

**MINISTRY OF HEALTH OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY**

**International faculty
Department of Internal Medicine №1**



APPROVED
Acting vice-rector for research and educational work
Eduard Buryachkiy
2023

Methodical recommendations for the practical classes in the academic discipline

for 4th year applicants, international faculty
academic discipline: "Actual questions of management of patients with cardiac pathology" (elective course)

The program was discussed and approved at the meeting of the Department of Internal Medicine No. 1, 05 September 2023.

Head of the Department: _____ Yuri KARPENKO

Developers:

Karpenko Yuriy Ivanovich, professor
Zolotarova Natalia Artemivna, profesor
Poliakov Anatolii Yevheniiiovych, profesor
Izha Hanna Mykolaivna, assosiate professor
Kryzhanovskyi Yuriy Mykolaiovych, assosiate professor
Pavlovska Kateryna Mykolaivna, assosiate professor
Potapchuk Oleksandr Vasylovych, associate professor
Savelieva Olha Valeriivna, assosiate professor
Shukhtina Iryna Mykolaivna, assosiate professor
Alavatska Tetiana Vasylivna, assistant
Blikhar Olena Volodymyrivna, assistant
Bondarenko Olha Vitaliivna, assistant
Hunenko Iryna Ihorivna, assiatant
Kravtsova Kateryna Volodymyrivna, assistant
Maistrenko Mariia Serhiivna, assistant
Mytrokhina Nadiya Anatoliivna, assistant
Pashaieva Viktoriia Faikivna, asssistant
Riabinina Anna Hennadiivna, assistant
Sukhina Yuliia Oleksandrivna, assistant
Ukhan Viktoriia Viktorivna, assistant
Yanvarova Olha Yuriivna, assistant
Yurdanova Ilona Heorhiivna, assistant
Zolotarova Kseniia Olehivna, assistant

PRACTICAL CLASSES

Practical class №1

Theme: Management of patients with arterial hypertension. Hypertensive crises, peculiarities of treatment tactics.

Purpose: to explain the essence of the arterial hypertension, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: essential arterial hypertension, secondary hypertension, atherosclerosis.

Equipment: laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge(written work, written test, frontal survey, etc.)
3. Questions (test tasks) to check basic knowledge on the theme of the practical:

1. Which of the following drugs is an inhibitor of angiotensin converting enzyme?

- A. Propranolol
- B. alpha-methyldopa
- C. Hydralazine
- D. Hydrochlorthiaside
- E. Enalapril

2. The upper limit of normal diastolic blood pressure:

- A. 80 mm Hg
- B. 84 mm Hg
- C. 89 mm Hg
- D. 94 mm Hg
- E. 99 mm Hg

3. The upper limit of normal systolic BP:

- A. 119 mm Hg
- B. 139 mm Hg
- C. 154 mm Hg
- D. 159mm Hg
- E. 179 mm Hg

4. Microalbuminuria is the loss of protein in the urine:

- A. 5-15 mg/day
- B. 30-300 mg/day
- C. 30-40 mg/day
- D. 2-5 mg/day
- E. 500-700 mg/day

5. Which of the following drugs belongs to the antihypertensive drugs of the second line?

- A. Hidroklorisiazit
- B. Nifedipine
- C. Enalapril
- D. Metoprolol
- E. alpha-methyldopa

4. Discussion of theoretical issues:

1. Give definition of EH

2. Etiology and pathogenesis of AH
3. To know classification of EH
4. Risk-factors
5. Clinical manifestations of EH
6. Laboratory and instrumental diagnostics of EH
7. Complications of EH
8. Principles and methods of EH treatment.

Note. The discussion of theoretical questions can take place in the composition of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of answers of higher education applicants, etc.

