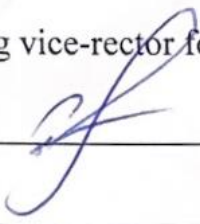


Ministry of Health of Ukraine
ODESA NATIONAL MEDICAL UNIVERSITY

Faculty of medicine, international
Department of Internal Medicine No. 1 with the cardiovascular pathology course

CONFIRMED by

Acting vice-rector for scientific and pedagogical work



Svitlana KOTYUZHYNSKA
_____, 2022

**METHODOLOGICAL DEVELOPMENT TO THE INDEPENDENT WORK OF HIGHER
EDUCATION ACQUIRES
FROM EDUCATIONAL DISCIPLINE**

Course: 4 Faculty: International
Academic discipline: Internal medicine

Approved:

Meetings of the department of internal medicine No. 1 on the course of cardiovascular pathology of
the Odesa National Medical University

Protocol No. 1 from "31" 08 2022

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Topic: Essential arterial hypertension

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.

Plan**I. Theoretical questions for the lesson:**

1. <https://www.escardio.org/Guidelines>
2. <https://professional.heart.org/en/guidelines-and-statements>
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control

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.

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

Term	Definition
AH	Persistently elevated systolic and/or diastolic blood pressure >140/90 mm Hg
Essential AH (primary AH or hypertonic disease)	High blood pressure in the absence of obvious reasons for its increase
Secondary (symptomatic) AH	AH, the cause of which can be identified
Malignant AH	Syndrome, which is characterized by high BP levels (>220/120 mmHg) with signs of severe retinopathy: hemorrhages, exudates, often with edema of the optic nerve
Hypertensive crisis	A sudden significant increase in blood pressure from normal or elevated levels, which is almost always accompanied by the appearance or progression of disorders of the target organs or the vegetative nervous system

II. Practical work (tasks) that will be performed in class:

1. Patient K., 34 years old, was admitted urgently to the cardiology department with complaints of headache, dizziness, impaired visual acuity, palpitations, fear, thirst, frequent urge to urinate. Considers himself sick for 6 months. The disease proceeds in the form of attacks that occur suddenly, after physical exertion, emotional stress, last from 15 to 45 minutes and go away on their own. Objective data. General condition of moderate severity. The patient is agitated, the face is pale, the skin is covered with cold sweat. Pulse - 94 per minute, rhythmic, tense. AD 250/130 mm Hg The left border of the heart is 1 cm outward from the left mid-clavicular line. The 1st tone over the apex of the heart is preserved, the accent of the 2nd tone over the aorta is heard. When examining the respiratory system and abdominal organs, no changes were found. Additional research data. Complete blood count: erythrocytes - $3.96 \times 10^{12} / l$, hemoglobin - 120 g / l, CI - 0.9, leukocytes - $5.9 \times 10^9 / l$, eosinophils - 1%, stab neutrophils - 2%, segmented neutrophils - 63%, lymphocytes - 26%, monocytes - 8%, ESR - 8 mm / year. The general analysis of urine is transparent, the reaction is slightly acidic, the

relative density is 1019, the protein is traces, erythrocytes are 0-3, leukocytes are 3-5 in the field of view, oxalate crystals are single in the field of view. Biochemical blood test: glucose - 7.9 mmol / L, bilirubin - 14.4 mmol / L, potassium - 4.4 mmol / L, sodium - 125 mmol / L, calcium - 2.15 mmol / L. Ultrasound data - the length of the right kidney is 10 cm, the width is 6 cm, the thickness is 4 cm, the left kidney is 11, 6.5, 4.5 cm, respectively; size of the right adrenal gland - 35 mm, left - 24 mm

QUESTIONS.

1. Give an assessment to the biochemical blood test.
2. Interpret the UltraSound data.
3. Determine the most likely diagnosis.
4. Determine the most informative additional laboratory test to verify the diagnosis.
5. Choose the most effective remedy for symptomatic treatment.

2. Patient S., 45 years old, complains of headache, thirst, weakness, leg muscle cramps, frequent (8-10 times a day) urination with the release of a significant (up to 5 liters) amount of urine per day. Considers herself sick for 8 months, she did not seek help. Objective data. General condition of moderate severity. Muscle weakness is pronounced, and therefore difficulty in walking. Pulse 76 bpm, rhythmic, tense. BP - 180/100 mm Hg The left border of the heart is 0.5 cm outward from the left mid-clavicular line. The 1st tone over the apex of the heart is weakened, the accent of the 2nd tone over the aorta is determined. When examining the respiratory system and abdominal organs, no changes were found. Additional research data. Complete blood count - no changes. Biochemical blood test: sugar - 5.6 mmol / l, bilirubin - 16.93 mmol / l, calcium - 2.25 mmol / l, potassium - 2.8 mmol / l, sodium - 145 mmol / l. General urine analysis: alkaline reaction, relative density - 1005, protein - traces, leukocytes 3-4, erythrocytes 1-2 in the field of view.

QUESTIONS:

1. Give an interpretation to the biochemical blood test.
2. Determine the most likely diagnosis.
3. Assign a diagnostic test to verify the diagnosis.
4. Select a drug for conservative treatment of the patient.

III. Test tasks for self-control:

1. Which of the following drugs is an inhibitor of angiotensin converting enzyme?
 - A. Propranolol
 - B. alpha-methyldopa
 - C. Hydralazine
 - D. Hidroklorisiazit
 - 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. Hypothyosid
 - B. Nifedipine
 - C. Enalapril
 - D. Metoprolol
 - E. alpha-methyldopa
6. Which of the following clinical signs/symptoms of complicated characterizes hypertensive crisis?
- A. Headache
 - B. Pain in the heart area
 - C. Dizziness
 - D. Cardiac asthma
 - E. Pronounced heartbeat
7. Which of the following antihypertensive drugs is the drug of choice in patients with hypertensive disease in combination with angina?
- A. Metoprolol
 - B. Hidroklorisiazit
 - C. Clonidine
 - D. alpha-methyldopa
 - E. Raunatin
8. Tactics in uncomplicated hypertensive crisis:
- A. The mandatory hospitalization in the therapeutic department
 - B. Hospitalization is not required
 - C. Hospitalization is required in an intensive care unit
 - D. Compulsory hospitalization in the cardiology department
 - E. It is Necessary to reduce the BP in for one hour
9. Which of the following drugs belongs to the first-line drugs in the treatment of hypertension?
- A. Moxonidin
 - B. Doxazosin
 - C. Verapamil
 - D. Hydralazine
 - E. Methyldopa
10. The most common side effects of ACE inhibitors include:
- A. Hypokalemia
 - B. Hypercholesterolemia
 - C. Hyperglycemia
 - D. Bertrille
 - E. Dry cough

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.

Fill in the table of classification of hypertension by blood pressure (mm Hg)

Categories	Systolic BP	Diastolic BP
Optimal BP	<120	<80

Task 2.

Fill in the table the main symptoms or clinical signs of damages of the organs/systems with AH:

System/organ	Signs of damage
The brain	Dizziness, headache, sensory and motor deficit, transient ischemic attack, stroke, revascularization of carotids
Heart	_____

Kidney	_____

Task 3.

Fill in the table to mandatory laboratory investigations of the patient with AH:

№	Method of investigation	Aim of investigation
1.	General blood analysis	Exclusion of comorbidities
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Task 4.

List the main directions of non-drug therapy in hypertension:

1. To give up smoking _____
2. _____
3. _____
4. _____
5. _____
6. _____

Task 5.

Fill the table. Optimum combinations of antihypertensive drugs:

ACE inhibitor	+ thiazide diuretics
Receptor blocker of angiotensin II	+
Calcium channel blocker	+
Calcium channel blocker	+
Calcium channel blocker	+ _____ + _____

Task 6.

Fill in the table of differential treatment of patients with complicated hypertensive crises:

A drug	Method of use, dose	Note
Nitroglycerin	intravenous drip	Particularly effective in acute left ventricle failure, myocardial infarction

Verapamil	_____	_____
	_____	_____
Enalapril	_____	_____
	_____	_____

Variante 2.

Task 1.

Fill in the table of classification of hypertension by the damage of target organs

Stage of AH	Target organs	Signs of damage of targets organs
I	Objective signs of organic damage of the target organs are absent	
II	_____	

	Heart	_____
	Eyeground	_____
	Kidney	_____

	Carotid artery	_____

Task 2.

Fill in the table the main symptoms or clinical signs of damages of the organs/systems with AH:

Organs/systems	Signs of damages
Brain	Dizziness, headache, sensory and motor deficit, transient ischemic attack, stroke, revascularization of carotids
Eyeground	_____

Peripheral artery	_____

Task 3.

Fill in the table to mandatory laboratory investigations of the patient with AH:

№	Method of investigation	Aim of investigation
1.	Urine analysis by Nechyporenko (or Adis-Chukovskogo, or Hamburge)	to exclude renal pathology
2.		

3.	_____	_____
4.	_____	_____
5.	_____	_____

Task 4.

List of antihypertensive drugs of the first line, and give examples of drugs:

1. ACE inhibitors - enalapril, _____
2. _____
3. _____
4. _____

Task 5.

Fill in which of hypertensive crisis are complicated:

1. Myocardial infarction _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Task 6.

Fill in the table of treatment of uncomplicated hypertensive crises:

A drug	Method of use, dose	Side effects
Captopril	12,5-50 mg sub lingual	Hypotension with renin-dependent hypertension
Nifedipine	_____	_____
Furosemide	_____	_____

Recommended reading list

Basic

1. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
2. Harrison's "Principles of internal medicine", 19th edition, 2019.

Additional

3. 2020 ESH/ESC Guidelines for the management of arterial hypertension
4. https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/

Topic: Secondary arterial hypertension. Neurocirculatory dystonia

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

Key words: arterial hypertension, secondary hypertension, endocrinopathy, kidney failure, artery stenosis, neurocirculatory dystonia, cardiac variant, neurotic variant, arrhythmic variant of NCD.

Plan

I. Theoretical questions for the lesson:

12. <https://www.escardio.org/Guidelines>
13. <https://professional.heart.org/en/guidelines-and-statements>
14. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
15. Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control

1. Give definition of SHT, "neurocirculatory dystonia" .
2. Etiology and pathogenesis of SHT, "neurocirculatory dystonia" .
3. To know classification of SHT
4. Risk-factors
5. Clinical manifestations of SHT, "neurocirculatory dystonia" .
6. Laboratory and instrumental diagnostics of SHT
7. Diff. diagnosis between types of SHT, "neurocirculatory dystonia" .
8. Complications of SHT
9. Principles and methods of SHT, "neurocirculatory dystonia" treatment.

Approximate tasks for the study of theoretical material

1. Make a dictionary of basic concepts on the topic:

Term	Definition
Secondary (symptomatic) arterial hypertension (AH)	Arterial hypertension, in which the increase in arterial pressure is associated with the disease of organs involved in the regulation of blood pressure. The reason for an increase in blood pressure can be determined
Vasorenal (or renovascular) hypertension	The increase in blood pressure is due to one or two-way stenosis of the renal arteries
Renoparenchymatous AH	Increased blood pressure is due to chronic disease of kidney parenchyma
Cushing's syndrome	The presence of cortisol-secreting tumor (adenoma, adenocarcinoma) or hyperplasia of the adrenal gland)
Pheochromocytoma	Adrenal suprarenal tumor producing catecholamine - adrenaline and norepinephrine
Primary hyperaldosteronism (Conn's syndrome)	Syndrome is due to hypersecretion of aldosterone by adenoma or carcinoma of the adrenal cortical substance.
NCD	polietiological functional disease of the cardiovascular system, which is based on a violation of the neuroendocrine regulation of multiple clinical symptoms that arise or progress on the background of stress, physical exertion, weather and other factors, is characterized by undulating benign course, is not complicated by cardiomegaly and heart failure.

II. Practical work (tasks) that will be performed in class:

1. Woman, 42 y.o., after the family stressful situation, complains of stabbing pain in the apex of the heart and long-term aching pain over the region of the heart, palpitations, a sense of "fading" of the heart, shortness of breath, irritability. After intake of tincture of Valerian's,

condition is improving. Objectively: the emotionally labile, red spots on the face, brushes are wet and cold. Thyroid gland is not increased. Pulse – 92/bmp, rhythmic. Borders of heart are in norm. The cardiac sounds are sonorous, short systolic murmur over the apex. BP – 140/85 mm.Hg. On ECG – decrease in the amplitude of the wave T. What is most likely diagnosis?

2. Patient A., 20 years old, has an increased blood pressure since childhood, the level of which is currently 180-200 / 110-120 mm Hg. Art. There is no influence of psychoemotional factors. There are practically no fluctuations in blood pressure. There is no headache. It is not possible to normalize blood pressure with antihypertensive drugs. A systolic murmur is heard to the left and right of the navel. General urine analysis without pathology.
 1. Name the presumptive form of arterial hypertension and its probable cause in this patient.
 2. What is the mechanism of arterial hypertension formation?
 3. What research should be done to confirm or deny the diagnosis?
 4. What result of this study will support your assumption?

III. Test tasks for self-control:

1. What disease is a common cause of renovascular hypertension?
 - A. Chronic pyelonephritis
 - B. Chronic glomerulonephritis
 - C. Amyloidosis of the kidneys
 - D. Atherosclerosis of the renal arteries
 - E. Conn's syndrome
2. What laboratory index is informative for the diagnosis of Cushing's syndrome?
 - A. Increase in glucose content in daily urine
 - B. Increase in the content of norepinephrine daily urine
 - C. Increase in progesterone content in daily urine
 - D. Increase cortisol content in daily urine
 - E. Increased activity of renin in the blood
3. What is characteristic of hypertension in chronic pyelonephritis?
 - A. Frequent hypertensive crises
 - B. Preferred increase in systolic blood pressure
 - C. Preferred increase in diastolic blood pressure
 - D. Systolic noise in the circulatory region
 - E. Edema of the legs
4. Which of the following clinical signs is characteristic of pheochromocytoma?
 - A. Abdominal obesity, strains on the abdominal skin
 - B. Muscular weakness, paresthesia
 - C. Polyuria, polydipsia
 - D. Hypertensive crisis with increased body temperature, sweating, tachycardia
 - E. Systolic noise in the circulatory region
5. Which of the following clinical signs is characteristic for the Cushing's syndrome?
 - A. Hypertensive crisis with increased body temperature, sweating, tachycardia
 - B. Abdominal obesity, stomach on the abdominal skin
 - C. Muscular weakness, paresthesia
 - D. Polyuria, polydipsia
 - E. Increased excitability, tremor, weight loss
6. Antagonists of slow calcium channels include:
 - A. Diltiazem
 - B. Bisoprolol
 - C. Clopidogrel
 - D. Trimetazidine
 - E. Enalapril

7. Specific signs of myocardial ischemia on ECG in patients with stable angina pectoris:
- Ventricular extrasystole
 - The presence of a pathological Q
 - Negative or high positive T wave
 - Transient or horizontal depression of the ST segment in leads from the corresponding LV zone and its discordant depression in leads from the opposite LV zone
 - Skewed depression of the ST segment
8. A 53-year-old patient complains of compressive pain in the region of the heart with irradiation in the left arm, interruptions, severe headache, dizziness. Deterioration of the condition is associated with physical overload. Within a few years, he noticed high blood pressure. Objectively: pulse 95 per 1 min. arrhythmic, arterial pressure 230/115 mm. Hg. The border of the heart is widened to the left by 3 cm. When auscultation: the heart is arrhythmic, the accent is II tone over the aorta. Frequent early ventricular extrasystole were recorded on the ECG. Which drug is most suitable for emergency care?
- Novokainamid 10% - 10.0
 - Labetalol 100 mg IV.
 - Lidocaine 2% - 6.0 w / w.
 - Sodium nitroprusside 50 mg IV.
 - Arfonad 250 mg IV.
9. A patient of 27 years complains of periodic pains in the region of the heart, palpitations. Objectively: pulse 95 bpm, arterial pressure 100/70 mm Hg. The level of T3, T4, TTG is within the normal range. ECG: sinus tachycardia. The test with physical exertion on IHD is negative. What is the diagnosis of this patient?
- Vasospastic angina
 - Stable exertional angina
 - Neurocirculatory dystonia
 - Metabolic Cardiomyopathy
 - Coronary Syndrome X
10. What are the causes of paresthesias, seizures in the fingers and feet with NCD?
- hypokalemia.
 - hyperkalemia.
 - hyperventilation and alkalosis.
 - hypermagnesia and hypernatremia.
 - metabolic acidosis

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.

What signs can be suspected of secondary renovascular arterial hypertension?

- Development under the age of 35
- _____
- _____
- _____

Task 2.

What are the main causes of secondary hypertension related to endocrine pathology

- Pheochromocytoma
- _____
- _____
- _____
- _____

Task 3.

Fill in the table, indicating the possible causes of secondary renal hypertension

Renoparenchymal AH	Chronic glomerulonephritis_____

Task 4.

Fill in the table, indicating which groups of conditions accompanied by an increase in blood pressure are distinguished in pregnant women and give them a description.

	Characteristic
1. Arterial hypertension that existed before	Increased blood pressure \geq 140/90 mm Hg. during pregnancy and / or up to 20 weeks registered hypertension is postpartum (more than 42 weeks)
a) essential	
b)	_____

2.	
a)	_____
b)	_____
c)	_____

Task 5.

Give a description of a hypertensive crisis with pheochromocytoma

1. Sharp headache

3. _____

4. _____

Task 6.

Fill in the table, indicating the types of treatments used in pheochromocytoma

Type of treatment	Method
Radical	Surgical
Symptomatic	a. _____

	b. _____

	c. _____

Urgent (pheochromocytic hypertensive crisis)	

Variant 2.

Task 1.

List the main features of neurocirculatory dystonia:

Task 2.

Additional signs of NCD:

Task 3.

Fill in the table of obligatory laboratory methods of examination of the patient for NDC:

№	Method of examination	Purpose
1.	General blood test	Elimination of concomitant diseases
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Task 4.

List the main ways of non-drug therapy with NDC:

1. Refuse of smoking _____
2. _____
3. _____
4. _____

5. **Task 5.**

6. Fill in the differential treatment table for patients with sympathoadrenal crises:

Drug	Way of injection, dose	Note
	_____	_____
	_____	_____

Recommended reading list

Basic

1. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
2. Harrison's "Principles of internal medicine", 19th edition, 2019.
3. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition
4. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
5. Churchill, C Barbui, D Caldwell, A Cipriani, T Furukawa. Psychological therapies for panic disorder with or without agoraphobia in adults: a network meta-analysis // The Cochrane Library. – 2016.
6. Cherednichenko, T., Sereda, V., Svyrydova, N., Parnikoza, T., Chuprina, G., Khanenko, N., Sulik, R., Mykytei, O., & Svystun, V. (2017). Vegetative-vascular dystonia: etiopathogenesis, clinical picture, diagnosis, treatment (clinical lecture). *East European Journal of Neurology*, (1(13), 34-39.2017.

Additional

1. 2020 ESH/ESC Guidelines for the management of arterial hypertension
2. https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/
4. <https://www.webmd.com/brain/dystonia-causes-types-symptoms-and-treatments>

Topic: Atherosclerosis

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

Key words: lipid profile, atherosclerosis, hypertension, ischemic heart disease, stroke.

Plan

I. Theoretical questions for the lesson:

1. <https://www.escardio.org/Guidelines>
2. <https://professional.heart.org/en/guidelines-and-statements>
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018

Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control

1. Define the concept of atherosclerosis.
2. Indicate the main etiological factors, features of pathogenesis.
3. Modern classification of atherosclerosis.
4. The main clinical signs of atherosclerotic lesions depending on the location.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment.

Approximate tasks for the study of theoretical material

1. Make a dictionary of basic concepts on the topic:

Term	Definition
Cholesterol	Natural lipophilic alcohol. It belongs to the group of steroids.
Triglycerides	The combination of three esters of fatty acids and glycerol, which is a polyhydric alcohol
Lipoproteins	Spiral particles of different sizes contained in the plasma and consist of cholesterol, triglycerides, phospholipids and proteins
Hypolipoproteinemia	Any increase in the level of lipids and lipoproteins in plasma is higher than optimal values.
Foam cells	Macrophages stuffed with cholesterol
SCORE	Systematic Coronary Risk Evaluation - System for assessing the risk of cardiovascular catastrophes (MI and stroke) in the next 10 years

II. Practical work (tasks) that will be performed in class:

Clinical task №1.

Patient R., 22 years old, is hospitalized for acute glomerulonephritis for 7 days. From the anamnesis it is known that 10 days after the tonsillectomy the patient complained of pain in the lumbar region, fever, change in urine color to the color of "meat slops", headache, dizziness, weakness, swelling of the face, reduction the amount of urine excreted, so the patient was sent to hospital. 3 months ago, the patient noted a sudden onset of anuria, which preceded within 2 days, general malaise, weakness, oliguria, the patient did not seek medical attention. Despite the therapy in the hospital, the patient's condition deteriorated: drowsiness, urine does not go away for the last 12 hours.

Objectively: the patient is retarded, the skin is pale, swelling of the face, lower back, lower extremities. Body weight - 70 kg. The boundaries of cardiac dullness are extended to the left. The tones of the heart are muffled, the activity of the heart is rhythmic, the accent of the second tone on the aorta is felt on the basis of the heart. Heart rate - 104 beats per minute. BP 150/104 mm Hg. Percussion sound over the lungs is clear pulmonary, vesicular respiration. BH - 28 per minute. At laboratory research in the general analysis of urine micro hematuria, cylindruria, daily excretion of protein - 4.2 g a day is defined, in the general analysis of blood increase in ESR, leukocytosis, normochromic anemia is noted, at research of blood it is noted - hypoalbuminemia, dysproteinemia, hypercholesterolemia, creatinine increase to 356 $\mu\text{mol} / \text{l}$.

Question.

1. Calculate the patient's GFR.
2. Was acute glomerulonephritis diagnosed correctly in the hospital?
3. What additional methods of examination will help to most accurately assess the patient's condition?
4. Recommended treatment measures?

Clinical task №2

A 58-year old man is referred to a vascular clinic due to a 3-month history of left calf pain after walking about two blocks. Over the counter nonsteroidal anti-inflammatory drugs (NSAIDs) and common analgesics do not relieve his symptoms. He is a smoker and his medical history includes dyslipidemia and a surgery for left anterior cruciate ligament rupture 10 years ago. He has no family history of cardiac disease. Laboratory workup, except for an LDL-C value of 4,2 mmol/l, is completely normal. Physical examination reveals palpable distal pulses to the left and right lower extremity, however distal pulses to the left foot are decreased. Right and left ankle-brachial index (ABI) values at rest are 1.3 and 1.1 respectively. A magnetic resonance imaging (MRI) is ordered and reveals small round masses with hypoechogenic center in the arterial wall of the popliteal artery.

Question.

What is the meaning of difference of ABI on the left and right side?

1. What changes were found on the MRI?
2. What is your diagnosis?
3. Treatment plan

III. Test tasks for self-control:

1. Which of the following drugs is used to treat statins?

- A. Propranolol
- B. Rosuvostatin
- C. Hydralazine
- D. Hydrochlorothiazide
- E. Enalapril

2. What is the level of total cholesterol targeted at patients at low risk of fatal cardiovascular events?

- A. <2.5 mmol, l
- B. <3.0 mmol, l
- C. <4,5 mmol, l
- D. <5.0 mmol, l
- E. <5.5 mmol, l

3. What is the level of low-density lipoprotein cholesterol targeted at patients at high risk of fatal cardiovascular events?
- A. <2.5 mmol, l
 - B. <3.0 mmol, l
 - C. <4,5 mmol, l
 - D. <5.0 mmol, l
 - E. <5.5 mmol, l
4. What clinical sign is characteristic for atherosclerosis of renal arteries?
- A. Peripheral edema
 - B. Lumbar pain
 - C. Arterial hypertension
 - D. Fever
 - E. Polyuria
5. Which of the factors of cardiovascular risk belongs to those that are not modified?
- A. Smoking
 - B. Obesity
 - C. Arterial hypertension
 - D. Family history
 - E. Diabetes mellitus
6. Atherosclerosis of the thoracic aorta can manifest itself clinically:
- A. Aorthalgia
 - B. Isolated systolic hypertension
 - C. Aortic aneurysm
 - D. Voice and difficulty in swallowing
 - E. All listed above
7. Non-medicated therapy for atherosclerosis consists of:
- A. Appointment of low-calorie and hypocholesterol diet
 - B. Correction of overweight.
 - C. Increased physical activity.
 - D. Refusal of smoking.
 - E. All the above is listed
8. To lipid-lowering drugs do not belong:
- A. Fenofibrate
 - B. Cholesterram
 - C. Niacin
 - D. Clopidogrel
 - E. Atorvastatin
9. The most common side effects of statins include:
- A. Increase in liver enzymes
 - B. Fever
 - C. Hyperglycemia
 - D. Hypokalemia
 - E. Dry cough
10. What is the level of low-density lipoprotein cholesterol targeted at patients at low risk of fatal cardiovascular events?
- A. <2.5 mmol, l
 - B. <3.0 mmol, l
 - C. <4,5 mmol, l
 - D. <5.0 mmol, l
 - E. <5.5 mmol, l

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.

Fill in the table of the main criteria for the distinction between unstable (susceptible to rupture) and stable atherosclerotic (AC) plaque

Criteria	Unstable AC plaque	Stable AC plaque
Dimensions of the lipid core	Big	Small
Condition of fibrous tire		
Content of cells of inflammation (macrophages, T-lymphocytes)		
Secretion of proteolytic enzymes		

Task 2.

Fill in the table of main symptoms / clinical signs of vascular lesions in stenotic atherosclerosis:

Vessels	Signs of lesions of organs / systems
Cerebral arteries	Dizziness, headache, sensory and motor deficiency, transient ischemic attack, stroke, revascularization of carotid arteries
Coronary arteries	

Task 3.

Fill in the table of non-invasive instrumental examination methods for a patient with atherosclerosis:

№	Method of investigation	Aim of investigation
1.	X-ray of the chest organs and overview of X-ray of the abdominal cavity	It is sometimes possible to detect linear calcinates in the wall of the arc of the aorta and abdominal aorta.
2.		
3.		
4.		
5.		
6.		

Task 4.

Complete the necessary criteria for patients with a very high risk of overall cardiovascular mortality:

1. Persons with established cardiovascular disease.
2. -----
3. -----
4. -----

Task 5.

Fill in the table of the clinical classification of dyslipidemias of the Association of cardiologists of Ukraine in 2011.):

Dyslipidemia	Characteristic

Hypercholesterolemia	
Combined dyslipidemia	
Hypertriglyceridemia	Isolated increase in triglyceride levels > 1.7 mmol

Task 6.

Write down the aspects that include non-medicated treatment for atherosclerosis:

1. Stopping smoking.
2. -----
3. -----
4. -----

Variant 2.

Task 1.

To add that the complications of an atherosclerotic plaque belong to:

1. -----
2. The hemorrhage as a result of the rupture of the tiny plaque.
3. -----

Task 2.

Fill in the table of main symptoms / clinical signs of vascular lesions in stenotic atherosclerosis:

Vessels	Signs of lesions of organs / systems
Kidney arteries	
Mesenterial arteries	
Arteries of the lower extremities	

Task 3.

List the main clinical manifestations of atherosclerosis of the thoracic aorta:

1. Aortalgias
2. -----
3. -----

Task 4.

Fill in the table of invasive instrumental examination methods for a patient with atherosclerosis:

No	Method	Aim of investigation
1.	X-ray contrast angiography (aortography, selective coronary angiography, mesenteric, renal, extra-intracranial arteries, arteries of the lower extremities).	Method of verifying the diagnosis.
2.	Intravascular ultrasound	

Task 5.

Fill in the table of medical treatment of various variants of dyslipidemia:

Type of dyslipidemia	Drugs

Hypercholesterolemia	
Combined dyslipidemia	
Hypertriglyceridemia	Fibrates and/or statins

Task 6.

The most common causes of secondary dyslipidemia may be:

1. Diabetes
2. Hypothyroidism
3. -----
4. -----
5. -----
6. -----

Recommended reading list

Basic

Davidson’s “Principles of Practice of Medicine” 23rd edition, 2018

Harrison’s “Principles of internal medicine”, 19th edition, 2019.

Cherednichenko, T., Sereda, V., Svyrydova, N., Parnikoza, T., Chuprina, G., Khanenko, N., Sulik, R., Mykytei, O., & Svystun, V. (2017). Vegetative-vascular dystonia: etiopathogenesis, clinical picture, diagnosis, treatment (clinical lecture). *East European Journal of Neurology*, (1(13), 34-39.2017.

Additional

2020 ESH/ESC Guidelines for the management of arterial hypertension

https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/ehz151/2/

Topic: Chronic forms of Ischemic heart disease

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.

Plan

I. Theoretical questions for the lesson:

16. <https://www.escardio.org/Guidelines>
17. <https://professional.heart.org/en/guidelines-and-statements>
18. Davidson’s “Principles of Practice of Medicine” 23rd edition, 2018
19. Harrison’s “Principles of internal medicine”, 19th edition, 2019.

Questions for self-control

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

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

Term	Definition
IHD	Acute and chronic heart disease due to mismatch between the needs of the myocardium in oxygen and the magnitude of coronary blood flow
Ischemia	Pathological condition due to a decrease in the delivery of oxygen to tissues and a violation of the removal of their metabolites due to the reduction of perfusion
Hypoxia	The state of oxygen hunger as a whole organism as a whole, as well as individual organs and tissues
Angina pectoris	Clinical syndrome of discomfort or compression in the pericardial region as a result of transient ischemia of the myocardium without the development of MI
Stable angina of the tension	Angina, the attacks of which develop in the event of a certain level of physical activity

II. Practical work (tasks) that will be performed in class:

1. At the patient of 50 years 2 weeks ago at fast rise on the 4th floor there was a pain in the lower third of a sternum of oppressive character, passing at rest. In the future, the pain began to occur when walking fast, climbing to the 2-3 floor.

1. Form of angina
2. doctor's tactics
3. a drug for pain relief
4. research plan

2. The patient, complained of a feeling of suffocation arising from brisk walking, passes alone at rest. Three days ago there was an attack of intense pain behind the sternum, lasting up to 20 minutes, accompanied by nausea.

From the anamnesis of life: for 10 years suffers from high blood pressure (up to 170/110), is treated irregularly, smokes for 25 years.

On examination: high nutrition. In the lungs vesicular respiration, no wheezing, BH 22 per minute. The border of the heart is expanded to the left by 2 cm. Heart tones are clear, heart rate 80 beats / min. Frequent extrasystole are heard. AD 180/115 mmHg For other bodies without changes. ECG: sinus rhythm, negative T teeth in V1-3.

1. Formulate a diagnosis
2. tactics of patient management

III. Test tasks for self-control:

1. Which of the following drugs is used to treat statins?

- A. Propranolol
- B. Rosuvostatin
- C. Hydralazine
- D. Hydrochlorothiazide
- E. Enalapril

2. What is the level of total cholesterol targeted at patients at low risk of fatal cardiovascular events?

- A. <2.5 mmol, l
- B. <3.0 mmol, l
- C. <4,5 mmol, l
- D. <5.0 mmol, l
- E. <5.5 mmol, l

3. What is the level of low-density lipoprotein cholesterol targeted at patients at high risk of fatal cardiovascular events?

- A. <2.5 mmol, l
- B. <3.0 mmol, l
- C. <4,5 mmol, l
- D. <5.0 mmol, l
- E. <5.5 mmol, l

4. What clinical sign is characteristic for atherosclerosis of renal arteries?

- A. Peripheral edema
- B. Lumbar pain
- C. Arterial hypertension
- D. Fever
- E. Polyuria

5. Which of the factors of cardiovascular risk belongs to those that are not modified? :

- A. Smoking
- B. Obesity
- C. Arterial hypertension
- D. Family history
- E. Diabetes mellitus

6. Atherosclerosis of the thoracic aorta can manifest itself clinically:

- A. Aorthalgia
- B. Isolated systolic hypertension
- C. Aortic aneurysm
- D. Voice and difficulty in swallowing
- E. All listed above

7. Non-medicated therapy for atherosclerosis consists of:

- A. Appointment of low-calorie and hypocholesterol diet
- B. Correction of overweight.
- C. Increased physical activity.
- D. Refusal of smoking.
- E. All the above is listed

8. To lipid-lowering drugs do not belong:

- A. Fenofibrate
- B. Cholesterram
- C. Niacin
- D. Clopidogrel
- E. Atorvastatin

9. The most common side effects of statins include:

- A. Increase in liver enzymes
- B. Fever
- C. Hyperglycemia
- D. Hypokalemia
- E. Dry cough

10. What is the level of low-density lipoprotein cholesterol targeted at patients at low risk of fatal

cardiovascular events?

