


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

**Контрольный  
экземпляр**

**APPROVED**

by Rector of the Educational  
Institution «Belarusian State  
Medical University»

S.P. Rubnikovich

  
26.06.2024  
Reg. # UD-0911-01-20/425 edu.

**INTERNAL DISEASES**

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

**1-79 01 01 «General Medicine»**

Curriculum is based on the educational program «Internal Diseases», approved 26.06.2024, registration # УД-0911-01-20/2425/уч; on the educational plan in the specialty 1-79 01 01 «General Medicine», approved 15.05.2024, registration # № 7-07-0911-01/2425/mf.

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### **RECOMMENDED FOR APPROVAL:**

1st Department of Internal Medicine of the educational institution «Belarusian State Medical University»

(protocol # 13 of 29.03.2024);

2nd Department of Internal Medicine of the educational institution «Belarusian State Medical University»

(protocol # 12 of 29.03.2024);

Department of Cardiology and Internal Medicine of the educational institution  
«Belarusian State Medical University»  
(protocol # 11 of 29.03.2024);

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

## EXPLANATORY NOTE

«Internal Diseases» – the academic discipline of the module «Internal Diseases», containing systematized scientific knowledge about etiology, pathogenesis, semiotics, diagnosis, prognosis and prevention of diseases of internal organs of the human body.

The purpose of the discipline «Internal Diseases» is the formation of specialized competence for the construction of clinical diagnosis, medical care, prevention of diseases of human internal organs.

The objectives of the discipline «Internal Medicine» consist in the formation of students' scientific knowledge of etiology, pathogenesis, clinical picture, diagnosis, principles of treatment, prevention of major diseases of internal organs of man, skills and abilities necessary for:

- patient exams;
- interpretation of the results of laboratory and instrumental methods of research;
- building a diagnosis;
- prescribing treatment;
- prevention.

Knowledge, abilities, skills acquired during the study of the academic discipline «Internal Medicine», are necessary for the successful study of academic disciplines: «Clinical Immunology, Allergology», «Professional Diseases», modules: «Therapeutic Module 2», «Therapeutic Module 3».

Studying the educational discipline «Internal Diseases» should ensure the formation of students' specialized competence: provide primary and specialized medical care in cases of internal organs pathology, including urgent and life-threatening conditions, occupational diseases; conduct medical and social expertise of internal organs pathology, including occupational diseases; apply methods of tests interpretation for the diagnosis of autoimmune and allergic diseases, laboratory and immunological control data assessment during pathogenetic therapy.

As a result of studying the academic discipline «Internal Medicine» the student should

**know:**

- etiology, pathogenesis, clinical picture, diagnosis, principles of treatment and prevention of the most common diseases of internal organs of the adult population;
- rules of medical ethics and deontology;
- normative legal acts regulating the provision of medical care for diseases of human internal organs;

**able to:**

- examine the patient and assess the identified changes in various organs and organ systems;
- interpret the results of examination (clinical and biochemical tests, electrocardiogram, spirometry, bicycle ergometry, daily monitoring of blood pressure and electrocardiogram, bronchoscopy and esophagogastrosocopy, X-ray examination);
- choose the treatment tactics;

prescribe individual pharmacological treatment taking into account the mechanism of action, pharmacokinetics and pharmacodynamics of drugs, prevention of their undesirable side effects, possible interaction with concomitant administration of other drugs;

work with medical documentation, complying with the Law of the Republic of Belarus «On Personal Data Protection», draw up a medical record of an inpatient patient within the framework of writing a medical history;

provide medical care for the most common critical conditions encountered in practice;

give recommendations to the patient on primary prevention, healthy lifestyle, taking into account the state of his/her health;

use educational, scientific and reference literature;

ensure epidemiological safety in the provision of medical care;

**master:**

skills in interviewing a patient with internal organ disease;

skills in objective examination of patients;

skills in clinical interpretation of laboratory results;

skills in clinical interpretation of instrumental methods of investigation;

indirect cardiac massage skills;

skills of artificial ventilation (with Ambu bag, mouth-to-mouth).

**Total number** of hours for the study of the discipline is 394 academic hours, of which 257 classroom hours and 137 hours of student independent work. Classroom hours according to the types of studies: lectures – 48 hours (including 15 hours of supervised student independent work (SSIW)), practical classes – 209 hours.

Intermediate assessment is carried out on the module «Internal Medicine» (academic disciplines «Clinical Immunology, Allergology», «Professional Diseases») and on the academic discipline.

Intermediate assessment on the module: exam (10 semester), intermediate certification on the academic discipline: credit (7, 9 semesters) and exam (8 semester).

Form of higher education – full-time

**ALLOCATION OF ACADEMIC TIME ACCORDING TO  
SEMESTERS OF STUDY**

Code, name of the specialty	semester	Number of hours of training sessions						Form of intermediate assessment
		total	in-class	of which			out-of-class self-studies	
				lectures	supervised student independent work	practical classes		
<b>1-79 01 01 «General Medicine»</b>	<b>7</b>	138	93	9	6	78	45	credit
	<b>8</b>	112	72	9	3	60	40	examination
	<b>9</b>	64	45	6	3	36	19	credit
	<b>10</b>	80	47	9	3	35	33	examination
		<b>394</b>	<b>257</b>	<b>33</b>	<b>15</b>	<b>209</b>	<b>137</b>	

