MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
Educational Institution
BELARUSIAN STATE MEDICAL UNIVERSITY

APPROVED
by Rector of the Educational Institution «Belarusian State Medical University»
_____S.P.Rubnikovich
26.06.2024
Reg. # UD-0911-01-35/2425/edu.

ACUTE CARDIAC CARE

Curriculum of the educational institution in the academic discipline for the specialty

1-79 01 01 «General Medicine»

2024

Curriculum is based on the educational program «Acute Cardiac Care», approved 26.06.2024, registration УД-0911-01-35/2425/уч.; on the educational plan in the specialty 7-07-0911-01 «General Medicine», approved 15.05.2024, registration # № 7-07-0911-01/2425/mf.

COMPILERS:

N.P.Mitkovskaya, Head of the Department of Cardiology and Internal Diseases of the educational institution «Belarusian State Medical University», DSc., Professor;

E.A.Grigorenko, Professor of the Department of Cardiology and Internal Diseases of the educational institution «Belarusian State Medical University», DSc., Associate Professor;

E.M.Balysh, Associate Professor of the Department of Cardiology and Internal Diseases of the educational institution «Belarusian State Medical University», PhD, Associate Professor;

T.V.Statkevich, Associate Professor of the Department of Cardiology and Internal Diseases of the educational institution «Belarusian State Medical University», PhD, Associate Professor

RECOMMENDED FOR APPROVAL BY:

the Department of Cardiology and Internal Diseases of the educational institution «Belarusian State Medical University»
(protocol # 13 of 06.05.2024);

Scientific and Methodological Council of the educational institution «Belarusian State Medical University»
(protocol # 18 of 26.06.2024)

EXPLANATORY NOTE

«Acute Cardiac Care» is an academic discipline containing systematized scientific knowledge of the etiology, mechanisms of development, clinical manifestations, laboratory and instrumental diagnosis and medical care for the most common emergency conditions in cardiology.

The aim of the academic discipline «Acute Cardiac Care» is to form professional competences for providing medical care to patients with emergency conditions in cardiology.

The objectives of the academic discipline «Acute Cardiac Care» consist in the formation of students' scientific knowledge of the most common emergency conditions in cardiology, which are life-threatening and require providing emergency medical care; skills and abilities necessary for:

assessment of the clinical situation in cardiovascular emergencies and determining the direction of diagnostic search (defining the list of diseases for differential diagnosis);

making up an examination plan for patients with emergency conditions in cardiology;

interpreting the results of laboratory and instrumental methods of investigation;

making a diagnosis;

providing medical care in emergency conditions in cardiology.

The knowledge, skills and abilities acquired during the study of the academic discipline «Acute Cardiac Care» are necessary for successful study of the academic discipline «Emergency Cardiology and Other Emergency Conditions».

Studying the educational discipline «Acute Cardiac Care» should ensure the formation of the following professional competencies:

provide medical care for the most common diseases, injuries, disorders, including emergency and life-threatening conditions of the patient;

use therapeutic and diagnostic equipment;

apply modern methods of diagnostics and treatment of diseases at various stages of medical care.

As a result of studying the academic discipline «Acute Cardiac Care» the student should

know:

the main causes and signs of primary circulatory and respiratory arrest;

principles of basic cardiopulmonary resuscitation;

etiological factors and pathogenesis of the main acute pathological conditions in cardiology (sudden cardiac death; acute coronary syndrome; complications of myocardial infarction; cardiac rhythm and conduction disorders; pulmonary embolism; acute core pulmonale; aortic aneurysm dissection and rupture, cardiac tamponade);

general symptoms and classification of the main emergency conditions in cardiology;

advantages and disadvantages of differential diagnostics and methods of functional studies in cardiology;

modern aspects of emergency diagnosis and emergency treatment of emergency conditions in cardiology;

approaches to the prevention of sudden cardiac death;

be able to:

perform objective examination of a patient with emergency conditions in cardiology;

determine the list of diseases for differential diagnostics in patients with cardiology emergencies;

perform cardiopulmonary resuscitation;

make up an examination plan for emergency cardiovascular diseases;

interpret the results of laboratory and instrumental research methods;

make a clinical diagnosis;

provide emergency care for the main emergency conditions in cardiology;

master the skills of:

anamnesis collection;

physical examination of the patient (measurement of blood pressure, assessment of pulse characteristics, methods of percussion, auscultation, palpation);

taking and interpretation of electrocardiograms;

monitoring vital functions of the human body;

diagnosing clinical death and determining indications for resuscitation in terminal patients;

techniques of indirect cardiac massage and artificial ventilation.

Total number of hours for the study of the discipline is 54 academic hours, including 36 classroom hours and 18 hours of independent work of the student (self-study). Classroom hours according to the types of studies: 36 hours of practical classes.

The form of education is full-time.

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

ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

Code, name of the specialty	semester	Number of academic hours						Form of intermediate assessment
		total	in-class	including			out-of-class self-studies	
				lectures	supervised student independent work	practical classes		
1-79 01 01 «General Medicine»	12	54	36	-	-	36	18	credit

THEMATIC PLAN

Name of section (topic)	Number of class hours
	practical
1. Instrumental diagnostic technologies in cardiology	7
2. Acute coronary syndrome. Complications of myocardial infarction	7
3. Pulmonary embolism. Acute cor pulmonale	7
4. Acute aortic syndrome. Cardiac tamponade	7
5. Differentiated approach to risk stratification and prevention of sudden cardiac death. Differential diagnosis of arrhythmias	8
Total hours	**36**

CONTENT OF THE EDUCATIONAL MATERIAL

1. Instrumental diagnostic technologies in cardiology

Functional diagnostics in cardiology. Electrocardiography (ECG): method of registration, algorithm of interpretation. Holter monitoring: possibilities of the method, indications, interpretation. Daily monitoring of blood pressure (BP): indications, interpretation.

Cardiac ultrasound (echocardiography): possibilities of the method, indications, interpretation. Transesophageal echocardiography: indications, contraindications.

Stress testing, types of stressors, indications and contraindications. Stress tests with ECG, evaluation criteria. Stress-echocardiography. Single-photon emission computed tomography (SPECT) of myocardium, magnetic resonance imaging (MRI), positron emission tomography (PET). Multispiral computed tomography with contrast of coronary arteries, indications, contraindications. Determination of indications for coronarography during stress testing.

Analysis of clinical cases, interpretation of the results of instrumental methods of cardiovascular research.

2. Acute coronary syndrome. Complications of myocardial infarction

Acute coronary syndrome: definition, diagnostic criteria, differential diagnosis.

Organisational tactics in acute coronary syndrome with and without ST-segment elevation at the pre-hospital stage and in hospital conditions, emergency medical care (differentiated approach), tactics of reperfusion therapy. Indications for thrombolytic therapy in acute coronary syndrome with ST-segment elevation, evaluation of efficacy. The concept of ‘pharmacointerventional intervention’.

Myocardial infarction: definition, diagnostic criteria, classification, algorithm of diagnosis and treatment. Complications of myocardial infarction: classification, diagnosis, treatment.

Examination of patients with acute coronary syndrome with and without ST-segment elevation, determination of optimal organisational tactics, interpretation of the

results of laboratory and instrumental methods of investigation, making a diagnosis, drawing up a treatment plan.

3. Pulmonary embolism. Acute cor pulmonale

Pulmonary embolism (PE): etiology, pathogenesis, clinical manifestations, differential diagnosis. Predisposing factors of venous thromboembolism. Use of pretest probability scales in the diagnosis of PE. Assessment of the risk of death in PE. Acute cor pulmonale, clinical picture, diagnostic methods, therapeutic tactics. Determination of indications for thrombolytic therapy in PE. Anticoagulant therapy in PE.