5. Themes of reports/abstracts:

- classification of chronic complications of hypertension
- heart damage in hypertensive disease: clinical manifestations, features of diagnosis and treatment
- lesions of cerebral vessels in hypertensive disease: clinical manifestations, features of diagnosis and treatment
- kidney damage in hypertensive disease: clinical manifestations, features of diagnosis and treatment
- principles of treatment of patients with hypertension
- modern methods of treatment, main groups of drugs
- pathogenic aspects of the development of hypertension

Note. When preparing a report, essay, analytical review, etc., applicants of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

6. Summary:

7. Recommended reading list Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

Additional:

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

Electronic information resources:

1. <http://www.oxfordmedicaleducation.com/>
2. <http://www.strazhesko.org.ua/advice>
3. <https://www.heart.org/>
4. <https://www.aace.com/>
5. <https://www.acc.org/>
6. <https://www.escardio.org/>
7. <https://www.ese-hormones.org/publications/guidelines/>
8. <https://ehaweb.org/>
9. https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/

Practical class №2

Theme: Management of a patient with cardiac pain.

Purpose: to explain the essence of the chronic forms of IHD, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: atherosclerosis, ischemic heart disease, stable angina, vasospastic angina, cardiosclerosis, heart failure.

Equipment: laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge(written work, written test, frontal survey, etc.)

3. Questions (test tasks) to check basic knowledge on the theme of the practical:
 1. Which of the following statements is true for Prinzmetal's Angina?
 - A. Characteristic stenotic atherosclerosis of the coronary arteries
 - B. Anginal attacks occur during exercise
 - C. Anginal attacks, as a rule, arise at rest, at night
 - D. Reduced tolerance to physical activity
 - E. On the ECG is characterized by the presence of deep teeth Q passing through

 2. Target level of total blood cholesterol in patients with stable angina pectoris and ejection fraction <45%
 - A. <2.5 mmol / l
 - B. <4.0 mmol / L
 - C. <6.0 mmol / L
 - D. <3.5 mmol / l
 - E. <6.4 mmol / L

 3. Which of the following criteria indicates a positive result of a load test for the diagnosis of coronary heart disease?
 - A. Increased blood pressure
 - B. Appearance of extrasystole
 - C. Appearance of oblique or horizontal depression of segment ST ≥ 1 mm
 - D. T. inversion
 - E. Increase in the amplitude of the positive T wave

 4. The ability to improve the prognosis of cardiopulmonary diseases in patients with stable angina pectoris is proven for:
 - A. Antagonists of angiotensin II receptors
 - B. Statins
 - C. Inhibitors of ADP receptor platelets
 - D. Nitrates
 - E. Heart glycosides

 5. What is characteristic of microvascular angina (coronary syndrome X):
 - A. Anginal attacks are absent
 - B. Lack of stenotic atherosclerosis during coronarography
 - C. No changes in ECG when loading tests are performed
 - D. Characteristic paroxysmal rhythm disturbances
 - E. There is no effect from medication therapy

6. Which of the following factors contributes to the development of coronary heart disease:

- A. Reduction of low density lipoprotein cholesterol in the blood
- B. Increase in blood cholesterol of low density lipoprotein.
- C. Arterial hypotension
- D. Increased high density lipoprotein cholesterol in the blood
- E. Reducing the content of triglycerides in the blood

7. With stable angina pectoris III, angina pain occurs:

- A. During insignificant physical activity
- B. At night in a state of rest
- C. At the slightest physical load
- D. During significant physical activity
- E. At a very high physical load

4. Discussion of theoretical issues:

- 1. Definition of IHD, cardialgia
- 2. To know classification of IHD, cardialgia.
- 3. Give definition of AP and unstable AP.
- 4. Etiology and pathogenesis of AP.
- 5. Clinical manifestations of AP.
- 6. Diagnostics of cardialgia.
- 7. Differential diagnostic of cardialgia.
- 8. Principles and methods of IHD, cardialgia treatment
- 9. Principles of rehabilitation of patients with IHD
- 10. Prophylaxis of cardialgia.

Note. The discussion of theoretical questions can take place in the composition of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of answers of higher education applicants, etc.