## THEMATIC PLAN

Name of section (topic)	Number of hours of classroom training	
	Lectures (incl. SSIW)	practical
<b>1. Respiratory diseases</b>	<b>6</b>	<b>30</b>
1.1. Acute and chronic bronchitis. Chronic obstructive pulmonary disease	1,5	6
1.2. Bronchial asthma	1,5	6
1.3. Pneumonias	1,5	6
1.4. Pleural effusion. Pneumonic diseases of the lungs. Bronchiectasis	-	6
1.5. Pulmonary embolism. Pulmonary hypertension. Core pulmonale	1,5	6
<b>2. Circulatory diseases</b>	<b>15</b>	<b>60</b>
2.1. Arterial hypertension	1,5	6
2.2. Secondary hypertension	-	6
2.3. Atherosclerosis. Coronary artery disease. Angina pectoris	1,5	6
2.4. Acute coronary syndrome. Myocardial infarction	1,5	6
2.5. Complications of myocardial infarction	1,5	6
2.6. Cardiomyopathies. Myocarditis	3	6
2.7. Pericarditis	-	
2.8. Infective endocarditis	1,5	6
2.9. Arrhythmias and blockages	3	12
2.10. Circulatory insufficiency (syncope, collapse, shock, acute and chronic heart failure)	1,5	6
<b>3. Digestive diseases</b>	<b>7,5</b>	<b>42</b>
3.1. Esophagitis. Gastroesophageal reflux disease. Functional diseases of the esophagus	-	6
3.2. Functional dyspepsia. Chronic gastritis. Gastroduodenal ulcers	1,5	6
3.3. Enteropathies. Celiac disease.	1,5	6
3.4. Diseases of the large intestine. Irritable bowel syndrome	1,5	6
3.5. Functional biliary disorders. Chronic pancreatitis	-	6
3.6. Chronic hepatitis. Steatosis of the liver. Gilbert's syndrome	1,5	6
3.7. Cirrhoses of the liver. Hemochromatosis. Wilson-Conovalov disease	1,5	6
<b>4. Diseases of the musculoskeletal system and connective tissue</b>	<b>9</b>	<b>36</b>
4.1. Acute rheumatic fever. Chronic rheumatic heart disease	1,5	6

Name of section (topic)	Number of hours of classroom training	
	Lectures (incl. SSIW)	practical
4.2. Acquired heart defects. Mitral valve prolapse	3	6
4.3. Joint diseases. Rheumatoid arthritis	1,5	6
4.4. Osteoarthritis. Gout		6
4.5. Systemic lupus erythematosus. Systemic sclerosis. Dermatomyositis/polymyositis	1,5	6
4.6. Systemic vasculitis	1,5	6
<b>5. Kidney and urinary tract diseases</b>	<b>4,5</b>	<b>18</b>
5.1. Acute and chronic glomerulonephritis	1,5	6
5.2. Urinary tract infections. Tubulointerstitial kidney diseases	1,5	6
5.3. Nephrotic syndrome. Renal amyloidosis. Chronic kidney disease and chronic renal failure	1,5	6
<b>6. Diseases of the blood system</b>	<b>6</b>	<b>23</b>
6.1. Anemias	3	6
6.2. Hemorrhagic diatheses	-	6
6.3. Hemoblastoses. Acute leukemia. Agranulocytosis	1,5	5
6.4. Chronic leukemia. True polycythemia. Multiple myeloma	1,5	6
<b>Total hours</b>	<b>48</b>	<b>209</b>

## CONTENT OF THE EDUCATIONAL MATERIAL

### 1. Respiratory diseases

#### 1.1. Acute and chronic bronchitis. Chronic obstructive pulmonary disease

Actual issues of medical ethics and deontology. Principles of forming the personality of a medical worker. The main models of building communications «doctor-patient».

Acute and chronic bronchitis: definition, prevalence, etiology, pathogenesis, clinical manifestations, diagnosis and differential diagnosis, treatment and prevention.

Chronic obstructive pulmonary disease (COPD): definition, epidemiology, risk factors. Pathogenesis of COPD. The modern concept of COPD (GOLD), developed by the World Health Organization (WHO). Clinical manifestations and variants of COPD course (assessment of dyspnea severity, severity of exacerbation). Extrapulmonary manifestations of COPD. Instrumental methods of research in COPD (spirometry, bodyplethysmography, diffusion capacity of the lungs), severity degree (I-IV) bronchial patency disorders, differential diagnosis. Complications of COPD. Principles of patient management in stable course and in COPD exacerbation: bronchodilator treatment (change of doses, frequency and method of drug administration), oxygen therapy, use of antibacterial treatment in case of infectious



episode, use of glucocorticoid drugs, including in combination with long-acting  $\beta_2$  - agonists and m-choline blockers, phosphodiesterase-4 inhibitor, respiratory support.

Curation of patients with COPD: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **1.2. Bronchial asthma**

Bronchial asthma: definition, etiology, risk factors, pathogenesis, classification, clinical manifestations. Global strategy for the treatment and prevention of bronchial asthma developed by WHO (GINA). Diagnosis of different forms of asthma: with predominance of allergic component, non-allergic, mixed, unspecified. The role of spirometry, pycfloumetry, bodiplasmography in establishing the variability of symptoms and lung function indices. Identification of allergies. Asthmatic status: diagnostic criteria, treatment. Tactics of treatment of patients depending on the severity of asthma at the beginning of the disease and on the degree of control over the disease during its development and course (in controlled, partially controlled, uncontrolled asthma). Inhalation treatment of asthma, types of inhalers. The use of nebulizers. Prevention of bronchial asthma. Prognosis in bronchial asthma.

Curation of patients with bronchial asthma: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **1.3. Pneumonias**

Pneumonias: definition, prevalence, etiology (bacterial, viral, caused by atypical pathogens, fungal pneumonias), predisposing factors, pathogenesis, classification, pathways of entry of the pathogen.

Health care-associated pneumonias. Ensuring epidemiological safety in the provision of medical care.

Clinical manifestations of pneumonia, criteria of severity. Clinical features of the course of pneumonia depending on the type of pathogen and the state of the immune system. Verification of the causative agent of pneumonia (microbiological, immunological methods). Laboratory, instrumental, radiologic methods of examination in pneumonia. Differential diagnosis of pneumonia. Complications of pneumonia. Emergency conditions in pneumonia: acute respiratory failure (acute respiratory distress syndrome), acute vascular failure, acute kidney damage, infectious toxic shock, acute psychosis, DIC, diagnosis, management tactics. Treatment of pneumonia: indications for hospitalization, antibacterial treatment, staged antibacterial treatment, criteria for the effectiveness of antibacterial treatment, antiviral drugs, anti-inflammatory drugs, symptomatic treatment. Criteria for recovery and discharge from the hospital organization. Prognosis, outcomes of pneumonia. Prevention of pneumonia.

Curation of patients with pneumonia: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

#### **1.4. Pleural effusion. Pneumonic diseases of the lungs. Bronchiectasis**

Pleural effusion: etiology and pathogenesis. Clinical and laboratory signs of exudate and transudate. Classification of pleurisy. Clinical manifestations, diagnosis, course of pleural effusion. Indications and technique of pleural cavity puncture. Laboratory evaluation of pleural effusion, differential diagnosis. Complications and outcomes in pleural effusion. Treatment of pleural effusion, indications for surgical treatment. Prevention of pleural effusion.

