

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY

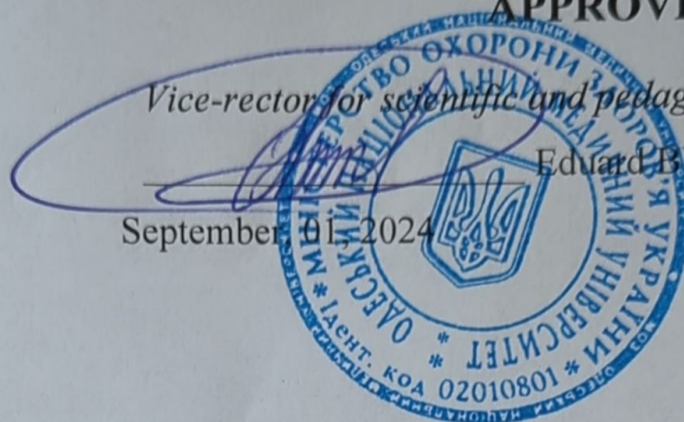
Department of INTERNAL MEDICINE No.2

APPROVED

Vice-rector for scientific and pedagogical work

Eduard BURIACHKIVSKYI

September 01, 2024



WORK PROGRAM FOR THE ELECTIVE DISCIPLINE
"CARDIAC EMERGENCIES"

Speciality 222 «Medicine»

Branch of knowledge 22«Health Care»

Educational qualification «Master of Medicine»

Professional qualification «Doctor»

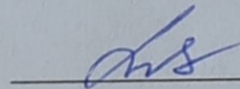
The work program is based on the educational and professional program "Medicine" for the training of specialists of the second (master's) level of higher education in the specialty 222 "Medicine" of the field of knowledge 22 "Health Care", approved by the Academic Council of ONMedU (Minutes No. 10 of June 27, 2024).

Developed by:

- Tykhonova S.A. - Doctor of Medicine, Professor of the Department of Internal Medicine No. 2;
- Khyzhnyak O.V. - PhD in Medicine, Associate Professor of the Department of Internal Medicine No. 2;
- Iablonska V.B. - PhD in Medicine, Associate Professor of the Department of Internal Medicine No. 2;
- Perepeliuk M.M. - PhD in Medicine, Associate Professor of the Department of Internal Medicine No. 2;
- Kholopov L.S. - PhD in Medicine, Associate Professor of the Department of Internal Medicine No. 2;
- Batashova-Halinska V.O. - PhD in Medicine, Associate Professor of the Department of Internal Medicine No. 2.

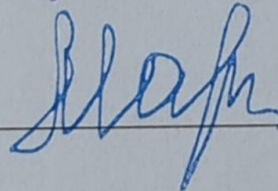
Work program approved at the meeting of the Department of Internal Medicine No. 2
Minutes №1 dated August 27, 2024.

V.i. Head of the Department



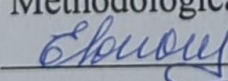
Olena KHYZHNYAK

Agreed with the guarantor of the EPP



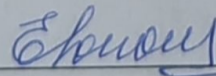
Valeriia MARICHEREDA

Approved by the Subject-Cycle Methodological Commission for Therapeutic Disciplines of ONMedU
Minutes № 1 dated August 30, 2024.

Chairman of the Subject-Cycle Methodological Commission for Therapeutic Disciplines,
Doctor of Medicine, Professor  Olena VOLOSHYNA

Revised and approved at the meeting of the Department of Internal Medicine #2
with postgraduate training
Minutes № 1 dated "02" September 2024 p.

Head of the Department



Olena Voloshyna

Revised and approved at the meeting of the Department of _____
Minutes № ____ dated "____" _____ 20__ p.