5. Themes of reports/abstracts:

- classification of chronic complications of IHD.
- heart damage in IHD, cardialgia: clinical manifestations, features of diagnosis and treatment
- lesions of cerebral vessels in IHD: clinical manifestations, features of diagnosis and treatment
- kidney damage in IHD: clinical manifestations, features of diagnosis and treatment
- principles of treatment of patients with IHD, cardialgia.
- modern methods of treatment, main groups of drugs.
- pathogenic aspects of the development of cardialgia.

Note. When preparing a report, essay, analytical review, etc., applicants of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

6. Summary:

7. Recommended reading list Basic:

- 1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
- 2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
- 3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
- 4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

Additional:

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

Electronic information resources:

1. <http://www.oxfordmedicaleducation.com/>
2. <http://www.strazhesko.org.ua/advice>
3. <https://www.heart.org/>
4. <https://www.aace.com/>
5. <https://www.acc.org/>
6. <https://www.escardio.org/>
7. <https://www.ese-hormones.org/publications/guidelines/>
8. <https://ehaweb.org/>
9. https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/

Practical class №3**Theme: Management of a patient with acute coronary syndrome. Management of a patient with shortness of breath.**

Purpose: to explain the essence of the acute coronary syndrome, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: ischemic heart disease, atherosclerosis, acute coronary syndrome, unstable angina, myocardial infarction, coronary death, heart failure.

Equipment: laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.)
3. Questions (test tasks) to check basic knowledge on the theme of the practical:
 1. Sign resorcine-necrotic syndrome in acute it is:
 - A. Leukopenia within 8-10 days
 - B. a Decrease in body temperature within 2-5 days
 - C. Lymphocytosis up to 5-6 days of illness
 - D. Increased activity of CPK in the blood
 - E. Neutrophilic leukocytosis with a maximum of 2 - 4 days
 2. What drug is proven to improve the prognosis of patients after MI:
 - A. Acetylsalicylic acid
 - B. Nitroglycerin
 - C. Nifedipine
 - D. Verapamil
 - E. Dipyridamole
 3. Which of the following diseases can be a complication of acute MI?
 - A. Dressler Syndrome
 - B. The Syndrome Of Wolff-Parkinson-White
 - C. Acute pulmonary heart
 - D. Thromboembolism of the pulmonary artery
 - E. Constrictive pericarditis

4. The pain characteristic of MI?
 - A. Constant nagging pain, a feeling of heaviness in the heart, is reduced when bending forward
 - B. Acute increases with movement of the trunk
 - C. gripping pain behind the sternum, giving in the left hand under the left shoulder blade, lasts from several minutes up to 15 minutes is relieved with nitroglycerin
 - D. Squeezing, crushing, burning behind the breastbone, radiating to the left arm under the left shoulder blade, continues for more than 30 minutes, is not removed by nitroglycerin
 - E. Aching, stabbing, lasting minutes, hours and days.

5. Over what period remains elevated concentrations troponins with MI?
 - A. 10-14 days
 - B. 2 days
 - C. 7 days
 - D. 18 days
 - E. 28 days

6. Indications for intravenous nitroglycerin in acute MI:
 - A. the Existing pain syndrome.
 - B. the right ventricle.
 - C. Cardiogenic shock.
 - D. Syndrome Of Dressler.
 - E. Astrogational pericarditis.

7. Thrombolytic include:
 - A. Streptokinase
 - B. Heparin
 - C. Enoxaparin
 - D. Aspirin
 - E. Clopidogrel

8. ACS include:
 - A. Unstable angina
 - B. cardiac syndrome X
 - C. Vasospastic angina
 - D. Stable angina FC III
 - E. Stable angina of II FC

9. A patient with MI for 2-3 days in the overall analysis of blood observed
 - A. Eosinophilia
 - B. Moderate leukocytosis
 - C. Leukopenia
 - D. Lymphocytosis
 - E. Anemia