Nignoid lung diseases: definition, classification. Acute infectious destructions: abscess and gangrene. Risk factors for the development of suppurative lung diseases. Etiology of abscesses and gangrene of the lungs. Clinical manifestations and diagnosis of acute and chronic lung abscess, mediastinum, lung gangrene. Differential diagnosis of lung abscess with tuberculous caverns, bronchiectasis, suppurative cysts and hypoplasia, pleural empyema, mycotic suppuration, cavitory forms of cancer. Complications of suppurative lung diseases. Principles of therapeutic methods of treatment of suppurative lung diseases, indications for surgical treatment. Outcomes of suppurative lung diseases, prognosis. Prevention of suppurative lung diseases.

Hemoptysis and pulmonary hemorrhage: clinical manifestations, diagnosis, therapeutic and diagnostic fibrobronchoscopy, conservative treatment.

Bronchiectasis: definition, etiology and pathogenesis, predisposing factors. Identification of hereditary diseases with the formation of bronchiectasis. Clinical manifestations of bronchiectasis. The main methods of diagnostics of bronchiectasis: chest radiography, computed tomography (CT), magnetic resonance imaging (MRI), bronchoscopy, bronchography. Complications of bronchiectasis: pulmonary and extrapulmonary. Conservative treatment of bronchiectasis: antibacterial (in case of suppuration), postural drainage, sanation bronchoscopy, improvement of mucociliary transport, correction of immune disorders, oxygen therapy, physical therapy. Indications for surgical treatment in bronchiectasis. Prognosis in bronchiectasis.

Curation of patients with pleural effusion, suppurative lung diseases: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

#### **1.5. Pulmonary embolism. Pulmonary hypertension. Core pulmonale**

Pulmonary embolism: predisposing factors for venous thromboembolism, causes and mechanisms of development, classification, clinical presentation, diagnosis, differential diagnosis, emergency medical care. Assessment of clinical (pre-test) probability, pulmonary embolism severity and the risk of early death. Acute-phase treatment of low-, intermediate- or high-risk pulmonary embolism. Primary and secondary prevention of pulmonary embolism.

Pulmonary hypertension: definitions, mechanisms of development, risk factors. Classification: pulmonary arterial hypertension; pulmonary hypertension associated with left heart disease; pulmonary hypertension associated with lung diseases and/or hypoxia; pulmonary hypertension associated with chronic pulmonary artery obstruction; pulmonary hypertension with unclear and/or multifactorial mechanisms. Pulmonary hypertension diagnosis: electrocardiogram, echocardiography and

abdominal ultrasound, chest radiography, pulmonary function tests, ventilation/perfusion lung scan, non-contrast and contrast-enhanced chest computed tomography examinations, cardiac magnetic resonance imaging, right heart catheterization. Laboratory tests in pulmonary hypertension diagnosis. Severity and risk assessment in pulmonary hypertension. Complications of pulmonary hypertension. Principles of treatment of pulmonary hypertension (general, maintenance, initial, specific, combined treatment, surgical methods of treatment). Outcomes and prognosis of pulmonary hypertension.

Core pulmonale: definition, causes and mechanisms of development of acute and chronic core pulmonale, classification, clinical signs, laboratory and instrumental methods of diagnostics, principles of medical treatment, outcomes, prognosis, prevention.

Curation of patients with pulmonary embolism, pulmonary hypertension, chronic core pulmonale: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

## **2. Circulatory diseases**

### **2.1. Arterial hypertension**

Classification of office blood pressure and definitions of hypertension grades.

Medical and social significance of arterial hypertension. Definition of hypertension. Classification of hypertension. Principles of primary hypertension pathophysiology. Hypertension and total CV risk assessment (risk factors, hypertension-mediated organ damage, established cardiovascular and kidney disease). The work-up in patients with suspected or established hypertension. Treatment of hypertension: lifestyle interventions and antihypertensive drug treatment. Drug classes for BP-lowering therapy. Antihypertensive drug combinations. The polypill concept. Device-based treatment of hypertension. Target blood pressure levels in patients with hypertension. Complications of hypertension. Prognosis for hypertension. Prevention of hypertension.

Classification of hypertension disorders in pregnancy. Hypertension management in pregnancy

Hypertensive urgencies and emergencies: definitions, classification, clinical manifestations of various options, basic principles of treatment (relief of crises).

Curation of patients with hypertension: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

### **2.2. Secondary hypertension**

Causes of secondary hypertension. Pathogenesis of increased blood pressure in various types of secondary hypertension. Features of clinical manifestations, diagnosis and differential diagnosis of symptomatic hypertension. Therapeutic tactics for symptomatic hypertension.

Curation of patients with pulmonary embolism, pulmonary hypertension, chronic core pulmonale: collection of complaints and anamnesis of the disease;

physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

### **2.3. Atherosclerosis. Coronary artery disease. Angina pectoris**

Atherosclerosis. Etiology and pathogenesis of atherosclerosis. Formation of atherosclerotic plaque. Risk factors of atherosclerotic cardiovascular disease. Types of hyperlipidemias. Clinical manifestations and diagnosis of atherosclerosis depending on its predominant localization (aorta, heart vessels, brain, limbs, kidneys, intestines). Methods for visualizing atherosclerotic lesions: ultrasound, computed tomography, magnetic resonance imaging, coronary angiography. Drugs for treatment of dyslipidaemias. Principles of treatment of atherosclerosis: non-pharmacological and pharmacological treatment. Primary and secondary prevention of atherosclerosis. Assessment of general cardiovascular risk and a differentiated approach to the prescription of lipid-lowering treatment. Indications for surgical treatment of atherosclerosis.

Coronary artery disease (CAD). Medical and social significance of the problem of CAD. Etiology and pathogenesis CAD. CAD classification. The concept of chronic coronary syndromes. Instrumental methods for diagnosing coronary heart disease: electrocardiography (ECG), echocardiography, radiation methods, coronary angiography. The role of stress testing in the diagnosis of coronary artery disease. Definition of «sudden cardiac death». Algorithm for cardiopulmonary resuscitation during circulatory arrest. High-tech methods of surgical treatment of coronary artery disease: aorto-, mammary-coronary bypass surgery, angioplasty and stenting of coronary arteries. Prognosis for CAD. Prevention of CAD.