- A. <2.5 mmol, 1
- B. <3.0 mmol, 1
- C. <4,5 mmol, 1
- D. <5.0 mmol, 1
- E. <5.5 mmol, 1

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.

Fill in the table. Give a description of FC stable angina

I FC	Angina occurs during elevated (in intensity and / or duration) of physical activity. Normal exercise does not cause the appearance of pain.

Task 2

Describe the main features of a typical angina attack

1. Localization of the pain behind the sternum
2. _____
3. _____
4. _____
5. _____

Task 3

Describe the possible changes to an electrocardiogram with stable angina and describe these changes.

Consequential horizontal or oblique depression of the ST segment greater than 1 mm	Recorded during an angina attack
--	----------------------------------

	<hr/> <hr/> <hr/>
	<hr/> <hr/> <hr/>
	<hr/> <hr/> <hr/>

Task 4

Specify the absolute contraindications for a metered-dose test:

1. Symptomatic aortic stenosis
1.

2.

3.

4.

5.

6.

7.

8.

Task 5

Specify the main indications for coronaventriculography, for surgical revascularization, patients with stable angina pectoris

1. Ineffective drug symptom control
1.

2.

3.

4.

Task 6

Fill in the table of the main groups of anti-ischemic drugs used to treat patients with stable angina pectoris indicating drugs and dosage

Group of drugs	Drugs and doses
----------------	-----------------

β – adrenoblockers	Bisoprolol 2,5 – 10 mg/once a day
The blockers of Ca ²⁺ channels • Dihydropyridine • That ↓ heart rate	 <hr/> <hr/> <hr/> <hr/>
Drugs that improve metabolism	<hr/> <hr/> <hr/>
Inhibitors of Late Flow Na ⁺	<hr/> <hr/>

Variant 2

Task 1

Indicate which patients are shown the implementation of pharmacological stress tests for the diagnosis of coronary heart disease

- Patients with ECG changes at rest that interfere with the accurate interpretation of ECG changes
- _____
- _____
- _____

1. _____
2. _____

Task 2

Fill in the table of compulsory instrumental examinations of a CHD patient

№	Method	Aim of investigation
1	EchoCG	Detection of zones of regional lesions of the contractility of LV, determination of systolic function of LV, determination of LV hypertrophy.
2		<hr/> <hr/> <hr/> <hr/>

3		_____

4		_____

5		_____

6		_____

Task 3

Fill in the table, indicating the possible results of the test with the metered exercise

Positive	<p>1. Appearance of signs of subendocardial ischemia on ECG during physical activity, which may be accompanied or not typical of an anginal attack</p> <p>1. _____</p> <p>2. _____</p> <p>3. _____</p>

Task 4.

Fill in the table of the main groups of anti-ischemic drugs used to treat patients with stable angina pectoris indicating drugs and dosage

Group of drugs	Aim of using
β – adrenoblockers	Bisoprolol 2,5-10 mg/once a day

Nitrats <ul style="list-style-type: none"> • Short action • Prolonged action 	<hr/> <hr/>
If- channels blockers	<hr/>

Task 5

Indicate the possible complications of stable angina pectoris

1. Transient violations of rhythm and conduction of the heart

1. _____
2. _____
3. _____
4. _____

Task 6

Indicate in which cases aortic coronary artery bypass surgery has advantages over percutaneous coronary intervention, in order to improve the long-term prognosis for life expectancy

1. With stenosis of the left coronary artery stem

1. _____
2. _____

Recommended reading list

Basic

1. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
2. Harrison's "Principles of internal medicine", 19th edition, 2019.

Additional

3. 2020 ESH/ESC Guidelines for the management of arterial hypertension
https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/ehz151/2/

Topic: Acute coronary syndrome (unstable angina, acute myocardial infarction)

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.

Plan

I. Theoretical questions for the lesson:

1. <https://www.escardio.org/Guidelines>
2. <https://professional.heart.org/en/guidelines-and-statements>
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control

1. Give definition of ACS.
2. Give definition of MI
3. Give definition of Unstable angina.
4. Classification of MI.
5. Etiology and pathogenesis of MI.
6. Clinical manifestations of MI.

7. Diagnostics of ACS
8. differential diagnostics of MI.
9. Principles and methods of MI treatment
10. Complications of MI.

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

Term	Definition
Acute coronary syndrome	A group of symptoms and signs that allow to suspect MI or unstable angina
MI	Is any necrosis of the myocardial mass due to acute and prolonged ischemia
Unstable angina	Acute myocardial ischemia, the severity and duration of which are insufficient for the development of myocardial necrosis
Aneurysm of the heart	Stretching and thinning of the LV wall, occurring in the region of infarction and is accompanied by dyskinesia and the deformation of the contour of the left ventricle according to Echocardiography and / or ventriculography
Rehabilitation of patients with MI	The complex of the actions directed on restoration of health and disability of the patient
Heart troponin	Cardiac enzyme that is released into the blood during myocardial damage, is a sensitive marker in the diagnosis of MI

II. Practical work (tasks) that will be performed in class:

1. Patient A. was disturbed for 3 years short-term pain in the left half of the chest, irradiation in the neck. The day before there were very intense pains in left half of the chest with irradiation in the neck, arm, abdomen, lasting 30 minutes. The temperature rose to 37.0 C. Heart tones are weakened. Leukocytes - $7 \cdot 10^9 / l$. AST - 40 U / L (norm to 31), CPK - 150 U / L (norm up to 170). On the ECG, the T wave in the leads III and avF negative, pointed. After 3 days of ECG normalized.

1. Your diagnosis?
2. Assign the necessary additional research

2. A 49-year-old man consulted a doctor due to severe pain in the sternum, arising during snow removal 3 days ago, and remaining at the time of treatment. At registration of an ECG at reception the frontal myocardial infarction, a subacute stage was revealed, in connection with which he was hospitalized. Reperfusion therapy was not performed. From the anamnesis it is known that the patient smokes. Has a burdensome family history of cardiovascular disease diseases (father - myocardial infarction at 45 years). Objectively: weight 81 kg, height 181 cm, blood pressure 100/60 mm Hg, pulse 60 beats in 1 min. In the rest is objective without features.

Laboratory tests

LDL - 3.0 mmol / l

Glucose 4.4 mmol / l

Sodium 139 mmol / L

ECG: sinus rhythm, PBLNPG

ECHO-KG: 20% PV, thrombus in the left ventricular cavity, aneurysm in the apex heart, moderate mitral and aortic regurgitation.

1. Formulate and justify a preliminary diagnosis. Highlight risk factors.
2. Evaluate the results of the survey. Select the survey method, which must be performed on

the patient first.

3. Prescribe treatment.

III. Test tasks for self-control:

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

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.

Write the classification of MI

1. Acute myocardial infarction with pathological Q-wave
- 1.
- 2.
- 3.

Task 2

Append the etiology of ACS (unstable angina, acute myocardial infarction)

	Atherosclerosis of the coronary arteries (in most cases).

Task 3

Describe the pain that occurs when acute myocardial infarction (complete the table)

1	Occurs at rest, sometimes during sleep.

Task 4

List the atypical clinical variants of the course of AMI

	Gastralgia

Task 5

Fill in the table of contraindications to thrombolysis

Contraindications to thrombolytic therapy	
Absolute	relative
Ischemic stroke within the last 6 months	Transient ischemic attack within the last 6 months

Task 6

Write what diseases should conduct a differential diagnosis with corticosteroids

1. Pulmonary embolism
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.

Variant 2

Task 1

Write the classification of unstable angina

1. New-onset angina.
- 2.
- 3.

Task 2

Write the characteristics of progressive angina pectoris

- gradual reduction of the ischemic threshold, that is, the emergence of angina attacks at a load less the intensity, or even at rest, particularly at night during sleep.

- _____

- _____

Task 3

List the causes of increase of level troponin T and I in blood

Acute myocardial infarction

Task 4

Fill in the table the dynamics of changes in markers of myocardial necrosis.

Figure	Start increasing activity, h	Maximum increase in activity, h	Normalizing, day
Troponin I	3,5-10		

CPK			
MB-CPK			

Task 5

Add topical ECG diagnosis of MI

Localization of MI	Leads, reflecting the potential of a particular area of myocardial ischemia:
Front-membrane	V1-V3
Front-top	
Front-side	
Back-diaphragmal	
Back-side	

Task 6

List the complications that can arise as a result of thrombolytic therapy.

- Reperfusion arrhythmia

-

-

-

Recommended reading list

Basic

Davidson's "Principles of Practice of Medicine" 23rd edition, 2018

Harrison's "Principles of internal medicine", 19th edition, 2019.

Additional

2020 ESH/ESC Guidelines for the management of arterial hypertension

https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/

Topic: Acute pulmonary heart – pulmonary embolism (PE). Chronic pulmonary heart

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.

Plan

I. Theoretical questions for the lesson:

5. <https://www.escardio.org/Guidelines>
6. <https://professional.heart.org/en/guidelines-and-statements>
7. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
8. Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control

1. Give definition of pulmonary thromboembolism and cor-pulmonale.
2. Etiology and pathogenesis of pulmonary thromboembolism and cor-pulmonale.
3. Classification of pulmonary thromboembolism and cor-pulmonale.
4. Clinical manifestations of pulmonary thromboembolism
5. Clinical manifestations of cor-pulmonale.
6. Laboratory and instrumental diagnostics of pulmonary thromboembolism and cor-pulmonale.
7. Diff. diagnosis of pulmonary thromboembolism and cor-pulmonale with other diseases
8. Diff. diagnosis of cor-pulmonale with other diseases
9. Management of pulmonary embolism
10. Treatment

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

Term	Definition
Pulmonary embolism (PE)	Sudden occlusion of the arterial lumen of the lung by a thrombus, which was originally formed in the veins of a large circle of blood circulation or in the cavities of the right heart and migrated into blood vessels of the lungs
Lung infarction	The disease, caused by embolism or thrombosis of branches of pulmonary artery, develops in 10 -30% of cases of pulmonary embolism
Pulmonary hypertension	Pathological increase in mean pressure in the pulmonary artery to 25 mm Hg. Art. and higher in a state of rest according to the data of catheterization of right heart departments
Chronic cor pulmonale (CCP)	Secondary enlargement of the right ventricle (its hypertrophy and / or dilatation), the development of which is due to pulmonary arterial hypertension, which develops as a result of diseases that affect the function of the lungs (those that lead to the development of respiratory failure).
Multispiral computed tomography	Polar method for the investigation of human internal organs using X-rays with the use of contrast agents (Omnipack, Ultravist 300)

II. Practical work (tasks) that will be performed in class:

1. A 62-year-old man was taken to the admission department by the SMP team after a brief loss of consciousness. Complains of severe weakness, heaviness in the chest, shortness of breath. It is not possible to find out the anamnesis it seems possible because the patient is sleepy and has difficulty answering the simplest questions. Objectively. Lies low, the skin is cold, moist, pronounced cyanosis of the face, neck, hands. The jugular veins are swollen. There are no peripheral edemas. BH 40 in 1 min. Vesicular respiration, no wheezing. Tones, rhythmic, deaf. Pulse 102 in 1 min, BP 60/40 mm Hg. The abdomen is soft, the liver on the edge of the costal arc.

preliminary diagnosis
provide emergency assistance
schedule an examination

2. An 62-year-old woman underwent an appendectomy three days ago. Today, when trying to get out of bed there was a sharp weakness, dizziness and shortness of breath. The doctor on duty was called. At the time of the examination, his condition returned to normal, there were no complaints. Objectively. Lies low. Integuments dry, warm, slight cyanosis of the lips. The left foot and shin are moderately swollen, palpation along the deep veins are painful. RR 18 in 1 min. Vesicular respiration, no wheezing. Heart tones are clear, rhythmic. Pulse 96 in 1 min, blood pressure 120/80 mm Hg.

Assess the clinical likelihood of PE
Diagnosis
Treatment

III. Test tasks for self-control:

1. What disease often leads to the development of CCP?
 - A. Chronic obstructive pulmonary disease
 - B. Systemic scleroderma
 - C. Bronchial asthma
 - D. Post-thromboembolic PH

E. Tuberculosis of the lungs

2. 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

3. 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

4. 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

5. 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 branch of the Gis bundle
 - E. Decrease of teeth voltages, concordant ST elevation in all chest leads "arc down"

6. 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

7. To treat high-risk pulmonary artery disease, which is complicated by cardiogenic shock, use:
 - A. Nitroglycerin
 - B. Hydrochlorothiazide
 - C. Morphin
 - D. Furosemid
 - E. Streptokinase

8. 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

9. Which of the following medicines refers to phosphodiesterase type 5 inhibitors?

- A. Sildenafil
- B. Warfarin
- C. Boustean
- D. Iloprost
- E. Amlodipine

10. 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. Calcifies of the fibrous ring
- E. Vegetation on valves

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.

Identify and detail the complaints of a patient with a PE.

- Shortness of breath, has a sudden start _____;
 - Sudden Onset of Dyspnea
 - ___Chestpain, Hemoptysis,Fainting,or syncope
-
- peripheral vascular collapse -

Task 2

Fill in the table of reasons for the occurrence of pulmonary embolism

1	Thrombophlebitis of deep veins
	Amniotic Fluid Embolism
	Fat Embolus
	Blocked Artery In lungs
	Obesity
	Cigarettes smoking
	Systemic arterial hypertension
	Chronic obstructive pulmonary disease
	Blood transfusion
	Air pollution

Task 3

Write down the diseases that can lead to the development of CCP

- COPD
- Systemic Lupous erythematosus
- Rheumatoid Arthritis
- Connective Tissue Disease

Task 4

Fill in the table of laboratory and instrumental methods for diagnosis of pulmonary embolism

Indicator	Aims of diagnosis

D – dimer	Fibrin degradation product. The normal level of the D-dimer prevents thrombosis.
ECG	T wave inversion in V1 lead, Q wave in Lead III
Venous Ultrasonography	It appears homogenous and has low echogenicity
Biomarkers	Elevated Cardiac Biomarkers serum troponin
Chest CT	Abnormalities includes focal oligemia
Chest Roentgenography	RV enlargement on Chest city scan

Task 5

Write with what diseases it is necessary to conduct a differential diagnosis of pulmonary embolism

• Pneumonia
Congestive Heart Failure
Acute coronary Syndrome
Pericarditis
Rib fracture, pneumothorax
Pneumonia, Asthma, Chronic obstructive pulmonary disease
Pleurisy

Task 6

Fill the PH stage table

Stage	Indicator (mm Hg)
Mild	
Medium	
High	

Variant 2.

Task 1

Fill in a scheme that includes risk factors for venous thromboembolism

Factors associated with a significant increase in the risk of pulmonary embolism

1. Fracture of the lower extremities
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

Task 2

Fill in the table. Functional classification of PH

I	Patients with PH, not limiting physical activity; normal physical activity does not cause shortness of breath, fatigue, chest pain or premature state (asymptomatic PH).
II	
III	
IV	

Task 3

Write signs of decompensation of chronic heart failure - signs of malnutrition

- pulsation in the left parasternal region
-
-
-

Task 4

Write the instrumental methods of diagnosis of CCP

Method	Aims
ECG	Detection of hypertrophy of psoriasis and right atrium, in part cases, diagnosis of concomitant diseases

Task 5

List the dopler-cardiography signs that may be due to the pulmonary embolism

- Increased average pressure in the pulmonary artery
-
-

Task 6

Write the prevention of the occurrence of pulmonary embolism.

- Early activation of patients in the postoperative period
-
-

Recommended reading list

Basic

Davidson's "Principles of Practice of Medicine" 23rd edition, 2018

Harrison's "Principles of internal medicine", 19th edition, 2019.

Additional

2020 ESH/ESC Guidelines for the management of arterial hypertension

Topic: Congenital heart defects in adults

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

Key words: congenital heart defects, atrial septal defect, ventricle septal defect, coarctation of aorta, Tetralogy of Fallot.

Plan

I. Theoretical questions for the lesson:

1. <https://www.escardio.org/Guidelines>
2. <https://professional.heart.org/en/guidelines-and-statements>
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control

1. Give definition of congenital heart disease.
2. Classification of congenital heart diseases.
3. Etiology of Congenital heart disease
4. Pathogenesis of Congenital heart disease
5. Clinical manifestations of congenital heart disease.
6. Laboratory diagnostics of Congenital heart disease
7. Instrumental diagnostics of Congenital heart disease
8. Management of patients with congenital heart defects
9. Differential diagnostics of congenital heart defects
10. Principles of surgical treatment.

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

Terms	Definition
Heart disease	An organic impression of the heart valves, its partitions, large vessels and myocardium, which leads to heart failure, stagnation of blood in the veins, tissues and organs. There are simple, combined and combined heart defects.
Open arterial duct	An abnormal combination between the aorta and the pulmonary artery, which persists in the postnatal period.
Pulmonary hypertension	This is a hemodynamic and pathophysiological state characterized by an increase in pressure in the pulmonary artery above 25 mm Hg. and evaluated according to the data of the right heart departments.
Arterial pulmonary hypertension	Prevailing increase in blood pressure in the precapillary channel of the small circle of blood circulation.
Venous pulmonary hypertension	Prevalence of arterial pressure in the post of capillary chord of a small circle of blood circulation.

Eisenmenger syndrome	High pulmonary hypertension with a sharp increase in pulmonary vascular resistance in patients with congenital heart disease with the presence of pathological combination between large and small circles of blood circulation, which leads to the occurrence of right-left, that is, venous-arterial blood flow and the appearance of cyanosis
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II. Practical work (tasks) that will be performed in class:

1.. A 17-year-old patient was admitted to the hospital with complaints of shortness of breath, aggravated by physical exertion, rapid fatigue, palpitations.

Objectively: there is a lag in physical development, pallor of the skin.

Auscultation reveals a rough "machine" systolic-diastolic murmur in the 2nd intercostal space to the left of the sternum. The noise is conducted into the interscapular space and on the vessels of the neck. In the lungs, breathing is vesicular. Pulse - 70 beats per minute, blood pressure - 100/60 mm Hg. Radiographically - increased pulmonary pattern, signs of left ventricular hypertrophy, bulging of the pulmonary artery arch. On the ECG - the norm. On aortography - simultaneous contrasting of the pulmonary artery.

Preliminary diagnosis?

Survey methods?

Indications for surgery?

2. The parents of an 8-year-old child drew attention to the pronounced development of the muscles of the shoulder girdle in the child in comparison with the underdevelopment of the muscles of the lower extremities.

Objectively: developmental imbalance. Systolic blood pressure in the upper extremities is 150 mm Hg., and on the lower limbs - 60 mm Hg. X-ray - expansion of the borders of the heart to the left. ECG - signs of left ventricular hypertrophy. On auscultation, the heart sounds are sonorous, clear, the accent of the 2nd tone above the aorta, systolic murmur on the vessels of the neck, under the right collarbone. In the lungs, breathing is vesicular. The abdomen is soft, painless. The pulsation of the abdominal aorta is sharply weakened, the pulse in the arteries of the thigh is sharply weakened.

Preliminary diagnosis?

Survey methods?

Treatment?

III. Test tasks for self-control:

1. Which of the following statements is true for coarctation of the aorta?

A. Systolic noise in the III-IV interterritorial space to the left of the sternum edge.

B. There is an increase in blood pressure in the upper extremities and lower blood pressure on the lower extremities

C. Hypertrophy of both ventricles and dilatation of the left atrium

D. Systole-diastolic noise is heard in the second inter-ribbed gap to the left of the sternum edge.

E. The tone of Troub over the femoral artery is listening

2. With a defect of the atrial membrane may be:

A. Systolic noise and accent II of the tone in the second intercross gap to the left

B. Extension of the limits of cardiac dullness to the right due to right ventricular dilation and right ventricular

C. ECG is a complete or incomplete blockade of the right leg of the Gis beam

D. All listed - not true

E. All listed right

3. Enlargement of the right ventricle of the heart is characteristic for:
 - A. Aortic stenosis
 - B. Defect between the atrial septum
 - C. Insufficiency of the aortic valve
 - D. Mitral valve deficiency
 - E. Coarctation of the aorta

4. Which of the following statements is true for the defect of the interventricular septum?
 - A. Harsh rudimentary systolic noise on the apex, which is carried out in the armpit.
 - B. Characteristic systole-diastolic noise over the pulmonary artery
 - C. A frequent complication is atrial fibrillation
 - D. Frequently complicated by Eisenmenger syndrome
 - E. Radiological trait is the impoverishment of the pulmonary pattern

5. Name the ECG-signs of hypertrophy of the right ventricle:
 - A. Deep Stem S in V1-V2-leads, high R in V5-V6-leads
 - B. Increase in the amplitude of the R wave in the V1-V2 leads and amplitude S in the V5-V6 leads
 - C. Deep sinus S in V1-V2 leads and negative T-pin in V5-V6 leads
 - D. High R to aVL and deep S in III and aVF leads
 - E. Deep throat S in and out and pathological Q in III throw

6. Diffuse cyanosis is a characteristic feature:
 - A. Syndrome Eisenmenger
 - B. Defect interatrial septum
 - C. Aortic Coarctation
 - D. Defect of interventricular septum
 - E. Opened arterial duct

7. Name ECG - signs of left ventricular hypertrophy:
 - A. Deep wave S in V1-V2, high R in V5-V6 leads
 - B. High wave R y V1-V2, deep S y V5-V6 leads
 - C. Negative T-wave in V1-V2 leads
 - D. Deep wave S in I standard, aVL leads and high wave R in III, aVF leads
 - E. Deep wave Q in the third release and aVF

8. Complications of aortic coarctation:
 - A. Atrial fibrillation
 - B. Pulmonary hemorrhage
 - C. Stroke
 - D. Syndrome Eisenmenger
 - E. Acute left ventricular failure

9. The open arterial duct is:
 - A. Defect in the muscular part of the interventricular septum
 - B. Defect in the central part of the atrial partition
 - C. Abnormal communication between the aorta and pulmonary artery
 - D. Narrowing of the aortic lumen in the area of the isthmus
 - E. Dextroposition of the aorta

10. Features of the pulse during coarctation of the aorta:
 - A. High, fast, spasmodic at the upper and lower extremities

- B. No peculiarities
- C. At an older age, atrial fibrillation is often present
- D. High, fast on the upper limbs and relaxed on the lower extremities
- E. Soft, weakened on the upper and lower limbs

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.

Write down the factors that increase the risk of developing a disability, especially in the first trimester of pregnancy (see the table):

1	Some viral infections (rubella, influenza);
2	
3	
4	
5	

Task 2.

Complications of an interventricular septal defect:

1. Atrial fibrillation
2. _____
3. _____
4. _____

Task 3.

Fill in the table:

Diagnosis	Features of systolic noise
Defective of IVS	Coarse pancystolic noise with an epicenter in the 3-4 intercostal space to the left of the sternum, accompanied by an accent of the second tone above the pulmonary artery
Defective IAS	
Coarctation of the aorta	

Task 4.

Instrumental examinations for defect diagnostics of IAS (list the features of changes).

EKG	Complete or incomplete blockage of the right leg of the Giss's bundle as a sign of hypertrophy due to overload with right ventricular volume, p-pulmonale
X-ray of thoracic cavity	_____
Doppler echocardiography	_____
Catheterization of the heart	_____

Task 5.

Write the EKG-signs of hypertrophy of the atrial:

The left atrium is a two-hinged tooth R in the second standard release

Right atrium _____

Task 6.

Fill in the differential diagnostic table:

Method of instrumental	Defecation of interatrial septum	Defect of interventricular septum
ECG	The phenomenon of rSR in VI (the blockage of the right leg of the Gis beam is complete or incomplete, as a sign of hypertrophy of the right ventricle due to its overload), a sign of hypertrophy of the right atrium (P-pulmonale)	With a slight defect there are no changes. With large - signs of hypertrophy of the left, and with significant pulmonary hypertension - both ventricles, followed by 60% of patients - isolated right ventricular hypertrophy
X-ray of thoracic cavity		
EchoCG		

Variant 2.

Task 1.

List the formed left heart contour on the Xray of the chest cavity in a straight line projection:

1. _____
2. _____
3. _____

Task 2.

Write down the main clinical and ECG sings of DIAS

1. Splitting the second tone over the pulmonary artery _____
2. _____
1. _____
2. _____

Task 3.

Instrumental examination for diagnosis of aortic coarctation (list the features of changes).

ECG	Hypertrophy of the left ventricle, possible blockade of the left foot of the Gis beam
X-ray of thoracic cavity	
EchoCG	
Catheterization of the heart	

Task 4.

Describe the clinical picture of Eisenmenger syndrome:

1. Growing shortness of breath, weakness
2. _____
3. _____

4. _____
5. _____
6. _____

Task 5.

Fill in the classification table of the main congenital heart defects by pulmonary blood flow:

Pulmonary blood flow		
Reduced	Unchanged	Increased
Stenosis of the pulmonary artery		

Task 6.

Write the possible complications of congenital heart disease with increased pulmonary blood flow:

1. Haemoptysis;

1. _____
2. _____
3. _____
4. _____
7. _____

Recommended reading list

Basic

Davidson’s “Principles of Practice of Medicine” 23rd edition, 2018

Harrison’s “Principles of internal medicine”, 19th edition, 2019.

Additional

2020 ESH/ESC Guidelines for the management of arterial hypertension

https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/ehz151/2/

Topic: Infective endocarditis

Purpose: to eradicate the infectious agent from the thrombus and to address the complications of valvular infection. The latter includes both the intracardiac and extracardiac consequences of IE. Some of the effects of IE require surgical intervention.

Key words: inflammation, valve disease, cardiac imaging, infection, congenital heart disease, echocardiography.

Plan

I. Theoretical questions for the lesson:

1. <https://www.webcardio.org/protokol-nadannya-medychnoji-dopomogy-khvorym-na-infektsijnyj-endokardyt.aspx>
2. <https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Infective-Endocarditis-Guidelines-on-Prevention-Diagnosis-and-Treatment-of>
3. Davidson’s “Principles of Practice of Medicine” 23rd edition, 2018
4. Harrison’s “Principles of internal medicine”, 19th edition, 2019.

Questions for self control:

1. Approximate tasks for the study of theoretical material:

Make a dictionary of basic concepts on the topic:

Term	Definition
primary infectionendocarditis	The defeat of the morphologically altered cardiac structures

secondary infectious endocarditis	The defeat of morphologically altered heart structures
valvularinfectious endocarditis	Infections of implanted artificial heart valves and surrounding tissues
vegetation	Conglomerate of fibrin, platelets and microbial bodies
bacteremia	Circulation of microorganisms in the blood
regurgitation	Reverse blood flow (on the valve)

II. Practical tasks that are performed in the lesson:

Clinical task 1

A 23-year-old man complains of aching pain in the heart, shortness of breath, palpitations during exercise, cough, sometimes mixed with blood, joint pain. 4 years ago after a severe sore throat there was joint pain, shortness of breath. Took aspirin, after which the pain decreased. He was not treated further. Objectively: the boundaries of the heart are enlarged on the right side and up. At the top, during auscultation of the heart - diastolic murmur, clap and tone. Blood test: CRP ++, titer of ASLO-430AE STO in 1 ml, fibrinogen - 6.3 g / l.

Your diagnosis?

Clinical task №2.

A 35-year-old patient complains of fever up to 38 ° C with chills, sweating and weight loss. Ill for about a month. The skin is pale, punctate hemorrhagic rash on the legs. Short systolic and pronounced protodiastolic murmur in the aorta. Liver - +3 cm, spleen - +2 cm. Leukocytes - 13.5 G / l, Hb - 103 g / l, ESR - 35 mm / h, CRP +++, gamma globulin - 26%. Your diagnosis?

III. Test questions for self-control

Variant 1

Select the one correct answer:

- Which of the causative agents of infective endocarditis prevails in patients with immunodeficiency states?
 - Streptococcus
 - Enterococci
 - Fungi of the genus Candida
 - Staphylococcus aureus
 - Viruses
- What is the main echocardiographic sign of infective endocarditis?
 - Significant regurgitation on the affected valve.
 - Violation of contractility of the myocardium.
 - Thrombs in the cavities of the heart.
 - Vegetation on the valves of the affected valves.
 - Decrease in the fraction of the ejection of the left ventricle.
- Indicate antibacterial agents for the treatment of infective endocarditis caused by penicillin-resistant streptococcus:
 - Azithromycin + levofloxacin.

- B. Erythromycin + amikacin
- C. amoxicillin + vancomycin
- D. Ceftriaxone + gentamicin
- E. Levofloxacin + gentamicin

4. What is the Lukin-Liebman symptom?

- A. microinfarctions of the retina
- B. Petechia in the area of transitional fold of the conjunctiva
- C. spleen infarction
- D. Painful subcutaneous nodules
- E. Petechial rash on the upper or lower limbs

5. What is the indication for urgent surgical treatment for infective endocarditis?

- A. Signs of a subvalvular abscess and an increase in vegetation in size
- B. Arterial hypotension
- C. Changing the nature of noise during auscultation
- D. Development of nephrotic syndrome
- E. Paroxysm of atrial fibrillation

Variant 2

Select the one correct answer:

1. What kind of prosthetic valve endocarditis is considered to be early?

- A. Less than 18 months after prosthesis
- B. Less than 24 hrs
- C. Less than 1 year
- D. Less than 28 days
- E. Less than 6 months

2. What is a Roth spots?

- A. retinal microinfarcts
- B. Petechiae in the transitional fold of the conjunctiva
- C. spleen microinfarcts
- D. Painful subcutaneous nodules
- E. Petechial rash on the upper or lower extremities

3. Which of the following criteria apply to large diagnostic criteria for infective endocarditis?

- A. Fever over 38 ° C
- B. Embolism large arteries
- C. vegetations on the valves when the valves echocardiography
- D. Heart failure.
- E. Addiction

4. Identify the indications for transesophageal echocardiography in suspected infective endocarditis?

- A. Cardiomegaly on x-ray of the thoracic cavity
- B. The ineffectiveness of antibiotic therapy
- C. Obesity
- D. The presence of congenital heart disease
- E. Lack of vegetation with transthoracic echocardiography

5. What is an antibacterial drug used in the treatment of infective endocarditis caused by Staphylococcus, in case of resistance to methicillin and vancomycin?

- A. tetracycline
- B. amikacin
- C. daptomycin
- D. ciprofloxacin
- E. rifampicin

Variant 3

1. What factors in the anamnesis contribute to the appearance of infectious endocarditis?

- A. cardiac surgery
- B. Severe acute respiratory viral infection for 2 weeks until the complaints
- C. Vaccination
- D. Alcohol Abuse
- E. Injury chest

2. What is the sign of a common infection in infective endocarditis?

- A. hepatomegaly
- B. Splenomegaly
- C. Petechiae on skin
- D. Systolic murmur at the apex
- E. Arrhythmia

3 What is the main method of examination for the diagnosis of infective endocarditis?

- A. ECG
- B. echocardiography
- C. Complete blood count
- D. x-ray of the chest cavity
- E. Blood test for myocardial necrosis markers

4. Which of the provided criteria referred to as "small" diagnostic criteria for infective endocarditis?

- A. Skin Itching
- B. lack of appetite
- C. thromboembolism
- D. vegetation
- E. Anguish valve prosthesis

5. What antibacterial agents are used to treat infectious endocarditis caused by enterococcus, in case of sensitivity of the pathogen to beta-lactams?

- A. Amoxicillin + gentamicin
- B. Ampicillin + ceftriaxone
- C. Azithromycin + Penicillin
- D. Vancomycin + levofloxacin
- E. Clarithromycin + Amoxicillin

IV. Individual tasks for students on the topic of the lesson:

Tasks for independent study of the topic (need to write)

Variant 1

Definition of infective endocarditis

Infective endocarditis - is a disease of an infectious nature

Task 2.

Main symptoms and signs of a common infection:

1. Increasing of temperature, accompanied by chills and sweating
2. _____
3. _____
4. _____

Task 3.

Fill in the table of non-cardiac lesions in infectious endocarditis:

Organ or system	characteristic of lesions
brain	1. <u>Ischemic stroke</u> 2. _____ 3. _____ 4. _____ 5. _____ 6. _____
skin	1. _____ 2. _____ 3. _____
eyes	1. _____ 2. _____

Task 4.

List the "Big" modified Duke criteria for infective endocarditis:

1. Positive result of blood culture, characteristic of infective endocarditis

Visualization, positive for infective endocarditis:

- 2.1 _____
- 2.2 _____
- 2.3 _____

Task 5.

Write complications of infective endocarditis.

1. Acute and chronic heart failure
2. _____
3. _____
4. _____
5. _____

6. _____

Task 6.

