023



O.S.Ishutin

Methodologist of the educational  
institution «Belarusian State Medical  
University»

09.08. 2023



S.V.Zaturanova