Angina pectoris. Classification of angina pectoris. Pathogenesis and the characteristics of discomfort related to myocardial ischaemia (angina pectoris). Grading of effort angina severity according to the Canadian Cardiovascular Society. Atypical clinical manifestations of angina pectoris. Silent myocardial ischemia. Vasospastic angina. Microvascular angina. Differential diagnosis of angina pectoris. Principles of treatment of angina pectoris. Anti-ischaemic drugs in patients with chronic coronary syndromes. Immediate relief of effort angina. Organizational and therapeutic tactics for stable and unstable angina, possible outcomes. Indications for coronary angiography for angina pectoris, indications for interventional and surgical treatment methods for chronic coronary syndromes.

Curation of patients with chronic coronary syndromes: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

### **2.4. Acute coronary syndrome. Myocardial infarction**

Acute coronary syndrome (ACS): definition, clinical manifestations, diagnosis, classification, treatment tactics for ACS with/without ST segment elevation. Acute pharmacotherapy in ACS. Selection of invasive strategy and reperfusion therapy (invasive strategy, fibrinolysis and pharmaco-invasive strategy). Indications and contraindications of fibrinolysis in ACS, signs of successful reperfusion.

Myocardial infarction (MI): definition, etiology and pathogenesis, classification. Typical and atypical clinical variants of MI, MI severity classes,

periods of MI. Electrocardiographic diagnosis of MI: by depth of lesion, localization, periods. Biomarker of cardiomyocyte injury. Instrumental diagnostics of MI. Differential diagnosis of MI. Principles of treatment of MI: pain relief, reperfusion of the infarct-related artery, antithrombotic treatment, limiting the area of ischemic damage, prevention of complications. Emergency medical care for complications of myocardial infarction. Indications for surgical treatment of MI. Principles of physical and mental rehabilitation of patients after MI. Prognosis for MI, primary and secondary prevention of MI.

Curation of patients with myocardial infarction: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

### **2.5. Complications of myocardial infarction**

Complications of myocardial infarction (MI) in acute and subacute periods. Classification of acute heart failure according to Killip. Acute left ventricular failure: clinical picture, treatment and diagnostic tactics. Cardiogenic shock: diagnostic criteria, classification, treatment and diagnostic tactics. Arrhythmias (supraventricular and ventricular tachyarrhythmias, conduction disturbances): diagnostic and treatment tactics. Left ventricular aneurysm: diagnosis, treatment tactics. Left ventricular thrombus, thromboembolic complications. Mechanical complications of MI (rupture of the interventricular septum, free wall of the left ventricle, papillary muscle with the development of acute mitral regurgitation): clinical signs, diagnostic and treatment tactics. Post-acute coronary syndrome pericarditis (early infarct-associated pericarditis, late pericarditis or post-cardiac injury (Dressler) syndrome and pericardial effusion): diagnostics, treatment tactics.

Curation of patients with myocardial infarction: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

### **2.6. Cardiomyopathies. Myocarditis**

Cardiomyopathy: definition, etiology, pathogenesis, disorders of intracardiac hemodynamics in patients with dilated, hypertrophic, restrictive cardiomyopathy. Main clinical syndromes in cardiomyopathies. Instrumental methods of diagnosis of cardiomyopathy: ECG, echocardiography, magnetic resonance imaging, radionuclide techniques, myocardial biopsy. Principles of treatment of cardiomyopathies, indications for surgical treatment. Prognosis for cardiomyopathies.

Myocarditis: definition, etiology and pathogenesis, classification, pathomorphology, clinical manifestations, instrumental and laboratory diagnosis. Indications for endomyocardial biopsy. Diagnostic criteria for «clinically suspected» myocarditis. Differential diagnosis of myocarditis. Complications of myocarditis. Principles of treatment of myocarditis. Outcomes and prognosis for myocarditis.

Curation of patients with cardiomyopathies, myocarditis: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

## **2.7. Pericarditis**

Pericarditis: definition, etiology and pathogenesis, classification, clinical manifestations. Diagnosis of acute pericarditis. Principles of treatment of pericarditis. Complications of pericarditis. Cardiac tamponade. Indications for pericardial puncture and surgical treatment of pericarditis. Constrictive pericarditis. Outcomes and prognosis for pericarditis.

Curation of patients with pericarditis: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

## **2.8. Infective endocarditis**

Infective endocarditis (IE): definition, epidemiology, etiology and pathogenesis, classification, pathomorphology, main clinical manifestations. Diagnostic algorithm and differential diagnosis of IE. Diagnostic criteria for IE. Complications of IE.

Pharmacological treatment of IE (etiologic, pathogenetic and symptomatic), criteria for cure. Prognosis for IE. Indications for early surgical treatment of IE.

Populations at risk of infective endocarditis. Infective endocarditis prevention.

Curation of patients with infective endocarditis: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

## **2.9. Arrhythmias and blockages**

Risk factors, electrophysiological mechanisms of arrhythmias and heart blocks. Classification of arrhythmias. Basic methods for diagnosing arrhythmias and heart blocks.

Extrasystole: etiology, classification, clinical manifestations, ECG criteria, diagnostic algorithm for extrasystole, antiarrhythmic treatment, prevention.

Atrial fibrillation and flutter: etiology, pathogenesis, classification, clinical symptoms. ECG criteria for atrial fibrillation and flutter. Strategies for the treatment of atrial fibrillation (prevention of thromboembolic complications, treatment of the arrhythmia itself, treatment of comorbid pathology). Assessment of the risk of thromboembolic events in patients with atrial fibrillation/flutter (CHA<sub>2</sub>DS<sub>2</sub>-VASc score). Indications and contraindications for cardioversion in atrial fibrillation/flutter, methods of cardioversion. Prevention of paroxysms of atrial fibrillation/flutter. Prognosis for atrial fibrillation and flutter.

Paroxysmal tachycardia: etiology, pathogenesis, classification, clinical signs, ECG diagnosis, diagnostic and treatment tactics. Algorithms for acute management of paroxysmal tachycardia. Indications for synchronized cardioversion, catheter ablation of the source of arrhythmia. Prevention and prognosis for paroxysmal cardiac arrhythmias.

Ventricular fibrillation: etiology, clinical manifestations, ECG diagnosis, cardiopulmonary resuscitation algorithm.