Fill in the table of antibacterial therapy for IE due to streptococcus sensitive to penicillin:

Standard treatment of the 4-week course	Penicillin G 12-16 million U / d / in or 4-6 times a day or continuously; amoxicillin or 100-200 mg / kg / d / 4-6 times per day or ceftriaxone 2 g / g / in or / m times in one day
Standard treatment of 2-week course	_____ _____ _____
In patients with an allergy to beta-lactams	_____

Variant 2.

Task 1.

Complete the infectious endocarditis classification table:

1. Activity of process	1. _____ 2. _____
2. Endocarditis of native valves	1. _____ 2. _____
3. Endocarditis of the prosthetic valve	1. _____ 2. _____
4. Depending on the conditions of infection	1. _____ 2. _____ 3. _____ 4. _____ 5. _____
5.	
6.	
7.	

Task 2.

Fill in the table non-cardiac defects in infective endocarditis:

Organ or system	lesion characteristics

brain	1. ischemic stroke _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____
kidneys	1. _____ 2. _____
spleen	1. _____ 2. _____

Task 3.

Fill in the table of the diagnostic program patient infective endocarditis:

No		survey technique
	mandatory	1. <u>Collection of complaints and anamnesis</u> 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____
2.	additional	1. _____ 2. _____ 3. _____

Task 4.

Specify the echocardiographic signs of infective endocarditis:

1. _Vegetations _____
2. _____
3. _____
4. _____

Task 5.

List the "Small" modified Duke criteria for infective endocarditis:

1. Favorable factors: the presence of heart disease, proven by injecting druguse
2. _____
3. _____
4. _____
5. _____

Target 6.

Specify predictors of poor outcome in patients with infective endocarditis:

Patient Characteristics:

The presence of complications:

1. elderly _____
2. _____
3. _____
4. _____

1. _____
2. _____
3. _____
4. _____

Variant 3.

Task 1.

Describe the main features of heart disease in infective endocarditis, detected by physical examination:

Physical data:

1. Valvular defect (characteristic) _____
2. _____
3. _____

Task 2.

Fill in the table of modified assessment criteria for the diagnosis of Duke:

conclusion	Large criteria	minor criteria
Reliable with infective endocarditis	1 2 criteria	1.
	2.	2.
	3.	3.
"Probable" infective endocarditis		

Task 3.

With what diseases carry out differential diagnosis of infective endocarditis: 1. Infectious diseases (sepsis,_)

2. _____
3. _____
4. _____

Task 4.

Fill in the table of antibiotic treatment of patients with infective endocarditis caused by streptococci relatively resistant to penicillin:

standard treatment 4 week course	Penicillin G 12-16 million U / d / in or 4-6 times a day or continuously; amoxicillin or 100-200 mg / kg / d / 4-6 times per day or ceftriaxone 2 g/day i/v or i/m once a day in combination with gentamicin 3 mg / kg / day i/v or i/ m once a day
In patients with an allergy to beta-lactams	_____

Task 5.

Indications for urgent surgical treatment of active infective endocarditis own valves: 1. Persistent infection

2. _____
- _____

3. _____

Target 6. _____

Specify predictors of unfavorable outcome in patients with infective endocarditis:

microorganisms:

1. S. aureus
2. _____
3. _____

Echocardiographic parameters:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

List of recommended literature:

Basic:

- Infective Endocarditis and Its Implications in Dentistry by Kumar Chandan Srivastava and Deepti Shrivastava | Jul 3, 2017
- Infective Endocarditis: A Multidisciplinary Approach by Arman Kilic | Dec 10, 2021
- Infective Endocarditis: Epidemiology, Diagnosis, Imaging, Therapy, and Prevention by Gilbert Habib | Jul 26, 2016
- Infective Endocarditis by Peter Magnusson and Robin Razmi | Jul 17, 2019

Additional:

- A Simple Guide To Infective Endocarditis. (Infected Heart Valves) Diagnosis, Treatment And Related Conditions (A Simple Guide to Medical Conditions) by Kenneth Kee | Sep 9, 2016
- Significant Developments in Infective Endocarditis by Jeff Wilson | Jan 29, 2015

Topic: Acquired heart defects

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

Key words: mitral stenosis, mitral regurgitation, aortic stenosis, aortic regurgitation, heart failure.

Plan

I. Theoretical questions for the lesson:

9. <https://www.escardio.org/Guidelines>
10. <https://professional.heart.org/en/guidelines-and-statements>
11. Davidson’s “Principles of Practice of Medicine” 23rd edition, 2018
12. Harrison’s “Principles of internal medicine”, 19th edition, 2019.

Questions for self-control

11. Defining the concept of AHD.
12. What are the risk factors for AHD.
13. classification of AHD.
14. Classification of stages AHD.
15. AHD risk factors

16. Evaluation of patients with suspected AHD
17. Diagnostic Criteria of AHD
18. Principles of treatment AHD
19. Surgery and medication AHD
20. Criteria of AHD effective treatment

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

term	definition
heart disease	Heart disease - a congenital or acquired abnormality of the structure of the heart valves, holes or partitions between the chambers of the heart and (or) large vessels branching from the heart. There are simple, combined and heart defects
simple defect	Isolated stenosis or insufficiency certain valve
combined defect	The presence of stenosis and insufficiency, which are observed at one valve
multiply defect	Multiple valves defeat

II. Practical work (tasks) that will be performed in class:

1. A 40-year-old patient was admitted to the clinic with complaints of angina pectoris pain in the heart, palpitations, dizziness. As a child, he suffered from bacterial endocarditis. Objectively: diffuse apical impulse of the heart, which is displaced downward. Increased pulsation of the arteries of the neck. AD - 130/30. In the projection of the aortic valve, a rough systolic murmur that spreads to the carotid arteries. In the lungs, breathing is vesicular. Pulse - 78 per minute. The abdomen is soft, painless. The liver and spleen are not palpable. X-ray enlargement of the heart due to the left ventricle, the ascending aorta and its arch. The waist of the heart is well defined, the heart is aortic configuration, the deposition of calcium salts in the projection of the aortic valve.

- Preliminary diagnosis?
- Diagnostic methods?
- Treatment?

2. Patient 54 was admitted to the clinic with attacks of suffocation, chest pain with minor exertion, palpitations. As a child, he often suffered from angina, was not treated.

Objectively: on examination, the expansion of the area of the cardiac impulse by 3-4 cm, the displacement to the left of the apical impulse. On auscultation, weakening of the first tone, emphasis of the second tone over the pulmonary artery, systolic murmur at the apex. In the lungs, breathing is vesicular. The abdomen is soft, painless. The liver and spleen are not palpable. BH - 24 / min, pulse 84 / min, BP - 120 / 70mm Hg. ECG shows signs of left atrial and left ventricular hypertrophy.

- What is your preliminary diagnosis?
- Diagnostic methods?
- Treatment?

III. Test tasks for self-control:

1. What kind of noise is typical for aortic insufficiency?
 - A. presystolic murmur at the apex
 - B. Intensive holosystolic murmur at the apex
 - C. With a pansystolic murmur with an epicenter on the xiphoid process

- D. proto-diastolic murmur with an epicenter in 3-4 intercostal spaces along the left side of the sternum
- E. systolic-diastolic noise at the Botkin-Erba point

2. What is the norm of the aortic valve opening area:

- A. less than 1 cm².
- B. 2.1-2.5 cm².
- C. 1-1.5 cm².
- D. 2.5-3 cm².
- E. more than 1.5 cm².

3. The verification method for the diagnosis of acquired heart disease is:

- A. Electrocardiography
- B. Sample with physical activity
- C. Doppler echocardiography
- D. Radiography of the thoracic cavity organs
- E. Aortocoronarography

4. For which acquired heart disease is a characteristic symptom Rivero-Corvallio:

- A. Insufficient tricuspid valve
- B. Insufficient mitral valve
- C. aortic stenosis
- D. Insufficient aortic valve
- E. mitral stenosis

5. For the prevention of thromboembolic complications in a permanent form of atrial fibrillation prescribe:

- A. acetylsalicylic acid.
- B. clopidogrel
- C. ticlopidine
- D. pentoxifylline
- E. Warfarin

6. What are the characteristics of pulse on a. radialis can be determined in a patient with aortic stenosis?

- A. Pulsus irregularis
- B. Pulsus celer et altus
- C. Pulsus tardus, parvus, brevis
- D. Pulsus deficiens
- E. Pulsus differens

7. What is the area of the mitral orifice is an indication for surgical correction of the defect?

- A. ≤ 1 cm²
- B. <3 cm²
- C. $<0,5$ cm²
- D. $\leq 1,5$ cm²
- E. <2 cm²

8. With what diseases carry out differential diagnosis of mitral stenosis?

- A. Mitral valve insufficiency
- B. cardiothyrotoxicosis
- C. obstructive hypertrophic cardiomyopathy

- D. Dilated cardiomyopathy
- E. mitral valve prolapse

9. What is the purpose of secondary prevention of antibacterial agents in the case of valve replacement?

- A. Prevention of myocardial infarction
- B. Prevention of heart failure
- C. Prevention of acute rheumatic fever
- D. Prevention of infective endocarditis
- E. Prevention of atherosclerosis

10. Which defect is characterized by the following auscultatory picture: systolic click, a late systolic murmur of mitral regurgitation over the top?

- A. aortic insufficiency
- B. mitral insufficiency
- C. tricuspid insufficiency
- D. mitral stenosis
- E. Mitral valve prolapse

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Exercise 1.

Give a definition.

Acquired heart disease - is _____

Task 2.

Fill in the table the main etiological factors of acquired heart disease:

vice	etiology
AS	1. <u>Nonspecific degenerative lesions in the elderly</u> 2. Acute rheumatic fever, chronic rheumatic heart disease 3. Congenital heart disease _____
MI	1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____

TI	1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____
----	--

Note: MI - mitral valve insufficiency; AS - aortic stenosis; TI - insufficiency of tricuspid valve;

Task 3.

Fill in the table of physical examination of the patient with acquired heart defects:

Defect	The identified changes			
	neck review	Pulse on a.radialis	apical impulse	phenomenon of "cat-purring"
MI	with right ventricular failure - swelling of the cervical veins	may be arrhythmic (atrial fibrillation)	spilled, shifted to the left and down	none
MS				
AS				
AI				
TI				

Note: MS - mitral stenosis; MI - mitral valve insufficiency; AS - aortic stenosis; AI - insufficiency of the aortic valve; TI - insufficiency of tricuspid valve;

Task 4.

Fill in the table with radiographic evidence of acquired heart disease:

defect	heart configuration	radiographic changes
AI	__aortic__	1. The increase in the left ventricle of the heart with the underlined waist. 2. Expansion and extension of the aorta.
AS	_____	1. _____ 2. _____ _____

MI		1. _____ 2. _____ 3. _____ 4. _____
MS		1. _____ 2. _____ 3. _____ 4. _____ 5. _____
TI		1. _____ _____

Note: MS - mitral stenosis; MI - mitral valve insufficiency; AS - aortic stenosis; AI - insufficiency of the aortic valve; TI - insufficiency of tricuspid valve;

Task 5.

List the complications of mitral insufficiency:

1. Left ventricle insufficiency _____
2. _____
3. _____
4. _____

Task 6.

List the indications for surgical intervention in case of aortic valve insufficiency:

1. _____

2. _____

Variant 2.

Exercise 1.

Fill in the table the main etiological factors of acquired heart disease:

defect	etiology
AS	1. <u>Nonspecific degenerative lesions in the elderly</u> 2. <u>Acute rheumatic fever and chronic rheumatic heart disease</u>
AI	1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____

MS	1. _____ 2. _____
----	----------------------

Note: MS - mitral stenosis; AS - aortic stenosis; AI - aortic insufficiency;

Task 2.

Fill in the table of hemodynamic instability in aortic stenosis:

Primary hemodynamic instability	1. systolic pressure gradient on the aortic valve → 2. The overload of the left ventricle pressure _____
compensation	_____ _____ _____
decompensation	1. _____ 2. _____ 3. _____ _____

Task 3.

Fill in the table of complaints of patients with acquired heart disease:

Short coming	complaints
MN	1. dyspnea on exertion, at rest, and then 2. palpitations, irregular _____
MS	1. _____ 2. _____ 3. _____ 4. _____ 5. _____
AS	1. _____ 2. _____ 3. _____
AI	1. _____ 2. _____
TI	1. _____ 2. _____

Note: MS - mitral stenosis; MI - mitral insufficiency; AS- aortic stenosis; AI - insufficiency of aortic valve; TI - insufficiency of tricuspid valve;

Task 4.

Fill in the table changes the picture of the heart auscultation with acquired heart diseases:

defect	heart tones	noise
AI	1. <u>The weakening of the II-nd tone of the aorta</u> 2. _____ 3. _____ _____	1. Protodiastolic murmur from the epicenter of a III-IV intercostal space to the left of the sternum _____ 2. _____ 3. _____ 4. _____
AS	1. _____ 2. _____ 3. _____	1. _____ _____ 2. _____ _____ _____
MI	1. _____ 2. _____ 3. _____	1. _____ _____ _____ _____
MS	1. _____ 2. _____ 3. _____	1. _____ _____ 2. _____ _____ _____
TI	1. _____ 2. _____	1. _____ _____ _____ _____

Note: MS - mitral stenosis; MI - mitral insufficiency; AS - aortic stenosis; AI - insufficiency of aortic valve; TI –insufficiency of tricuspid valve;

Task 5.

Fill in the table of ECG changes in the presence of hypertrophy of the atria and ventricles in patients with acquired defects:

ECG sign	characteristic	diagrammatic representation
Hypertrophy of the left atrium	1. P-mitrale - prolongation of the P wave (> 0.1 ms), a doubling in leads I, II, aVL, V5, V6. 2. Increasing the duration and amplitude of the second negative phase P wave in V1, V2.	
Hypertrophy of the right atrium	1. _____ _____ _____	

Left ventricular hypertrophy	1. _____ 2. _____ 3. _____ 4. _____	
Right ventricular hypertrophy	1. _____ 2. _____ 3. _____ 4. _____	

Task 6.

List the types of surgical treatment of acquired heart disease:

defect	surgery
AS	1. Prosthetic aortic valve _____ 2. Percutaneous balloon valvuloplasty _____
AI	1. _____ _____
MS	1. _____ 2. _____ 3. _____
MI	1. _____ 2. _____
TI	1. _____ 2. _____

Note: MS - mitral stenosis; MI - mitral insufficiency; AS - aortic stenosis; AI –insufficiency of aortic valve; TI –insufficiency of tricuspid valve;

Recommended reading list

Basic

Davidson’s “Principles of Practice of Medicine” 23rd edition, 2018

Harrison’s “Principles of internal medicine”, 19th edition, 2019.

Additional

2020 ESH/ESC Guidelines for the management of arterial hypertension

https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/

Topic: Myocarditis. Cardiomyopathy

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

Key words: acute myocarditis, subacute myocarditis, chronic myocarditis, heart failure, hypertrophic cardiomyopathy, dilated cardiomyopathy, restrictive cardiomyopathy, heart failure, rhythm disorders.

Plan

I. Theoretical questions for the lesson:

1. <https://www.escardio.org/Guidelines>
2. <https://professional.heart.org/en/guidelines-and-statements>

3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control

1. Definition of myocarditis, cardiomyopathy.
2. Epidemiology of myocarditis, cardiomyopathy.
3. Etiology, pathogenesis of myocarditis, cardiomyopathy.
4. Classification of myocarditis, cardiomyopathy.
5. Clinical features of different types of myocarditis.
6. Diagnosis of myocarditis.
7. Severity criteria of the disease.

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

The main terms of the topic

Term	Definition
Myocarditis	Inflammation of the heart muscle caused by direct or mediated through immune mechanisms due to the effects of infectious, physical and chemical factors, as well as autoimmune diseases and heart transplantation.
cardiomyopathy	Diseases of the myocardium, in which the myocardium is structurally and functionally pathologically altered in the absence of coronary artery disease, hypertension, valvular pathology
dilated cardiomyopathy	A disease characterized by dilatation of the left ventricle (LV), and often also of the right ventricle (PZ), with systolic dysfunction due to non-coronary myocardial damage not associated with hemodynamic overload (AH, valve pathology) and CHD
hypertrophic cardiomyopathy	The disease, characterized by an increase in wall thickness and ventricular mass, is more often left, with hypertrophy more often asymmetric and is accompanied by an incorrect, chaotic arrangement of muscle fibers, in the absence of hemodynamic overload
restrictive cardiomyopathy	A rare disease of the myocardium with frequent involvement of the endocardium, characterized by a violation of filling one or both ventricles with a decrease in their diastolic volume with unchanged wall thickness
metabolic cardiomyopathy	Noncoronary myocardial lesions of different etiology, which are based on a metabolic disorder, the process of energy formation and transform it into mechanical work

II. Practical work (tasks) that will be performed in class:

1) At the patient of 53 years after the transferred flu the general weakness, short wind, palpitations, cardialgias increased. About: temperature - 37.4 ° C, pulse - 110 beats. / min. The size of the heart is increased in diameter, extrasystole, deaf tones. In the lower lungs - wet rales. The liver is painful, protruding 6 cm from the hypochondrium. ESR - 32 mm / h, CRP (+++), ECG - diffuse myocardial changes. Your diagnosis?

2) Patient D., 32 years old, complains of chest discomfort, shortness of breath, palpitations, dizziness, frequent episodes of loss of consciousness. Objectively:, on palpation, a double apical shock is determined, on auscultation - a late systolic murmur over the apex of the heart, increases in the position

of the patient standing and after the use of nitroglycerin. ECG: in leads U4_6 the pathological Tooth Q, R U5> RU4 is defined. Echocardiography: the ratio of the thickness of the interventricular septum to the thickness of the posterior wall of the left ventricle is 2.3; systolic fit of the anterior sash of the mitral valve to the interventricular septum, srednesistolichesky noise occurs through O, 14 s after opening the aortic valve, is determined by the subaortic systolic pressure gradient. The most likely diagnosis is?

III. Test questions for self-control:

1. "Against the background of an infectious disease or exposure to a non-infectious factor, the most likely sign of myocarditis is:"

- A) Accelerated ESR
- B) The appearance of "C" reactive protein
- C) Leukocytosis
- D) ECG changes

2. In the treatment of restrictive cardiomyopathy use all these tools, except one. What's wrong?

- A) Diuretics
- B) Glucocorticoids, cytostatics
- C) Alpha-blockers
- D) Surgical correction of valve defects, endocardial dissection
- E) Heart transplantation

3. Criteria for the diagnosis of idiopathic dilated cardiomyopathy:

- A) Echocardiographic parameters
- B) Endomyocardial biopsy
- C) Myocardial scintigraphy
- D) The diagnosis is established by the method of excluding known diseases that cause progressive dilatation of the heart chambers
- E) X-ray examinations

4. "Risk factors for sudden death (MS) in hypertrophic cardiomyopathy: 1. Young age. 2. History of syncopal conditions. 3. Cases of relatives' MS. 4. Significant pressure gradient. 5. History of ventricular tachycardia

- A) Correctly 2,3,5
- B) Correctly 2,3,4
- C) Correctly 3,5
- D) Correctly 1,2,3,4,5

5. "Biopsy for the study receive:"

- A) From the top of the heart
- B) From the left atrium
- C) From the right atrium
- D) From the interventricular septum on the left
- E) From the interventricular septum on the right

6. "How many times should an endomyocardial biopsy be performed in patients with myocarditis according to the recommendations of American morphologists:"

- A) One
- B) Twice
- C) Three times

7. "In viral myocarditis NSAIDs are prescribed:"

- A) From the first day of the disease

- B) At the beginning of the second week
- C) Not earlier than 12-14 days after the onset of the disease
- D) Do not appoint at all

8. "In case of diagnosis of" Myocarditis ":"

- A) Mandatory appointment of non-steroidal anti-inflammatory drugs
- B) Mandatory use of antibiotics
- C) Prescribing drugs that affect metabolic processes in the myocardium
- D) Treatment in most cases is symptomatic

9. "In viral myocarditis, the appointment of antibiotics:"

- A) Contraindicated in general
- B) Contraindicated in the acute period
- C) Appointed in the presence of a bacterial infection in the subacute period

10. "In which viral myocarditis NSAIDs are indicated from the first day of the disease:"

- A) Coxsackie B
- B) Influenza
- C) Cytomegalovirus
- D) Adenovirus
- D) In viral myocarditis, NSAIDs are indicated no earlier than 12-14 days after the onset of the disease

**IV. Individual tasks for students on the topic of the lesson:
Variant 1.**

Task 1.

List the main complaints of the patient for myocarditis:

1. Dyspnoea
2. _____
3. _____
4. _____
5. _____
6. _____

Task 2.

Fill the table. Indicate ECG changes in myocarditis:

Disease	ECG changes
Dilated cardiomyopathy	Conductivity disorders (left bundle branch block) and heart rhythm (in particular, atrial fibrillation), nonspecific changes in the ST segment and the T wave
Myocarditis	_____

Task 3.

List "great" criteria for myocarditis

1. Presence of a previous infection, proven by clinical and laboratory data
2. _____

3. _____
4. _____
5. _____

Variante 2.

Task 1.

The main types of cardiomyopathy, depending on the pathophysiological mechanisms of disorders of intracardiac hemodynamics:

1. Dilated cardiomyopathy _____
2. _____
3. _____
4. _____
5. _____

Task 2.

Fill in the table instrumental diagnostic that is necessary for patients with dilated cardiomyopathy:

№	Examination methods	purpose
1.	ECG	Diagnosing disorders of heart rhythm and conduction, nonspecific ST segment and T wave
2.		
3.		
4.		
5.		

Task 3.

Fill the table. Specify ECG changes with cardiomyopathies and myocarditis:

disease	ECG signs
dilated cardiomyopathy	conduction disorder (blockade of the left bundle branch), and heart rate (in particular atrial fibrillation), nonspecific ST segment and T wave
hypertrophic cardiomyopathy	_____

myocarditis	_____

Task 4.

List the main directions of medical treatment of dilated cardiomyopathy:

1. Etiotropic if possible _____
2. symptomatic: _____
- _____
- _____
- _____

Recommended reading list

Harrison's Endocrinology. Ed. by J. Larry Jameson, Mc Graw – Hill., New York, Chicago, Toronto. e.a. 5rd edition, 2019. - 608 p.

Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMed. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021

<http://www.asco.org/practice-guidelines/quality-guidelines/guidelines>

<https://www.asn-online.org/education/training/fellows/educationalresources.aspx#Guidelines>

www.brit-thoracic.org.uk/standards-of-care/guidelines

Topic: Cardiomyopathy: restrictive, arrhythmogenic cardiomyopathy of right ventricle. Pericarditis: acute forms. Heart's tamponade. Pericarditis: subacute and chronic forms.

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

Key words: hypertrophic cardiomyopathy, dilated cardiomyopathy, restrictive cardiomyopathy, heart failure, rhythm disorders, pericarditis, cardiac tamponade.

I. Theoretical questions for the lesson:

1. <https://www.escardio.org/Guidelines>
2. <https://professional.heart.org/en/guidelines-and-statements>
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

Note. Depending on the complexity and specificity of the educational topic, the availability of modern educational and scientific literature, this section can be presented with different levels of detail (the right to choose the form of displaying the content remains with the department):

Option I: the content of the topic can be presented in the form of theses, which reflect the main information blocks of the topic, its main provisions, concepts, criteria, signs, relationships, interdependence, etc.;

Option II: justified in those cases when students of higher education have the opportunity to use modern literature on the topic and there is no need to explain it in detail in the methodical development, in this case it will be methodologically justified to display the content of the topic in the form of its structural and logical scheme;

Option III: in the absence of a sufficient amount of modern literature on the topic, this section in methodological development can be provided in the form of the text of the topic in an expanded and detailed version;

Option IV: in the presence of relevant literature that details the content of the topic, a specific reference to certain literary sources is quite sufficient.

Questions for self-control

1. Definition of cardiomyopathy.
2. Epidemiology of cardiomyopathy.
3. Etiology, pathogenesis of cardiomyopathy.
4. Classification of cardiomyopathy.
5. Clinical features of different types of cardiomyopathy.
6. Diagnosis of cardiomyopathy.
7. Severity criteria of the disease.
8. Give a definition of pericarditis.
9. Name the etiological factors that contribute to the development of pericarditis.
10. Pathogenesis of pericarditis depending on the variants of the course.

11. Describe the clinic of acute exudative pericarditis.
12. Learn the features of the clinics of chronic pericarditis, incl. constrictive.
13. Indicate the features of treatment of pericarditis and their complications.
14. Disassemble the issue of primary and secondary prevention of pericarditis.

Approximate tasks for the study of theoretical material

1. Make a dictionary of basic concepts on the topic:

The main terms of the topic

term	definition
cardiomyopathy	Diseases of the myocardium, in which the myocardium is structurally and functionally pathologically altered in the absence of coronary artery disease, hypertension, valvular pathology
dilated cardiomyopathy	A disease characterized by dilatation of the left ventricle (LV), and often also of the right ventricle (RV), with systolic dysfunction due to non-coronary myocardial damage not associated with hemodynamic overload (AH, valve pathology) and CHD
hypertrophic cardiomyopathy	The disease, characterized by an increase in wall thickness and ventricular mass, is more often left, with hypertrophy more often asymmetric and is accompanied by an incorrect, chaotic arrangement of muscle fibers, in the absence of hemodynamic overload
restrictive cardiomyopathy	A rare disease of the myocardium with frequent involvement of the endocardium, characterized by a violation of filling one or both ventricles with a decrease in their diastolic volume with unchanged wall thickness
metabolic cardiomyopathy	Noncoronary myocardial lesions of different etiology, which are based on a metabolic disorder, the process of energy formation and transform it into mechanical work

term	definition
fibrinous pericarditis	
pericardial effusion	
hydropericardium	
constrictive pericarditis	
cardiac tamponade	
Pericardiocentesis	

Fill in the daily protocol of preparation for a practical lesson on the topic (according to the decision of the meeting of the department). https://info.odmu.edu.ua/chair/internal_medicine1/files/507/en

II. Practical work (tasks) that will be performed in class:

Task 1) Patient T., 16 years old, was hospitalized with complaints of severe shortness of breath, palpitations, abdominal distension, general weakness. From the anamnesis of life: 8 months ago his 17-year-old brother died suddenly. Objectively: a significant lag in physical development, pale skin, auscultation in the lungs below the angles of the scapula of respiration is absent; heart tones are weakened, systolic noise with the epicenter at the Botkin point is listened, heart rate - 130 for 1 min; ascites. Radiologically: signs of cardiomegaly, fluid in both pleural cavities. Echocardiography: ejection fraction - 27%, diameter of the left ventricle ~ 9 cm, thickness of the posterior wall of the left ventricle - 0.65 cm. The most likely diagnosis.

Task 2) Patient D., 32 years old, complains of chest discomfort, shortness of breath, palpitations, dizziness, frequent episodes of loss of consciousness. Objectively:, on palpation, a double apical shock is determined, on auscultation - a late systolic murmur over the apex of the heart, increases in the position of the patient standing and after the use of nitroglycerin. ECG: in leads U4_6 the pathological Tooth Q, R U5> RU4 is defined. Echocardiography: the ratio of the thickness of the

interventricular septum to the thickness of the posterior wall of the left ventricle is 2.3; systolic fit of the anterior sash of the mitral valve to the interventricular septum, srednesistolichesky noise occurs through O, 14 s after opening the aortic valve, is determined by the subaortic systolic pressure gradient. The most likely diagnosis is?

Task 3. A 50-year-old patient complains of shortness of breath, swelling of the cervical veins, enlarged liver, ascites, edema of the lower extremities. Previously treated for pulmonary tuberculosis. Heart rate - 96 per minute. Heart sounds are muffled. BP - 100/80 mm Hg. ECG - a sharp decrease in voltage. 1. What is the most likely diagnosis? 2. Plan of investigations? 3. Treatment plan?

Task 4. The patient was taken to a hospital after an episode of unconsciousness. Complaints of weakness, dizziness. The last week marks fatigue, low-grade fever, shortness of breath at physical load. Carried ARI ten days ago. The skin is pale. 22 / min. Breathing hard. Blood pressure - 70/45 mm Hg, heart rate - 40 / min. Heart tones are sharply weakened. Liver + 1 cm from under the edge of the costal arch. The legs are pasty. ECG - QRS complex - 0.090 sec, frequency 40 / min. Tooth P appears with a frequency of 72 / min., Then precedes the QRS complex, then layered on it, then occurs after it. Negative asymmetric T teeth in precordial leads and I and aVL. Blood pressure - 60/40 mm Hg., bradycardia, arrhythmia. 1. What is the most likely diagnosis? 2. Complications of this condition? 3. Pathogenetic treatment?

III. Test questions for self-control:

1. "Against the background of an infectious disease or exposure to a non-infectious factor, the most likely sign of myocarditis is:"
 - A. Accelerated ESR
 - B. The appearance of "C" reactive protein
 - C. Leukocytosis
 - D. ECG changes
2. In the treatment of restrictive cardiomyopathy use all these tools, except one. What's wrong?
 - A. Diuretics
 - B. Glucocorticoids, cytostatics
 - C. Alpha-blockers
 - D. Surgical correction of valve defects, endocardial dissection
 - E. Heart transplantation
3. Criteria for the diagnosis of idiopathic dilated cardiomyopathy:
 - A. Echocardiographic parameters
 - B. Endomyocardial biopsy
 - C. Myocardial scintigraphy
 - D. The diagnosis is established by the method of excluding known diseases that cause progressive dilatation of the heart chambers
 - E. X-ray examinations
4. "Risk factors for sudden death (MS) in hypertrophic cardiomyopathy: 1. Young age. 2. History of syncopal conditions. 3. Cases of relatives' MS. 4. Significant pressure gradient. 5. History of ventricular tachycardia"
 - A. Correctly 2,3,5
 - B. Correctly 2,3,4
 - C. Correctly 3,5
 - D. Correctly 1,2,3,4,5
5. "Biopsy for the study receive:"
 - A. From the top of the heart
 - B. From the left atrium
 - C. From the right atrium
 - D. From the interventricular septum on the left
 - E. From the interventricular septum on the right

6. Classification of hypertrophic cardiomyopathy (by NUHA) by pressure gradient: 1. I degree - up to 25 mm Hg. 2. II degree - up to 36 mm Hg. 3. III degree - up to 44 mmHg. 4. IU degree - up to 80 mm Hg

- A. Everything is correct
- B. Correctly 1,2,3
- C. Correctly 1,2,4
- D. Correct 1.2
- E. Correctly 2,3,4

7. In which of the following forms of non-coronary heart disease is most indicated the purpose of vitamin B1:

- A. Hypertrophic cardiomyopathy
- B. Hypothyroidism
- C. Alcoholic myocardial infarction with severe heart failure
- D. Hemochromatosis
- E. Thyrotoxicosis

8. Tactics of beta-blockers in dilated cardiomyopathy:

- A. Appointed for tachycardia
- B. Contraindicated
- C. Indicated for atrial fibrillation
- D. More often prescribed long-acting drugs with additional action (vasodilation, antioxidant effect, etc.), starting with small doses
- E. Non-selective short-acting beta-blockers are prescribed in small doses

9. The main in the treatment of restrictive cardiomyopathy are:

- A. Prescribing glucocorticoids, cytostatics, diuretics
- B. Glucocorticoids are contraindicated
- C. Prescribing beta-blockers
- D. Appointment of cardiac glycosides in combination with peripheral vasodilators
- E. Prescription of cardiac glycosides and diuretics

10. What arrhythmia is more common in hypertrophic cardiomyopathy:

- A. Atrial fibrillation, ventricular overexcitation syndrome, paroxysm of ventricular tachycardia
- B. Ventricular excitation syndrome, paroxysm of ventricular tachycardia, sinus bradycardia
- C. Atrial fibrillation
- D. Sinus bradycardia, nodular extrasystole
- E. Atrial fibrillation, paroxysm of ventricular tachycardia, nodular extrasystole.

11. Which of the etiological factors of pericarditis is a frequent?

- A. A viral infection
- B. Bacterial infection
- C. Diffuse diseases of connective tissue
- D. pericardium tumors
- E. metabolic disorders

12. What ECG-signs are typical of acute exudative pericarditis?

- A. domed ST segment elevation in leads II, III, aVF, V5-V6.
- B. ST Elevation and pathological Q wave in V1-V3 B. High R wave, oblique ST depression and negative T in the left chest leads
- C. Atrial fibrillation, SIQIII syndrome, complete blockade of right bundle branch block.
- D. Reducing the voltage of the waves, concordant ST segment elevation in all leads "arc down" except for AVR.