Head of the Department _____

1. Description of the course

Indicators	Branch of knowledge, specialty, specialization, level of higher education	Characteristics of the discipline
Total amount:	Branch of knowledge 22«Health Care»	<i>Full time form study</i> <i>Elective discipline</i>
Credits: 3,0	Speciality 222 «Medicine»	<i>Study year: 6</i>
Hours: 90	Level of higher education	<i>Semesters XI - XII</i>
Content modules: 4	Second «Master of Medicine»	<i>Lectures (0 h.)</i>
		<i>Seminars (0 h.)</i>
		<i>Practical's (30 h.)</i>
		<i>Laboratory (0 h.)</i>
		<i>Independent Work (60 h.)</i>
		<i>Form of final control – credit</i>

2. The aim and objectives of the discipline, competencies, program learning outcomes.

The purpose of the elective discipline (ED) is to train specialists who are able to competently solve complex problems in the field of emergency cardiology, professional activity in general, and to prepare applicants for the quality performance of functional duties related to the choice of modern optimal non-pharmacological and medical strategies and tactics for the management of cardiac patients in the development of emergency conditions, which should increase the effectiveness and safety of treatment, increase patient survival, increase the duration and quality of life.

The main objectives of the ED are to acquire knowledge about:

- risk factors and pathogenetic mechanisms of development of major emergencies in patients with cardiovascular diseases (CVD);
- clinical course of major emergencies in patients with CVD;
- modern methods of predicting the course and outcome of major emergencies in cardiology;
- ways to optimize the management of cardiac patients with emergencies using modern standards of medical and nonmedical treatment;
- current standards of emergency care for patients with CVD.

Program competencies

Integral competence. Ability to solve typical and complex problems in the field of emergency medicine. Ability to continue learning with a high degree of autonomy.

General competencies (GC).

GC1. Ability to abstract thinking, analysis and synthesis.

GC 3. Ability to apply knowledge in practical situations.

GC 5. Ability to adapt and act in a new situation.

GC 6. Ability to make reasonable decisions.

GC 7. Ability to work in a team.

GC 8. Ability to interpersonal interaction.

GC 10. Ability to implement information and communication technologies

GC 11. Ability to search, process and analyze information from various sources.

Special (professional, subject) competencies (SC):

SC1. Ability to collect medical information about the patient and analyze clinical data.

SC 2. Ability to determine the necessary list of laboratory and instrumental studies and evaluate their results.

SC 7. Ability to diagnose emergency conditions.

SC 8. Ability to determine tactics and provide emergency medical care.

SC 9. Ability to carry out medical and evacuation measures.

SC 11. Ability to solve medical problems in new or unfamiliar environments with incomplete or limited information, taking into account aspects of social and ethical responsibility, including early intervention.

Program learning outcomes (PLO):

Higher education applicant should know:

PLO 2. Fundamentals of basic, clinical biochemical sciences at a level sufficient to solve professional problems in the field of health care, in particular, emergency cardiology.

Higher education applicant should be able to:

PLO 4. Identify and identify the leading clinical symptoms and syndromes of emergency conditions in cardiology; use preliminary anamnesis data, patient examination data, and establish a preliminary diagnosis of the disease according to standard methods.

PLO 7. To prescribe and analyze mandatory and additional methods of examination (laboratory, functional, instrumental) for differential diagnosis of major emergencies in cardiology.

PLO 8. Identify the main clinical syndrome or symptom that determines the severity of the patient's condition (in a health care setting, outside the health care setting), in conditions of lack of information and limited time.

PLO 9. Determine the nature and principles of patient treatment in a health care facility, outside the facility and at the stages of medical evacuation based on a preliminary diagnosis, adhering to relevant ethical and legal standards, by making an informed decision according to existing algorithms and standards for providing emergency medical care to patients with CVD.

PLO14. Determine the tactics and provide emergency medical care in case of emergencies in a limited time in accordance with current clinical protocols and standards of care.

PLO16. To formulate rational medical routes for patients; to organize interaction with colleagues in

their own and other institutions.

3. Content of the discipline.

The ED program consists of 4 content modules (CM):

CM 1. Basics of diagnosis and differential diagnosis of major emergency conditions in patients with cardiovascular diseases.

CM 2. Acute coronary syndromes and their complications.

CM 3. Acute vascular syndromes.

CM 4. Paroxysmal arrhythmias and cardiac conduction disorders. Acute pericarditis.