Ventricular preexcitation syndromes. Wolf-Parkinson-White syndrome (WPW syndrome): pathogenesis, classification, clinical manifestations, treatment and

diagnostic tactics. Restrictions in prescribing antiarrhythmic drugs in patients with WPW syndrome.

Heart blocks (sinoauricular, atrioventricular and intraventricular): etiology, pathogenesis, clinical manifestations, ECG diagnosis. Morgagni-Adams-Stokes syndrome. Pharmacological treatment of heart blocks, temporary cardiac pacing, pacemaker implantation. Prognosis for heart block.

Sick sinus syndrome: classification, diagnostics, medical tactic.

Indications for implantation of intracardiac devices (pacemakers, resynchronization devices, cardioverter-defibrillators).

Curation of patients with arrhythmias and heart blocks: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

### **2.10. Circulatory insufficiency (syncope, collapse, shock, acute and chronic heart failure)**

Acute vascular insufficiency (syncope, collapse, shock): causes, difference between syncope and collapse, diagnosis and emergency medical care. Emergency care for anaphylactic shock.

Acute heart failure (left ventricular (cardiac asthma and pulmonary edema) and right ventricular (acute cor pulmonale)): causes, pathogenesis, pathophysiology, clinical manifestations. Instrumental diagnosis of acute heart failure: EchoCG, ECG, chest radiography, CT with contrast, angiography. Emergency medical care for acute heart failure at the prehospital stage and in hospital settings. Prognosis for acute heart failure. Prevention of acute heart failure.

Chronic heart failure (CHF): epidemiology, etiology and pathogenesis, classification, criteria for diastolic and systolic myocardial dysfunction. Clinical manifestations of heart failure. Instrumental diagnosis of CHF, 6-minute walk test. The significance of determining the level of brain natriuretic peptide. Treatment of CHF: non-pharmacological methods, pharmacological treatment, hardware and surgical treatment (revascularization, resynchronization therapy, implantable cardioverter-defibrillators, heart transplantation). Prognosis for CHF. Prevention of CHF.

Curation of patients with heart failure: collection of complaints and anamnesis of the disease; physical examination; preparation of the examination plan; interpretation of the obtained laboratory and instrumental data; making diagnosis; making treatment plan.

## **3. Digestive diseases**

### **3.1. Esophagitis. Gastroesophageal reflux disease. Functional diseases of the esophagus**

Esophagitis: definition, etiology, pathogenesis. Risk groups for the development of esophagitis. Classification. Clinical manifestations. Diagnostics, differential diagnosis. Candidal esophagitis. Eosinophilic esophagitis. Diagnostic criteria for eosinophilic esophagitis. Treatment of esophagitis. Complications of esophagitis. Indications for surgical treatment. Prevention of esophagitis.

Gastroesophageal reflux disease (GERD): definition, epidemiology, major risk factors, pathogenesis, classification, clinical picture, differential diagnosis. Extraesophageal manifestations of GERD: bronchopulmonary, otolaryngologic, dental. Instrumental diagnosis of GERD: esophagoscopy, daily pH-metry, radiologic examination, histologic examination, manometry. Complications of GERD: esophageal strictures, bleeding, Barrett's esophagus. Risk factors for the development of complications of GERD. Treatment of GERD. Management of patients with Barrett's esophagus.

Functional diseases of the esophagus: definition of the concept. Causes of occurrence. Diagnostic criteria for functional substernal pain of esophageal origin, functional dysphagia, lump in the throat, functional heartburn, hypersensitive reflux syndrome. Treatment.

Curation of patients with GERD: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **3.2. Functional dyspepsia. Chronic gastritis. Gastroduodenal ulcers**

Functional dyspepsia: definition, epidemiology, causes of development, pathogenesis, classification, clinical manifestations. Diagnostic criteria of epigastric pain syndrome and postprandial distress syndrome, differential diagnosis. Treatment of functional dyspepsia.

Chronic gastritis: definition, prevalence, the role of exogenous and endogenous factors in the development of the disease, pathogenesis, classification. The main methods of diagnosis of chronic gastritis: endoscopic, morphologic, detection of *Helicobacter pylori* infection. Leading morphological signs of chronic gastritis: degree of inflammation, gastritis activity, degree of atrophy and intestinal metaplasia, density of *Helicobacter pylori* infection. Treatment of *Helicobacter pylori*-associated gastritis, other types of gastritis.

Gastroduodenal ulcers: definition, prevalence, etiology and pathogenesis, factors of aggression and protection of the gastric mucosa, clinical manifestations depending on the ulcer localization. Instrumental diagnosis of gastroduodenal ulcers: endoscopic and radiologic method, histologic examination, tests for detection of *Helicobacter pylori*. Differential diagnosis of gastroduodenal ulcers. Complications of gastroduodenal ulcers: bleeding, perforation, penetration, periviscitis, gatekeeper stenosis, malignization. Tactics of a general practitioner in the detection of complications of gastroduodenal ulcers. Treatment of uncomplicated ulcers: diet, eradication of *Helicobacter pylori*, antisecretory treatment, symptomatic drugs, gastroprotectors. Duration of basic treatment depending on the localization of the ulcer. Methods of secondary prevention of gastroduodenal ulcers: continuous supportive and «on demand». Indications for surgical treatment of gastroduodenal ulcers.

Symptomatic ulcers: definition, NSAID-gastropathy, mechanisms of formation of symptomatic ulcers, endoscopic characterization, clinical manifestations, bleeding risk factors, treatment, prevention. Palliative care for patients with gastroduodenal cancer.



Curation of patients with diseases of the upper gastrointestinal tract: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **3.3. Enteropathies. Celiac disease**

Enteropathies: definition, etiology, pathogenesis, classification, the role of excessive bacterial growth in the intestine, enzymopathies, clinical manifestations. The main syndromes in enteropathy: digestive failure, absorption failure, exudative enteropathy. Methods of diagnosis of enteropathy (endoscopic, morphologic, radiologic, functional methods of investigation of absorption processes), changes in laboratory parameters, differential diagnosis. Treatment of enteropathy: diet, antibacterial treatment, probiotics and prebiotics, enzyme treatment, regulators of intestinal motor evacuatory function.

Celiac disease: etiology, pathogenesis, clinical manifestations, diagnosis, treatment, prevention, prognosis.