10. Secondary prevention of sudden coronary death after myocardial infarction is carried out by receiving:
 - A. Antiarrhythmic drugs class III
 - B. Beta-blockers
 - C. Antiarrhythmic drugs class IV
 - D. Antiarrhythmic drugs class I
 - E. Intravenous nitroglycerin

4. Discussion of theoretical issues:
 1. Give definition of ACS, rhythm and conduction disturbances
 2. Give definition of MI
 3. Give definition of Unstable angina.
 4. Classification of MI, rhythm and conduction disturbances
 5. Etiology and pathogenesis of MI.
 6. Clinical manifestations of MI.
 7. Diagnostics of ACS, rhythm and conduction disturbances
 8. Differential diagnostics of MI.
 9. Principles and methods of treatment
 10. Complications of ACS, rhythm and conduction disturbances

Note. The discussion of theoretical questions can take place in the composition of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of answers of higher education applicants, etc.

5. Themes of reports/abstracts:
 - classification of chronic complications of ACS.
 - heart damage in ACS: clinical manifestations, features of diagnosis and treatment
 - lesions of cerebral vessels in ACS: clinical manifestations, features of diagnosis and treatment
 - kidney damage in ACS.: clinical manifestations, features of diagnosis and treatment
 - principles of treatment of patients with ACS.
 - modern methods of treatment, main groups of drugs.
 - pathogenic aspects of the development of ACS, rhythm and conduction disturbances.

Note. When preparing a report, essay, analytical review, etc., applicants of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

6. Summary:

7. Recommended reading list Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

Additional:

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

Electronic information resources:

1. <http://www.oxfordmedicaleducation.com/>
2. <http://www.strazhesko.org.ua/advice>
3. <https://www.heart.org/>
4. <https://www.aace.com/>
5. <https://www.acc.org/>
6. <https://www.escardio.org/>
7. <https://www.es-hormones.org/publications/guidelines/>
8. <https://ehaweb.org/>

Practical class №4

Theme: Management of a patient with heart murmurs. Management of a patient with cardiomegaly. Management of a patient with heart failure.

Purpose: to explain the essence of the pulmonary embolism, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: pulmonary embolism, thromboembolism, pulmonary disease, chronic pulmonary heart, heart failure, cardiomegaly, myocarditis

Equipment: laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge(written work, written test, frontal survey, etc.)
3. Questions (test tasks) to check basic knowledge on the theme of the practical:

1. To exclude the diagnosis of pulmonary embolism, the most informative indicator is:

- A. AsAT, AlAT
- B. Bilirubin blood serum
- C. D-dimer plasma of blood
- D. Leukocytosis
- E. Myoglobin

2. Which of the following diagnostic methods allows non-invasive measurement of pressure in the pulmonary artery?

- A. ECG
- B. Catheterization of the right heart
- C. Dopplerechocardiography
- D. Roentgenography of the thoracic cavity
- E. Radionuclide ventriculography

3. What are the auspicious phenomena typical of PE?

- A. Accent II tone over the pulmonary artery
- B. Accent II tone over the aorta
- C. Systolic noise above the top
- D. Proto-diastolic noise over the aorta
- E. Weakening of the second tone over the aorta

4. What ECG changes are characteristic of CCP?

- A. Deflection of the electric heart to the right, "p-pulmonale", hypertrophy of the RV
- B. Elevated segment of ST and abnormal tooth Q in V 1 -V 4
- C. High tooth R, Eclipse depression ST and negative tooth T in leads V 5 -V 6
- D. Deviation of the electric axis to the left, incomplete or complete blockade of the left bundle branch
- E. Decrease of teeth voltages, concordant ST elevation in all chest leads "arc down"