The following topics will be considered and discussed in the form of practical lessons:

Topic 1: Key symptoms and syndromes in emergency cardiology (heart pain, dyspnea, syncope). Differential diagnosis of heart pain (cardiac pain, equivalents of anginal pain (angina pectoris), probably cardiac pain, non-cardiac pain. Risk factors for atherosclerotic cardiovascular disease (CVD). Factors that should be considered for assessing the situation during the first medical contact (FMC) with a patient with complaints of chest pain, algorithm of actions.

Differential diagnosis of dyspnea. Basic indicators for monitoring the patient's condition. Indications for transporting a patient with dyspnea to the intensive care unit.

Syncopal state, definition. Differential diagnosis of syncope and conditions other than syncope. Diagnostic criteria for syncopal state. Management and risk stratification in patients with probable syncope.

Topic 2. Acute coronary syndromes (ACS). Definition of ACS. Classification of ACS: ACS with persistent ST-segment elevation, ACS without ST-segment elevation, unstable angina. Universal definition of myocardial infarction (MI). Triage and differential diagnosis of patients with ACS. ECG criteria for ACS. Algorithm for confirmation / exclusion of the diagnosis of MI in patients with ACS without persistent ST-segment elevation by analyzing the level of cardiac troponin. Algorithm for the management of patients with suspected ACS. Risk stratification of patients with ACS without ST-segment elevation. Treatment algorithms with analysis of clinical situations.

Topic 3. Acute heart failure (AHF) and pulmonary edema. Etiology and risk factors for the development of ACF. The initial stage of diagnosis and treatment. ABCDE algorithm. Clinical scenarios. Emergency care. Secondary prevention.

Topic 4. Cardiogenic shock (CS). Definition. Hemodynamic criteria for CS. Etiologic factors of CS. Priority measures and monitoring. Initial resuscitation measures. Target values of vital signs. Indications for mechanical hemodynamic support. Pharmacotherapy. Ventilation procedures during CS.

Topic 5. Cardiac arrest and sudden cardiac death (SCD). Etiology and risk factors for development. Chain of survival. Out-of-hospital circulatory arrest and initial emergency care. In-hospital circulatory arrest and initial emergency care. Advanced resuscitation measures. Pharmacotherapy during resuscitation.

Topic 6. Acute aortic syndrome (dissecting aortic aneurysm). The concept of acute aortic syndrome (AAS). Pathomorphological variants. Anatomical classification and duration of the disease. Symptoms and differential diagnosis. General approach to the management of patients with AAS. Algorithm of treatment measures.

Topic 7. Acute thromboembolism of the branches of the pulmonary artery (PE). Symptoms and syndromes of the cardiovascular and respiratory system. Algorithm for the management of initially stable patients with suspected PE. Scales for determining the clinical probability of PE. Algorithm for the management of unstable patients with suspected PE. Signs of hemodynamic instability (criteria for high-risk PE). Risk stratification. Algorithms for managing patients depending on hemodynamic instability and risk.

Topic 8. Paroxysmal arrhythmias and cardiac conduction disorders. Tachyarrhythmias. Classification. Diagnostic criteria. Diagnostic manipulations. Therapeutic algorithms. Cardioversion. Bradyarrhythmias. Dysfunction of the sinus node. Atrio-ventricular blocks. Emergency pharmacological treatment. Temporary transvenous pacing.

Topic 9. Complicated hypertensive crises (HC). Definition, criteria and classification of hypertensive crisis. Algorithm for managing a patient with HC. Rates of reduction and target levels of blood pressure (BP) in different types of complications of hypertension. The main drugs for the treatment of complicated hypertension. Differentiated approach to the treatment of patients with complicated hypertension.

Topic 10. Acute pericarditis and cardiac tamponade. Definition and diagnostic criteria. Ultrasound diagnosis of the presence of fluid in the pericardium. Algorithm of patient management. Cardiac tamponade. Algorithm of emergency diagnosis and patient management.

The final lesson. Credit.