Examination of patients with PE: collection of anamnesis, assessment of clinical picture, interpretation of results of laboratory and instrumental methods of investigation, making a diagnosis, drawing up a treatment plan.

4. Acute aortic syndrome. Cardiac tamponade

Methods of aortic evaluation. Methods of aortic visualisation (echocardiography, CT aortography, MRI, aortography).

Acute aortic syndrome: definition, classification. Acute aortic dissection: definition, clinical manifestation, diagnosis, treatment. Intramural haematoma: pathogenesis, clinical manifestation, algorithm of diagnosis and treatment. Penetration of atherosclerotic plaque, pathogenesis, diagnostic methods, treatment.

Cardiac tamponade: etiology, pathogenesis, clinical manifestations, diagnosis. Indications for pericardiocentesis.

Examination of patients with pathology of aorta, pericardial effusion, collection of anamnesis, assessment of clinical picture, interpretation of the results of laboratory and instrumental methods of research, making a diagnosis and a treatment plan.

5. Differential approach to risk stratification and prevention of sudden cardiac death. Differential diagnosis of arrhythmias

Sudden cardiac death: etiology, basics of pathogenesis of cardiac arrest, risk factors. Medical care for circulatory arrest. Cardiopulmonary resuscitation: assessment of effectiveness, errors in carrying out.

Differentiated approach to assessing the risk of sudden cardiac death in patients with various cardiovascular pathologies. Complex of measures for primary and secondary prevention of sudden cardiac death in patients with coronary artery disease (CAD), chronic heart failure (CHF), cardiomyopathies.

Classification of arrhythmias. Pathogenesis of rhythm and conduction disorders. Diagnosis of arrhythmias. Differential diagnosis of tachycardias with narrow and wide QRS complex. Differential diagnosis of conduction disorders.

Examination of patients with arrhythmias, CHF, acute and chronic forms of CAD, collection of anamnesis, assessment of clinical picture, interpretation of the results of laboratory and instrumental methods of research, making a diagnosis and a treatment plan.

ACADEMIC DISCIPLINE CURRICULAR CHART

Section, topic #	Section (topic) name	Number of class hours	Literature	Practical skills	Form of control	
		practical			of practical skills	of current / intermediate assessment
	Practical classes	**36**				
1	Instrumental diagnostic technologies in cardiology	7	1, 4-8	Interpretation of the electrocardiogram	Solving situational tasks	Survey, electronic testing,
2	Acute coronary syndrome, differential diagnosis, treatment tactics. Complications of myocardial infarction	7	1, 4-8	1. Interpretation of the electrocardiogram. 2. Determination of indications and timing of coronarography in acute coronary syndrome with and without ST-segment elevation. 3. Performance of basic medical diagnostic and treatment measures in acute coronary syndrome	Solving situational tasks, performing at the patient's bedside	Survey, electronic testing
3	Pulmonary embolism. Acute cor pulmonale	7	1, 4-8	Interpretation of the electrocardiogram	Solving situational tasks	Survey, electronic testing
4	Acute aortic syndrome. Cardiac tamponade	7	1, 4-6, 8	Interpretation of the electrocardiogram	Solving situational tasks	Survey, electronic testing

5	Differentiated approach to risk stratification and prevention of sudden cardiac death. Differential diagnosis of arrhythmias	8	1-8	Interpretation of the electrocardiogram	Solving situational tasks *	Survey, electronic testing, control work Credit
	Total hours	**36**				

*This is a mandatory form of current certification

INFORMATION AND INSTRUCTIONAL UNIT

LITERATURE

Basic (relevant)

1. Internal diseases : textbook. In 2 Vols. Vol. 1 / ed. by A. I. Martynov, J. D. Kobalava, S. V. Moiseev. – Moskow : Geotar-Media, 2022. – 683 p.