Curation of patients with enteropathies: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **3.4. Diseases of the large intestine. Irritable bowel syndrome**

Ulcerative colitis, Crohn's disease: definition, prevalence, etiology and pathogenesis, classification, clinical manifestations, extraintestinal manifestations. Instrumental methods of diagnosis of ulcerative colitis and Crohn's disease: endoscopic, morphologic, radiologic, ultrasound. Criteria of activity of ulcerative colitis and Crohn's disease, complications. Treatment of ulcerative colitis and Crohn's disease: diet, basic (induction and supportive) treatment depending on the extent and degree of activity (5-aminosalicylic acid derivatives, glucocorticoids, immunosuppressants, monoclonal antibodies), symptomatic drugs, indications for surgical treatment.

Colitis with known etiology: ischemic, radiation, antibiotic-associated (pseudomembranous). Rare forms of colitis (microscopic colitis): collagen and lymphocytic colitis.

Irritable bowel syndrome: definition, prevalence, etiology and pathogenesis, pathophysiology. Clinical manifestations and diagnostic criteria of the main variants of irritable bowel syndrome: with predominance of constipation, diarrhea, mixed and nonspecific. Treatment of irritable bowel syndrome: diet, impact on the psycho-emotional sphere, pain syndrome management, correction of impaired intestinal function. Prevention of irritable bowel syndrome in risk groups.

Curation of patients with intestinal diseases: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **3.5. Functional biliary disorders. Chronic pancreatitis**

Functional biliary disorders: definition, causes of development, pathogenesis, classification, clinical manifestations. Diagnostic criteria, diagnosis and treatment of functional gallbladder disorder, functional biliary and pancreatic disorders of sphincter of Oddi.

Chronic pancreatitis: definition, etiologic factors, pathogenesis, classification, clinical picture, criteria of severity of chronic pancreatitis. Laboratory and instrumental methods of diagnosis of chronic pancreatitis: dynamics of enzymes (amylase, lipase, elastase), coprological examination, ultrasound, endoscopic ultrasonography, fibrogastroduodenoscopy, CT, magnetic resonance cholangiopancreatography. Diagnostic criteria of chronic pancreatitis, differential diagnosis. Complications of chronic pancreatitis. Treatment of chronic pancreatitis: diet, pharmacological treatment (pain relief, compensation of exocrine insufficiency, correction of nutritional status disorders), indications for surgical treatment.

Curation of patients with chronic pancreatitis: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **3.6 Chronic hepatitis. Steatosis of the liver. Gilbert's syndrome**

Chronic hepatitis: definition, epidemiology, etiology, pathogenesis (depending on etiologic factors), classification. Biochemical markers of cytolytic syndrome, cholestasis, hepatocellular insufficiency, mesenchymal-inflammatory syndrome. Criteria of chronic hepatitis activity: clinical, biochemical, morphological.

Autoimmune hepatitis: definition, prevalence, etiology (genetic and trigger factors), pathogenesis (immunoregulatory defects, major autoantibodies and target organs), main clinical symptoms (hepatic and extrahepatic), diagnosis, prognosis.

Chronic viral hepatitis: features of the clinical picture depending on the viral infection (B, C, D, E), verification of viral hepatitis, complications, prognosis, primary prevention, vaccination.

Chronic drug-induced hepatitis: prevalence, drugs causing hepatitis, mechanisms of direct cytotoxic action of drug metabolites on the liver, clinical, biochemical, serologic, morphologic manifestations, prognosis.

Cryptogenic hepatitis: definition, differential diagnosis.

Treatment of hepatitis: diet, indications for the use of antiviral drugs, corticosteroids, immunosuppressive drugs, hepatoprotectors, methods of extracorporeal therapy.

Liver steatosis: etiology, pathogenesis, classification, clinical manifestations, diagnosis, treatment.

Gilbert's syndrome: clinical manifestations, diagnosis, treatment, prognosis.

Curation of patients with chronic hepatitis: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **3.7 Cirrheses of the liver. Hemochromatosis. Wilson-Conovalov disease**

Liver cirrhosis: definition, epidemiology, etiology and pathogenesis, classification, severity classes. Clinical manifestations of viral, alcoholic, primary and secondary biliary cirrhosis of the liver. Diagnosis of liver cirrhosis: transient elastography of the liver, liver biopsy, assessment of portal hypertension. Hypersplenism. Complications of liver cirrhosis: bleeding from esophageal and gastric varices, ascites, hepatic encephalopathy, hepatopulmonary syndrome, hepatorenal syndrome, portal hypertensive gastropathy and colopathy, spontaneous bacterial peritonitis. Associated with cirrhosis: nutritional disorders, disorders of systemic hemodynamics, respiratory system disorders, hemostasis, hepatocellular cancer. Differential diagnosis of liver cirrhosis, chronic hepatitis and hepatocarcinoma. Oncomarkers. Principles of treatment of liver cirrhosis: general measures, pharmacologic treatment and its peculiarities in different forms of liver cirrhosis. Treatment of complications of liver cirrhosis. Indications for liver transplantation. Prognosis in liver cirrhosis. Prevention of liver cirrhosis.

Primary biliary cirrhosis of the liver: etiology, pathogenesis, clinical manifestations, diagnosis, treatment.

Hemochromatosis: primary and secondary iron overload syndrome, etiology, pathogenesis, clinical manifestations, diagnosis, treatment, prevention, prognosis.

Wilson-Conovalov disease: etiology, pathogenesis, clinical manifestations, diagnosis, treatment, prevention, prognosis.

Curation of patients with liver cirrhosis: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

## **4. Diseases of the musculoskeletal system and connective tissue**

### **4.1. Acute rheumatic fever. Chronic rheumatic heart disease**

Acute rheumatic fever: definition, epidemiology, etiology, pathogenesis, classification, clinical manifestations, diagnosis, diagnostic criteria, differential diagnosis, treatment, outcomes, primary and secondary prevention.

Chronic rheumatic heart disease: definition, diagnosis, patient management strategy.

Management of patients with chronic rheumatic heart disease: collecting complaints and medical history; physical examination; developing an investigation plan; interpretation of results of laboratory and instrumental examination methods; establishing a diagnosis; developing a treatment plan.

### **4.2. Acquired heart defects. Mitral valve prolapse**

Acquired heart defects. Mitral valve insufficiency. Mitral stenosis. Aortic valve insufficiency. Aortic stenosis. Etiology of valve defects. Pathogenesis of hemodynamic disorders in acquired heart defects. Clinical manifestations, direct and indirect signs of heart defects. The importance of instrumental methods in diagnosing heart defects (ECG, echocardiography, transesophageal echocardiography, chest X-ray, CT and MRI of the heart).