4. Structure of the discipline

Topic	Hours					
	Total	Lectures	Seminars	Practical	Laboratory	IW
CM 1. Basics of diagnosis and differential diagnosis of major emergency conditions in patients with cardiovascular diseases.						
Topic 1: Key symptoms and syndromes in emergency cardiology (heart pain, dyspnea, syncope).	6	-	-	-	-	6
CM 2. Acute coronary syndromes and their complications.						
Topic 2. Acute coronary syndromes.	12	-	-	6	-	6
Topic 3. Acute heart failure and pulmonary edema.	10	-	-	4	-	6
Topic 4. Cardiogenic shock.	8	-	-	2	-	6
Topic 5. Cardiac arrest and sudden cardiac death.	8	-	-	2	-	6
CM 3. Acute vascular syndromes.						
Topic 6. Acute aortic syndrome (dissecting aortic aneurysm).	8	-	-	2	-	6
Topic 7. Acute thromboembolism of the branches of the pulmonary artery.	8	-	-	2	-	6
Topic 9. Complicated hypertensive crises.	8	-	-	2	-	6
CM 4. Paroxysmal arrhythmias and cardiac conduction disorders. Acute pericarditis.						
Topic 8. Paroxysmal arrhythmias and cardiac conduction disorders.	12	-	-	6	-	6
Topic 10. Acute pericarditis and cardiac tamponade. The final lesson. Credit.	10	-	-	4	-	6
Total	90			30		60

5. Topics of lectures / seminars / practical / laboratory classes

5.1. Topics of lectures

Lectures are not provided.

5.2. Topics of the seminars

Seminars are not provided.

5.3. Topic of Practical lessons

№	Topic	Hours
1	Topic 1. Practical lesson 1. Acute coronary syndromes.	2
2	Topic 1. Practical lesson 2. Acute coronary syndromes.	2
3	Topic 1. Practical lesson 3. Acute coronary syndromes.	2
4	Topic 2. Practical lesson 4. Acute heart failure.	2
5	Topic 2. Practical lesson 5. Pulmonary edema.	2
6	Topic 3. Practical lesson 6. Cardiogenic shock.	2
7	Topic 4. Practical lesson 7. Cardiac arrest and sudden cardiac death.	2
8	Topic 5. Practical lesson 8. Acute aortic syndrome (dissecting aortic aneurysm).	2
9	Topic 6. Seminar 9. Acute thromboembolism of the branches of the pulmonary artery.	2
10	Topic 7. Seminar 10. Paroxysmal arrhythmias and cardiac conduction disorders.	2
11	Topic 7. Seminar 11. Paroxysmal arrhythmias and cardiac conduction disorders.	2
12	Topic 7. Seminar 12. Paroxysmal arrhythmias and cardiac conduction disorders.	2
13	Topic 8. Seminar 13. Complicated hypertensive crises.	2
14	Topic 9. Seminar 14. Acute pericarditis and cardiac tamponade.	2
15	The final lesson. Credit.	2
Total		30

5.4. Topics of laboratory classes:

Laboratory classes are not provided.

6. Independent work of a higher education applicant

№	Topic title / types of tasks	Hours
1.	Key symptoms and syndromes in emergency cardiology (heart pain, dyspnoea, syncope). Differential diagnosis of heart pain (cardiac pain, equivalent of angina pain (angina pectoris), probably cardiac pain, non-cardiac pain). Risk factors for atherosclerotic cardiovascular disease (CVD). Factors that should be considered for assessing the situation during the first medical contact with a patient with complaints of chest pain, algorithm of actions. Solving situational clinical tasks.	6
2.	Preparation for the seminar on Acute Coronary Syndromes (ACS). Analysis and interpretation of ECG in patients with ACS. Solving situational tasks. Familiarisation with the current standards of medical care for patients with ACS (Orders of the Ministry of Health, national and international recommendations).	6
3	Preparation for the seminar on "Acute heart failure and pulmonary edema". Solving situational tasks. Acquaintance with the current standards of medical care for patients with acute heart failure and pulmonary edema (Orders of the Ministry of Health, national and international recommendations).	6