5. What is the average pressure in the pulmonary artery is considered a sign of pulmonary hypertension?

- A. Less than 10 mm Hg with physical activity
- B. More than 25 mm Hg at rest

- C. 10 mm Hg at rest
 - D. More than 20 mm Hg when loaded
 - E. Less than 15 mm Hg at rest
6. To treat high-risk pulmonary artery disease, which is complicated by cardiogenic shock, use:
- A. Nitroglycerin
 - B. Hydrochlorothiazide
 - C. Morphin
 - D. Furosemid
 - E. Streptokinase
7. Which of the following factors does not relate to factors of significant risk of venous thromboembolism?
- A. Fracture of the lower extremities
 - B. Chemotherapy
 - C. polytrauma
 - D. Injury of the spinal cord
 - E. Prosthetics of the knee or hip joint
8. Which of the following medicines refers to phosphodiesterase type 5 inhibitors?
- A. Sildenafil
 - B. Warfarin
 - C. Boustean
 - D. Iloprost
 - E. Amlodipine
9. What Echo-CG changes are characteristic of CLS?
- A. Hypertrophy of the right ventricle
 - B. Violation of the contractile capacity of the left ventricle myocardium
 - C. Left ventricular hypertrophy
 - D. Calcificates of the fibrous ring
 - E. Vegetation on valves
4. Discussion of theoretical issues:
1. Give definition of pulmonary embolism, pulmonary disease, cardiomegaly,
 2. Give definition of chronic pulmonary heart, cor-pulmonale.
 3. Give definition of cardiomyopathy, myocarditis.
 4. Give definition of congenital heart disease.
 5. Classification of congenital heart diseases.
 6. Diagnostics of pulmonary embolism, pulmonary disease.
 7. Differential diagnostics of pulmonary disease
 8. Principles and methods of treatment
 9. Complications of chronic pulmonary heart

Note. The discussion of theoretical questions can take place in the composition of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of answers of higher education applicants, etc.

5. Themes of reports/abstracts:
- classification of chronic complications of pulmonary heart
 - Differential diagnostics of pulmonary disease
 - heart damage in heart failure: clinical manifestations, features of diagnosis and treatment

- principles of treatment of patients with pulmonary embolism,.
- modern methods of treatment, main groups of drugs.
- pathogenic aspects of the development of heart failure.
- Clinical features of different types of cardiomyopathy.

Note. When preparing a report, essay, analytical review, etc., applicants of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

6. Summary:

7. Recommended reading list Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

Additional:

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

Electronic information resources:

1. <http://www.oxfordmedicaleducation.com/>
 2. <http://www.strazhesko.org.ua/advice>
 3. <https://www.heart.org/>
 4. <https://www.aace.com/>
 5. <https://www.acc.org/>
 6. <https://www.escardio.org/>
 7. <https://www.ese-hormones.org/publications/guidelines/>
 8. <https://ehaweb.org/>
- https://oup.silverchaircdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/

Practical class №5

Theme: Management of a patient with a heart rhythm disorder. Management of a patient with impaired cardiac conduction.

Purpose: to explain the essence of the arrhythmia and conduction disorders, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: Morgagni-Adams-Stokes syndrome, Cardiac conduction system, Frederick syndrome, Extrasystoles, Paroxysmal tachycardia, Atrial Fibrillation, Atrial Flutter, Ventricular fibrillation, antiarrhythmic drugs

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge(written work, written test, frontal survey, etc.)
3. Questions (test tasks) to check basic knowledge on the theme of the practical:
 1. ECG signs of atrial fibrillation
 - A. P wave is absent, ventricular complexes rare modified equidistantly
 - B. P wave is absent, different gaps between the widened, aberrant QRS complexes

- C. P wave is absent, F waves, QRS complexes are regular and modified
- D. P wave is absent, wave f, irregular ventricular rhythm, oscillations QRS complex amplitude
- E. Negative P waves are after QRS complex, the same shape

2. For the prevention of thromboembolism with persistent F at high risk of thromboembolic complications are used:

- A. Clopidogrel
- B. Dipyridamole
- C. Warfarin
- D. Aspirin

3. ECG signs of atrial extrasystole:

- A. Absence of P wave and change in QRS complex
- B. Change in shape and premature P wave before the usual QRS complex
- C. Expanded P wave and aberrant QRS complex
- D. The presence of the P wave and the absence of the QRS complex
- E. Negative P wave after QRS complex