Combined and mixed heart defects: features of the clinical picture, determination of the predominant defect, diagnosis, course, complications, prognosis. Relative and absolute valve insufficiency.

Complications of acquired heart defects. Causes of decompensation of heart defects. Prognosis of acquired heart defects. Principles of treatment of heart defects, indications for surgical treatment. Features of therapeutic management of patients with prosthetic valves.

Mitral valve prolapse: definition, causes of primary and secondary mitral valve prolapse, classification, minor heart anomalies, diagnosis, significance of ECG and echocardiography, course, complications, prognosis, principles of therapeutic treatment, indications for surgical treatment.

Management of patients with heart defects: collecting complaints and medical history; physical examination; developing an investigation plan; interpretation of results of laboratory and instrumental examination methods; establishing a diagnosis; developing a treatment plan.

### **4.3. Joint diseases. Rheumatoid arthritis**

Prevalence of joint diseases, social significance, nomenclature of joint diseases.

Rheumatoid arthritis: definition, prevalence, etiology, predisposing factors, pathogenesis, classification, clinical manifestations, involvement of other organs and systems in humans. Diagnostic criteria, laboratory and instrumental methods for diagnosing rheumatoid arthritis. Differential diagnosis of rheumatoid arthritis with gout, osteoarthritis, joint syndrome in systemic connective tissue diseases, acute rheumatic fever. Complications of rheumatoid arthritis, prognosis. Treatment of rheumatoid arthritis: basic, pathogenetic, symptomatic, non-pharmacological treatment methods, physical rehabilitation. Prevention of exacerbations of rheumatoid arthritis.

Palliative care for patients with diseases of the musculoskeletal system and connective tissue who have lost the ability to self-care and have persistent pain syndrome.

Management of patients with rheumatoid arthritis: collecting complaints and medical history; physical examination; developing an investigation plan; interpretation of results of laboratory and instrumental examination methods; establishing a diagnosis; developing a treatment plan.

### **4.4. Osteoarthritis. Gout**

Osteoarthritis: definition, prevalence, etiology, pathogenesis, risk factors, clinical manifestations depending on the localization of the process, diagnosis, differential diagnosis with rheumatoid arthritis and gout. Treatment of osteoarthritis: non-pharmacological methods, pharmacological treatment, physical rehabilitation. Prevention of osteoarthritis progression. Prognosis of osteoarthritis.

Gout: definition, etiology, predisposing factors, causes of primary and secondary hyperuricemia, pathogenesis, classification, main clinical syndromes (joint, involvement of other organs and systems). Acute gouty attack: precipitating factors, clinical manifestations. Laboratory and instrumental diagnosis of gout, differential diagnosis with rheumatoid arthritis and osteoarthritis. Complications of gout. Treatment of gout: alleviation of acute gouty attack, hypouricemic treatment,

dietary recommendations, physical rehabilitation. Prevention of gout. Prognosis in gout.

Management of patients with osteoarthritis and gout: collecting complaints and medical history; physical examination; developing an investigation plan; interpretation of results of laboratory and instrumental examination methods; establishing a diagnosis; developing a treatment plan.

#### **4.5. Systemic lupus erythematosus. Systemic sclerosis. Dermatomyositis/polymyositis**

Systemic lupus erythematosus: definition, epidemiology, etiology and pathogenesis, classification, clinical manifestations, laboratory and instrumental diagnosis, diagnostic criteria, differential diagnosis, course, principles of treatment, outcomes, complications, prognosis.

Systemic sclerosis: definition, etiology and pathogenesis, classification, clinical manifestations, laboratory and instrumental diagnosis, diagnostic criteria, differential diagnosis, principles of treatment, outcomes, prognosis.

Dermatomyositis/polymyositis: definition, etiology and pathogenesis, clinical manifestations, laboratory and instrumental diagnosis, diagnostic criteria, differential diagnosis, primary and secondary dermatomyositis/polymyositis, treatment, course, prognosis.

Management of patients with systemic lupus erythematosus, systemic sclerosis: collecting complaints and medical history; physical examination; developing an investigation plan; interpretation of results of laboratory and instrumental examination methods; establishing a diagnosis; developing a treatment plan.

#### **4.6. Systemic vasculitis**

Etiology and pathogenesis, classification, general principles of diagnosis and treatment of systemic vasculitis.

Vasculitis with predominant involvement of small-caliber vessels (IgA vasculitis (Henoch-Schönlein purpura), granulomatosis with polyangiitis, eosinophilic granulomatosis with polyangiitis, microscopic polyangiitis): clinical manifestations, course variants, diagnosis, treatment.

Vasculitis with predominant involvement of medium-caliber vessels (polyarteritis nodosa, Kawasaki disease): clinical manifestations, course variants, diagnosis, treatment.

Vasculitis with predominant involvement of large vessels (non-specific aortoarteritis, giant cell arteritis): clinical manifestations, diagnosis, treatment. Diagnostic criteria for rheumatic polymyalgia.

Management of patients with systemic vasculitis: collecting complaints and medical history; physical examination; developing an investigation plan; interpretation of results of laboratory and instrumental examination methods; establishing a diagnosis; developing a treatment plan.

### **5. Kidney and urinary tract diseases**

#### **5.1. Acute and chronic glomerulonephritis**

Acute glomerulonephritis: etiology, pathogenesis, clinical manifestations. The concept of nephritic syndrome. Methods of diagnosis of acute glomerulonephritis,

principles of treatment, outcomes, prognosis. Prevention of post-streptococcal glomerulonephritis.

Chronic glomerulonephritis: pathogenesis of various forms, classification (clinical and morphological). The role of kidney biopsy in the diagnosis of nephrologic diseases. Assessment of the functional state of the kidneys. Urinary syndrome. Differentiated approach to the treatment of chronic glomerulonephritis.

Curation of patients with chronic glomerulonephritis: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **5.2. Urinary tract infection. Tubulointerstitial kidney diseases**

Urinary tract infection: clinical manifestations, diagnosis, treatment. Features of management of pregnant women with urinary tract infection.

Chronic pyelonephritis: etiology, pathogenesis, classification, clinical manifestations, diagnosis, treatment, peculiarities of antibacterial treatment, prevention of exacerbations.