13. What determines the development of pericardial tamponade?

- A. From the etiology of pericarditis
- B. The nature of the exudate
- C. From the age of the patient

- D. From the rate of accumulation of exudate
 - E. From the presence of comorbidity
14. What position of the patient is typical for acute fibrinous pericarditis?
- A. Constantly and ineffectively looking for a position to reduce pain in the chest
 - B. Sits with legs down from the bed, leaning on the edge of the bed
 - C. Lying, pressing his knees to the body
 - D. Sits with an inclination of the trunk forward
 - E. lies on the right side
15. What auscultative phenomenon is inherent in acute fibrinous pericarditis?
- A. An additional third tone (proto-diastolic rhythm of the canal)
 - B. Noise in the II-IV intercostal spaces to the left of the sternum scratching the character, not associated with tones
 - C. Cannon Tone Strazhesko
 - D. Accent II tone over the aorta
 - E. Systolic murmur at the apex of the heart with a left axillary region
16. What auscultative phenomenon is characteristic for compressive pericarditis?
- A. Additional fourth tone
 - B. Noise in the II-IV intercostal spaces to the left of the sternum scratching character, not associated with tones
 - C. Cannon Tone Strazhesko
 - D. Pericard-tone (additional tone in the protodiastole)
 - E. Systolic murmur at the apex of the heart with irradiation to the left axillary region
17. In case of chronic constrictive pericarditis, the face is:
- A. Puffy face with cyanotic shade, cervical vein swelling ("consular head")
 - B. Pale gray, with pointed features, sunken eyes (facies Hippocratica)
 - C. Dark red with a cyanotic shade of blush on the cheeks (facies mitralis)
 - D. Round, moonlike face with a deep red flush
 - E. Anymic, "masky" face
18. What drugs are the basis of therapy for acute pericarditis?
- A. Metabolic drugs
 - B. NSAIDs
 - C. Nitrates
 - D. β -blockers
 - E. calcium antagonists
19. In what clinical situation is the pericardiocentesis not shown?
- A. Available cardiac tamponade
 - B. With a high likelihood of purulent or neoplastic pericarditis
 - C. With a large amount of effusion, which despite the treatment is preserved for more than 1 week
 - D. In acute exudative pericarditis without signs of tamponade
 - E. With recurrent effusions and questionable results of a preliminary examination
20. What laboratory indicators will testify to the autoimmune pathogenesis of pericarditis?
- A. Specific immunological markers
 - B. acute phase inflammatory abnormalities
 - C. The resulting growth of the flora during the sowing of blood
 - D. Increased level of leukocytes in the urine
 - E. Increase in the level of creatinine, urea
21. On what day there is acute pericarditis in acute myocardial infarction
- A. 1 - 2 days
 - B. 2 - 7 days
 - C. 7 - 10 days
 - D. 10 - 14 days

- E. 15 - 20 days
- 22. Features of treatment of acute pericarditis with uremic intoxication:
 - A. Prescribing of antibiotics
 - B. Hemodialysis
 - C. Puncture of the pericardium
 - D. Pericardectomy
 - E. Purpose of diuretics
- 23 Features of tuberculous pericarditis:
 - A. Start with high fever and intoxication
 - B. Constrictive pericarditis often occurs
 - C. Complicates with shortness of breath
 - D. atypical cells in exudate
 - E. accompanied by severe chest pain
- 24. X-ray data in constrictive pericarditis:
 - A. Size of the heart increased due to the left ventricle
 - B. Smoothed waist of the heart
 - C. The arc of the pulmonary trunk swells out
 - D. Signs of calcification of the pericardium
 - E. Size of the heart increased due to the right ventricle
- 25. Acute pericarditis in rheumatic heart disease:
 - A. Occurs more often in the elderly
 - B. Usually exudative
 - C. Has a malignant course
 - D. It is often combined with acute endocarditis
 - E. Has a low activity of the inflammatory process.

Note. It is suggested to use test tasks (for those seeking higher education who have to take part in the license test exams in the current year, it is more appropriate to use tests of the "Step" type) and tests compiled by departments for rector's control.

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1. The main types of cardiomyopathy, depending on the pathophysiological mechanisms of disorders of intracardiac hemodynamics:

1. Dilated cardiomyopathy _____
2. _____
3. _____
4. _____
5. _____

Task 2. Fill in the table instrumental diagnostic that is necessary for patients with dilated cardiomyopathy:

№	Examination methods	purpose
1.	ECG	Diagnosing disorders of heart rhythm and conduction, nonspecific ST segment and T wave
2.		
3.		
4.		
5.		

Task 3. Fill the table. Specify ECG changes with cardiomyopathies and myocarditis:

disease	ECG signs

hypertrophic cardiomyopathy	a) _____ b) _____
myocarditis	a) _____ b) _____
dilated cardiomyopathy	conduction disorder (blockade of the left bundle branch), and heart rate (in particular atrial fibrillation), nonspecific ST segment and T wave
Restrictive cardiomyopathy	a) _____ b) _____

Task 4. List the main directions of medical treatment of dilated cardiomyopathy:

1. Etiotropic if possible _____
2. symptomatic: _____

Variant 2

Task 1. A) Definition of pericarditis:

B) Write the criteria for acute pericarditis (the diagnosis is determined if there are at least 2 of the following 4 criteria):

1. Chest pain typical for pericarditis
2. _____
3. _____
4. _____

Task 2. Write clinical signs of effusion in the pericardium without cardiac tamponade:

1. Swelling of the cervical veins and increased central venous pressure
2. _____

3. _____

Task 3. Fill in the table. Diagnosis of pericarditis

Examination method	purpose
ECG	
Echo-CG	
X-ray	
Pericardiocentesis	
Cardiac catheterization and ventriculography	

Task 4. Write indications for cardiac puncture:

1. Clinical signs of cardiac tamponade _____
2. _____

3. _____

Task 5. Write groups of drugs use for differentiated treatment of pericarditis:

Pericarditis with chronic renal failure	hemodialysis
Pericarditis in the background of diffuse connective tissue diseases	
tuberculous pericarditis	

Variant 3.

Task 1. Fill in the differential diagnosis table for acute fibrinous pericarditis and acute coronary syndrome with ST / MI elevation:

	Acute pericarditis	Acute coronary syndrome with ST elevation/MI
pain	Behind the sternum, is strengthened by movements, coughing, is facilitated by leaning the trunk forward, the intensity varies	Behind the sternum, with a typical irradiation in most cases of intensive
Angina pectoris or MI in history		
Pericardium friction noise		
Cardiac troponins, CPK MB and total CPK in the blood		
ECG		
Echo-CG		

Task 2. List the drugs that are often used to treat acute pericarditis:

Drug	Standart doses	Duration of therapy	Cancellation scheme
acetylsalicylic acid	750 - 1000 mg every 8 hrs	1 - 2 weeks	Dose reduction of 250-500 mg every 1-2 weeks

Task 3. Clinical symptoms of cardiac tamponade:

acute	1. Small and frequent pulse 2. _____ 3. _____ 4. _____
chronic	All of the above, and: 2. _____ 3. _____

Task 4. Write clinical signs of acute fibrinous pericarditis:

1. Chest pain or in heart area _____
2. _____
3. _____

Task 5. Provide diagnostic features tuberculous pericarditis (stage 1 - Primary noninvasive assessment)

method of examination	purpose
X-rays of the chest	For confirmation of pulmonary tuberculosis
echocardiography	
CT or MRI of the chest	
Tank. sputum or gastric contents and / or urine	
lymph node biopsy	

Task 6. List features clinic and diagnosing acute infectious pericarditis:

1. Acute onset of high fever and general intoxication . _____
2. _____
3. _____
4. _____
5. _____
6. _____

Variant 4.

Task 1. Fill in the table of clinical and morphological classification of pericarditis:

acute	chronic
1. Dry (fibrinous) _____	1. Exudative _____
2. _____	2. _____
a) _____	3. _____
b) _____	

Task 2. Write clinical signs of exudative pericarditis:

1. _____
2. _____
3. _____

Task 3. At an objective examination in a patient with pericarditis reveal:

1. Signs of the presence of fluid in the pericardium _____
- a) _____
- b) _____
- c) _____
- d) _____
2. _____
3. _____

Task 4. Features of pericarditis with pericardial tumors:

1. There is a cancer (lung cancer, breast cancer, leukemia, lymphoma

2. _____
3. _____

Task 5. Fill in the table of the differential diagnosis of acute exudative pericarditis according to X-ray:

evidence	Acute pericardial effusion	dilated cardiomyopathy
Enlarged heart shadows	symmetrically	
heart arc		
Pulsation		
Pulmonary congestion		
Focal changes in the lungs		
Increase in heart size in dynamics		

Task 6. For acute pericarditis with postinfarction syndrome Dreclera characterized by:

1	time of occurrence	2 weeks - months
2	Start of disease	
3	Signs of involvement of other organs	
4	Amount of fluid	
5	Flow of disease	

List of recommended literature:

Basic:

1. Harrison's Endocrinology. Ed. by J. Larry Jameson, Mc Graw – Hill., New York, Chicago, Toronto. e.a. 5rd edition, 2019. - 608 p.
2. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMed. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
3. <http://www.asco.org/practice-guidelines/quality-guidelines/guidelines>
4. <https://www.asnonline.org/education/training/fellows/educationalresources.aspx#Guidelines>
5. www.brit-thoracic.org.uk/standards-of-care/guidelines

Additional:

1. <https://www.asnonline.org/education/training/fellows/educationalresources.aspx#Guidelines>
2. www.brit-thoracic.org.uk/standards-of-care/g

Topic: Arrhythmias: classification, etiopathogenesis, symptoms, clinic, diagnosis. Arrhythmias: antiarrhythmic drugs, invasive treatments. Conduction disorders: classification, etiopathogenesis, symptoms.

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

Key words: sinus rhythm, bradycardia, tachycardia, atrial flutter, atrial fibrillation, extrasystoles, ventricular fibrillation, blockade, Morgagni-Adams-Stokes syndrome, bundle branch blockades.

Theoretical questions for the lesson:

1. <https://www.escardio.org/Guidelines>
2. <https://professional.heart.org/en/guidelines-and-statements>
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

Note. Depending on the complexity and specificity of the educational topic, the availability of modern educational and scientific literature, this section can be presented with different levels of detail (the right to choose the form of displaying the content remains with the department):

Option I: the content of the topic can be presented in the form of theses, which reflect the main information blocks of the topic, its main provisions, concepts, criteria, signs, relationships, interdependence, etc.;

Option II: justified in those cases when students of higher education have the opportunity to use modern literature on the topic and there is no need to explain it in detail in the methodical development, in this case it will be methodologically justified to display the content of the topic in the form of its structural and logical scheme;

Option III: in the absence of a sufficient amount of modern literature on the topic, this section in methodological development can be provided in the form of the text of the topic in an expanded and detailed version;

Option IV: in the presence of relevant literature that details the content of the topic, a specific reference to certain literary sources is quite sufficient.

Questions for self-control

1. Definition of the concept of "violation of the rhythm of the heart."
2. Etiological factors and the main pathogenetic mechanisms of heart rhythm disturbances.
3. Classification of heart rhythm disturbances.
4. Clinical picture of heart rhythm disturbances.
5. Diagnostic criteria for heart rhythm disturbances.
6. Differential diagnosis for heart rhythm disturbances.
7. Principles of treatment of heart rhythm disturbances.
8. Tactics of assistance in stopping blood circulation, paroxysmal rhythm disorders
9. Prognosis and work capacity of patients with heart rhythm disturbances.
10. Prophylaxis of thromboembolic complications in fibrillation (F) and atrial flutter (AF).
11. Etiology of conduction disorders
12. Classification of conduction disorders
13. Symptoms and signs of conduction disorders
14. Diagnosis of conduction disorders
15. Treatment of conduction disorders

Approximate tasks for the study of theoretical material

2. Make a dictionary of basic concepts on the topic:

The main terms of the topic

term	definition
Extrasystoles	
Paroxysmal tachycardia	
Atrial Fibrillation	
Atrial Flutter	
Ventricular fibrillation	

Term	Definition
Conduction system of the heart	A set of structural elements that ensure the generation of pulses and their conduct in the myocardium
Morgagni-Adams-Stokes syndrome.	The clinical syndrome, which develops with a sudden decrease in cardiac output and perfusion of the brain, is accompanied by loss of consciousness, convulsions, defecation, urination due to acute disturbance of the heart rhythm

The Samoilov-Wenckebach Periods	Progressive lengthening of the conduction from the atria to the ventricles, which results in the precipitation of the QRST complex in the AV blockade of degree II
"Cannon" Ith tone Strazhesko	periodic reinforcement of the I tone due to accidental simultaneous ventricular and atrial contraction in full AV blockade
Cardiac conduction system	The set of structural elements providing the pulse generation and conduct in the myocardium
Frederick syndrome	The combination of atrial fibrillation with complete AV block

Fill in the daily protocol of preparation for a practical lesson on the topic (according to the decision of the meeting of the department).

https://info.odmu.edu.ua/chair/internal_medicine1/files/507/en

II. Practical work (tasks) that will be performed in class:

Task 1. 35-year-old man was admitted with complaints of palpitations, shortness of breath, general weakness. He considers himself to be sick for about 3 days - he fell ill after a viral infection. On the ECG, the P wave is not recorded. There are atrial F waves with a frequency of 300 per minute, the same in length, shape and height, consist of a steep ascending and gently sloping descending knee (saw teeth), clearly visible in leads II, III, avF, V1. The R-R intervals are the same. The QRS complex is not changed. 1. What rhythm disturbance is possible in the patient? 2. Plan of investigations? 3. Treatment plan?

Task 2. A 55-year-old man was admitted with complaints of palpitations, shortness of breath, general weakness. Patients consider themselves about 3 days, a history of myocardial infarction. On the ECG, the P wave is not recorded. There are atrial F waves with a frequency of 250 per minute, the same in length, shape and height, consist of a steep ascending and gently sloping descending knee (saw teeth), clearly visible in leads II, III, avF, V1. The R-R intervals are the same. The QRS complex is not changed. What rhythm disturbance does the patient have? 1. What is the most likely diagnosis? 2. Plan of investigations? 3. Treatment plan? 4. What rhythm disturbance does the patient have?

Task 3. Patient, 75 years old, went to see a doctor with complaints of shortness of breath, arising with slight physical activity and in the supine position, weakness, palpitations, the appearance of edema on the feet and legs in the evening. It is known from the anamnesis that for 10 years knows about an increase in blood pressure up to 150/90 mm Hg; did not receive therapy regularly. The above complaints appeared within 24 hours. Objectively: acrocyanosis, heart rate 120 in 1 minute, pulse 102 in 1 minute, arrhythmic, blood pressure = 140/100 mm Hg The borders of the heart are moderately expanded to the left in 4-5 intercostal spaces intervals. Heart sounds are arrhythmic, muffled, no murmurs. NPV 22 in 1 minute. In the lungs breathing is hard, single moist rales are heard in the lower parts. The liver is not increased. No edema. 1. What rhythm disturbance is possible in the patient? 2. Plan of investigations? 3. Treatment plan?

Task 4. A patient, 50 years old, went to see a doctor with complaints of shortness of breath and palpitations that appeared an hour ago Blood pressure 130/70 Pulse 100. Heart sounds are rhythmic, muffled, no murmurs No edema. On ECG Delta-wave. 1. What is the most likely diagnosis? 2. Plan of investigations? 3. Treatment plan? 4. What rhythm disturbance does the patient have?

III. Test questions for self-control:

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 extrasystoles:
 - 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
11. What are the names of extrasystoles originating from different parts of the heart?
 - A. Alorhythmic
 - B. polytopic
 - C. Introductory
 - D. Group
 - E. Interpolated
12. Dysfunction of which endocrine gland leads to arrhythmia:
 - A. The pituitary gland
 - B. The pancreas
 - C. the hypothalamus
 - D. The adrenal glands
 - E. Thyroid gland
13. For ventricular extrasystole of V class according to Lown is characterized by:
 - A. Single rare ventricular extrasystoles (up to 1 per 1 minute or 30 Hours per hour)
 - B. Early ventricular extrasystoles of the type "R to T", which are superimposed on the tooth of the previous ventricular complex and indicate pronounced inhomogeneity 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 per 1 minute or 30 per hour).
14. Signs of AF:
 - A. There is no tooth P, the same interval RR
 - B. P wave is absent, unequal intervals RR
 - C. P wave is negative, ventricular complexes changed
 - D. RR interval shortened to 0.3 seconds, same, high atrial waves
 - E. Interval RR of various magnitude, low-amplitude waves in large numbers (instead of P wave)
15. Emergency care for a sustained paroxysmal ventricular tachycardia with relatively stable hemodynamics:
 - A. Pre-cardial hit
 - B. Injection of lidocaine
 - C. Closed heart massage, artificial ventilation
 - D. Injection of digoxin
 - E. Transesophageal pacemaking.
16. 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

17. For the prevention of thromboembolism with persistent F at high risk of thromboembolic complications are used:
- Clopidogrel
 - Dipyridamole
 - Warfarin
 - Aspirin
 - Ticagrelor
18. ECG signs of atrial extrasystole:
- Absence of P wave and change in QRS complex
 - Change in shape and premature P wave before the usual QRS complex
 - Expanded P wave and aberrant QRS complex
 - The presence of the P wave and the absence of the QRS complex
 - Negative P wave after QRS complex
19. At what arrhythmia can there be a pulse deficit?
- sinus tachycardia
 - sinus bradycardia
 - Sinus Arrhythmia
 - Atrial fibrillation
 - paroxysmal tachycardia
20. The most informative method of arrhythmia diagnosis:
- Holter monitoring of ECG
 - Scintigraphy of the myocardium
 - Electrophysiological examination
 - ECG at rest
 - Echocardiography
21. For ventricular extrasystole II class on Lown is characterized by:
- Single rare ventricular extrasystoles (up to 1 for 1 minute or 30 for 1 year)
 - 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.
 - Polymorphic extrasystoles, that is, having a different shape in one lead.
 - Group ventricular extrasystoles.
 - Single frequent extrasystoles (more than 1 for 1 minute or 30 for 1 year)
22. Ventricular fibrillation is:
- arrhythmic, uncoordinated and ineffective contractions of individual groups of ventricular muscle fibers
 - rhythmic, uncoordinated and ineffective contractions of individual groups of ventricular muscle fibers
 - Three or more consecutive ectopic ventricular impulses ($QRS \geq 0.12$ c).
 - Atrial tachyarrhythmia with frequent (240-300 in 1 min) right atrial rhythm
 - Violation of the impulse to the ventricles with the development of asystole of the ventricles of the heart and fainting.
23. The drug is indicated for monitoring heart rate at a constant form of F in the presence of heart failure?
- Digoxin
 - Atropine
 - Verapamil
 - Novocainamide
 - Lidocaine
24. ECG-signs of ventricular extrasystole:
- 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
25. 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
26. What are the names of extrasystoles originating from different parts of the heart?
- A. Alorhythmic
 - B. Polytopic
 - C. Introductory
 - D. Group
 - E. Interpolated
27. Dysfunction of which endocrine gland leads to arrhythmia:
- A. The pituitary gland
 - B. The pancreas
 - C. the hypothalamus
 - D. The adrenal glands
 - E. Thyroid gland
28. For ventricular extrasystole of V class according to Lown is characterized by:
- A. Single rare ventricular extrasystoles (up to 1 per 1 minute or 30 Hours per hour)
 - B. Early ventricular extrasystoles of the type "R to T", which are superimposed on the tooth of the previous ventricular complex and indicate pronounced inhomogeneity 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 per 1 minute or 30 per hour).
29. Signs of AF:
- A. There is no tooth P, the same interval RR
 - B. P wave is absent, unequal intervals RR
 - C. P wave is negative, ventricular complexes changed
 - D. RR interval shortened to 0.3 seconds, same, high atrial waves
 - E. Interval RR of various magnitude, low-amplitude waves in large numbers (instead of P wave)
30. Emergency care for a sustained paroxysmal ventricular tachycardia with relatively stable hemodynamics:
- A. Pre-cardial hit
 - B. Injection of lidocaine
 - C. Closed heart massage, artificial ventilation
 - D. Injection of digoxin
 - E. Transesophageal pacemaking

Note. It is suggested to use test tasks (for those seeking higher education who have to take part in the license test exams in the current year, it is more appropriate to use tests of the "Step" type) and tests compiled by departments for rector's control.

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1. Fill in the classification table of AF depending on the nature of the course and duration of arrhythmia:

Type	Definition
------	------------

First diagnosed AF	It is established for each patient, who first has AF, regardless of the duration of arrhythmia and the nature of the course of symptoms

Task 2. The main ECG signs of ventricular extrasystole:

1. Wide deformed QRS complex _____
2. _____
3. _____

Task 3. Fill in the table of recommended laboratory tests in patients with arrhythmias:

№	method	purpose
1	Determination of K +	Hypokalemia promotes the development of tachyarrhythmia
2		
3		
4		
5		

Task 4. Write non-pharmacological vagal tests used to stop supraventricular rhythm disturbances:

1. Valsalva test - breath holding with closed nose with straining at inspiration height
2. _____
3. _____
4. _____

Task 5. Fill in the table with the characteristics of these groups of arrhythmic drugs:

Group	drug	dose	indications	contrindications	side effect
IA					
IB					
IC					
II					

Task 6. Write strategy for the prevention of thromboembolic events in patients with atrial fibrillation, using a scale CHA2DS2-VASc

risk factors thromboembolic complications	Points on a scale CHA2DS2-VASc	Recommended antithrombotic therapy
A "serious risk factor or > 2 'clinically relevant non-serious" risk factors	> 2	an oral anticoagulant

Variant 2.

Task 1. Write etiology of cardiac rhythm disorders:

Functional factors	- Physical and emotional stress - The pubertal period - Pregnancy
Organic damage of myocardium	
iatrogenic factors	
Violation of the electrolyte metabolism	
Metabolic disorder in the myocardium	
The etiology is unknown	

Task 2. Instrumental methods of examination of patients with arrhythmias:

method	survey goal
12-lead ECG	Register arrhythmias and, in some cases, its cause

Task 3. List ECG signs of AF:

1. Irregular rhythm, RR different.

2. _____

3. _____

4. _____

Task 4. Fill in the table of differential diagnosis of arrhythmias:

Task 5. Write directions and principles of treatment of AF

1. Choosing an antiarrhythmic treatment strategy

a) restoration of sinus rhythm -medical- -

b) _____

2. _____

3. _____

Variant 3.

Task 1. Complete the classification table for ventricular extrasystole B.Lown and M.Wolf (1971):

class	characteristic
I	Single rare (up to 1 for 1 minute or 30 for 1 year)
II	
III	
IV	
V	

Task 2. Fill in the table of features of the clinic and prognosis for supraventricular and ventricular tachycardia:

	Supraventricular tachycardia	Ventricular tachycardia
Organic diseases of the heart	often are absent	Present in most cases

--	--	--

Task 3. List ECG signs of atrial flutter

1. _____
2. _____
3. _____

Task 4. Indicate what risk factors for thromboembolic complications in patients with AF are indicated in the scale CHA2DS2-VASc (ETK, 2012) and how many scores they are:

Risk factors	Score
Chronic heart failure / left ventricular dysfunction	1

Task 5. Drug medications used to treat paroxysmal tachycardia:

Type of arrhythmia	Control of heart rate	Stop of paroxysm	contraindicated
Supraventricular with narrow complexes	Vagus tests, β -adrenoblockers, calcium channel blockers, digoxin	IC, III	In severe organic diseases of the myocardium - calcium channel blockers, IC
Supraventricular with narrow complexes			
Monomorphic ventricular tachycardia (Without hemodynamic disturbances)			
Monomorphic ventricular tachycardia (With a violation of hemodynamics)			

Task 6. Write down the features of managing patients after successful treatment of ventricular tachycardia and the prevention of sudden cardiac death

1. Installation and elimination of the cause of VT, especially myocardial ischemia.
2. _____
3. _____
4. _____
 - a) _____
 - b) _____

Variant 4.

Task 1. Fill the table:

Conduction system of the heart is normal:
1. Sinus node (Kiss-Flick)
2. _____
3. _____
4. _____

Task 2. Write classification impulse conduction disorders (ICD-10)

1. sinus block
2. _____
3. _____
4. _____
5. _____
6. _____

Task 3. Fill the table:

automatism centers	nodes	automatism frequency
first order	sinoatrial	60-80 pm
second order		
third order		

Task 4. Fill in the ECG table for signs of impulse conduction:

Block	Diagnosis according to ECG data in 12 leads:
Complete blockage of the left bundle branch leg:	<ol style="list-style-type: none"> 1. The QRS width is 120 ms or more. Wide, notched on the apex R wave with no Q and S V5-V6; with an increase in internal deviation time up to 60 ms and more. 2. _____ _____ _____ _____
Incomplete left bundle branch blockade:	_____ _____ _____
Complete right bundle branch blockade:	_____ _____ _____
Incomplete right bundle branch blockade::	_____ _____ _____

Task 5. There are the following types of electrocardiostimulation in violation of conductivity:

1. Temporary and permanent;
2. _____
3. _____
4. _____
5. _____

Task 6. Fill the table. Emergency care for bradycardia:

At the pre-hospital stage
Atropine sulfate 0,1% 0,5-1 ml
Hospitalization in a specialized department

stable hemodynamics	unstable hemodynamics
Atropine sulfate 0,1% 0,5-1 mli/vbolus repeatedly, but not more than 3 ml	Dopamine 5-10 mcg / ml / min i/v

Variant 5.

Task 1. Fill the table of the etiology of AV-Blocks

functional	Increased vagal tone
organic	IHD
iatrogenic	
Congenital complete blockade	

Task 2. Complications of conduction disorders of the heart?

1. Morgagni-Adams-Stokes syndrome
2. _____
3. _____
4. _____

Task 3. Fill in the table of ECG-signs in violation of the impulse

Blockade	Diagnosis according to ECG data in 12 leads:
Blockade I degree	1. Regular, sinus rhythm of the heart with the ratio of the P waves and QRST 1:1; 2. The duration of PQ is more than 0.20 s.
Blockade of the II degree Mobits I	_____ _____ _____
Blockade of the II degree Mobits II	_____ _____ _____
Blockade of the III degree	_____ _____ _____

Task 4. Formulate the concept of cardiac dyssynchrony. Mechanisms of cardiac resynchronization.
Cardiac dyssynchrony - is _____

Dyssynchrony of the heart is divided into:

1. Atrio-ventricular,
2. _____
3. _____
4. _____

Task 5. What drugs are used to treat conduction disorders

Drug, dosage, way of injection	Mechanism of action
Atropine sulfate 0,1% 0,5-1 ml i/v	Anticholinergic drug that blocks the action of acetylcholine on SA and AV node. This makes it possible to increase the sinus node automaticity (and heart rate) and the rate of conduction through the AV node. Action to 3 hours. Ineffective during prolonged blockade distal AV node.

Task 6. Write indications for pacing:

For permanent pacemaker	By temporary pacemaker
Persistent AV block III at any anatomic level.	For acute treatment of symptomatic atrioventricular block and bradycardia with other signs of cerebral blood flow reduction or CH: When to hold an urgent pacemaker implantation is not possible; _____ _____;
_____ _____ —	In order to prevent: _____ _____ _____ _____;

List of recommended literature:

Basic:

1. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMED. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
2. Davidson’s “PrinciplesofPracticeofMedicine” 20th edition 2016, Elsevierlimited.
3. Harrison’s “Principlesofinternal medicine” Volume 1,2, 2018, USA. - Cardiology
4. Unified clinical protocol of primary, secondary (specialized), tertiary (highly specialized) medical care for atrial fibrillation. Order of the Ministry of Health of Ukraine of June 15, 2016 No. 597.

5. 2016 AHA/ACC Clinical Performance and Quality Measures for Prevention of Sudden Cardiac Death

Additional:

1. <https://www.asnonline.org/education/training/fellows/educationalresources.aspx#Guidelines>
2. www.brit-thoracic.org.uk/standards-of-care/g
3. <http://www.asco.org/practice-guidelines/quality-guidelines/guidelines>
4. <https://www.asnonline.org/education/training/fellows/educationalresources.aspx#Guidelines>
5. www.brit-thoracic.org.uk/standards-of-care/guidelines

Topic: Conduction disorders: diagnosis, treatment. Electrical stimulation. Acute heart failure (AHF): classification, symptoms. Acute heart failure: diagnosis, complications, treatment.

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

Key words: sinus rhythm, blockade, Morgagni-Adams-Stokes syndrome, bundle branch blockades. Conduction system of the heart, heart failure.

Theoretical questions for the lesson:

1. <https://www.escardio.org/Guidelines>
2. <https://professional.heart.org/en/guidelines-and-statements>
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
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Option I: the content of the topic can be presented in the form of theses, which reflect the main information blocks of the topic, its main provisions, concepts, criteria, signs, relationships, interdependence, etc.;

Option II: justified in those cases when students of higher education have the opportunity to use modern literature on the topic and there is no need to explain it in detail in the methodical development, in this case it will be methodologically justified to display the content of the topic in the form of its structural and logical scheme;

Option III: in the absence of a sufficient amount of modern literature on the topic, this section in methodological development can be provided in the form of the text of the topic in an expanded and detailed version;

Option IV: in the presence of relevant literature that details the content of the topic, a specific reference to certain literary sources is quite sufficient.

Questions for self-control

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. Physiology of contraction and relaxation of the myocardium, regulation of the pump function of the heart, cardiohemodynamics parameters are normal.
7. Definition of the term acute heart failure and its clinical significance.
8. Etiological factors and pathogenesis of AHF occurrence.
9. Forms of AHF
10. The program of laboratory and instrumental examinations of patients with AHF and the

differential diagnostic value of the results of these research methods.

11. Differential diagnosis with AHF

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

The main terms of the topic

Term	Definition
Conduction system of the heart	A set of structural elements that ensure the generation of pulses and their conduct in the myocardium
Morgagni-Adams-Stokes syndrome.	The clinical syndrome, which develops with a sudden decrease in cardiac output and perfusion of the brain, is accompanied by loss of consciousness, convulsions, defecation, urination due to acute disturbance of the heart rhythm
The Samoilov-Wenckebach Periods	Progressive lengthening of the conduction from the atria to the ventricles, which results in the precipitation of the QRST complex in the AV blockade of degree II
"Canon"ith tone Strazhesko	periodic reinforcement of the I tone due to accidental simultaneous ventricular and atrial contraction in full AV blockade
Cardiac conduction system	The set of structural elements providing the pulse generation and conduct in the myocardium
Frederick syndrome	The combination of atrial fibrillation with complete AV block
term	definition
HF	A syndrome in which the heart can not meet the metabolic needs of the tissues, especially in oxygen
AHF	The rapid increase in the symptoms and signs of heart failure (HF) develops as a result of deterioration CH preceding or without (de novo)
shock	Acute vascular failure is a syndrome characterized by a critical reduction in blood flow in the tissues of hypoperfusion due to lower efficiency of the circulating blood volume - absolute hypovolemia, relative hypovolemia or redistribution of blood.
cardiogenic shock	The clinical syndrome, which is characterized along with a decrease in systolic blood pressure less than 90 mmHg. signs of decreasing perfusion of organs and tissues, a significant decrease in cardiac output, cardiac output and increased pressure in the pulmonary capillaries.
Cardiogenic pulmonary edema	Exit of the liquid part of the plasma in the interstitial space and alveoli with the development of severe lung failure, and decrease in oxygen saturation of arterial blood disorders due to left ventricular pump function

Fill in the daily protocol of preparation for a practical lesson on the topic (according to the decision of the meeting of the department).
https://info.odmu.edu.ua/chair/internal_medicine1/files/507/en

II. Practical work (tasks) that will be performed in class:

Task 1. Patient, 75 years old, went to see a doctor with complaints of shortness of breath, arising with slight physical activity and in the supine position, weakness, palpitations, the appearance of edema on the feet and legs in the evening. It is known from the anamnesis that for 10 years knows about an increase in blood pressure up to 150/90 mm Hg; did not receive therapy regularly. The above complaints appeared within 24 hours. Objectively: acrocyanosis, heart rate 120 in 1 minute, pulse 102 in 1 minute, arrhythmic, blood pressure = 140/100 mm Hg The borders of the heart are moderately expanded to the left in 4-5 intercostal spaces intervals. Heart sounds are arrhythmic, muffled, no murmurs. NPV 22 in 1 minute. In the lungs breathing is hard, single moist rales are heard in the lower parts. The liver is not increased. No edema. 1.What rhythm disturbance is possible in the patient? 2.Plan of investigations? 3.Treatment plan?

Task 2.A patient, 50 years old, went to see a doctor with complaints of shortness of breath and palpitations that appeared an hour ago Blood pressure 130/70 Pulse 100. Heart sounds are rhythmic, muffled, no murmurs No edema.On ECG Delta-wave. 1.What is the most likely diagnosis? 2.Plan of investigations? 3.Treatment plan? 4.What rhythm disturbance does the patient have?