4. At what arrhythmia can there be a pulse deficit?

- A. sinus tachycardia
- B. sinus bradycardia
- C. Sinus Arrhythmia
- D. Atrial fibrillation
- E. paroxysmal tachycardia

5. The most informative method of arrhythmia diagnosis:

- A. Holter monitoring of ECG
- B. Scintigraphy of the myocardium
- C. Electrophysiological examination
- D. ECG at rest
- E. Echocardiography

6. For ventricular extrasystole II class on Lown is characterized by:

- A. Single rare ventricular extrasystoles (up to 1 for 1 minute or 30 for 1 year)
- B. Early ventricular extrasystoles of the type "R to T", which are superimposed on the tooth of the previous ventricular complex and indicate a marked non-homogeneity of repolarization.
- C. Polymorphic extrasystoles, that is, having a different shape in one lead.
- D. Group ventricular extrasystoles.
- E. Single frequent extrasystoles (more than 1 for 1 minute or 30 for 1 year)

7. Ventricular fibrillation is:

- A. arrhythmic, uncoordinated and ineffective contractions of individual groups of ventricular muscle fibers
- B. rhythmic, uncoordinated and ineffective contractions of individual groups of ventricular muscle fibers
- C. Three or more consecutive ectopic ventricular impulses ($QRS \geq 0.12$ c).
- D. Atrial tachyarrhythmia with frequent (240-300 in 1 min) right atrial rhythm
- E. Violation of the impulse to the ventricles with the development of asystole of the ventricles of the heart and fainting.

8. The drug is indicated for monitoring heart rate at a constant form of F in the presence of heart failure?

- A. Digoxin
- B. Atropine
- C. Verapamil
- D. Novocainamide
- E. Lidocaine

9. ECG-signs of ventricular extrasystole:

- A. Modified teeth P, QRS complexes altered
- B. P wave extensible, QRS complex changed
- C. The presence of a negative P wave after the QRS complex
- D. Absence of a P wave, a broadened QRS complex with a full compensatory pause
- E. The presence of a negative P wave in front of the unchanged QRS complex

10. Transesophageal electropulse therapy is used to treat:

- A. Ventricular extrasystole I class by Lown
- B. sinus tachycardia
- C. Ventricular extrasystole IV class by Lown
- D. flutter
- E. supraventricular extrasystole

4. Discussion of theoretical issues:

1. Etiology of conduction disorders
2. Classification of conduction disorders
3. Symptoms and signs of conduction disorders
4. Diagnosis of conduction disorders
5. Treatment of conduction disorders
6. Definition of the concept of "violation of the rhythm of the heart."
7. Classification of heart rhythm disturbances.
8. Clinical picture of heart rhythm disturbances.
9. Diagnostic criteria for heart rhythm disturbances.
10. Principles of treatment of heart rhythm disturbances.
11. Prognosis and work capacity of patients with heart rhythm disturbances.

Note. The discussion of theoretical questions can take place in the composition of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of answers of higher education applicants, etc.

5. Themes of reports/abstracts:

- Etiological factors and the main pathogenetic mechanisms of heart rhythm disturbances.
- Treatment of conduction disorders
- Differential diagnosis for heart rhythm disturbances.
- Prophylaxis of thromboembolic complications in fibrillation (F) and atrial flutter (AF).
- Tactics of assistance in stopping blood circulation, paroxysmal rhythm disorders

Note. When preparing a report, essay, analytical review, etc., applicants of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

6. Summary:

7. Recommended reading list Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages

2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

Additional:

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

Electronic information resources:

1. <http://www.oxfordmedicaleducation.com/>
2. <http://www.strazhesko.org.ua/advice>
3. <https://www.heart.org/>
4. <https://www.aace.com/>
5. <https://www.acc.org/>
6. <https://www.escardio.org/>
7. <https://www.ese-hormones.org/publications/guidelines/>
8. <https://ehaweb.org/>
9. https://oup.silverchaircdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/