4	Preparation for the seminar on the topic "Cardiogenic shock". Solving situational tasks. Acquaintance with the current standards of medical care for patients with cardiogenic shock (Orders of the Ministry of Health, national and international recommendations).	6
5	Preparation for the seminar on "Cardiac arrest and sudden cardiac death". Solving situational tasks. Familiarisation with the current standards of medical care for patients with cardiac arrest and sudden cardiac death (Orders of the Ministry of Health, national and international recommendations).	6
6	Preparation for the seminar on "Acute aortic syndrome (dissecting aortic aneurysm)". Solving situational tasks. Acquaintance with the current standards of medical care for patients with acute aortic syndromes (Orders of the Ministry of Health, national and international recommendations).	6
7	Preparation for the seminar on the topic "Acute thromboembolism of the pulmonary artery branches". Solving situational tasks. Acquaintance with the current standards of medical care for patients with acute PE (Orders of the Ministry of Health, national and international recommendations).	6
8	Preparation for the seminar on "Complicated hypertensive crises". Solving situational tasks. Acquaintance with the current standards of medical care for patients with complicated hypertensive crises (MOH orders, national and international recommendations).	6
9	Preparation for the seminar on the topic "Paroxysmal arrhythmias and cardiac conduction". Analysis and interpretation of ECGs of patients with paroxysmal arrhythmias and cardiac conduction disorders. Solving situational tasks. Acquaintance with the current standards of medical care for patients with paroxysmal cardiac rhythm and conduction disorders (Orders of the Ministry of Health, national and international recommendations)	6
10	Preparation for the seminar on "Acute pericarditis and cardiac tamponade". Interpretation of echocardiography and ECG data of patients with acute pericarditis and cardiac tamponade. Solving situational tasks. Acquaintance with the current standards of medical care for patients with acute pericarditis and cardiac tamponade (Orders of the Ministry of Health, national and international recommendations). Preparation for the final lesson and test. Working out questions for the test.	6
Total		60

7. Training methods

Practical classes: explanation, conversation, discussion, discussion of problem situations, solving clinical situational tasks, training exercises on differential diagnosis of emergency conditions in CVD.

Independent work: work with the recommended basic and additional literature, with electronic information resources, independent mastering of skills of communication with the patient and his/her relatives (guardians), work with the bank of laboratory and instrumental research results.

8. Forms of control and assessment methods (including criteria for assessing learning outcomes)

Current control: oral questioning, assessment of communication skills, solving situational clinical problems, assessment of activity in the classroom.

Final control: credit for assessing the completeness of the discipline programme with an additional oral examination.

Assessment of current learning activities in a practical class:

1. Assessment of theoretical knowledge on the topic of the lesson:

methods: survey, evaluation of activity in the classroom

maximum grade - 5, minimum grade - 3, unsatisfactory grade - 2.

2. Evaluation of solving clinical situational tasks:

Assessment methods: a) completeness and correctness of appointment and interpretation of laboratory and instrumental studies, c) compliance with the algorithm of differential diagnosis, d) justification of clinical diagnosis, e) drawing up a plan of emergency care plan in accordance with modern standards;

maximum grade - 5, minimum grade - 3, unsatisfactory grade - 2.

The grade for one seminar session is the arithmetic mean of all components and can only have an integer value (5, 4, 3, 2), which is rounded by the statistical method.

Criteria for current assessment during the practical class

Grade	Assessment criteria
Excellent "5"	The applicant is fluent in the material, takes an active part in the discussion and solution of a situational clinical problem, confidently demonstrates practical skills in interpreting clinical, laboratory and instrumental research data, expresses his/her opinion on the topic of the class, demonstrates clinical thinking.
Good "4"	The applicant has a good understanding of the material, participates in the discussion and solution of a situational clinical problem, demonstrates practical skills in interpreting clinical, laboratory and instrumental research data with some errors, expresses his/her opinion on the topic of the class, demonstrates clinical thinking.
Satisfactory "3"	The applicant has insufficient knowledge of the material, is uncertain about participating in the discussion and solving a situational clinical problem, demonstrates practical skills in interpreting clinical, laboratory and instrumental research data with significant errors.
Unsatisfactory "2"	The applicant does not know the material, does not participate in the discussion and solution of a situational clinical problem, does not demonstrate practical skills in interpreting data from clinical, laboratory and instrumental studies.