Task 3. The patient complains of shortness of breath at rest, heaviness in the right hypochondrium, swelling in the legs, at night attacks of suffocation. Cyanosis of the skin is sharply expressed, the liver is significantly enlarged, free fluid is determined in the abdominal cavity. In the lower parts of the lungs, moist rales are heard. Respiratory rate - 45 per minute, heart rate - 160 per minute, blood pressure 80/60 mm Hg. The left border of the heart is displaced 3 cm from the mid-clavicular line to the left and 2.5 cm to the right from the right edge of the sternum. The content of erythrocytes - $5.9 \times 10^{12} / l$, hemoglobin - 185 g / l, reticulocytes - 20% 0. Daily urine output - 500 ml. 1.What is the most likely diagnosis? 2.Plan of investigations? 3.Treatment plan?

Task 4. On the second day after the injury, a patient with a hip fracture developed severe chest pains. Cyanosis of the skin is expressed. NPV - 38 / min, heart rate - 124 / min. Blood pressure 80/60 mm Hg The boundaries of the heart are not changed, there is a sharp swelling of the jugular veins, the liver is enlarged. 1. What is the most likely diagnosis? 2 Complications of this condition? 3.Pathogenetic treatment?

III. Test questions for self-control:

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
- E. Ticagrelor

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

11. What are the names of extrasystoles originating from different parts of the heart?
 - A. Alorhythmic
 - B. Polytopic
 - C. Introductory
 - D. Group
 - E. Interpolated
12. Dysfunction of which endocrine gland leads to arrhythmia:
 - A. The pituitary gland
 - B. The pancreas
 - C. the hypothalamus
 - D. The adrenal glands
 - E. Thyroid gland
13. For ventricular extrasystole of V class according to Lown is characterized by:
 - A. Single rare ventricular extrasystoles (up to 1 per 1 minute or 30 Hours per hour)
 - B. Early ventricular extrasystoles of the type "R to T", which are superimposed on the tooth of the previous ventricular complex and indicate pronounced inhomogeneity 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 per 1 minute or 30 per hour).
14. Signs of AF:
 - A. There is no tooth P, the same interval RR
 - B. P wave is absent, unequal intervals RR
 - C. P wave is negative, ventricular complexes changed
 - D. RR interval shortened to 0.3 seconds, same, high atrial waves
 - E. Interval RR of various magnitude, low-amplitude waves in large numbers (instead of P wave)
15. Emergency care for a sustained paroxysmal ventricular tachycardia with relatively stable hemodynamics:
 - A. Pre-cardial hit
 - B. Injection of lidocaine
 - C. Closed heart massage, artificial ventilation
 - D. Injection of digoxin
 - E. Transesophageal pacemaking
16. Which of the given drugs is an α - and β -adrenostimulator:
 - A. Propranolol
 - B. Alpha Methyldopa
 - C. Hydralazine
 - D. Dopamine
 - E. enalapril
17. Which of the following signs is not specific to acute right ventricular heart failure?
 - A. dyspnea on exertion
 - B. Edema of the lower limbs in the evening
 - C. Patient liver enlargement, jugular venous distention, lower extremity edema
 - D. crackles in the lower parts of the lungs
 - E. Increased liver
18. What disease can lead to acute LV failure?
 - A. Acute Coronary Syndrome
 - B. Pneumonia
 - C. Pulmonary embolism
 - D. COPD
 - E. Bronchial asthma
19. How pathophysiological process cardiogenic pulmonary edema is accompanied by:

- A. Increased perfusion of organs and tissues
 - B. Increase in cardiac output
 - C. Increasing the hydrostatic pressure in the pulmonary capillaries
 - D. Increasing of myocardial contractility
 - E. Increased CVP
20. Choose mechanism of compensatory reaction in cardiogenic shock:
- A. Expansion of peripheral vessels
 - B. bradycardia
 - C. Centralization of blood circulation
 - D. Extracting the liquid part of the blood into tissues
 - E. Exit of red blood cells from the depot
21. What amount of urine is allocated by a patient in oliguria:
- A. < 50 ml / h or 1000 ml / day
 - B. < 150 ml / h or 700 ml / day
 - C. < 30 ml / h or 600 ml / day
 - D. < 25 ml / h or 500 ml / day
 - E. < 100 ml / h or 1000 ml / day
22. What is the LVEF indicator indicative of LV systolic dysfunction?
- A. FV<45%
 - B. FV 45-55%
 - C. FV 55-70%
 - D. FV> 70%
 - E. FV 50-60%
23. What clinical sign is common to all types of shock?
- A. hypotension
 - B. bradycardia
 - C. Hyperthermia
 - D. Areflexia
 - E. bradypnoe
24. Select the normal SaO₂:
- A. < 80%
 - B. <78%
 - C.> 95%
 - D. <88%
 - E.> 70%
25. What is the possible cause of acute right ventricular disease?
- A. Thromboembolism of the pulmonary artery
 - B. Coarctation of the aorta
 - C. Insufficient mitral valve
 - D. Acute myocardial infarction
 - E. Stenosis of the aorta
26. Specify the normal index of moderate pulmonary artery pressure
- A. <35 mmHg.
 - B. <45 mm of Hg.
 - C < 20 mm Hg
 - D. <25 mm Hg
 - E. 50-60 mm Hg.
27. Choose one of the clinical signs of shock:
- A. systolic blood pressure > 120 mm Hg. Art.
 - B. oliguria
 - C. polyuria
 - D. Increase in pulse pressure

- E. Accent II over the aorta
28. β -adrenergic receptors blocker is:
- A. dobutamine
 - B. levosimendan
 - C. ephyllin
 - D. propranolol
 - E. Morphine
29. What dose of dopamine is diuretic, (is used to increase diuresis)?
- A. 1-2 mg / kg / min
 - B. 2-3 mg / kg / min
 - C. 3-4 mg / kg / min
 - D. 5-7 mg / kg / min
 - E. 2-5 mg / kg / min
30. signs of ALVF:
- A. Cardiac asthma and pulmonary edema
 - B. Swelling of the lower extremities
 - C. Ascites
 - D. Enlarged liver
 - E. Atrial fibrillation

Note. It is suggested to use test tasks (for those seeking higher education who have to take part in the license test exams in the current year, it is more appropriate to use tests of the "Step" type) and tests compiled by departments for rector's control.

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1. Fill the table of the etiology of AV-Blocks

functional	Increased vagal tone
organic	IHD
iatrogenic	
Congenital complete blockade	

Task 2. Complications of conduction disorders of the heart?

Morgagni-Adams-Stokes syndrome

Task 3. Fill in the table of ECG-signs in violation of the impulse

Blockade	Diagnosis according to ECG data in 12 leads:
Blockade I degree	Regular, sinus rhythm of the heart with the ratio of the P waves and QRST 1:1; The duration of PQ is more than 0.20 s.

Blockade of the II degree Mobits I	_____ _____ _____
Blockade of the II degree Mobits II	_____ _____ _____
Blockade of the III degree	_____ _____ _____

Task 4. Formulate the concept of cardiac dyssynchrony. Mechanisms of cardiac resynchronization.
Cardiac dyssynchrony - is _____

Dyssynchrony of the heart is divided into:
 Atrio-ventricular,

Task 5. What drugs are used to treat conduction disorders

Drug, dosage, way of injection	Mechanism of action
Atropine sulfate 0,1% 0,5-1 ml i/v	Anticholinergic drug that blocks the action of acetylcholine on SA and AV node. This makes it possible to increase the sinus node automaticity (and heart rate) and the rate of conduction through the AV node. Action to 3 hours. Ineffective during prolonged blockade distal AV node.

Task 6. Write indications for pacing:

For permanent pacemaker	By temporary pacemaker
Persistent AV block III at any anatomic level.	For acute treatment of symptomatic atrioventricular block and bradycardia with other signs of cerebral blood flow reduction or CH: When to hold an urgent pacemaker implantation is not possible; _____; _____; _____;

	In order to prevent:
_____	_____
_____	_____;
_____	_____;

Variant 2.

Task 1. Fill in the table of classification of intraventricular disorders of impulse conduction

single-beam:	two-pronged:	Three-beam:

Task 2. Write the main complaints and clinical data of patients with acquired heart atrioventricular block II-III degree:

Interruptions in the heart activity _____

pulse: _____

Auscultation of the heart: _____

Task 3. Fill in the table ECG signs of violations of the pulse:

blockade	Diagnosis of ECG leads 12:
Complete blockade of the left bundle branch block:	QRS width is 120 ms or more. Wide, notched at the top prong R in the absence of teeth Q and S V5-V6; with increasing internal time deviation to 60 ms or more. _____ _____ _____
Blockade of the anterior-upper branch of left bundle branch block:	
Blockade of the rear branches left bundle branch block:	
Frederick syndrome	

Task 4. The main functions of the AV node (Aschoff Products)

1. Physiological pulse delay from the atria to the ventricles (synchronizing atrial and ventricular contractions)

2. _____
_____;

3.

Task 5. List pacing complications:

Symptoms of pacemaker syndrome	symptoms
hypotension	shock orthostatic reactions
neurological symptoms (Low cardiac output)	- - -
Congestive heart failure	- - -

Task 6. What are the causes of slow (replacement) rhythms:

Inhibition of SA-node automaticity to a level equal to or lower than automatism distally located pacemaker;

Variant 3.

Task 1. List the forms of AHF, and provide the definition of each of them:

form AHF	definition
decompensated AHF	Occurrence of ACF symptoms on a chronic heart failure decompensation or de novo with characteristic symptoms and complaints ACF that is moderate and does not meet the criteria of cardiogenic shock and pulmonary edema and / or hypertensive crisis

Task 2. Write conditions / events, which typically result in rapid deterioration HF:

Aggressive type of arrhythmia or severe bradycardia / conduction disorder of the heart

Task 3. Write the basic preparations of inotropic action, their doses, the mechanism of action and side effects that are used in the treatment of AHF

Drug	Dose, way of injection	Contraindications

dobutamin	2-20mcg / kg / min i/vinfusion	Hypersensitivity to dobutamine

Variant 4.

Task 1. Write phenomena / events that usually lead to a slow deterioration of HF:

1. Infection (including infectious endocarditis)
2. _____

Task 2. Write the main pathogenetic mechanisms of acute heart failure:

1. Increased systolic dysfunction of the heart due to:
 - A) decrease in the number of viable cardiomyocytes (acute myocardial infarction, myocarditis)
 - B)
 - C)

Task 3. Fill the table. Write the symptoms and clinical signs of the AHF

Low cardiac output	Volume overload
1. Weakness	A. Left ventricle
2. _____	1. Shortness of breath
3. _____	2. _____
4. _____	3. _____
5. _____	B. Right ventricle
6. _____	1. _____
	2. _____

List of recommended literature:

Basic:

1. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMED. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
2. Davidson's "Principles of Practice of Medicine" 20th edition 2016, Elsevier limited.
3. Harrison's "Principles of Internal Medicine" Volume 1,2, 2018, USA. - Cardiology
4. Unified clinical protocol of primary, secondary (specialized), tertiary (highly specialized) medical care for atrial fibrillation. Order of the Ministry of Health of Ukraine of June 15, 2016 No. 597.
5. Zoni-Berisso, M; Lercari, F; Carazza, T; Domenicucci, S (2014). "Epidemiology of atrial fibrillation: European perspective." 4.2016 ACC/AHA Clinical Performance and Quality Measures for Adults With Atrial Fibrillation or Atrial Flutter
6. 2016 AHA/ACC Clinical Performance and Quality Measures for Prevention of Sudden Cardiac Death

Additional:

1. <https://www.asnonline.org/education/training/fellows/educationalresources.aspx#Guidelines>
2. www.brit-thoracic.org.uk/standards-of-care/g
3. <http://www.asco.org/practice-guidelines/quality-guidelines/guidelines>
4. <https://www.asnonline.org/education/training/fellows/educationalresources.aspx#Guidelines>
5. www.brit-thoracic.org.uk/standards-of-care/guidelines

Topic: Chronic heart failure (CHF): classification, etiopathogenesis, symptoms. Chronic heart failure: diagnosis, complications, treatment. Principles of evidence-based medicine.

Purpose: to explain the essence of the chronic heart failure, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of principles of evidence-based medicine, modern clinical studies, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: heart failure, chronic heart failure, evidence-based medicine, prevention, risk factors, clinical epidemiology, clinical trial.

Theoretical questions for the lesson:

1. <https://www.escardio.org/Guidelines>
2. <https://professional.heart.org/en/guidelines-and-statements>
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019
5. <https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/evidence-based-medicine-and-clinical-guidelines>
6. <https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/introduction-to-clinical-decision-making>

Note. Depending on the complexity and specificity of the educational topic, the availability of modern educational and scientific literature, this section can be presented with different levels of detail (the right to choose the form of displaying the content remains with the department):

Option I: the content of the topic can be presented in the form of theses, which reflect the main information blocks of the topic, its main provisions, concepts, criteria, signs, relationships, interdependence, etc.;

Option II: justified in those cases when students of higher education have the opportunity to use modern literature on the topic and there is no need to explain it in detail in the methodical development, in this case it will be methodologically justified to display the content of the topic in the form of its structural and logical scheme;

Option III: in the absence of a sufficient amount of modern literature on the topic, this section in methodological development can be provided in the form of the text of the topic in an expanded and detailed version;

Option IV: in the presence of relevant literature that details the content of the topic, a specific reference to certain literary sources is quite sufficient.

Questions for self-control

1. Physiology of contraction and relaxation of the myocardium, regulation of the pump function of the heart, cardiohemodynamics parameters are normal.
2. Definition of the term acute heart failure and its clinical significance.
3. Etiological factors and pathogenesis of CHF occurrence.
4. Forms of CHF
5. The program of laboratory and instrumental examinations of patients with CHF and the differential diagnostic value of the results of these research methods.
6. Differential diagnosis with CHF
7. The basic rules of work with the literature in evidence-based medicine.

8. What is evidence-based medicine and its basic methods?
9. Stages of work in evidence-based medicine.
10. Basic concepts of clinical epidemiology.
11. Organization of research in evidence-based medicine.
12. The criteria for statistical data analysis.
13. Rating scale evidence.
14. The levels of evidence

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

The main terms of the topic

term	definition
HF	A syndrome in which the heart can not meet the metabolic needs of the tissues, especially in oxygen
CHF	The slowly increase in the symptoms and signs of heart failure (HF) develops as a result of decompensation of chronic heart diseases
shock	Acute vascular failure is a syndrome characterized by a critical reduction in blood flow in the tissues of hypoperfusion due to lower efficiency of the circulating blood volume - absolute hypovolemia, relative hypovolemia or redistribution of blood.
cardiogenic shock	The clinical syndrome, which is characterized along with a decrease in systolic blood pressure less than 90 mmHg. signs of decreasing perfusion of organs and tissues, a significant decrease in cardiac output, cardiac output and increased pressure in the pulmonary capillaries.
Cardiogenic pulmonary edema	Exit of the liquid part of the plasma in the interstitial space and alveoli with the development of severe lung failure, and decrease in oxygen saturation of arterial blood disorders due to left ventricular pump function

Term	Definition
Risk group	a group of people with various risk factors for diseases, injuries and other health disorders in which should be planned carrying out preventive measures.
Clinical epidemiology	is the science that develops clinical research methods that make it possible to draw fair conclusions by controlling the impact of systematic and random errors.
The control group, or the comparison group	a group of subjects receiving usual treatment, or not receiving treatment, or receiving a placebo. Results measurements in the control group are compared with those in the experimental group to assess the effect of the investigational treatment.
Meta-analysis	is a quantitative analysis of the pooled results from multiple clinical trials of the same intervention. This approach provides more statistical power than in each individual trial by increasing sample size. Used to summarize the results of many tests and to increase the evidence of test results.

Placebo	is a dosage form indistinguishable from the study drug in appearance, color, taste and smell, but does not have a specific effect
Medical disease prevention	is a system of measures implemented through the health care system aimed at preventing, reducing the risk of development deviations in health and disease, preventing or slowing down their progression, reduction of their adverse effects.
Screening	is a mass examination of persons who do not consider themselves sick, to identify latent diseases or other conditions
Risk factor	a feature of the body or external influence (behavioral, biological, genetic, ecological, social and other nature), leading to an increase in the risk of a disease, its progression or other unfavorable outcome

Fill in the daily protocol of preparation for a practical lesson on the topic (according to the decision of the meeting of the department).

https://info.odmu.edu.ua/chair/internal_medicine1/files/507/en

II. Practical work (tasks) that will be performed in class:

Task 1. A 40-year-old patient turned to a general practitioner for help in connection with another cardiac decompensation (shortness of breath, enlarged liver, edema). The doctor found out that this decompensation of cardiac activity 3rd in a row that the patient suffers insufficiency of the semilunar valves of the aorta of a syphilitic nature. Receives enalapril at a dose of 20 mg / day and furosemide - 40 mg / day. The rhythm of the heart is correct sinus with a heart rate of 102 per minute. BPM - 24 per minute. 1. What is the most likely diagnosis? 2. Plan of investigations? 3. Treatment plan?

Task 2. Patient 72 years old, five years ago suffered a myocardial infarction. Three years ago appeared shortness of breath, two years ago the legs swelled for the first time, there was heaviness in the right hypochondrium. On examination, acrocyanosis is noted, legs and hands are cold to the touch. NPV - 24 per minute. The left border of the heart is increased by 3 cm, heart rate is 108 per minute, heart sounds are arrhythmic, pulse 86 per minute. The liver protrudes from under the edge of the costal arch by 4 cm, the edge is round, soft, painful. Swelling of the legs. ECG - P waves are not recorded, "f" -wave, intervals "f" -wave, intervals-wave, intervals R-R 0.57 to 1.02. 1. What is the most likely diagnosis? 2. Complications of this condition? 3. Pathogenetic treatment?

Task 3. A regional cardiologist is tasked with the development of a plan for medioprophylactic measures aimed at decrease of cardiovascular mortality. What measures should be planned for secondary PREVENTION?

Task 4. PRIMARY DISEASE PREVENTION includes/

Task 5. Which of the following study methods uses subjects who have already been exposed and will be followed over time to observe the differences in outcome between the exposed and non-exposed. (longitudinal study)?

Task 6. Which of the following study methods uses one or more active test treatments and at least one concurrent control basically, subjects are divided into two groups, one treatment group and one control group, they are both followed through time and then the outcomes are compared?

Task 7. Which of the following study methods collects data from patients who already have a certain condition in which the design of the study is retrospective?

III. Test questions for self-control:

1. Which of the given drugs is ACE inhibitor?
 - A. Propranolol
 - V. Valsartan
 - S. Hydralazine
 - D. Candesartan
 - E. Enalapril
2. Which of the following criteria is the most reliable in diagnosing systolic heart failure?
 - A. Dyspnoea with exertion
 - B. Swelling of the lower extremities in the evening
 - C. Ejection fraction
 - D. Wet rales in the lower parts of the lungs
 - E. Enlarged liver
3. What functional class of heart failure in a patient with heart disease, if the performance of normal physical activity does not cause shortness of breath, fatigue and palpitations?
 - A. I
 - B. II
 - C. III
 - D. IV
 - E. V
4. Drugs, the appointment of which in chronic HF should be avoided, include:
 - A. Class I antiarrhythmic drugs
 - B. ACE Inhibitors
 - C. Angiotensin II receptor antagonists
 - D. Aldosterone antagonists
5. What group of drugs is it advisable to appoint in diastolic HF?
 - A. Cardiac glycosides
 - B. α -blockers
 - C. β -blockers
 - D. Nitrate
 - E. Diuretics
6. What amount of urine is allocated by a patient in oliguria:
 - A. < 50 ml / h or 1000 ml / day
 - B. < 150 ml / h or 700 ml / day
 - C. < 30 ml / h or 600 ml / day
 - D. < 25 ml / h or 500 ml / day
 - E. < 100 ml / h or 1000 ml / day
7. What is the LVEF indicator indicative of LV systolic dysfunction?
 - A. EF $< 45\%$
 - B. EF 45-55%
 - C. EF 55-70%
 - D. EF $> 70\%$
 - E. EF 50-60%
8. What clinical sign is common to all types of shock?
 - A. hypotension
 - B. bradycardia
 - C. Hyperthermia
 - D. Areflexia
 - E. Bradypnoe
9. Select the normal SaO₂:
 - A. $< 80\%$
 - B. $< 78\%$
 - C. $> 95\%$

D. <88%

E. > 70%

10. What is the possible cause of acute right ventricular disease?
 - A. Thromboembolism of the pulmonary artery
 - B. Coarctation of the aorta
 - C. Insufficient mitral valve
 - D. Acute myocardial infarction
 - E. Stenosis of the aorta
11. The gold standard of medical research is called:
 - A. cross-sectional studies
 - B. a single blind study
 - C. randomized controlled trials
 - D. paired comparisons
12. A controlled trial is a study:
 - A. retrospective
 - B. prospective
 - C. transverse
 - D. perpendicular
13. A study in which patients are randomly assigned to groups is called:
 - A. simple blind
 - B. non-randomized
 - C. placebo controlled
 - D. randomized
14. A random selection of observations is called:
 - A. randomization
 - B. median
 - C. mode
 - D. probability
15. The most effective type of prevention is:
 - A. primary prevention
 - B. secondary prevention
 - C. tertiary prevention
 - D. quaternary prevention
16. The method in which neither the patient nor the doctor knows which of the methods of treatment was applied is called:
 - A. double blind
 - B. triple blind
 - C. single blind
 - D. placebo controlled
17. A study in which the patient does not know and the doctor knows what treatment the patient is receiving is called:
 - A. placebo controlled
 - B. double blind
 - C. triple blind
 - D. simple blind
18. According to the method of patient selection, studies are distinguished:
 - A. casual and complex
 - B. equally probable and impossible
 - C. randomized and non-randomized
 - D. primary and tertiary
19. The science that develops methods of clinical research is called:
 - A. clinical epidemiology

- B. pharmaceuticals
- C. cybernetics
- D. medical statistics

20. Secondary prevention is:

- A. elimination of factors and conditions of the human environment leading to the development of diseases
- B. prevention of the spread of diseases through their early diagnosis and timely treatment
- C. preventing the transition of chronic diseases to an acute form; creating decent conditions for doomed patients

Note. It is suggested to use test tasks (for those seeking higher education who have to take part in the license test exams in the current year, it is more appropriate to use tests of the "Step" type) and tests compiled by departments for rector's control.

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task1. Write clinical signs of cardiogenic shock:

Disturbance of consciousness (agitation, inhibition)

Task 2

Low cardiac output	Volume overload
1. Weakness 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____	A. Left ventricle 1. Shortness of breath 2. _____ 3. _____ 4. _____ B. Right ventricle 1. _____ 2. _____

Task 3. List the forms of CHF, and provide the definition of each of them:

form CHF	definition
decompensated AHF	

Variant 2.

Task 1. Write phenomena / events that usually lead to a slow deterioration of HF:

- 1. Infection (including infectious endocarditis)
- 2. _____

Task 2. Write the main pathogenetic mechanisms of acute heart failure:

- 1. Increased systolic dysfunction of the heart due to:
 - A) decrease in the number of viable cardiomyocytes (acute myocardial infarction, myocarditis)
 - B)
 - C)

Task 3. Fill the table. Write the symptoms and clinical signs of the CHF

Low cardiac output	Volume overload
1. Weakness	A. Left ventricle
2. _____	1. Shortness of breath
3. _____	2. _____
4. _____	3. _____
5. _____	4. _____
6. _____	B. Right ventricle
7. _____	1. _____
	2. _____

Variant 3.

Task 1. Primary prevention is:

- A. prevention of the spread of diseases through their early diagnosis and timely treatment
- B. prevention of the transition of chronic diseases into an acute form
- C. prevention (reduction) of morbidity by influencing its causes, conditions, risk factors
- D. creating decent conditions for the doomed sick

Task 2. A healthy lifestyle is:

- A. implementation of recommendations for a rational daily regimen;
- B. implementation of recommendations for a healthy diet
- C. implementation of recommendations for physical activity
- D. behavior, style, contributing to the preservation, strengthening and restoration of the health of a given population

Task 3. What is meta-analysis, its advantages and disadvantages

Task 4. The value of clinical trials for physician practice

Variant 4.

Task 1. Prevention is:

- A. in medicine, a system of measures to prevent diseases, preserve health and prolong human life
- B. preventing the spread of mass non-communicable diseases a set of measures to reduce the level of environmental pollution
- C. a set of measures aimed at early detection and timely treatment of diseases

Task 2. Tertiary prevention is:

- A. type of prevention, ranking third in terms of effectiveness among all types of prevention
- B. prevention of the spread of diseases through their early diagnosis and timely treatment
- C. a set of measures aimed at ensuring a dignified death of doomed patients
- D. a set of measures to curb the progression of developed diseases and prevent relapses, the transition of diseases to a more severe form

Task 3. Advantages of evidence-based medicine

Task 4. The value of clinical trials for physician practice

List of recommended literature:

Basic:

1. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMED. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
2. Davidson's "Principles of Practice of Medicine" 20th edition 2016, Elsevier limited.
3. Harrison's "Principles of Internal Medicine" Volume 1,2, 2018, USA. - Cardiology

Additional:

1. <https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/evidence-based-medicine-and-clinical-guidelines>
<https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/introduction-to-clinical-decision-making>
3. <https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/understanding-medical-tests-and-test-results>

Topic: Contemporary clinical research. Features of diagnosis and treatment of elderly patients. Emergencies in the context of an incurable disease. Obesity: classification, complications, treatment.

Purpose: to explain the essence of principles of evidence-based medicine, modern clinical studies, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of features of diagnosis and treatment of elderly people, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. to explain the essence of obesity, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: evidence-based medicine, prevention, risk factors, clinical epidemiology, clinical trial, metabolism in old age, comorbid pathology, drug action, emergency, incurable disease, obesity, IHD, heart failure, obstructive sleep apnea, diabetes type 2, insulin resistance, life style modification, bariatric surgery.

III. Theoretical questions for the lesson:

1. <https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/evidence-based-medicine-and-clinical-guidelines>
2. <https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/introduction-to-clinical-decision-making>
3. <https://www.msmanuals.com/professional/geriatrics/providing-care-to-older-adults/hospital-care-and-older-adults>
4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5644856/>
5. <https://www.karger.com/Article/Fulltext/496183>

Note. Depending on the complexity and specificity of the educational topic, the availability of modern educational and scientific literature, this section can be presented with different levels of detail (the right to choose the form of displaying the content remains with the department):

Option I: the content of the topic can be presented in the form of theses, which reflect the main information blocks of the topic, its main provisions, concepts, criteria, signs, relationships, interdependence, etc.;

Option II: justified in those cases when students of higher education have the opportunity to use modern literature on the topic and there is no need to explain it in detail in the methodical development, in this case it will be methodologically justified to display the content of the topic in the form of its structural and logical scheme;

Option III: in the absence of a sufficient amount of modern literature on the topic, this section in methodological development can be provided in the form of the text of the topic in an expanded and detailed version;

Option IV: in the presence of relevant literature that details the content of the topic, a specific reference to certain literary sources is quite sufficient.

Questions for self-control

1. The basic rules of work with the literature in evidence-based medicine.
2. What is evidence-based medicine and its basic methods?
3. Stages of work in evidence-based medicine.
4. Basic concepts of clinical epidemiology.

5. Organization of research in evidence-based medicine.
6. The criteria for statistical data analysis.
7. Rating scale evidence.
8. The levels of evidence
9. Prevalence of different diseases in old age
10. Distinctive features of older adults and elderly people
11. Specific changes in body with aging and its outcomes
12. Features in courses of illnesses in old age
13. Features in medical care for elderly people
14. Specific features in medication treatments in old age
15. Define the concept of obesity.
16. Indicate the main etiological factors, features of pathogenesis.
17. Modern classification of obesity.
18. The main clinical signs of obesity.
19. Laboratory and instrumental research of patients, interpretation of the obtained results.
20. Basic principles of treatment.

Approximate tasks for the study of theoretical material

3. Make a dictionary of basic concepts on the topic:

The main terms of the topic

Term	Definition
Risk group	a group of people with various risk factors for diseases, injuries and other health disorders in which should be planned carrying out preventive measures.
Clinical epidemiology	is the science that develops clinical research methods that make it possible to draw fair conclusions by controlling the impact of systematic and random errors.
The control group, or the comparison group	a group of subjects receiving usual treatment, or not receiving treatment, or receiving a placebo. Results measurements in the control group are compared with those in the experimental group to assess the effect of the investigational treatment.
Meta-analysis	is a quantitative analysis of the pooled results from multiple clinical trials of the same intervention. This approach provides more statistical power than in each individual trial by increasing sample size. Used to summarize the results of many tests and to increase the evidence of test results.
Placebo	is a dosage form indistinguishable from the study drug in appearance, color, taste and smell, but does not have a specific effect
Medical disease prevention	is a system of measures implemented through the health care system aimed at preventing, reducing the risk of development deviations in health and disease, preventing or slowing down their progression, reduction of their adverse effects.
Screening	is a mass examination of persons who do not consider themselves sick, to identify latent diseases or other conditions
Risk factor	a feature of the body or external influence (behavioral, biological, genetic, ecological, social and other nature), leading to an increase in the risk of a disease, its progression or other unfavorable outcome

Term	Definition
Geriatrics	a separate section of gerontology, which deals with the study,

	prevention and treatment of diseases of old age.
Comorbid pathology	the presence of one or more diseases in addition to the primary disease, or the effect of such an additional disease. A comorbid disease or disorder can be caused or directly related to the underlying disease.
Emergency	a condition of the body when life-threatening disorders of important vital functions that occur due to physical, chemical and biological factors require the use of emergency care. These are cases when emergency (within minutes, rarely hours, not days) intensive measures are required to prevent the death (or long-term damage to health) of a patient or victim.

Term	Definition
Obesity	is a chronic disease that develops as a result of complex chronic disorders of fat metabolism with excessive accumulation of fat in various parts of the body (focal or diffuse), which is accompanied by an increase in body weight and the subsequent development of various complications
Overweight	Overweight fat accumulation, which can lead to health problems
morbid obesity	Overweight by 50% or more of what is considered normal for the age, gender and constitution of the person. The term indicates the uniquely painful nature of obesity.
Body mass index (BMI)	Weight in kilograms divided by the square of growth in meters (kg / m ²)
Bariatrics	A section of medicine dealing with the treatment of obesity. First of all, we mean obesity surgery..

Fill in the daily protocol of preparation for a practical lesson on the topic (according to the decision of the meeting of the department).

https://info.odmu.edu.ua/chair/internal_medicine1/files/507/en

II. Practical work (tasks) that will be performed in class:

Task 1. A regional cardiologist is tasked with the development of a plan for medioprohylactic measures aimed at decrease of cardiovascular mortality. What measures should be planned for secondary PREVENTION?

Task 2. PRIMARY DISEASE PREVENTION includes/

Task 3. Which of the following study methods uses subjects who have already been exposed and will be followed over time to observe the differences in outcome between the exposed and non-exposed. (longitudinal study)?

Task 4. Which of the following study methods uses one or more active test treatments and at least one concurrent control basically, subjects are divided into two groups, one treatment group and one control group, they are both followed through time and then the outcomes are compared?

Task 5. Which of the following study methods collects data from patients who already have a certain condition in which the design of the study is retrospective?

Task 6. A 72-year-old woman with increasing general weakness was diagnosed with anemia (blood hemoglobin 100 g / l). Hematocrit number 28%, reticulocytes 50%, leukocytes $7.3 \times 10^9 / l$, neutrophils 65%, platelets $210 \times 10^9 / l$. The average concentration of hemoglobin in erythrocytes is 34%, the average hemoglobin content in erythrocytes is 30 pg / erythrocyte. The average erythrocyte volume is increased to 104 μm . 1. Indicate the most probable diagnosis. 2. What diseases need to be differentially diagnosed? 3. Justify your opinion. 4. What examination should be performed to confirm the diagnosis?

Task 7. Patient F., 75 years old, is receiving treatment for hypertension (blood pressure - 190/100 mm Hg, heart rate - 60 beats per minute). Concomitant diseases - diabetes and gout? 1. The appointment of which drug is most appropriate in this situation? 2. Justify your choice.

Task 8. Patient R., 36 years old. Complains of significant weight gain for the last two years (from 72 to 106 kg with a height of 173 cm), a decrease in sexual functions. The appetite is increased. Does not follow the diet. The diet is dominated by carbohydrates. Headache worries, drowsiness is periodically noted, general weakness. The deterioration of the state is not associated with anything. Often sick sore throats. About b e k t and v n about. Increased nutrition, deposition of subcutaneous fat fiber mainly in the area of the trunk, face, neck. The skin is dry. Edema no. Pulse - 72 in 1 min, rhythmic. BP - 150/105 mm Hg. Art. Left border relative cardiac dullness in the V intercostal space 1 cm outward from midclavicular line. Heart sounds are weakened, accent I tone over the aorta.