Additional:

2. Gerasimenok, D. S. Medical simulation in emergency medicine: CPR training : manual for students of higher education institutions studying in the specialty 1-79 01 01 «General Medicine» / Gerasimenok, D. S. – Minsk : BSMU, 2020. – 22 p.
3. Samsonova, I. M. Cardiopulmonary resuscitation. Post-resuscitation syndrome : textbook / I. M. Samsonova, L.G. Zakharova. – Vitebsk : VGMU, 2022. – 149 p.
4. Internal medicine : textbook for English-speaking students of higher medical educational esablishment. P. 1 : Cardiology. Rheumatology. Hematology / ed. by M. A. Stanislavchuk, V. K. Sierkova. – Vinnytsya : Nova Knyha, 2019. – 407 p.
5. Internal medicine : textbook. In 2 books. Book 1 . Diseases of the Cardiovascular and Respiratory Systems / N. M. Seredyuk [et al.]. – Kyiv : AUS Medicine Publishing, 2019. – 663 p.
6. Harrison`s principles of internal medicine. Vol. 1 / ed. by D. L. Longo, D. L. Kasper, J. L. Jameson [et. al]. – 20th ed. – New York [etc.] : McGrawHill Medical, 2018. – 1796 p.
7. Clinical electrocardiography : manual for students of higher education institutions studying in the specialty 1-79 01 01 «General Medicine»/ V. M. Parochkin, [et. al]. – Grodno : GRSMU, 2019.–200 p.

Electronic courseware for the academic discipline «Acute Cardiac Care»:

8. https://etest.bsmu.by/course/view.php?id=323/

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

The time allotted for independent work can be used by students for:
preparation for practical classes;
preparation for the credit in the academic discipline;
solving situational tasks;
preparing presentations, reports, abstracts.

LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms of current assessment are used to diagnose competencies:
electronic testing;
survey;
solving situational tasks;
control work.

LIST OF AVAILABLE TEACHING METHODS

Traditional method (practical exercises);
active (interactive) methods:
CBL (Case-Based Learning);
Problem-Based Learning (PBL);
Team-Based Learning (TBL);
Research-Based Learning (RBL).

LIST OF PRACTICAL SKILLS

Name of practical skill	Form of practical skill control
1. Interpretation of the electrocardiogram	Solving situational tasks
2. Determination of indications and timing of coronarography in acute coronary syndrome with and without ST-segment elevation	Performing at the patient's bedside, solving situational tasks
3. Performance of basic medical diagnostic and treatment measures in acute coronary syndrome	Performing at the patient's bedside, solving situational tasks

PROTOCOL OF THE CURRICULUM APPROVAL BY OTHER DEPARTMENTS

Title of the discipline requiring approval	Department	Amendments to the curriculum in the academic discipline	Decision of the department, which designed the curriculum (date, protocol #)
Emergency cardiology and other emergency conditions	Cardiology and Internal Diseases	no amendments	protocol # 13 of 06.05.2024

COMPILERS/AUTHORS:

Head of the Department of Cardiology and Internal Diseases of the Educational Institution «Belarusian State Medical University», DSc, Professor; N.P.Mitkovskaya

Professor of the Department of Cardiology and Internal Diseases of the Educational Institution «Belarusian State Medical University», DSc, Associate Professor; E.A.Grigorenko

Associate Professor of the Department of Cardiology and Internal Diseases of the Educational Institution «Belarusian State Medical University», PhD, Associate Professor E.M.Balysh

Associate Professor of the Department of Cardiology and Internal Diseases of the Educational Institution «Belarusian State Medical University», PhD, Associate Professor T.V.Statkevich

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

Dean of the Medical Faculty for International Students of the Educational Institution «Belarusian State Medical University» O.S.Ishutin

24.06. 2024

Methodist of Educational and Methodological Department of Educational Activity Office of the Educational Institution «Belarusian State Medical University» S.V.Zaturanova

24.06. 2024