Credit is assigned to an applicant who has completed all the tasks of the work programme of the discipline, actively participated in practical classes and has a current average grade of at least

3.0 and has no academic debt.

The test is taken at the last class of the discipline. The grade for the test is the arithmetic mean of all components on a traditional four-point scale and has a value that is rounded by the statistical method with two decimal places.

9. Distribution of points received by applicants for higher education

The obtained grade point average for the discipline for students who have successfully completed the work program of the discipline is converted from the traditional four-point scale to points on a 200-point scale, as shown in the table:

Conversion of traditional assessment to multi-point scale

National scale	Point for discipline
«5»	185 – 200
«4»	151 – 184
«3»	120 – 150
«2»	< 120

A multi-point scale (200-point scale) characterizes the actual performance of each student in mastering the educational component. The conversion of the traditional grade (grade point average for a discipline) into a 200-point scale is performed by the University's Information Technology Department.

According to the points obtained on a 200-point scale, the achievements of applicants are evaluated according to the ECTS rating scale. Further ranking on the ECTS rating scale allows to evaluate the achievements of applicants in the educational component who study in one course of one specialty, according to the points they received.

The ECTS scale is a relative and comparative rating system that establishes the applicant's belonging to the group of the best or worst among the reference group of fellow students (faculty, specialty). Grade A on the ECTS scale cannot be equal to grade A, and grade B cannot be equal to grade B, etc. When converting from a multi-point scale, the limits of grades "A", "B", "C", "D", "E" on the ECTS scale do not coincide with the limits of grades "5", "4", "3" on the traditional scale. Applicants who have received grades "FX" and "F" ("2") are not included in the list of ranked applicants. The grade "FX" is assigned to applicants who have scored the minimum number of points for current academic activities, but who have not been credited with the final control. The grade "F" is assigned to applicants who have attended all classes in the discipline, but have not gained an average score (3.00) for current academic activities and are not allowed to take the final control.

Applicants enrolled in the same course (one specialty), based on the number of points gained in the discipline, are ranked on the ECTS scale as follows:

Conversion of traditional grade in the discipline and the sum of points to the ECTS scale

ECTS scale	Statistical indicator
"A"	The best 10% of students
"B"	The next 25% of students
"C"	The next 30% of students
«D»	The next 25% of students
"E"	The last 10% of students

10. Methodological support

Work programme of an elective discipline.

Syllabus of the elective discipline

Methodical instructions for practical classes, which are posted on the department's website

Methodological recommendations for independent work of higher education applicants.

Multimedia presentations of practical lessons.