ADDITIONAL RESEARCH. General analysis of blood and urine without pathological changes.

OGTT (oral glucose tolerance test): on an empty stomach capillary blood glucose - 5.4 mmol / l, after 2 hours - 6.2 mmol / l. 1. Make and justify the diagnosis. 2. Assign additional studies needed to clarify diagnosis. 3. Determine if the patient should be given drug therapy and what.

Task 9. Patient S., 58 years old, does not work. Complains of general weakness, increased fatigue, shortness of breath with little exercise, headache pain, memory loss, intermittent thirst, increased appetite, severe drowsiness during the day. Menopause for 12 years. Previously was moderately full, a significant increase in body weight began to be noted about 10 years ago. About the object: General condition is satisfactory. Height - 169 cm, weight body - 116 kg. The deposition of subcutaneous adipose tissue mainly in areas of the face and trunk. There is cyanosis of the face, limbs, trunk, pasty legs, feet. The skin is damp. Pulse - 98 in 1 min, blood pressure - 170/100 mmHg Art. The left border of relative cardiac dullness in the V intercostal space by 1 cm outward from the midclavicular line, right - 1 cm outward from the right the edges of the sternum in the IV intercostal space. Heart sounds are significantly weakened. Percussion above the chest is marked by a shortened tympanitis. Breath vesicular, weakened, rigid in the interscapular space. ADDITIONAL RESEARCH. General analysis of blood and urine without pathological changes. OGTT: fasting capillary blood glucose - 5.2 mmol / L, after 2 hours - 12.8 mmol / L. 1. What disorders in the patient are indicated by periodic thirst, drowsiness, increased appetite. 2. How to assess an increase in blood pressure in a patient: a) manifestation hypertension; b) symptomatic arterial hypertension. 3. Make and justify the diagnosis. 4. Administer diet therapy. Calculate the energy value of the daily diet. 5. Prescribe pathogenetic and symptomatic therapy

III. Test questions for self-control:

1. The method in which neither the patient nor the doctor knows which of the methods of treatment was applied is called:

- A. double blind
- B. triple blind
- C. single blind
- D. placebo controlled

2. A study in which the patient does not know and the doctor knows what treatment the patient is receiving is called:

- A. placebo controlled
 - B. double blind
 - C. triple blind
 - D. simple blind
3. According to the method of patient selection, studies are distinguished:
- A. casual and complex
 - B. equally probable and impossible
 - C. randomized and non-randomized
 - D. primary and tertiary
4. The science that develops methods of clinical research is called:
- A. clinical epidemiology
 - B. pharmaceuticals
 - C. cybernetics
 - D. medical statistics
5. Secondary prevention is:
- A. elimination of factors and conditions of the human environment leading to the development of diseases
 - B. prevention of the spread of diseases through their early diagnosis and timely treatment
 - C. preventing the transition of chronic diseases to an acute form; creating decent conditions for doomed patients
6. A harmless inactive substance offered under the guise of a medicine that does not differ from it in appearance, smell, texture, is called:
- A. supplement
 - B. an analogue of the investigational drug
 - C. homeopathic medicine
 - D. placebo
7. A study with a randomly selected control group and the presence of intervention from the investigator is called:
- A. randomized controlled clinical trial
 - B. non-randomized study
 - C. observational study
 - D. retrospective study
8. According to the degree of data openness, the study can be:
- A. open or blind
 - B. closed or blind
 - C. open or randomized
 - D. randomized or multicenter
9. The purpose of clinical epidemiology is:
- A. the development of methods for the statistical evaluation of clinical observations
 - B. the study of infectious diseases
 - C. the development and application of effective methods of clinical research
 - D. the prevention of epidemics and infectious diseases
10. Health (as defined by WHO) is:
- A. the state of a person, ensuring his working capacity; the state of a person, due to the conditions of his life
 - B. a state of complete physical, mental and social well-being, and not just the absence of diseases or physical defects
 - C. a human condition characterized by optimal functioning of systems and organs
11. Aging is a process:
- A. stabilizing life, which increases life expectancy
 - B. naturally comes the final period of age development
 - C. destabilizing life, which reduces life expectancy

- D. destructive, the result of increasing with age insufficiency of physiological functions
 - E. creative, the result of increasing with age hyperfunction of organs and systems
12. Not characteristic changes in the ECG during physiological aging:
- A. the expansion of the wave P
 - B. flattening of the wave P
 - C. reducing the amplitude of all waves
 - D. negative wave T
 - E. reducing the amplitude of the wave T
13. What is the heart rhythm most characteristic of the physiological type of aging?
- A. tachycardia
 - B. bradycardia
 - C. normal, sinus
 - D. arrhythmia
 - E. AB - blockade
14. Angina attack in the elderly is characterized by:
- A. severe pain.
 - B. unusual irradiation and smoothness of pain.
 - C. a pronounced autonomic reaction
 - D. bright emotional color
 - E. severe pain
15. In the treatment of heart failure with thiazide diuretics may develop:
- A. gout
 - B. decreased reflexes
 - C. pancreatitis
 - D. anemia
 - E. pulmonary edema
16. Aging is a process:
- A. stabilizing life, which increases life expectancy
 - B. naturally comes the final period of age development
 - C. destabilizing life, which reduces life expectancy
 - D. destructive, the result of increasing with age insufficiency of physiological functions
 - E. creative, the result of increasing with age hyperfunction of organs and systems
17. Characteristic ECG changes in the elderly:
- A. decreased myocardial function
 - B. increase in myocardial contractile function
 - C. tachycardia
 - D. sinus arrhythmia
 - E. the vertical axis deviation
18. The presence of two or more diseases in a patient is:
- A. polyragmasia
 - B. polymorbidity
 - C. polyetiology.
 - D. atypicality
 - E. polypathogenicity
19. What type of medical care is most acceptable for chronic patients 80 years and older?
- A. inpatient treatment
 - B. sanatorium treatment
 - C. organization of long-term care at home
 - D. annual preventive examinations in the clinic
 - E. inpatient and sanatorium treatment
20. In the treatment of heart failure with thiazide diuretics may develop:
- A. gout

- B. decreased reflexes
 - C. pancreatitis
 - D. anemia
 - E. pulmonary edema
21. Aging is a process:
- A. stabilizing life, which increases life expectancy
 - B. naturally comes the final period of age development
 - C. destabilizing life, which reduces life expectancy
 - D. destructive, the result of increasing with age insufficiency of physiological functions
 - E. creative, the result of increasing with age hyperfunction of organs and systems
22. The main features of the disease in the elderly
- A. reducing the number of diseases
 - B. polymorbidity, chronic and atypical disease
 - C. the predominance of acute forms of disease
 - D. the predominance of external etiological factors
 - E. the predominance of infectious diseases
23. Insufficient blood circulation in old age is associated with:
- A. the formation of atherosclerotic plaques
 - B. increasing vascular tone
 - C. with shortening of blood vessels
 - D. deterioration of self-service
 - E. the development of collaterals
24. The leading cause of hypertension in the elderly:
- A. atherosclerosis
 - B. Itsenko-Cushing's disease
 - C. chronic pyelonephritis
 - D. pheochromocytoma
 - E. gastric ulcer
25. In the treatment of heart failure with thiazide diuretics may develop:
- A. gout
 - B. decreased reflexes
 - C. pancreatitis
 - D. anemia
 - E. pulmonary edema
26. Which of the following drugs is a blocker of pancreatic lipase?
- A. Metformin
 - V. Lorcaserin
 - With Orlistat
 - D. Topiramate
 - E. Levokarnitin
27. The most common complication of irrational reduction in excess weight:
- A. pancreatitis
 - B. cholecystitis
 - With cholelithiasis
 - D. impaired tolerance to carbohydrates
 - E. mochESIOL diathesis
28. Morbid obesity criterion in terms of BMI (kg / m²):
- A.> 30
 - B.> 35
 - C.> 40
 - D.> 45
 - E.> 50

29. If the energy value of the ration is reduced by 500-1000Kcal / day, the average person will lose kg / week:
- A. 0.2-0.3
 - B. 0.5-1
 - C. 0,7-1,5
 - D. 3-4
 - E. 1-1.5
30. Under what additional conditions it is most expedient to prescribe bupropion in order to influence the excess weight:
- A. Quitting smoking
 - B. Metabolic syndrome
 - C. In men
 - D. With hereditary form of obesity
 - E. With high blood pressure
31. What is the effectiveness of isolated dietary therapy of obesity in% of the initial body weight?
- A. to 5%
 - B. to 10%
 - C. to 15%
 - D. to 25%
 - E. to 35%
32. What is the index (index) of the ratio of the circumference of the waist to the circumference of the thighs, indicating abdominal obesity in women?
- A.> 0.5
 - B.> 0.75
 - C.> 0.85
 - D.> 1.0
 - E.> 1.5
33. What is the index (index) of the ratio of the circumference of the waist to the circumference of the thighs, indicating abdominal obesity in men?
- A.> 0.5
 - B.> 0.75
 - C.> 0.85
 - D.> 1.0
 - E.> 1.5
34. What is the energy value of the protein (kcal / h)?
- A. 2
 - B. 4
 - C. 6
 - D. 9
 - E. 12
35. What is the energy value of fat (kcal / h)?
- A. 2
 - B. 4
 - C. 6
 - D. 9
 - E. 12
36. How long does life expectancy increase with the loss of 10 extra pounds (in years)?
- A. 1 year
 - B. 2 years
 - C. 3 years
 - D. 5 years
 - E. 10 years

37. What is the energy value of carbohydrates (kcal / h)?
- 2
 - 4
 - 6
 - 9
 - 12
38. What breath test is used to study the patient's energy status?
- ^{13}C -urease
 - ^{13}C -metacetinium
 - ^{13}C -octanoide
 - ^{13}C -bicarbonate
 - Hydrogen
39. What variant of a diet is most expedient for using for weight reduction at violation of tolerance to carbohydrates:
- Low-fat
 - Highly protein
 - Low glycemic index
 - Karelian Diet
 - Ornish Diet
40. Which BMI (kg / m²) corresponds to the 2nd degree of obesity:
- 18.5-25
 - 25-30
 - Pp. 30-35
 - 35-40
 - 40-45

Note. It is suggested to use test tasks (for those seeking higher education who have to take part in the license test exams in the current year, it is more appropriate to use tests of the "Step" type) and tests compiled by departments for rector's control.

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1. Prevention is:

- in medicine, a system of measures to prevent diseases, preserve health and prolong human life
- preventing the spread of mass non-communicable diseases a set of measures to reduce the level of environmental pollution
- a set of measures aimed at early detection and timely treatment of diseases

Task 2. Tertiary prevention is:

- type of prevention, ranking third in terms of effectiveness among all types of prevention
- prevention of the spread of diseases through their early diagnosis and timely treatment
- a set of measures aimed at ensuring a dignified death of doomed patients
- a set of measures to curb the progression of developed diseases and prevent relapses, the transition of diseases to a more severe form

Task 3. Advantages of evidence-based medicine

Task 4. The value of clinical trials for physician practice

Variant 2.

Task 1. Quaternary prophylaxis is:

- type of prevention, ranking fourth in terms of effectiveness among all types of prevention
- a set of measures aimed at ensuring a dignified death of the doomed patients

- C. prevention of the spread of diseases through their early diagnosis and timely treatment
- D. a set of measures to curb the progression of developed diseases and prevent relapses, the transition of diseases to a more severe form

Task 2. Preventive medicine is:

- A. a direction of medicine that develops and implements measures to reduce the spread of diseases
- B. an independent direction of medicine, traditionally including hygiene, microbiology and epidemiology
- C. an independent direction of medicine, ensuring a decrease in the incidence of diseases associated with environmental pollution

Task 3. Name the best available clinical databases

Task 4. The value of clinical trials for physician practice

Variant 3.

Task 1. The aging process is manifested by changes in metabolism, structure and function of various organs and systems of the body.

1. Indicate what changes in the activity of functional systems are observed during aging.
2. Indicate which functions do not change during aging. Why is this happening?

Task 2. List the drugs that cause hyper- or hypothyroidism in the elderly.

Variant 4.

Task 1. Specify the causes of circulatory failure in old age:

1. _____
2. _____
3. _____
4. _____
5. _____

Task 2. Typical ECG changes in the elderly:

Variant 5.

Task 1. Indicate symptoms that indicate an overdose of cardiac glycosides

1. _____
2. _____
3. _____

Task 2. List the drugs in elderly patients for the correction of hypertension with subacute heart failure.

Variant 6.

Task 1. Fill in the table of characteristics of BMI indicators (kg / m²)

BMI (Body Mass Index)	Characteristic
<18,5	Insufficient body weight

Task 2. Complete the table of the main manifestations of metabolic syndrome:

Sings	Characteristics
Abdominal type of obesity	Waist Measurement male .: female .:

Task 3. Fill in the table of mandatory items when collecting anamnesis in a patient with obesity:

No		Purpose of identify
1.	Complete anamnesis of nutrition	Disruption of diet, overeating, and more.
2.		
3.		
4.		
5.		

Task 4. List the main areas of correction of excess weight:

1. Dietotherapy _____
- _____
2. _____
3. _____
4. _____
5. _____

Task 5. List medicines to reduce excess body weight with proven clinical efficacy:

1. Orlistat _____
2. _____
3. _____
4. _____

Task 6. List the most common types of surgical treatment of obesity (bariatric surgery)

1. Establishment of an intragastric balloon _____
2. _____
3. _____
4. _____

Variant 7.

Task 1. Give the most common etiological causes of obesity and examples to them:

Etiological group	Examples
Iatrogenic causes	Medicines, surgical interventions on the hypothalamus

Task 2. Fill in the table of medicines that can lead to weight gain:

Groups	Drugs
Group of drugs that are associated with weight gain	Steroid hormones Glucocorticoids, megestrol acetate

Task 3. Fill in the table of laboratory tests (blood tests), which are recommended for the primary treatment of a patient with obesity:

№	Method of investigation	Purpose of the study
1.	Lipidogram	Assessment of the risk of atherogenic dyslipidemia
2.		
3.		
4.		
5.		

Task 4. List under what conditions it is necessary to carry out a rapid weight loss, taking into account the value of BMI > 30 kg / m²:

1. Age under 40 years
2. _____
3. _____
4. _____
5. _____
6. _____

Task 5. List the indications for surgical treatment of obesity:

1. BMI > 40 kg / m² _____
2. _____
3. _____
4. _____
5. _____

Task 6. Complete the obesity pharmacotherapy table:

Preparation	Mode of administration, dose	Adverse effects
Phentermine	Per os 15.30 or 37.5 mg / day	Dry in the mouth, Dizziness, insomnia, increased blood pressure, tachycardia

Variant 8.

Task 1. Fill in the classification table of obesity by severity:

Degree	Owerweight (%)
I	10 - 30
II	
III	
IV	

Task 2. Specify the value of the coefficient of physical activity (CFA) depending on the intensity of labor:

Group	Group Representatives	Indicator
I	Workers predominantly of intellectual labor	1,4
II		
III		
IV		
V		

Task 3. List what the daily energy expenditure consists of:

1. The main exchange _____
2. _____
3. _____

Task 4. Specify the criteria that increase the forecast of the effectiveness of the program for weight loss:

1. Loss of at least 2 kg in the first 4 weeks
2. _____
3. _____
4. _____
5. _____

Task 5. Under what conditions in the definition of obesity should not rely on the indicators of BMI:

1. Athletes _____
2. _____
3. _____
4. _____
5. _____

Task 6. List possible lesions for obesity from the gastrointestinal tract:

1. Gastroesophageal reflux disease
2. _____
3. _____
4. _____
5. _____

List of recommended literature:

Basic:

6. Harrison's Endocrinology. Ed. by J. Larry Jameson, Mc Graw – Hill., New York, Chicago, Toronto. e.a. 5rd edition, 2019. - 608 p.

7. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMed. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
8. Davidson's "Principles of Practice of Medicine" 20th edition 2016, Elsevier limited.
9. Harrison's "Principles of Internal Medicine" Volume 1,2, 2018, USA. - Cardiology

Additional:

1. <https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/evidence-based-medicine-and-clinical-guidelines>
2. <https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/introduction-to-clinical-decision-making>
3. <https://www.msmanuals.com/professional/special-subjects/clinical-decision-making/understanding-medical-tests-and-test-results>
4. Hwang U, Dresden SM, Rosenberg MS, et al : Geriatric Emergency Department Innovations: Transitional Care Nurses and Hospital Use. J Am Geriatr Soc. 2018
5. <https://www.msmanuals.com/professional/geriatrics/providing-care-to-older-adults/hospital-care-and-older-adults>
6. Hales CM, Carroll MD, Fryar CD, et al : Prevalence of obesity and severe obesity among adults: United States, 2017–2018. NCHS Data Brief, no 360. Hyattsville, MD: National Center for Health Statistics, 2020.
7. Wilding JPH, Batterham RL, Calanna S, et al : Once-weekly semaglutide in adults with overweight or obesity. *N Engl J Med* 18;384(11):989, 2021.

Topic: Anemia: classification, etiopathogenesis, symptoms. Anemia: diagnosis, treatment. Acute leukemia.

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

Key words: iron deficiency anemia, B12 and folic acid deficiency anemia, aplastic anemia, hemolytic anemia. acute myeloblastic leukemia, acute lymphoblastic leukemia.

Theoretical questions for the lesson:

1. <https://ehaweb.org/guidelines/clinical-practice-guidelines/guidelines-workshops-3/bleeding-disorders-2/>
2. <https://www.guidelinesinpractice.co.uk/haematological-conditions/top-tips-anaemia-in-adults/454245.article>
3. <https://ehaweb.org/guidelines/clinical-practice-guidelines/guidelines-workshops-3/cmml-2/>
4. <https://ehaweb.org/guidelines/clinical-practice-guidelines/guidelines-workshops-3/c11-2/>

Note. Depending on the complexity and specificity of the educational topic, the availability of modern educational and scientific literature, this section can be presented with different levels of detail (the right to choose the form of displaying the content remains with the department):

Option I: the content of the topic can be presented in the form of theses, which reflect the main information blocks of the topic, its main provisions, concepts, criteria, signs, relationships, interdependence, etc.;

Option II: justified in those cases when students of higher education have the opportunity to use modern literature on the topic and there is no need to explain it in detail in the methodical development, in this case it will be methodologically justified to display the content of the topic in the form of its structural and logical scheme;

Option III: in the absence of a sufficient amount of modern literature on the topic, this section in methodological development can be provided in the form of the text of the topic in an expanded and detailed version;

Option IV: in the presence of relevant literature that details the content of the topic, a specific reference to certain literary sources is quite sufficient.

Questions for self-control

1. Define the concept of anemia.
2. Indicate the main etiological factors, features of pathogenesis.
3. Modern classification of anemia.
4. The main clinical signs of anemia.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment.
7. Define the concept of leukemia.
8. Indicate the main etiological factors, features of pathogenesis.
9. Modern classification of leukemia.
10. The main clinical signs of leukemia.
11. Laboratory and instrumental research of patients, interpretation of the obtained results.
12. Basic principles of treatment.

Approximate tasks for the study of theoretical material

4. Make a dictionary of basic concepts on the topic:

The main terms of the topic

Term	Definition
Anemia	is a pathological condition characterized by a decrease in the amount of hemoglobin and / or red blood cells per unit volume of blood below normal for a given age and sex index.
Iron deficiency anemia is a clinical	hematologic syndrome, based on a violation of the synthesis of hemoglobin due to iron deficiency due to the negative balance of this trace element in the body for a long time and is characterized by a violation of the synthesis of hema.
Megaloblastic anemia	Megaloblastic anemia is a group of anemias caused by a violation of the synthesis of DNA and RNA in cells, resulting in a breakdown of their division.
Aplastic anemia	is a heterogeneous disease characterized by deep oppression of bone marrow hematopoiesis and pancytopenia, which determine its basic manifestations.
Hemolytic anemia	is a group of anemias characterized by a decrease in the average life expectancy of red blood cells, which is due to their increased destruction and accumulation in the blood of products of decay of red blood cells - bilirubin or free hemoglobin, as well as the appearance of hemosiderin in urine.
Minkowski- Shofar	anemia is an autosomal dominant disease caused by a defect in the proteins of the erythrocytes membrane, resulting in its permeability being disturbed.

Term	Definition
hemoblastosis	tumors arising from cells of the hematopoietic tissue
leukemia	hemoblastosis, which primarily occurs in the red bone marrow.

leukemia	the disease caused by tumors developing from the cells of the hematopoietic tissue affects the bone marrow and is characterized by the replacement of normal bone marrow hemopoiesis with clonal proliferates consisting of less differentiated and functionally inactive cells
acute leukemia	this is a blast tumor (the first 4 classes of hematopoiesis). Acute leukemia never goes into chronic. Tumors for ever lost the ability to differentiate
Clinico-hematologic remission	a concept that includes the absence of a clinic, the normalization of indicators of a general blood test, the normalization of the bone marrow picture, and the absence of mutant cells in the punctate of the bone marrow.
leukemoid reactions	changes in the blood and organs of the blood, resembling leukemia and other tumors of the hematopoietic system, but always have a reactive character and do not transform into the tumor to which they are similar.

Fill in the daily protocol of preparation for a practical lesson on the topic (according to the decision of the meeting of the department).

https://info.odmu.edu.ua/chair/internal_medicine1/files/507/en

II. Practical work (tasks) that will be performed in class:

Task 1. A 48 years old woman complains of general weakness, dizziness, loss of appetite. It was made gastric resection because of ulcer disease 3 years ago. Objectively: skin is pale, brittle of nails, celonychia. Cardiac rate-96/min. Heart sounds are rhythmic, systolic murmur over the apex of the heart while auscultation. Liver is not enlarged. Blood analysis: RBC- $2,6 \times 10^{12}/l$, Hb-80 g/l, color index-0,7, reticulocytes-1%, WBC- $3,7 \times 10^9/l$, segmented-56%, lymphocytes-34%, monocytes-6%, BSR-7 mm/h. RBC are hypochromic; anisocytosis, poikilocytosis. Iron in blood serum-5 mkmol/l. What is your diagnosis?

Task 2. The patient 26 years old complains of weakness, headache, dizziness, palpitations, bleeding gums, subcutaneous hemorrhage. Sick for a month. Obj: skin and mucous membranes are pale, single hemorrhage on the shins and thighs, bleeding gums. Pulse - 96 beats / min. Cardiac weakness systolic sound. Over the top of lungs - vesicular breaths. Nourishes - normal. Blood test: RBC - $1.5 \times 10^{12} / l$, Hb-58 g / L, CI - 1.2; WBC - $1.4 \times 10^9 / l$, e-2%, s - 27%, seg - 71%, PLT - $24 \times 10^9 / l$. Your preliminary diagnosis?

Task 3. Patient 25 years old, 5 months was treated for acute lymphoblastic leukemia. He had received courses of chemotherapy on the program of induction and consolidation of remission. During the last week appeared headaches, decreased vision in his left eye, there was a weakness in his left hand. Analysis of blood: RBC – $3,9 \times 10^{12} / l$, Hb-136g/l, CI-1,0. Leuk. – $8,8 \times 10^9 / l$, band neutrophils - 10%, segm. neutrophils -60%, lymphocytes-25%, BSR-18mm/h, PLT - $150 \times 10^9 / l$. Myelogram: blast cells - 4%, lymphoid elements - 27%. What is the cause of the deterioration of the patient?

Task 4. What disease is characterized by this blood analysis: RBC – $3,5 \times 10^{12} / l$, Hb - 109 g / L, color index – 0,9; reticulocytes -1%, PLT - $140 \times 10^9 / l$, WBC – $320 \times 10^9 / l$, band neutrophils-2%, segmented-16%, lymphocytes-82%, BSR-25mm/h?

III. Test questions for self-control:

- Which of the following drugs should be used to treat IDA?
 - Propranolol
 - Prednisolone

- C. Heferol
 - D. Hydrochlorothiazide
 - E. Enalapril
2. The lower limit of serum iron in men:
 - A. 13 $\mu\text{mol} / \text{L}$
 - B. 8 $\mu\text{mol} / \text{L}$
 - C. 15 $\mu\text{mol} / \text{L}$
 - D. 6 $\mu\text{mol} / \text{L}$
 - E. 20 $\mu\text{mol} / \text{L}$
 3. The lower limit of the serum iron level in women:
 - A. 17 $\mu\text{mol} / \text{L}$
 - B. 12.5 $\mu\text{mol} / \text{L}$
 - With 9 $\mu\text{mol} / \text{L}$
 - E. 25 $\mu\text{mol} / \text{L}$
 - E. 7 $\mu\text{mol} / \text{L}$
 4. The normal content of vitamin B12 in the serum is:
 - A. 100-200 $\mu\text{g} / \text{L}$
 - B. 300-500 $\mu\text{g} / \text{L}$
 - C. 50-100 $\mu\text{g} / \text{L}$
 - D. 200-1000 $\mu\text{g} / \text{L}$
 - E. 2000-3000 $\mu\text{g} / \text{L}$
 5. The dose of vitamin B12 (cyanocobalamin) for the treatment of anemia:
 - A. 10-20 mcg / day
 - B. 50-100 mcg / day
 - C. 100-200 mcg / day
 - D. 200-400 mcg / day
 - E. 1000-2000 mcg / day
 6. Which of the following drugs refers to drugs for the treatment of IDA?
 - A. Hydrochlorothiazide
 - V. Nifedipine
 - With Nicergoline
 - D. Sandimmun
 - E. Sorbifer
 7. What high doses of antilymphocytic globulin are used to treat AA?
 - A. 1-5 mg / kg 4-9 days
 - B. 5-8 mg / kg 8-10 days
 - C. 10-30 mg / kg 4-6 days
 - D. 20-40 mg / kg 5-7 days
 - E. 50-60 mg / kg 3-5 days.
 8. What type of bleeding is typical for AA?
 - A. Vasculitally-purplish
 - B. Angiomatous
 - C. Spotted-petechial
 - D. Mixed
 - E. The hematoma
 9. Which of the following drugs is the drug of choice in patients with AA?
 - A. Prednisolone
 - B. Hydrochlorothiazide
 - C. Methotrexate
 - D. Leukeran
 - E. 6-Mercaptopurine
 10. Tactics of treatment for Minkowski-Schoffar anemia:

- A. Purpose of high doses of prednisolone
 - B. The purpose of the immunoglobulin
 - C. Bone marrow transplantation
 - D. Splenectomy
 - E. Cholecystectomy
11. Which of the following drugs is a glucocorticoid?
- A. Methylprednisolone
 - B. L-arginine
- With hydralazine
- D. Hydrochlorothiazide
 - E. Ekvoral
12. Severe anemia is a decrease in HB below:
- A. 90 g / L
 - B. 80 g / L
 - C. 50 g / L
 - D. 40 g / L
 - E. 70 g / L
13. Which of the following drugs is used in the treatment of IDA?
- A. Moxonidine
 - B. Dexamethasone
 - C. From Totem
 - D. Hydralazine
 - E. Methyldopa
14. The side effects of cyclosporine include:
- A. Hypokalemia
 - B. Impaired renal, hepatic function
 - C. Hyperglycemia, ketoacidosis
 - E. Dysfunction of the heart
 - E. Impaired brain function
15. For mild anemia the level of HB is characteristic:
- A. 90-110 g / L
 - B. 70-90 g / L
 - C. 50-70 g / L
 - D. 120-140 g / L
 - E. 110-130 g-l
16. Which of the given drugs should be prescribed for the treatment of acute lymphoblastic leukemia?
- A. Imifos
 - B. Hydroxy urea
 - C. Heferol
 - D. Wincrestine
 - E. Leukeran
17. How is the dose of preparations calculated for the appointment of PCT for the treatment of GL:
- A. Per kg
 - B. The length of the body
 - C. The age of the patient
 - D. On m² of the area
18. Which of the following drugs refers to drugs for AML treatment?
- A. Hydroxyurea
 - B. Cytosara
 - C. Cyclophosphamide
 - D. Sandimmun

E. Leukeran

19. Tactics of treatment with AL:

A. Purpose of high doses of chemotherapy

B. The purpose of the immunoglobulin

C. Bone marrow transplantation

D. Splenectomy

E. Cholecystectomy

Note. It is suggested to use test tasks (for those seeking higher education who have to take part in the license test exams in the current year, it is more appropriate to use tests of the "Step" type) and tests compiled by departments for rector's control.

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1 Fill in the table of morphological classification of anemia:

Morphological type of anemia	The main disorder	Clinical syndrome
Macrocytic (MCV > 100)	Vitamin B12 and folic acid deficiency	Megaloblastic anemia due to malnutrition and absorption

Task 2. Complete the table of the main clinical symptoms of acute posthemorrhagic anemia, depending on the magnitude of blood loss:

Blood loss	Clinical signs
10% - 500 ml	Symptoms not present
20% - 1000 ml	
30% - 1500 ml	
40% - 2000ml	

Task 3. Fill in the table of obligatory laboratory researches of the patient IDA:

№	Method of examination	Laboratory changes
1.	complete blood count	Anisocytosis of erythrocytes, moderate hypochromia, decrease first of all hemoglobin
2.		
3.		
4.		
5.		
6.		

Task 4. List the main etiological factors of IDA:

1. Chronic hemorrhage: hyperpolymenorrhea, childbirth, abortion, chronic bleeding from the digestive tract (peptic ulcers, erosions, tumors, diverticula, NPC, Crohn's disease, hemorrhoids, parasite infestation), hematuria, bloodletting, hemodialysis.

- 2.
- 3.
- 4.
- 5.
- 6.

Task 5. Fill in the table for signs of hemolysis:

Intracellular hemolysis	Intravascular hemolysis
Jaundice of the skin and protein membranes of the eye	Urine is red, black or brown

Task 6. Fill in the table of the main syndromes with AA:

Syndrome	Clinical signs
Hemorrhagic	Nasal bleeding, bleeding from the gums, uterine, renal, etc.

Variant 2.

Task 1. Fill in the table clinical classification of IDA:

№	Stage	
1.	Preclinical stage	1. Prelatent iron deficiency
		1.2. Latent iron deficiency
2.		
3.		

Task 2. Fill in the table of the main symptoms and clinical signs of syndromes in megaloblastic anemia:

Syndrome	Symptoms of organ damage / systems
Circulatory hypoxic	Dizziness, headache, weakness, shortness of breath, palpitation, skin pallor, fatigue

Task 3. Fill in the table of laboratory tests for the diagnosis of megaloblastic anemia:

№	Method of examination	Changes

1.	Complete blood count, erythrocytes	hyperchromic anemia, hypo- or normoregenerator, macro, or megalocytic, in the erythrocytes there are Jolly bodies or Kebot rings.
	Leukocytes	
	Platelets	
2.		
3.		

Task 4. Write treatment of AA:

1. GCS - prednisolone in a dose of 1-1,5-2 mg / kg for 2-3-4 weeks with a gradual decrease in dose per 1 2 tablets every 3-5-7 days with the transition to maintenance doses (15-20 Mg / day).
- 2.
- 3.
- 4.

Task 5. Write down the etiological factors of acquired aplastic anemia:

1. Idiopathic AA.
- 2.
- 3.
- 4.
- 5.
- 6.

Task 6. Fill in the table of international criteria of gravity AA:

Form of aplastic anemia	Blood	Bone marrow
mild	neutrophils $<2.5 \times 10^9 / l$	Different degree of decrease in cellular composition

Variant 3.

Task 1. Write down the indications for transfusion of erythrocyte mass, washed or thawed erythrocytes

1. Severe course of iron deficiency anemia (hemoglobin level $<50 \text{ g / l}$), development of deep metabolic processes and anemic hypoxia.
- 2.
- 3.
- 4.

Task 2. Fill in the table of anemia classifications by severity:

Level of gravity	Hemoglobin level
Lightweight	110-90 g / l

Task 3. Fill in the table of compulsory examinations of patient AA:

No	Method	Purpose of examination
1.	Complete blood count	normochromic anemia, reticulocytopenia, thrombocytopenia, leukopenia, relative lymphocytosis, and ESR increased.
2.		
3.		

Task 4. Write down the clinical classification of hereditary hemolytic anemia:

1. caused by the violation of the erythrocyte membrane: hereditary microspherocytosis, elipsocytosis, dentocytosis, pyrope-kylocytosis, hereditary absence of Rh-antigens, disruption of the lipid structure.
- 2.
- 3.
- 4.

Task 5. Write down the classification of acquired hemolytic anemia:

1. Hemolytic anemia due to the action of antibodies: isoimmune (hemolytic disease of the fetus and newborns),
- 2.
- 3.
- 4.