11. Questions to prepare for the final control in the form of a credit.

1. Definition and classification of ACS
2. The 4th universal definition of myocardial infarction (MI).
3. Triage and differential diagnosis of patients with ACS.
4. ECG criteria for ACS with persistent ST-segment elevation.
5. ECG criteria for ACS without persistent ST-segment elevation.
6. Algorithm for confirmation / exclusion of the diagnosis of MI in patients with ACS without ST segment elevation.
7. Risk stratification of patients with NSTEMI without ST-segment elevation.
8. Algorithm for managing patients with suspected ACS.
9. Etiology and risk factors for acute heart failure (AHF).
10. The initial stage of diagnosis and treatment of ACF. ABCDE algorithm.
11. Emergency care in case of AHF. Secondary prevention.
12. Definition and haemodynamic criteria for cardiogenic shock (CS). Etiological factors of CS.
13. Priority measures and monitoring in case of CS.
14. Initial resuscitation measures in case of CS. Target values of vital signs. Indications for mechanical haemodynamic support.
15. Pharmacotherapy of CS. Ventilation procedures during CS.
16. Etiology and risk factors for cardiac arrest and sudden cardiac death (SCD). Chain of survival.
17. Out-of-hospital cardiac arrest and initial emergency care.
18. In-hospital cardiac arrest and initial emergency care.
19. Pharmacotherapy during resuscitation in case of cardiac arrest and ACS.
20. The concept of acute aortic syndrome (AAS). Pathological variants. Anatomical classification and duration of the disease.
21. Differential diagnosis of suspected AAS.
22. General approach to the management of patients with AAS. Algorithm of treatment measures.
23. Symptoms and syndromes of the cardiovascular and respiratory system in PE.
24. Algorithm for the management of initially stable patients with suspected PE. Scales for determining the clinical probability of PE.
25. Algorithm for the management of unstable patients with suspected PE. Signs of haemodynamic instability (criteria for high-risk PE). Risk stratification.
26. Tachyarrhythmias. Classification. Diagnostic criteria.
27. Diagnostic manipulations in paroxysmal tachyarrhythmias. Therapeutic algorithms. Cardioversion.
28. Bradyarrhythmias. Dysfunction of the sinus node.
29. Atrio-ventricular blocks. Urgent pharmacological treatment. Temporary transvenous pacing.
30. Definition, criteria and classification of hypertensive crises (HC)
31. Algorithms for managing patients with hypertension.
32. Rates of reduction and target levels of blood pressure
33. Blood pressure (BP) in different types of complications of hypertension.
34. The main drugs for the treatment of complicated hypertension (registered in Ukraine). Differentiated approach to the treatment of patients with complicated hypertension.
35. Definition and diagnostic criteria for acute pericarditis and cardiac tamponade.
36. Algorithm of management of patients with cardiac tamponade.

12. Recommended literature.

Basic:

1. Unger T., Borghi C., Charchar F. et al. (2020) 2020 International Society of Hypertension Global Hypertension Practice Guidelines. *Hypertension*, 75(6): 1334–1357.
2. Рекомендації Європейського товариства кардіологів (European Society of Cardiology) і Європейського товариства з гіпертензії з лікування артеріальної гіпертензії 2018 р. Аретріальна гіпертензія, 2018; 5 (61): 58-172.
3. Наказ МОЗ України № 441 від 09.03.2022 р. Про затвердження порядків надання домедичної допомоги особам при невідкладних станах, <https://zakon.rada.gov.ua/laws/show/z0356-22#Text>.
4. Наказ МОЗ України від 14 вересня 2021 р. №1936 УНІФІКОВАНИЙ КЛІНІЧНИЙ ПРОТОКОЛ ЕКСТРЕНОЇ, ПЕРВИННОЇ, ВТОРИННОЇ (СПЕЦІАЛІЗОВАНОЇ), ТРЕТИННОЇ (ВИСОКОСПЕЦІАЛІЗОВАНОЇ) МЕДИЧНОЇ ДОПОМОГИ ТА КАРДІОРЕАБІЛІТАЦІЇ «ГОСТРИЙ КОРОНАРНИЙ СИНДРОМ З ЕЛЕВАЦІЄЮ СЕГМЕНТА ST» https://www.dec.gov.ua/wpcontent/uploads/2021/09/2021_1936_ykpm_d_gkszelev.pdf.
5. Наказ Міністерства охорони здоров'я України від 15 вересня 2021 р. №1957 УНІФІКОВАНИЙ КЛІНІЧНИЙ ПРОТОКОЛ ЕКСТРЕНОЇ, ПЕРВИННОЇ, ВТОРИННОЇ (СПЕЦІАЛІЗОВАНОЇ), ТРЕТИННОЇ (ВИСОКОСПЕЦІАЛІЗОВАНОЇ) МЕДИЧНОЇ ДОПОМОГИ ТА КАРДІОРЕАБІЛІТАЦІЇ «ГОСТРИЙ КОРОНАРНИЙ СИНДРОМ БЕЗ ЕЛЕВАЦІЇ СЕГМЕНТА ST»
6. Наказ МОЗ України від 15 січня 2014 р. №34 «Про затвердження та впровадження медико-технологічних документів зі стандартизації екстреної медичної допомоги «Гіпертонічний криз», «Раптова серцева смерть», «Гостра дихальна недостатність», «Гіповолемічний шок», «Гострі отруєння», «Тромбоемболія легеневої артерії».
7. Невідкладні стани при серцево-судинних захворюваннях: алгоритми діагностики та лікування. Адаптовано за матеріалами Асоціації з невідкладної серцево-судинної допомоги Європейського товариства кардіологів, Українська асоціація з невідкладної кардіології, Асоціація кардіологів України, 2023 /За редак. члена-кор. НАМН України проф. О.М. Пархоменка, Видання третє, - 153 с.
8. Серцево-судинні захворювання. Класифікація, стандарти діагностики та лікування / за ред. В. М. Коваленка, М. І. Лутая, Ю. М. Сіренка, О. С. Сичова. – К.: МОРІОН, 2021. – 192 с.
9. Електрокардіографічна діагностика і лікування в невідкладній кардіології. 2-е видання, доповнене. Скибчик В.А., Скибчик Я.В.. - Л: Простір – М, 2020. – 164 с.
10. Невідкладні стани в кардіології: навчально-методичний посібник для здобувачів ступеня доктора філософії за третім освітньо-науковим рівнем в галузі знань 22 "Охорона здоров'я" спеціальності 222 "Медицина" навчальна дисципліна "Сучасна кардіологія" / В.Д. Сиволап, С.М. Кисельов, Д.А. Лашкул. – Запоріжжя : ЗДМУ, 2020. – 137 с.

Additional:

1. Thygesen K, Alpert JS, Jaffe AS, et al. Fourth universal definition of myocardial infarction (2018). *J Am Coll Cardiol*. 2018 Oct 30;72(18):2231-64.
2. McDonagh TA, Metra M, Adamo M, et al. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. *Eur Heart J*. 2021 Sep 21;42(36):3599-726.
3. Heidenreich PA, Bozkurt B, Aguilar D, et al. 2022 AHA/ACC/HFSA guideline for the management of heart failure: a report of the American College of Cardiology/American Heart Association joint committee on clinical practice guidelines. *Circulation*. 2022 May 3;145(18):e895-1032.
4. Bossone E, LaBounty TM, Eagle KA. Acute aortic syndromes: diagnosis and management, an update. *Eur Heart J*. 2018 Mar 1;39(9):739-49d.

5. van Diepen S, Katz JN, Albert NM, et al. Contemporary management of cardiogenic shock: a scientific statement from the American Heart Association. *Circulation*. 2017 Oct 17;136(16):e232-68.
6. Brignole M, Moya A, de Lange FJ, et al. 2018 ESC guidelines for the diagnosis and management of syncope. *Eur Heart J*. 2018 Jun 1;39(21):1883-948.
7. Zeppenfeld K, Tfelt-Hansen J, de Riva M, et al. 2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death. *Eur Heart J*. 2022 Oct 21;43(40):3997-4126.
8. Panchal AR, Bartos JA, Cabañas JG, et al. Part 3: adult basic and advanced life support: 2020 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*. 2020 Oct 20;142(16_suppl_2):S366-S468.
9. Konstantinides SV, Meyer G, Becattini C, et al. 2019 ESC guidelines for the diagnosis and management of acute pulmonary embolism developed in collaboration with the European Respiratory Society (ERS). *Eur Heart J*. 2020 Jan 21;41(4):543-603.
11. О.М. Пархоменко. Лікування пацієнтів із гіпертензивними кризами: можливості та перспективи. *Кардіологія, Ревматологія, Кардіохірургія*. 2021. 3(76): 37.

13. Electronic information recourses:

1. American College of Cardiology <http://www.acc.org/>
2. American Heart Association <http://news.heart.org/>
3. BMJ Clinical Evidence <http://clinicalevidence.bmj.com>
4. European Society of Cardiology <http://www.escardio.org/>
5. Medscape from WebMD <http://www.medscape.com>
6. National Institute for Health and Clinical Excellence (NICE) <https://www.nice.org.uk/>

Information support:

Electronic library of ONMedU: links to the attached methodological guides of practical lessons and independent work.