Task 6. Fill in the table differential diagnosis of anemia:

Symptom	Thalassemia	Acquired hemolytic anemia	iron deficiency anemia
Pathogenesis	Violation of globin synthesis	Formation of AT or toxic	Iron deficiency
Hereditary predisposition			
Jaundice			
Resistance of erythrocytes			
Color index			
Serum iron level			

Variant 4.

Task 1. Complete the classification table for chronic myeloproliferative diseases:

Abbreviated name	Variant CMPD of FAB classification	
CML	Chronic myeloproliferative leukemia	

Task 2. Fill in the table of the main clinical symptoms of acute post-hemorrhagic anemia, depending on the magnitude of blood loss:

hemorrhage	Clinical signs
10% - 500 ml	Symptoms aren't present
20% - 1000 ml	
30% - 1500 ml	
40% - 2000 ml	

Task 3. Fill in the table of basic diagnostic methods AL:

№	Method of examination	Laboratory changes
1.	Complete blood count	normochromic (less often hyperchromic) anemia, thrombocytopenia, more frequent leukocytosis, the appearance of a large number of blasts and leukemia "failure"
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Task 4. List theories of the origin of leukemia:

- Viral - the presence of latent leukogenous viruses in the body

Task 5. Stages of the polycythemia vera:

Stages	Characteristic
I – initial	Asymptomatic current. Observe a slight hyperemia of the skin and mucous membranes, an increase in hemoglobin and erythrocytes, leukocytes and platelets - the norm

Task 6. Fill in the table of criteria of complete remission in CLL:

Method of examination	Clinical manifestations	Method of examination	Clinical manifestations
Instrumental investigation	Lymphadenopathy and hepatosplenomegaly aren't present		

Variant 5.

Task 1. Fill in the table of the main symptoms and clinical signs of syndromes in case of AL:

Syndrome	Symptoms of organ / system damage
Anemic	Dizziness, headache, weakness, shortness of breath, palpitations, sometimes flashing "flies" before the eyes.

Task 2. Fill in the table of the main symptoms and clinical signs of the syndromes during the period of developed clinical manifestations with CML:

Syndrome	Symptoms of organ / system damage
Anemic	Dizziness, headache, weakness, shortness of breath, palpitations, sometimes flashing "flies" before the eyes.
Hemorrhagic	
Immune Deficiency	
Intoxicating	
Extramedullary metaplasia	

Task 3. Fill in the table of clinical stages of chronic lymphocytic leukemia:

Stages	Group of risk	Clinic sings
I	low	Lymphocytosis in the blood and bone marrow
I	moderate	
II	moderate	
III	high	
IV	high	

Task 4. Criteria for diagnosis of the chronic stage of CML:

1. In the blood: leukocytosis > 30 g / L with a shift in the leukogram;

Task 5. Write down the criteria for complete remission of acute lymphoblastic leukemia:

1. Absence of symptoms of intoxication.
2. _____
3. _____
4. _____

Task 6. Fill in the classification table for acute non-lymphoblastic leukemia and their morphocytochemical features:

Morphocytochemical form	Variant of acute leukemia by FAB classification	Main cytochemical parameters

Undifferentiated	M0	All reactions are negative

List of recommended literature:

Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition
2. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
3. Moretti D, Goede JS, Zeder C, et al : Oral iron supplements increase hepcidin and decrease iron absorption from daily or twice-daily doses in iron-depleted young women. *Blood* 126(17):1981-1989, 2015.
4. DeZern AE, Zahurak M, Symons H, et al : Alternative donor transplantation with high-dose post-transplantation cyclophosphamide for refractory severe aplastic anemia. *Biol Blood Marrow Transplant* 23(3):498–504, 2017.
5. Winkler T, Fan X, Cooper J, et al : Treatment optimization and genomic outcomes in refractory severe aplastic anemia treated with eltrombopag. *Blood* 133(24):2575–2585, 2019.
6. <https://www.msdmanuals.com/professional/hematology-and-oncology/leukemias/overview-of-leukemia>
7. <https://www.msdmanuals.com/professional/hematology-and-oncology/leukemias/acute-lymphoblastic-leukemia-all>
8. <https://www.msdmanuals.com/professional/hematology-and-oncology/leukemias/acute-myeloid-leukemia-aml>

Additional:

1. <https://www.msdmanuals.com/professional/hematology-and-oncology/approach-to-the-patient-with-anemia/etiology-of-anemia>
2. <https://www.msdmanuals.com/professional/hematology-and-oncology/approach-to-the-patient-with-anemia/evaluation-of-anemia>
3. <https://www.msdmanuals.com/professional/hematology-and-oncology/anemias-caused-by-hemolysis/autoimmune-hemolytic-anemia?query=hemolytic%20anemia>
4. <https://www.msdmanuals.com/professional/hematology-and-oncology/anemias-caused-by-deficient-erythropoiesis/aplastic-anemia?query=aplastic%20anemia>
5. [Berry DA, Zhou S, Higley H, et al](#) : Association of minimal residual disease with clinical outcome in pediatric and adult acute lymphoblastic leukemia: A meta-analysis. *JAMA Oncol* 3(7): e170580, 2017.
6. [Kantarjian H, Stein A, Gökbuğet N, et al](#) : Blinatumomab versus chemotherapy for advanced acute lymphoblastic leukemia. *N Engl J Med* 376(9):836–847, 2017.
7. [Maude SL, Laetsch TW, Buechner J, et al](#) : Tisagenlecleucel in children and young adults with B-cell lymphoblastic leukemia. *N Engl J Med* 378(5):439–448, 2018.
8. [Stone RM, Mandrekar SJ, Sanford BL, et al](#) : Midostaurin plus chemotherapy for acute myeloid leukemia with a *FLT3* mutation. *N Engl J Med* 377(5):454–464, 2017.
9. [Lancet JE, Uy GL, Cortes JE, et al](#) : CPX-351 (cytarabine and daunorubicin) liposome for injection versus conventional cytarabine plus daunorubicin in older patients with newly diagnosed secondary acute myeloid leukemia. *J Clin Oncol* 36(26):2684–2692, 2018.
10. [Perl AE, Martinelli G, Cortes JE, et al](#) : Gilteritinib or chemotherapy for relapsed or refractory *FLT3*-mutated AML. *N Engl J Med* 381:1728–1740. 2019.
11. [Eichhorst B, Fink AM, Bahlo J et al](#) : First-line chemioimmunotherapy with bendamustine and rituximab versus fludarabine, cyclophosphamide, and rituximab in patients with advanced chronic lymphocytic leukaemia (CLL10): An international, open-label, randomised, phase 3, non-inferiority trial. *Lancet Oncol* 17:928–942, 2016.

Topic: Chronic leukemia. Hemophilia: definition, main clinical forms, diagnosis. Hemophilia: treatment.

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

Key words: chronic myelogenous leukemia, chronic lymphocytic leukemia, polycythemia vera, myelodysplastic syndrome. platelets, hemophilia A, hemophilia B, hemophilia C.

Theoretical questions for the lesson:

1. <https://ehaweb.org/guidelines/clinical-practice-guidelines/guidelines-workshops-3/cmml-2/>
2. <https://ehaweb.org/guidelines/clinical-practice-guidelines/guidelines-workshops-3/cil-2/>
3. <https://www.wfh.org/en/resources-education/educational-materials>
4. <https://elearning.wfh.org/resource/treatment-guidelines/>
5. <https://elearning.wfh.org/resource/diagnosis-of-hemophilia-and-other-bleeding-disorders-a-laboratory-manual/>

Note. Depending on the complexity and specificity of the educational topic, the availability of modern educational and scientific literature, this section can be presented with different levels of detail (the right to choose the form of displaying the content remains with the department):

Option I: the content of the topic can be presented in the form of theses, which reflect the main information blocks of the topic, its main provisions, concepts, criteria, signs, relationships, interdependence, etc.;

Option II: justified in those cases when students of higher education have the opportunity to use modern literature on the topic and there is no need to explain it in detail in the methodical development, in this case it will be methodologically justified to display the content of the topic in the form of its structural and logical scheme;

Option III: in the absence of a sufficient amount of modern literature on the topic, this section in methodological development can be provided in the form of the text of the topic in an expanded and detailed version;

Option IV: in the presence of relevant literature that details the content of the topic, a specific reference to certain literary sources is quite sufficient.

Questions for self-control

1. Define the concept of leukemia.
2. Indicate the main etiological factors, features of pathogenesis.
3. Modern classification of leukemia.
4. The main clinical signs of leukemia.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment.
7. Define the concept of hemophilia.
8. Indicate the main etiological factors, features of pathogenesis.
9. Modern classification of hemophilia.
10. The main clinical signs of hemophilia.
11. Laboratory and instrumental research of patients, interpretation of the obtained results.
12. Basic principles of treatment.

Approximate tasks for the study of theoretical material

Make a dictionary of basic concepts on the topic:

The main terms of the topic

Term	Definition
hemoblastosis	tumors arising from cells of the hematopoietic tissue

leukemia	hemoblastosis, which primarily occurs in the red bone marrow.
leukemia	the disease caused by tumors developing from the cells of the hematopoietic tissue affects the bone marrow and is characterized by the replacement of normal bone marrow hemopoiesis with clonal proliferates consisting of less differentiated and functionally inactive cells
acute leukemia	this is a blast tumor (the first 4 classes of hematopoiesis). Acute leukemia never goes into chronic. Tumors for ever lost the ability to differentiate
Clinico-hematologic remission	a concept that includes the absence of a clinic, the normalization of indicators of a general blood test, the normalization of the bone marrow picture, and the absence of mutant cells in the punctate of the bone marrow.
leukemoid reactions	changes in the blood and organs of the blood, resembling leukemia and other tumors of the hematopoietic system, but always have a reactive character and do not transform into the tumor to which they are similar.
Chronic myeloid leukemia	myeloproliferative process, resulting from leukemic transformation of early myeloid progenitor cells, which differentiate into mature forms
Polycythemia Vera	myeloproliferative disease, which is a tumor of the hematopoietic tissue with hematopoiesis disturbance at the level of myelopoiesis progenitor cells and is characterized mainly by an increase in the mass of erythrocytes, with a simultaneous increase in the number of leukocytes and platelets
Chronic lymphatic leukemia	a tumor whose substrate is predominantly mature lymphoid elements, in 95% of cases have B-cell origin and only 5% have a T-cell phenotype

Term	Definition
Thrombocytopenia	A hematologic symptom characterized by a decrease in the number of platelets is less than $100 \times 10^9 / L$ in peripheral blood.
The May-Heglin anomaly	Triad of symptoms: thrombocytopenia, giant forms of platelets, basophilic spindle-shaped inclusions in leukocytes (Dele's body). It is inherited by autosomal dominant type. Characterized by the appearance of bruises.
Wiskott-Aldrich Syndrome:	Immunodeficiency diseases, inherited by a recessive, X-linked type, is manifested in the first months of a child's life. The triad of symptoms: thrombocytopenia, eczematous skin rash and a tendency to infections.
Coagulopathies	Hemorrhagic syndromes caused by disorders in the blood coagulation system.

Hemophilia	<p>Hereditary disease due to deficiency or molecular anomalies of one of the procoagulants involved in the activation of blood coagulation "by internal mechanism."</p> <p>Hemophilia A is hereditary coagulopathy due to a deficiency or molecular anomaly of factor VIII of blood coagulation. Hemophilia B hereditary coagulopathy due to deficiency or molecular anomalies of factor IX blood clotting (antihemophilic globulin B, factor Christmas). Hemorrhagic diathesis due to deficiency of blood coagulation factor XI is known in the literature as hemophilia C, or Rosenthal's disease.</p>
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Fill in the daily protocol of preparation for a practical lesson on the topic (according to the decision of the meeting of the department).

https://info.odmu.edu.ua/chair/internal_medicine1/files/507/en

II. Practical work (tasks) that will be performed in class:

Task 1. Patient 25 years old, 5 months was treated for acute lymphoblastic leukemia. He had received courses of chemotherapy on the program of induction and consolidation of remission. During the last week appeared headaches, decreased vision in his left eye, there was a weakness in his left hand.

Analysis of blood: RBC – $3,9 \times 10^{12} / l$, Hb-136g/l, CI-1,0. Leuk. – $8,8 \times 10^9 / l$, band neutrophils - 10%, segm. neutrophils -60%, lymphocytes-25%, BSR-18mm/h, PLT - $150 \times 10^9 / l$. Myelogram: blast cells - 4%, lymphoid elements - 27%. What is the cause of the deterioration of the patient?

Task 2. What disease is characterized by this blood analysis: RBC – $3,5 \times 10^{12} / l$, Hb - 109 g / L, color index – 0,9; reticulocytes -1%, PLT - $140 \times 10^9 / l$, WBC – $320 \times 10^9 / l$, band neutrophils-2%, segmented-16%, lymphocytes-82%, BSR-25mm/h?

Task 3. Patient 20-year old complains of pain in right elbow, which appeared suddenly. The skin over the joint hyperemic, moves sharply limited. From history we know that his father was suffering from hemophilia A. What is first aid in terms of modern standards of medical care to patients with hemophilia?

Task 4. Patient 27 years old, after intense activity (long transition) felt a pain in the lumbar region, marked discharge of dark urine. On examination: skin is pale. Pulse - 98 beats / min. AP - 110/70 mmHg Cardiac rhythm is correct, relaxed tones, systolic murmur over the apex. The abdomen was soft. Liver and spleen were not enlarged. Symptom of Pasternatskiy is positive on both sides. Analysis of blood: RBC – $2,7 \times 10^{12} / l$, Hb-80g/l, CI-0,85. Leuk. – $14 \times 10^9 / l$, band neutrophils - 12%, segm. neutrophils -74%, lymphocytes-6 %, BSR-40mm/h. Analysis of urine: dark brown, leuk. - 2-3. Test for free hemoglobin is positive. Bilirubin of blood - 16.0 micromol / liter. Your diagnosis?

III. Test questions for self-control:

- Which of the given drugs is appropriate for the treatment of chronic myeloid leukemia?
 - Imifos
 - Hydroxyurea
 - Heferol
 - Vincristine
 - Leukeran
- Components of the treatment regimen for CLL COP are:
 - Vincristine + cyclophosphamide + prednisolone
 - Doxorubicin + cytosar + prednisolone
 - Prednisolone + asparks + calcium gluconate
 - Purinethol + Methotrexate + Dexamethasone
 - Leukeran + prednisolone + cytosar
- Criteria for complete remission with CML:

- A. Leukocytes $<50 \times 10^9 / L$, normalization of the formula, a rack of splenomegaly
 - B. Leukocytes $<30 \times 10^9 / L$, normalization of the formula, splenomegaly persist
 - C. leukocytes $<20 \times 10^9 / l$, normalization of the formula, absence of splenomegaly
 - D. Leukocytes $<15 \times 10^9 / l$, normalization of the formula, splenomegaly persists
 - E. Leucocytes $<9 \times 10^9 / l$, normalization of the formula, absence of splenomegaly
4. Which of the given drugs should be prescribed for the treatment of acute lymphoblastic leukemia?
- A. Imifos
 - B. Hydroxy urea
 - C. Heferol
 - D. Wincrestine
 - E. Leukeran
5. How is the dose of preparations calculated for the appointment of PCT for the treatment of GL:
- A. Per kg
 - B. The length of the body
 - C. The age of the patient
 - D. On m^2 of the area
6. Which of the following drugs refers to drugs for AML treatment?
- A. Hydroxyurea
 - V. Cytosara
 - C. Cyclophosphamide
 - D. Sandimmun
 - E. Leukeran
7. How many lymphocytes in the blood are characteristic for complete remission with CLL?
- A. $> 10 \times 10^9 / L$
 - B. $< 15 \times 10^9 / L$
 - C. $> 1.5 \times 10^9 / L$
 - D. $< 4.0 \times 10^9 / L$
 - E. $> 5.5 \times 10^9 / L$
8. What type of bleeding is typical for CML?
- A. Vasculitally-purple
 - B. Angiomatous
 - C. Spotted-petechial
 - D. Mixed
 - E. The hematoma
9. Tactics of treatment with AL:
- A. Purpose of high doses of chemotherapy
 - B. The purpose of the immunoglobulin
 - C. Bone marrow transplantation
 - D. Splenectomy
 - E. Cholecystectomy
10. Tactics of treatment in the erythremic stage of polycythemia:
- A. Purpose of high doses of chemotherapy
 - B. The purpose of the immunoglobulin
 - C. Bone marrow transplantation
 - D. Blood Exfusion
 - E. Blood transfusion
11. Which of the following drugs is GCS?
- A. Prednisolone
 - B. L-arginine
 - S. Hydralazine
 - D. Hydrochlorothiazide
 - E. Ekvoral

12. Preparations included in the "5 + 2" schemes, treatment of the blast crisis:
- Cyclophosphamide + prednisolone
 - Vinkristin + methotrexate + leucovorin
 - Leukeran + prednisolone
 - Dexamethasone + Vepeside
 - Cytosara + Rubomycin
13. Which of the following chemotherapy drugs is used in the treatment of IP?
- vincristine
 - cyclophosphamide
 - gidroksecovinoyu
 - Methotrexate
 - cytosar
14. Side effects of cytotoxic drugs include:
- Hypokalemia
 - Impaired renal, hepatic function
 - Hyperglycaemia, ketoacidosis
 - Hypoplasia of the bone marrow
 - Violation of the function of the brain
15. Side effects of cytotoxic drugs include:
- Hypokalemia
 - Impaired renal, hepatic function
 - Hyperglycemia, ketoacidosis
 - Bone marrow hypoplasia
 - Dysfunction of the brain
16. What treatment should I give to a patient with haemophilia A?
- Heparin
 - Thrombose concentrate
 - With Cryoprecipitate
 - Prednisolone
 - Dicinon
17. What is the most likely diagnosis, if the coagulogram of APTTV is 89c:
- Hemorrhagic vasculitis
 - Werlhof's disease
 - Thrombocytopathy
 - Hypoplastic anemia
 - Hemophilia
18. The content of platelets in the blood is $47 \times 10^9 / l$, all other indicators are within the norm. What is the most likely diagnosis?
- Idiopathic thrombocytopenic purpura
 - Hemolytic anemia
 - Chronic iron deficiency anemia
 - Hemophilia
 - Hemorrhagic vasculitis
19. A teenager who is sick with hemophilia B, hemarthrosis of the knee joint. What should be assigned to the patient in the first place:
- Washed platelets
 - Freshly frozen plasma
 - Dry plasma
 - Albumin placental
 - Aminocaproic acid
20. What type of hemophilia is bleeding?
- Mixed (synthetically-hematonic)

- B. petechial-spotted
- S. Vasculitally-purple
- D. Angiomatous
- E. The hematoma

21. In the marrow punctate, the high content of megakaryocytes.

What pathology can you think about?

- A. Chronic hepatitis
- B. Chronic lymphocytic leukemia
- C. Aplastic anemia
- D. Acute leukemia
- E. Idiopathic thrombocytopenic purpura

22. Haemophilia patient A was hospitalized in connection with the appearance of melena. Choose the required daily dose for the introduction of cryoprecipitate:

- A. 100-150 units per 1 kg of body weight
- B. 1 -2 From 1 kg of body weight
- C. 5-10 units per 1 kg of body weight
- D. 10-15 units per 1 kg of body weight
- E. 60-100 Units per 1 kg of body weight

23. What kind of disease can be thought of if clinically there is a symmetrical rash on the skin of the shins that does not change when pressed, not accompanied by itching, pain in the knee joints?

- A. Thrombocytopenia
- B. Hemophilia
- C. Hemorrhagic vasculitis
- D. Rheumatoid arthritis
- E. Systemic lupus erythematosus

24. A 15-year-old child had a Kefalo-hematoma in childhood. What is the most likely diagnosis?

- A. Shenlain's disease-Henoch disease
- B. Rundu-Osler disease
- C. Thrombocytopenic purpura
- D. DIC-Syndrome
- E. Hemophilia

25. The patient has menorrhagia, bleeding gums, platelets - $30 \times 10^9 / l$, bleeding time - 14 min. What is the most likely diagnosis in this case?

- A. Hemophilia A
- C. Werlhof's disease
- C. Hemorrhagic vasculitis
- D. Willebrand's disease
- E. Rundu-Osler disease

26. The patient, 20 years old, has hemophilia and erosive gastritis. The appointment of one of the following medicines is the first in the case of hospitalization?

- A. Cryoprecipitate
- V. Pantoprazole
- From the erythrocyte mass
- D. Prednisolone
- E. Epsilon-aminocaproic acid

Note. It is suggested to use test tasks (for those seeking higher education who have to take part in the license test exams in the current year, it is more appropriate to use tests of the "Step" type) and tests compiled by departments for rector's control.

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1. Fill in the table of the main symptoms and clinical signs of syndromes in case of AL:

Syndrome	Symptoms of organ / system damage
Anemic	Dizziness, headache, weakness, shortness of breath, palpitations, sometimes flashing "flies" before the eyes.

Task 2. Fill in the table of the main symptoms and clinical signs of the syndromes during the period of developed clinical manifestations with CML:

Syndrome	Symptoms of organ / system damage
Anemic	Dizziness, headache, weakness, shortness of breath, palpitations, sometimes flashing "flies" before the eyes.
Hemorrhagic	
Immune Deficiency	
Intoxicating	
Extramedullary metaplasia	

Task 3. Fill in the table of clinical stages of chronic lymphocytic leukemia:

Stages	Group of risk	Clinic sings
I	low	Lymphocytosis in the blood and bone marrow
I	moderate	
II	moderate	
III	high	
IV	high	

Task 4. Criteria for diagnosis of the chronic stage of CML:

1. In the blood: leukocytosis > 30 g / L with a shift in the leukogram;

Task 5. Write down the criteria for complete remission of acute lymphoblastic leukemia:

1. Absence of symptoms of intoxication.
2. _____
3. _____
4. _____

Task 6. Fill in the classification table for acute non-lymphoblastic leukemia and their morphocytochemical features:

Morphocytochemical form	Variant of acute leukemia by FAB classification	Main cytochemical parameters
Undifferentiated	M0	All reactions are negative

Variant 2.

Task 1. Criteria for diagnosis of the blast crisis CML:

Stage	Blast Crisis
1.	Number of blasts and promyelocyte of peripheral blood > 30%
2.	
3.	

Task 2. Fill in the table of the main signs and symptoms of intracellular and intravascular hemolysis:

intracellular hemolysis	intravascular hemolysis
Normochromic anemia, increased number of reticulocytes in the blood	The presence of free hemoglobin in the blood

Task 3. Fill in the table of examinations of patient CLL:

№	Method of examination	Result of examination
1.	Complete blood count	leukocytosis due to lymphocytes (60-90%) with leukolysis cells (Botkin-Humprecht cells), anemia
2.	Bone marrow	
3.	Lymph node biopsy	
4.	Chest X-ray	
5.	Scanning, ultrasound scanning	
6.	Immunophenotyping	

Task 4. Write down the clinical features of acute non-lymphoblastic leukemia:

1. Infiltration of skin blasts, gingival hypertrophy,

2. _____

3. _____

4. _____

Task 5. Criteria for clinical-hematologic remission in CML:

1. Complete normalization of physical indicators

Task 6. Fill in the table of basic chemotherapeutics used in the treatment of blast crises of chronic leukemia:

Group of drugs	Name of drugs	The mechanism of their action
Antimetaboliti	Purinethol, thioguanine, methotrexate, cytosar	Antagonists of metabolites-precursors of nucleic acids
Antimitotics		
Alkylating Compounds		
Antitumor antibiotics-anthracyclines		
Enzyme preparations		
Epipodophyllotoxins		
Anthraquinoids		

Nitrosoureas derivatives		
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Variant 3.

Task 1. Fill in the classification table for hemorrhagic diathesis, considering the genesis of hemorrhage:

Disturbances in the system of hemostasis	Type of bleeding on the skin	Examples of diseases
Coagulopathies	Hematomic	Hemophilia A and B
Thrombocytopenia	Microcirculatory (petechial echimatoses)	
Thrombocytopathy		

Task 2. Fill in the table of classification of thrombocytopenia caused by increased destruction of platelets:

Congenital thrombocytopenia	Acquired thrombocytopenia
Immune thrombocytopenia: - medicamentous; - Alloimmune thrombocytopenia of newborns; - in newborns whose mothers suffer from immune thrombocytopenia. Non-immune thrombocytopenia: - Hemolytic disease of newborns <ul style="list-style-type: none"> • - prematurity 	Immune: - idiopathic thrombocytopenic purpura (acute and chronic) - post-transfusion thrombocytopenia; - medicamentous; - with anaphylactic shock; - for autoimmune hemolytic anemia - - Non-immune <ul style="list-style-type: none"> • - with sepsis • •

Task 3. Fill in the table of degrees of severity of thrombocytopenia:

Degree	The number of platelets	The probability of bleeding
Light	50 – 140x10 ⁹ /л	low
moderate	25 – 50x10 ⁹ /л	
severe		high
Very severe	Less than 10x10 ⁹ /л	

Task 4. List the characteristic manifestations of hemorrhagic syndrome in thrombocytopenia:

1. Rosene petechiae and ecchymosis, which occur spontaneously and especially after trauma.
2. Diffuse bleeding of blood through the surgical sutures, _____.
3. _____.

Task 5. List the laboratory tests for the diagnosis of thrombocytopenia:

1. The number of platelets in the blood.
2. Duke bleeding time _____.

3. _____.

4. _____

Task 6. Fill in the table of the approximate differential diagnosis of thrombocytopenia:

Criteria	Suppressing platelet formation	Excessive platelet activation	Excessive destruction of platelets
Character thrombocytopenia	Secondary	Secondary	Primary
The number of megakaryocytes in the bone marrow	Significantly lowered		Significantly increased
Coagulation hemostasis			
Antibodies to platelets			Present in high titre

Variant 4.

Task 1. Fill in the table of reasons for the various variants of hemophilia:

Variant	Cause	Frequency
Гемофилия А	Hereditary deficiency of factor VIII (antigemofilnogo globin)	70 -80%
Hemophilia B (Kristmas disease) 10 -20%		10 -20%
Hemophilia C		

Task 2. Fill in the table of the frequent causes of bleeding of different locations

Localization	Reasons
skin (petechiae, purpura, ecchymosis)	Thrombocytopenia and thrombocytopathy
Subcutaneous and intramuscular hematomas pleural cavity	

Task 3. Fill out the required dose for factor VIII:

Depend-ence of the dose of factor VIII on the severity of bleeding	The necessary level of factor VIII in the blood (%)	The required dose of factor VIII (U / kg of body weight)
Low bleeding	40 - 50	20 - 25
Severe bleeding		25 -35

Dangerous for life bleeding: gastrointestinal, intracranial, large in volume surgery with a high risk of head trauma.	100	
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Task 4. Depending on the pathogenesis, thrombocytopenia is divided into:

1. Thrombocytopenia due to impaired production of platelets in the bone marrow
_____;
2. _____.

Task 5. List the types of bleeding on the skin:

1. Microcirculatory (petechial-echimatos);
2. _____;
3. _____;
4. _____;
5. _____.

Task 6. Fill in the differential diagnosis table for coagulopathy

Coagulopathy	Prothrombin time	Prothrombin time	Activated partial thromboplastin time	Platelet number	Bleeding time
Hemophilia A		N	prolongation	N	N
Willebrand's Disease		N	prolongation	N	prolongation
DIC-Syndrome				Low and N	
Immune thrombocytopenic syndrome		N			
Liver diseases			prolongation		

List of recommended literature:

Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition
2. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
3. Moretti D, Goede JS, Zeder C, et al : Oral iron supplements increase hepcidin and decrease iron absorption from daily or twice-daily doses in iron-depleted young women. Blood 126(17):1981-1989, 2015.
4. DeZern AE, Zahurak M, Symons H, et al : Alternative donor transplantation with high-dose post-transplantation cyclophosphamide for refractory severe aplastic anemia. Biol Blood Marrow Transplant 23(3):498–504, 2017.
5. Winkler T, Fan X, Cooper J, et al : Treatment optimization and genomic outcomes in refractory severe aplastic anemia treated with eltrombopag. Blood 133(24):2575–2585, 2019.
6. <https://www.msmanuals.com/professional/hematology-and-oncology/leukemias/overview-of-leukemia>
7. <https://www.msmanuals.com/professional/hematology-and-oncology/leukemias/chronic-lymphocytic-leukemia-cll>
8. <https://www.msmanuals.com/professional/hematology-and-oncology/leukemias/chronic-myeloid-leukemia-cml>

9. <https://www.msmanuals.com/professional/hematology-and-oncology/coagulation-disorders/hemophilia>
10. <https://www.msmanuals.com/professional/hematology-and-oncology/thrombocytopenia-and-platelet-dysfunction/overview-of-platelet-disorders>

Additional:

1. <https://www.msmanuals.com/professional/hematology-and-oncology/approach-to-the-patient-with-anemia/etiology-of-anemia>
2. <https://www.msmanuals.com/professional/hematology-and-oncology/approach-to-the-patient-with-anemia/evaluation-of-anemia>
3. <https://www.msmanuals.com/professional/hematology-and-oncology/anemias-caused-by-hemolysis/autoimmune-hemolytic-anemia?query=hemolytic%20anemia>
4. <https://www.msmanuals.com/professional/hematology-and-oncology/anemias-caused-by-deficient-erythropoiesis/aplastic-anemia?query=aplastic%20anemia>
5. [Berry DA, Zhou S, Higley H, et al](#) : Association of minimal residual disease with clinical outcome in pediatric and adult acute lymphoblastic leukemia: A meta-analysis. *JAMA Oncol* 3(7): e170580, 2017.
6. [Kantarjian H, Stein A, Gökbüget N, et al](#) : Blinatumomab versus chemotherapy for advanced acute lymphoblastic leukemia. *N Engl J Med* 376(9):836–847, 2017.
7. [Maude SL, Laetsch TW, Buechner J, et al](#) : Tisagenlecleucel in children and young adults with B-cell lymphoblastic leukemia. *N Engl J Med* 378(5):439–448, 2018.
8. [Stone RM, Mandrekar SJ, Sanford BL, et al](#) : Midostaurin plus chemotherapy for acute myeloid leukemia with a *FLT3* mutation. *N Engl J Med* 377(5):454–464, 2017.
9. [Lancet JE, Uy GL, Cortes JE, et al](#) : CPX-351 (cytarabine and daunorubicin) liposome for injection versus conventional cytarabine plus daunorubicin in older patients with newly diagnosed secondary acute myeloid leukemia. *J Clin Oncol* 36(26):2684–2692, 2018.
10. [Perl AE, Martinelli G, Cortes JE, et al](#) : Gilteritinib or chemotherapy for relapsed or refractory *FLT3*-mutated AML. *N Engl J Med* 381:1728–1740. 2019.
11. [Eichhorst B, Fink AM, Bahlo J et al](#) : First-line chemoimmunotherapy with bendamustine and rituximab versus fludarabine, cyclophosphamide, and rituximab in patients with advanced chronic lymphocytic leukaemia (CLL10): An international, open-label, randomised, phase 3, non-inferiority trial. *Lancet Oncol* 17:928–942, 2016.
12. [George LA](#) : Hemophilia gene therapy comes of age. *Blood Adv* 1:2591–2599, 2017.
13. [Al-Samkari H, Rosovsky RP, Karp Leaf RS](#) : A modern reassessment of glycoprotein-specific direct platelet autoantibody testing in immune thrombocytopenia. *Blood Adv* 4(1):9–18, 2020.
14. [Neunert C, Terrell DR, Arnold DM, et al](#) : American Society of Hematology 2019 guidelines for immune thrombocytopenia. *Blood Adv* 3(23):3829–3866, 2019.
15. [Provan D, Arnold DM, Bussel JB, et al](#) : Updated international consensus report on the investigation and management of primary immune thrombocytopenia. *Blood Adv* 3(22):3780–3817.
16. [Bussel J, Arnold DM, Grossbard E, et al](#) : Fostamatinib for the treatment of adult persistent and chronic immune thrombocytopenia: Results of two phase 3, randomized, placebo-controlled trials. *Am J Hematology* 93: 921–930, 2018.

Topic: Thrombocytopenic purpura. Lymphomas: definition, classification. Hodgkin's lymphoma.

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

To explain the essence of lymphomas: Hodgkin's lymphoma. the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: platelets, thrombocytopenic purpura. lymphomas: Hodgkin's lymphoma

Theoretical questions for the lesson:

1. <https://www.wfh.org/en/resources-education/educational-materials>
2. <https://elearning.wfh.org/resource/treatment-guidelines/>
3. <https://elearning.wfh.org/resource/diagnosis-of-hemophilia-and-other-bleeding-disorders-a-laboratory-manual/>
4. https://journals.lww.com/hemasphere/Fulltext/2020/04000/EHA_Endorsement_of_ESMO_Clinical_Practice.7.aspx#JCL-P-2
5. https://journals.lww.com/hemasphere/Fulltext/2021/05000/EHA_Endorsement_of_ESMO_Clinical_Practice.4.aspx
6. https://journals.lww.com/hemasphere/Fulltext/2020/08000/Hodgkin_Lymphoma_Comments_on_ESMO_Clinical.8.aspx

Note. Depending on the complexity and specificity of the educational topic, the availability of modern educational and scientific literature, this section can be presented with different levels of detail (the right to choose the form of displaying the content remains with the department):

Option I: the content of the topic can be presented in the form of theses, which reflect the main information blocks of the topic, its main provisions, concepts, criteria, signs, relationships, interdependence, etc.;

Option II: justified in those cases when students of higher education have the opportunity to use modern literature on the topic and there is no need to explain it in detail in the methodical development, in this case it will be methodologically justified to display the content of the topic in the form of its structural and logical scheme;

Option III: in the absence of a sufficient amount of modern literature on the topic, this section in methodological development can be provided in the form of the text of the topic in an expanded and detailed version;

Option IV: in the presence of relevant literature that details the content of the topic, a specific reference to certain literary sources is quite sufficient.

Questions for self-control

1. Define the concept of thrombocytopenic purpura.
2. Indicate the main etiological factors, features of pathogenesis.
3. Modern classification of thrombocytopenic purpura.
4. The main clinical signs of thrombocytopenic purpura.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment.

7. Define the concept of lymphoma.
8. Indicate the main etiological factors, features of pathogenesis.
9. Modern classification of lymphoma.
10. The main clinical signs of lymphoma.
11. Laboratory and instrumental research of patients, interpretation of the obtained results.
12. Basic principles of treatment.

Approximate tasks for the study of theoretical material

5. Make a dictionary of basic concepts on the topic:

The main terms of the topic

Term	Definition
Thrombocytopenia	A hematologic symptom characterized by a decrease in the number of platelets is less than $100 \times 10^9 / L$ in peripheral blood.

The May-Heglin anomaly	Triad of symptoms: thrombocytopenia, giant forms of platelets, basophilic spindle-shaped inclusions in leukocytes (Dele's body). It is inherited by autosomal dominant type. Characterized by the appearance of bruises.
Wiskott-Aldrich Syndrome:	Immunodeficiency diseases, inherited by a recessive, X-linked type, is manifested in the first months of a child's life. The triad of symptoms: thrombocytopenia, eczematous skin rash and a tendency to infections.
Coagulopathies	Hemorrhagic syndromes caused by disorders in the blood coagulation system.
Hemophilia	Hereditary disease due to deficiency or molecular anomalies of one of the procoagulants involved in the activation of blood coagulation "by internal mechanism." Hemophilia A is hereditary coagulopathy due to a deficiency or molecular anomaly of factor VIII of blood coagulation. Hemophilia B - hereditary coagulopathy due to deficiency or molecular anomalies of factor IX blood clotting (antihemophilic globulin B, factor Christmas). Hemorrhagic diathesis due to deficiency of blood coagulation factor XI is known in the literature as hemophilia C, or Rosenthal's disease.

Term	Definition
Lymphomas (lymphocytomas)	– are foreign-cerebral tumors that occur in the lymph nodes or lymphoid tissue of other organs and are characterized by local growth, and the morphological substrate of these tumors is mature lymphocytes or lymphocytes and prolymphocytes.
Lymphosarcomas	– is exogenous malignant tumors that appear in the lymph nodes or lymphoid tissue of other organs and are characterized by local growth, and the morphological substrate of these tumors is lymphoblasts or lymphoblasts and prolymphoblasts..
The lymphatic system	is a collection of vessels, tissues and organs that serves as a source of immunocompetent cells, a filtering complex, a means of transporting fats and other substances, as well as a drainage system through which the tissue fluid enters the blood.
Lymphogranulomatosis (Hodgkin's disease)	is a primary tumor disease of the lymphatic system, characterized by granulomatous proliferation with the presence of specific Reed-Sternberg cells. Lymphogranulomatosis has long been considered a lymphoproliferative disease, but at present a monocytic-macrophage origin of the disease has been proven.
Reed-Sternberg cells (Berezovsky-Sternberg cells)	– are large cells with a basophilic cytoplasm and two nuclei that have a monocytic origin.
Non-Hodgkin's lymphomas	– are a group of cell-cell tumors of the lymphatic system..

Myeloma (multiple myeloma, generalized plasmacytoma, Rustitskogo-Kaller disease)	–is a paraproteinemic hemoblastosis, which is characterized by malignant tumor proliferation of plasma cells of one clone with hyperproduction of a monoclonal immunoglobulin or free monoclonal immunoglobulin chains.
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Fill in the daily protocol of preparation for a practical lesson on the topic (according to the decision of the meeting of the department).

https://info.odmu.edu.ua/chair/internal_medicine1/files/507/en

II. Practical work (tasks) that will be performed in class:

Task 1. Patient 20-year old complains of pain in right elbow, which appeared suddenly. The skin over the joint hyperemic, moves sharply limited. From history we know that his father was suffering from hemophilia A. What is first aid in terms of modern standards of medical care to patients with hemophilia?

Task 2. Patient 27 years old, after intense activity (long transition) felt a pain in the lumbar region, marked discharge of dark urine. On examination: skin is pale. Pulse - 98 beats / min. AP - 110/70 mmHg Cardiac rhythm is correct, relaxed tones, systolic murmur over the apex. The abdomen was soft. Liver and spleen were not enlarged. Symptom of Pasternatskiy is positive on both sides. Analysis of blood: RBC – $2,7 \times 10^{12} / l$, Hb-80g/l, CI-0,85. Leuk. – $14 \times 10^9 / l$, band neutrophils - 12%, segm. neutrophils -74%, lymphocytes-6 %, BSR-40mm/h. Analysis of urine: dark brown, leuk. - 2-3. Test for free hemoglobin is positive. Bilirubin of blood - 16.0 micromol / liter. Your diagnosis?

Task 3. Patient 30 years old admitted to the hospital complaining of general weakness, increased body temperature to febrile digits in the evening, profuse night sweats, an increase in the size of the cervical lymph nodes up to 10 cm in the overall analysis of blood and myelogram showed no pathological changes. Histological examination of lymph node biopsy: diffuse lymphocytic infiltration of the bits and pieces, the loss of lymph node structure. The preliminary diagnosis?

Task 4. Patients 38 years old entered the clinic with complaints of general weakness, fever in febrile digits in the evening, profuse night sweats, itching, an increase of neck's lymph nodes up to 4 cm. In the general analysis of blood and myelogram without pathological changes. Histologic examination of the lymph node showed the presence of multi-cell Berezovsky - Reed - Shtenberh's. What is the diagnosis?

III. Test questions for self-control:

1. What type of bleeding is observed with idiopathic thrombocytopenic purpura?
 - A. The hematoma
 - B. petechial-spotted
 - S. Angiomatous
 - D. Mixed
 - E. Vasculitally-purplish
2. What treatment should I give to a patient with haemophilia A?
 - A. Heparin
 - B. Thrombose concentrate
With Cryoprecipitate
 - D. Prednisolone
 - E. Dicinon
3. What is the most likely diagnosis, if the coagulogram of APTTV is 89c:
 - A. Hemorrhagic vasculitis
 - C. Werlhof's disease

- C Thrombocytopathy
- D. Hypoplastic anemia
- E. Hemophilia

4. The content of platelets in the blood is $47 \times 10^9 / l$, all other indicators are within the norm. What is the most likely diagnosis?
- A. Idiopathic thrombocytopenic purpura
 - B. Hemolytic anemia
 - C. Chronic iron deficiency anemia
 - D. Hemophilia
 - E. Hemorrhagic vasculitis
5. A teenager who is sick with hemophilia B, hemarthrosis of the knee joint. What should be assigned to the patient in the first place:
- A. Washed platelets
 - B. Freshly frozen plasma
 - C. Dry plasma
 - D. Albumin placental
 - E. Aminocaproic acid
6. What type of hemophilia is bleeding?
- A. Mixed (synthetically-hematomic)
 - B. petechial-spotted
 - S. Vasculitally-purple
 - D. Angiomatous
 - E. The hematoma
7. When the number of platelets is claimed about thrombocytopenia?
- A. $\leq 149 \times 10^9 / l$
 - B. $\leq 180 \times 10^9 / l$
 - C. $\leq 160 \times 10^9 / l$
 - D. $\leq 150 \times 10^9 / l$
 - E. $\leq 50 \times 10^9 / l$
8. What pathogenetic treatment is most effective for idiopathic thrombocytopenic purpura?
- A. Cryoprecipitate
 - B. Heparin
 - C. Freshly frozen plasma
 - D. Splenectomy
 - E. Reopoliglyukin
9. In the marrow punctate, the high content of megakaryocytes. What pathology can you think about?
- A. Chronic hepatitis
 - B. Chronic lymphocytic leukemia
 - C. Aplastic anemia
 - D. Acute leukemia
 - E. Idiopathic thrombocytopenic purpura
10. Haemophilia patient A was hospitalized in connection with the appearance of melena. Choose the required daily dose for the introduction of cryoprecipitate:
- A. 100-150 units per 1 kg of body weight
 - B. 1 -2 From 1 kg of body weight
 - C. 5-10 units per 1 kg of body weight
 - D. 10-15 units per 1 kg of body weight
 - E. 60-100 Units per 1 kg of body weight
11. What kind of disease can be thought of if clinically there is a symmetrical rash on the skin of the shins that does not change when pressed, not accompanied by itching, pain in the knee joints?
- A. Thrombocytopenia

- B. Hemophilia
 - C. Hemorrhagic vasculitis
 - D. Rheumatoid arthritis
 - E. Systemic lupus erythematosus
12. A 15-year-old child had a Kefalo-hematoma in childhood. What is the most likely diagnosis?
- A. Shenlain's disease-Henoch disease
 - B. Rundu-Osler disease
 - C. Thrombocytopenic purpura
 - D. DIC-Syndrome
 - E. Hemophilia
13. What pathogenetic treatment is prescribed for idiopathic thrombocytopenic purpura?
- A. Cyclophosphamide
 - V. Curantil
 - With Pentoxifylline
 - D. GCS
 - E. Preparations of iron
14. The patient has menorrhagia, bleeding gums, platelets - $30 \times 10^9 / l$, bleeding time - 14 min. What is the most likely diagnosis in this case?
- A. Hemophilia A
 - C. Werlhof's disease
 - C. Hemorrhagic vasculitis
 - D. Willebrand's disease
 - E. Rundu-Osler disease
15. The patient, 20 years old, has hemophilia and erosive gastritis. The appointment of one of the following medicines is the first in the case of hospitalization?
- A. Cryoprecipitate
 - V. Pantoprazole
 - From the erythrocyte mass
 - D. Prednisolone
 - E. Epsilon-aminocaproic acid
16. What cells are called plasmacytams?
- A. T-lymphocytes are killers.
 - B. neutrophilic granulocytes.
 - C. B-lymphocytes after antigenic stimulation.
 - D. mast cells.
 - E. erythroblasts.
17. Humoral immune reactions with complement participation lead to:
- A. phagocytosis of a bacterial cell.
 - B. agglutination of bacterial cells.
 - C. Lysis of bacterial cells.
 - D. Not floating on bacteria.
 - E. mutations of bacteria.
18. Which organ does not belong to the lymphatic system?
- A. Lymphatic vessel.
 - B. spleen.
 - C. lymph node.
 - D. Bone marrow.
 - E. Peyer's plaque.
19. What cells are characteristic for granuloma in Hodgkin's lymphoma?
- A. Botkin-Humprecht cells.
 - B. Cells of Reed-Sternberg.
 - C. platelets.

- D. erythrocytes.
 - E. Blast cells.
20. Which research method is required to confirm the diagnosis of non-Hodgkin's lymphoma?
- A. Ultrasound.
 - B. Sternal puncture.
 - C. Lymph node biopsy.
 - D. liver biopsy.
 - E. Clinical analysis of blood.
21. What disease is hyperproteinemia?
- A. lymphosarcoma.
 - B. lymphogranulomatosis.
 - C. chronic lymphocytic leukemia.
 - D. non-Hodgkin's lymphoma.
 - E. myeloma.
22. What is complement?
- A. Coagulation factor.
 - B. complex of inactive proteases.
 - C. receptor of leukocytes.
 - D. vasoactive substances.
 - E. Antigen.
23. What is the main class of immunoglobulins?
- A. IgM.
 - B. IgG.
 - C. IgA.
 - D. IgE.
 - E. IgD.
24. Where does the maturation of B lymphocytes occur?
- A. liver
 - B. lymph nodes.
 - C. the spleen.
 - D. red bone marrow.
 - E. Yellow marrow.
25. What is the difference between lymphoma and leukemia?
- A. With leukemia, there is no damage to the lymph nodes.
 - B. for lymphomas there are no signs of general intoxication.
 - C. with lymphomas do not apply cytostatics.
 - D. with lymphomas, the primary pathological process develops outside the bone marrow.
 - E. Lymphoma is not complicated by infectious and inflammatory diseases.
26. What characteristics are inherent in enlarged lymph nodes in lymphogranulomatosis?
- A. dense, painless, immobile, soldered to the skin.
 - B. soft, painful, mobile, not soldered to the skin.
 - C. dense-elastic, painless, mobile, not soldered to the skin.
 - D. dense, painful, the skin over the lymph nodes is hyperemic.
 - E. soft, painful, motionless.
27. What cells are the tumor substrate in non-Hodgkin's lymphomas?
- A. lymphocytes.
 - B. neutrophils.
 - C. monocytes.
 - D. erythrocytes.
 - E. platelets.
28. What is synthesized in plasmocytes in response to antigen stimulation?
- A. Antibody.

- B. hormones.
 - C. Cholesterol.
 - D. cytokines.
 - E. Coagulation factors.
29. Which cells belong to immunocompetent cells?
- A. B-lymphocytes.
 - B. T-lymphocytes.
 - C. macrophages.
 - D. neutrophils.
 - E. erythrocytes.
30. Which protein fraction of the antibody belongs to the antibody?
- A. β -globulins.
 - B. γ -globulins.
 - C. α 1-globulins.
 - D. α 2-globulins.
 - E. albumins.
31. What symptom is most typical for the initial period of lymphogranulomatosis?
- A. Splenomegaly.
 - B. increase in body temperature.
 - C. Pain in the lumbar region.
 - D. night sweats.
 - E. Enlargement of lymph nodes.
32. What stage of lymphogranulomatosis is characterized by a diffuse lesion of internal organs?
- A. I stage.
 - B. II stage.
 - C. The third stage.
 - D. Stage IV.
 - E. There is no lesion of internal organs with lymphogranulomatosis.
33. In what disease can lymphomas be transformed?
- A. lymphosarcoma.
 - B. acute lymphoblastic leukemia.
 - C. chronic lymphocytic leukemia.
 - D. lymphadenitis.
 - E. myeloma.

Note. It is suggested to use test tasks (for those seeking higher education who have to take part in the license test exams in the current year, it is more appropriate to use tests of the "Step" type) and tests compiled by departments for rector's control.

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1. Fill in the table of reasons for the various variants of hemophilia:

Variant	Cause	Frequency
Гемофилия А	Hereditary deficiency of factor VIII (antigemofilnogo globin)	70 -80%
Hemophilia B (Kristmas disease) 10-20%		10 -20%
Hemophilia C		

Task 2. Fill in the table of the frequent causes of bleeding of different locations

Localization	Reasons
skin (petechiae, purpura, ecchymosis)	Thrombocytopenia and thrombocytopathy
Subcutaneous and intramuscular hematomas pleural cavity	

Task 3. Fill out the required dose for factor VIII:

Depend- ence of the dose of factor VIII on the severity of bleed- ing	The necessary level of factor VIII in the blood (%)	The required do- se of factor VII I (U / kg of body we- ight)
Low bleeding	40 - 50	20 - 25
Severe bleeding		25 -35
Danger- ous for life bleeding: gastrointestinal, intracranial, la- rge in volume surgery with a high risk of head traum- a.	100	

Task 4. Depending on the pathogenesis, thrombocytopenia is divided into:

1. Thrombocytopenia due to impaired production of platelets in the bone marrow
_____;
2. _____.

Task 5. List the types of bleeding on the skin:

1. Microcirculatory (petechial-echimatos);
2. _____;
3. _____;
4. _____;
5. _____.

Task 6. Fill in the differential diagnosis table for coagulopathy

Coagulopathy	Prothrombin time	Activated partial thromboplasty time	Platelet number	Bleeding time
Prothrombin time				
Hemophilia A	N	plongation	N	N
Willebrand's Disease	N	plongation	N	prolonga- tion
DIC-Syndrome			Low andN	
Immune thrombocyt opo-singing	N			
Liver diseases		plongation		

Variant 2.

Task 1. Fill in the classification table for hemorrhagic diathesis:

Violation of the blood coagulation system	a violation of the formation of thromboplastin - hemophilia A, hemophilia B, hemophilia C; - - violation of thrombin formation - hypokonvertinemia, lack of X factor; - - disruption of fibrin formation - lack of XII factor.
Dysfunction of the megakaryo-cytar sprout	<ul style="list-style-type: none"> • _____; • _____; • _____.
Violation of the vascular wall	<ul style="list-style-type: none"> • _____; • _____; • _____; • _____.
Due to the combined disorders	Willebrand's disease, radiation sickness, leukemia.

Task 2. Complete the table of the main diseases / conditions accompanied by thrombocytopenia:

Variants of thrombocytopenia	Diseases / conditions
Inhibition of platelet formation	<ul style="list-style-type: none"> • hypoplastic and aplastic anemia • - - Fanconi syndrome with hypoplasia of megakaryocytic germ; • - - congenital megakaryocytic thrombocytopenic purpura with anomaly of development of bones (osteogenic dystrophy); • - paroxysmal nocturnal hemoglobinuria - Marciafawa-Micheli's disease; • - - malignant tumor with replacement of bone marrow by malignant cells (leukemia, lymphoma, osteomyelophybro-sis, etc.) • - - deficiency of thrombopoietin; _____; • _____; • _____.
Excessive activation of platelets	<ul style="list-style-type: none"> • DIC-syndrom; • hemolytic-anemic syndrome _____; • _____.
Excessive destruction of platelets	<ul style="list-style-type: none"> • idiopathic thrombocytopenic purpura - Werlhof's disease; • autoimmune thrombocytopenic purpura (secondary): heparin-induced connective tissue in patients with systemic diseases, chronic lymphocytic leukemia; _____ • _____; • _____; • _____.

Task 3. Give the main groups of drugs that can lead to the development of MRI:

- - antibiotics (penicillins, cephalosporins, erythromycin, tetracycline, chloramphenicol, sulfonamides, rifampicin, PASC, etc.)
- - NSAIDs (aspirin, indomethacin, butadione)
- - anticoagulants (heparin) _____;
- _____;
- _____;
- _____.

Task 4. List the factors that contribute to the development of bleeding:

- 1) platelet hemostasis;
- 2) the plasma link of hemostasis - _____;
- 3) _____;
- 4) _____.

Task 5. The following groups of bleeding are distinguished according to disorders in the hemostasis system:

1. Disturbance in the megakaryocytic-platelet system:
 - thrombocytopenia (decrease in the number of platelets)
 - thrombocytopathy (_____)
2. _____;
3. _____;
4. _____;
5. The syndrome of disseminated intravascular coagulation (DVS-syndrome), which is characterized by a violation in several links of hemostasis (thrombocytopenia, coagulopathy, etc.).

Task 6. Treatment options for idiomatic thrombocytopenic purpura:

- 1) Course treatment of MRI - the appointment of glucocorticoids, the initial dose of prednisolone is 1 - 1.5 mg / kg body weight. In the absence of the effect _____;
- 2) The administration of cyclosporine A at a dose of _____;
- 3) _____;
- 4) _____.

Variant 3.

Task 1. General information on the structure and function of the lymphatic system.

Location of lymph nodes and their groups _____

Task 2. Morphological classification of lymphogranulomatosis.

1. The variant of nodular sclerosis (the most common is 75%).
- 2.
- 3.
- 4.

Task 3. Laboratory data for granulomatosis.

General blood analysis: _____

Blood chemistry:

Task 4. Treatment of lymphogranulomatosis.

Polychemotherapy - there are many different treatment regimens, the most popular schemes are MOPP and ABVD (course of treatment 28 days):

The scheme of MORP:

- _____

The scheme of ABVD ---

Task 5. Treatment of non-Hodgkin's lymphomas.

Treatment of lymphomas with a low degree of malignancy.

1. Treatment with cytostatics.

2. Polychemotherapy. CVP scheme (duration of the course is 21 days):

3. Immunotherapy:

Task 6. Clinical manifestations of myeloma.

In the clinical picture of the advanced stage of the disease, the following syndromes can be distinguished:

1. The syndrome of bone pathology includes

2. The defeat of the hematopoietic system -

3. The syndrome of protein pathology - includes

4. The syndrome of kidney damage (myeloma nephropathy) -

5. Syndrome of visceral pathology -

6. Syndrome of secondary immunodeficiency -

7. Syndrome of high viscosity of blood -

8. Neurological syndrome - includes

9. Hypercalcemic syndrome - includes

Variant 4.

Task 1. cellular structure of the lymph node
- The cortical substance contains

- In the paracortical
zone

Task 2. Differential diagnosis for lymphogranulomatosis.

Differential diagnosis should be carried out with diseases that are accompanied by an increase in lymph nodes, fever and weight loss. The main of these diseases are:

- 1.
- 2.
- 3.
- 4.
- 5.

Task 3. General diagnostic criteria for non-Hodgkin's lymphomas.

1. The focal character of lymphoid proliferation, the lesion is predominantly of a certain organ.
- 2.

- 3.
- 4.
- 5

Task 4. Clinico-anatomical classification of myeloma.

A. Solitary myeloma (bony or zovnikikstkova) - 1% of all myelomas.

B. _____

Task 5. Laboratory research.

Myelogram:

Task 6. Treatment of myeloma.

Several polychemotherapy regimens can also be used, in particular, the VCMP scheme.

-
-
-

List of recommended literature:

Basic:

Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition

1. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
2. <https://www.msdmanuals.com/professional/hematology-and-oncology/thrombocytopenia-and-platelet-dysfunction/overview-of-platelet-disorders>
3. <https://www.msdmanuals.com/professional/hematology-and-oncology/thrombocytopenia-and-platelet-dysfunction/thrombocytopenia-other-causes>
4. <https://www.msdmanuals.com/professional/hematology-and-oncology/thrombocytopenia-and-platelet-dysfunction/thrombotic-thrombocytopenic-purpura-ttp>
5. <https://www.msdmanuals.com/professional/hematology-and-oncology/lymphomas/overview-of-lymphoma>
6. <https://www.msdmanuals.com/professional/hematology-and-oncology/lymphomas/hodgkin-lymphoma>

Additional:

1. [George LA](#) : Hemophilia gene therapy comes of age. Blood Adv 1:2591–2599, 2017.
2. [Al-Samkari H, Rosovsky RP, Karp Leaf RS](#) : A modern reassessment of glycoprotein-specific direct platelet autoantibody testing in immune thrombocytopenia. Blood Adv 14;4(1):9–18, 2020.
3. [Neunert C, Terrell DR, Arnold DM, et al](#) : American Society of Hematology 2019 guidelines for immune thrombocytopenia. Blood Adv 3(23):3829–3866, 2019.
4. [Provan D, Arnold DM, Bussel JB, et al](#) : Updated international consensus report on the investigation and management of primary immune thrombocytopenia. Blood Adv 3(22):3780–3817.
5. [Bussel J, Arnold DM, Grossbard E, et al](#) : Fostamatinib for the treatment of adult persistent and chronic immune thrombocytopenia: Results of two phase 3, randomized, placebo-controlled trials. Am J Hematology 93: 921–930, 2018.

6. [Johnson P, Federico M, Kirkwood A, et al](#) : Adapted treatment guided by interim PET-CT scan in advanced Hodgkin's lymphoma. N Engl J Med 374(25):2419– 2429, 2016.
7. [Connors JM, Jurczak W, Straus DJ, et al](#) : Brentuximab vedotin with chemotherapy for stage III or IV Hodgkin's lymphoma. N Engl J Med 378(4):331–344, 2018.

Topic: Non-Hodgkin's lymphomas. Myeloma.

Purpose: to explain the essence of lymphomas: Hodgkin's lymphoma. Non-Hodgkin's lymphoma, myeloma, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: lymphomas: Non-Hodgkin's lymphoma, myeloma.

Theoretical questions for the lesson:

1. https://journals.lww.com/hemasphere/Fulltext/2020/04000/EHA_Endorsement_of_ESMO_Clinical_Practice.7.aspx#JCL-P-2
2. https://journals.lww.com/hemasphere/Fulltext/2021/05000/EHA_Endorsement_of_ESMO_Clinical_Practice.4.aspx
3. https://journals.lww.com/hemasphere/Fulltext/2020/08000/Hodgkin_Lymphoma_Comments_on_ESMO_Clinical.8.aspx
4. <https://ehaweb.org/guidelines/clinical-practice-guidelines/guidelines-workshops-3/multiple-myeloma-2/>

Note. Depending on the complexity and specificity of the educational topic, the availability of modern educational and scientific literature, this section can be presented with different levels of detail (the right to choose the form of displaying the content remains with the department):

Option I: the content of the topic can be presented in the form of theses, which reflect the main information blocks of the topic, its main provisions, concepts, criteria, signs, relationships, interdependence, etc.;

Option II: justified in those cases when students of higher education have the opportunity to use modern literature on the topic and there is no need to explain it in detail in the methodical development, in this case it will be methodologically justified to display the content of the topic in the form of its structural and logical scheme;

Option III: in the absence of a sufficient amount of modern literature on the topic, this section in methodological development can be provided in the form of the text of the topic in an expanded and detailed version;

Option IV: in the presence of relevant literature that details the content of the topic, a specific reference to certain literary sources is quite sufficient.

Questions for self-control

1. Define the concept of lymphoma.
2. Indicate the main etiological factors, features of pathogenesis.
3. Modern classification of lymphoma.
4. The main clinical signs of lymphoma.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment.
7. Define the concept of myeloma.
8. Indicate the main etiological factors, features of pathogenesis.
9. Modern classification of myeloma.
10. The main clinical signs of myeloma.
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Approximate tasks for the study of theoretical material

6. Make a dictionary of basic concepts on the topic:

The main terms of the topic

Term	Definition
Lymphomas (lymphocytomas)	– are foreign-cerebral tumors that occur in the lymph nodes or lymphoid tissue of other organs and are characterized by local growth, and the morphological substrate of these tumors is mature lymphocytes or lymphocytes and prolymphocytes.
Lymphosarcomas	– is exogenous malignant tumors that appear in the lymph nodes or lymphoid tissue of other organs and are characterized by local growth, and the morphological substrate of these tumors is lymphoblasts or lymphoblasts and prolymphoblasts..
The lymphatic system	is a collection of vessels, tissues and organs that serves as a source of immunocompetent cells, a filtering complex, a means of transporting fats and other substances, as well as a drainage system through which the tissue fluid enters the blood.
Lymphogranulomatosis (Hodgkin's disease)	is a primary tumor disease of the lymphatic system, characterized by granulomatous proliferation with the presence of specific Reed-Sternberg cells. Lymphogranulomatosis has long been considered a lymphoproliferative disease, but at present a monocytic-macrophage origin of the disease has been proven.
Reed-Sternberg cells (Berezovsky-Sternberg cells)	– are large cells with a basophilic cytoplasm and two nuclei that have a monocytic origin.
Non-Hodgkin's lymphomas	– are a group of cell-cell tumors of the lymphatic system..
Myeloma (multiple myeloma, generalized plasmacytoma, Rustitskogo-Kaller disease)	–is a paraproteinemic hemoblastosis, which is characterized by malignant tumor proliferation of plasma cells of one clone with hyperproduction of a monoclonal immunoglobulin or free monoclonal immunoglobulin chains.

Fill in the daily protocol of preparation for a practical lesson on the topic (according to the decision of the meeting of the department).

https://info.odmu.edu.ua/chair/internal_medicine1/files/507/en

II. Practical work (tasks) that will be performed in class:

Task 1. Patient 30 years old admitted to the hospital complaining of general weakness, increased body temperature to febrile digits in the evening, profuse night sweats, an increase in the size of the cervical lymph nodes up to 10 cm in the overall analysis of blood and myelogram showed no pathological changes. Histological examination of lymph node biopsy: diffuse lymphocytic infiltration of the bits and pieces, the loss of lymph node structure. The preliminary diagnosis?

Task 2. Patients 38 years old entered the clinic with complaints of general weakness, fever in febrile digits in the evening, profuse night sweats, itching, an increase of neck's lymph nodes up to 4 cm. In the general analysis of blood and myelogram without pathological changes. Histologic examination of the lymph node showed the presence of multi-cell Berezovsky - Reed - Shtenberh's. What is the diagnosis?

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1. The variant of nodular sclerosis (the most common is 75%).
- 2.
- 3.
- 4.

Task 3. Laboratory data for granulomatosis.

General blood analysis: _____

Blood chemistry: _____

Task 4. Treatment of lymphogranulomatosis.

Polychemotherapy - there are many different treatment regimens, the most popular schemes are MOPP and ABVD (course of treatment 28 days):

The scheme of MORP:

The scheme of ABVD

Task 5. Treatment of non-Hodgkin's lymphomas.

Treatment of lymphomas with a low degree of malignancy.

1. Treatment with cytostatics.

2. Polychimotherapy. CVP scheme (duration of the course is 21

days): _____

3. Immunotherapy:

Task 6. Clinical manifestations of myeloma.

In the clinical picture of the advanced stage of the disease, the following syndromes can be distinguished:

1. The syndrome of bone pathology includes

2. The defeat of the hematopoietic system -

3. The syndrome of protein pathology - includes

4. The syndrome of kidney damage (myeloma nephropathy) -

5. Syndrome of visceral pathology -

6. Syndrome of secondary immunodeficiency -

7. Syndrome of high viscosity of blood -

8. Neurological syndrome - includes

9. Hypercalcemic syndrome - includes

Variant 2.

Task 1. cellular structure of the lymph node

- The cortical substance contains

- In the paracortical zone _____

Task 2. Differential diagnosis for lymphogranulomatosis.

Differential diagnosis should be carried out with diseases that are accompanied by an increase in lymph nodes, fever and weight loss. The main of these diseases are:

- 1.
- 2.
- 3.
- 4.

5.

Task 3. General diagnostic criteria for non-Hodgkin's lymphomas.

1. The focal character of lymphoid proliferation, the lesion is predominantly of a certain organ.
- 2.
- 3.
- 4.
- 5

Task 4. Clinico-anatomical classification of myeloma.

A. Solitary myeloma (bony or zovnikikstkova) - 1% of all myelomas.

B. _____

Task 5. Laboratory research.

Myelogram:

Task 6. Treatment of myeloma.

Several polychemotherapy regimens can also be used, in particular, the VCMP scheme.

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Variant 3.

Task 1. Lymphoid system of mucous membranes includes:

Task 2. Classification of clinical stages of lymphogranulomatosis.

Stage I - lesion of lymph nodes of one region (I) or lesion of one extralymphatic organ or localization (IE).

Stage II -

Stage III -

Stage IV

Task 3. Instrumental studies for lymphogranulomatosis.

1. X-ray examinations:

2.

Task 4. Treatment of lymphomas with a high degree of malignancy.

Combined therapy is used: chemotherapy and radiation therapy. The most popular scheme of polychemotherapy CHOP (duration of the course is 21 days):

Tasks 5. Scheme of formation of plasma cells:

Antigen-independent maturation: a polypotent stem cell →



Task 6. Laboratory research in myeloma.

General urine analy-

sis: _____

List of recommended literature:

Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition
2. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
3. <https://www.msmanuals.com/professional/hematology-and-oncology/lymphomas/overview-of-lymphoma>
4. <https://www.msmanuals.com/professional/hematology-and-oncology/lymphomas/hodgkin-lymphoma>
5. <https://www.msmanuals.com/professional/hematology-and-oncology/lymphomas/non-hodgkin-lymphomas>

Additional:

1. [Johnson P, Federico M, Kirkwood A, et al](#) : Adapted treatment guided by interim PET-CT scan in advanced Hodgkin's lymphoma. N Engl J Med 374(25):2419– 2429, 2016.
2. [Connors JM, Jurczak W, Straus DJ, et al](#) : Brentuximab vedotin with chemotherapy for stage III or IV Hodgkin's lymphoma. N Engl J Med 378(4):331–344, 2018.