Tubulointerstitial nephritis: causes of development, diagnosis, differential diagnosis with glomerulonephritis, treatment. Features of drug interstitial nephritis.

Curation of patients with urinary tract infection: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **5.3. Nephrotic syndrome. Renal amyloidosis. Chronic kidney disease and chronic renal failure**

Nephrotic syndrome: the most common diseases accompanied by the development of nephrotic syndrome, pathogenesis, clinical manifestations, diagnosis, complications, therapeutic tactics.

Renal amyloidosis: modern ideas about etiology and pathogenesis, classification. The most frequent diseases accompanied by the development of amyloidosis. Clinical stages of renal amyloidosis, diagnosis, the role of morphologic examination, therapeutic tactics, preventive measures.

Chronic kidney disease (CKD): classification of stages. The main diseases leading to the development of CKD. Factors of progression of CKD. Control of the functional state of the kidneys. Clinical manifestations, diagnostic methods, conservative treatment of CKD. Therapeutic aspects when using methods of extracorporeal detoxification or efferent methods (hemodialysis, peritoneal dialysis). Kidney transplantation.

Palliative care for patients with terminal CKD.

Curation of patients with nephrotic syndrome, chronic kidney disease: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

## **6. Diseases of the blood system**

### **6.1. Anemias**

Erythropoiesis, hemoglobin synthesis. Definition and classification of anemias. Criteria for assessing the severity of anemia. Common symptoms of anemia: laboratory, clinical.

Iron deficiency anemias: prevalence, iron metabolism in the human body, etiology and pathogenesis, clinical manifestations. Laboratory signs of iron deficiency. Differential diagnosis of iron deficiency anemias with iron-saturated anemias. Treatment and prevention of iron deficiency anemia: diet, iron-containing drugs. Indications for parenteral administration of iron-containing drugs.

Anemias associated with impaired DNA and RNA synthesis (megaloblastic anemias): etiology, pathogenesis of B<sub>12</sub>-deficiency and folate-deficiency anemias, clinical manifestations, hematologic picture, myelogram, differential diagnosis of vitamin B<sub>12</sub> and folate deficiency. Treatment, prevention and prognosis of megaloblastic anemias.

Hemolytic anemias: causes, pathogenesis depending on etiology, classification, manifestations of intravascular and intracellular hemolysis, hemolytic crises, clinical manifestations, laboratory diagnosis, immunological diagnosis. Basic treatment of hemolytic anemias, management of hemolytic crises, indications for surgical treatment.

Aplastic anemias: the structure of etiological factors, pathogenesis of aplastic anemia and individual clinical and laboratory syndromes, classification, clinical manifestations and diagnosis of congenital and acquired (primary and secondary) anemias. Treatment of aplastic anemias, indications for bone marrow transplantation.

Anemia of chronic disease (in CKD, connective tissue diseases, endocrine diseases): diagnosis, treatment, prognosis.

Indications for transfusion of erythrocyte mass, «washed» red blood cells in various variants of anemia. Rules of transfusion, control, registration of medical documentation. Prevention of hemotransfusion reactions.

Curation of patients with anemia: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **6.2. Hemorrhagic diatheses**

Hemorrhagic diathesis: definition, causes of development, classification, common signs, types of bleeding, methods of diagnosis.

Idiopathic thrombocytopenic purpura: main etiologic factors, pathogenesis of bleeding, clinical manifestations, diagnosis, differential diagnosis with symptomatic thrombocytopenias, course, treatment.

Hemophilia: the importance of hereditary factor in the development of the disease, forms, pathogenesis of bleeding, clinical manifestations, course, diagnosis, treatment, prevention, prognosis. Secondary coagulopathies: causes, diagnosis, tactics of patient management.

Hemorrhagic telangiectasia (Randu-Osler disease): pathogenesis of bleeding, role of hereditary factor, clinical manifestations, diagnosis, treatment.

Curation of patients with hemorrhagic diathesis: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **6.3. Hemoblastoses. Acute leukemia. Agranulocytosis**

Hemoblastoses. The importance of hereditary factor, radiation, chemical substances, viruses, changes in tryptophan metabolism in the development of hemoblastosis. Pathogenesis, classification, clinical and hematologic syndromes of hemoblastoses, myeloproliferative and lymphoproliferative diseases, paraproteinemic hemoblastoses.

Acute leukemia: classification, major clinical syndromes, laboratory and morphological diagnosis, immunological phenotyping of leukemia cells. Course and complications of acute leukemia. Principles of treatment of acute leukemia (cytostatic and detoxification treatment, immunotherapy, treatment of hemorrhagic syndrome and anemia, bone marrow transplantation). Cytostatic disease. Outcomes of acute leukemia.

Palliative care for patients with oncohematologic diseases.

Agranulocytosis: etiology and pathogenesis, clinical variants (myelotoxic, immune), laboratory diagnosis. Complications and course of agranulocytosis. Treatment and prevention of agranulocytosis. Prognosis in agranulocytosis.

Curation of patients with acute leukemia: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

### **6.4. Chronic leukemia. True polycythemia. Multiple myeloma**

Chronic myeloleukosis: pathogenesis, laboratory and morphologic diagnosis, clinical manifestations, stages of course, complications, treatment, prognosis.

Leukemoid reactions: diagnosis and differential diagnosis.

Chronic lympholeukemia: pathogenesis, laboratory and morphologic diagnosis, the main clinical syndromes, stages of course, principles of treatment, prognosis.

Curation of patients with chronic leukemia: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.

True polycythemia: pathogenesis, stages of the course of the disease and the main clinical syndromes, differential diagnosis with symptomatic erythrocytosis, course and outcomes of the disease. Principles of treatment of polycythemia and its complications. Prognosis in polycythemia.

Multiple myeloma: pathogenesis, clinical manifestations, diagnosis, principles of treatment, prognosis.

Waldenström's macroglobulinemia: clinical manifestations, diagnosis, principles of treatment.

Curation of patients with leukemoid reactions, polycythemia, multiple myeloma: collection of complaints and history of the disease; objective examination; drawing up an examination plan; interpretation of the results of laboratory and instrumental methods of examination; making a diagnosis; drawing up a treatment plan.



## ACADEMIC DISCIPLINE CURRICULAR CHART

Section, topic #	Section (topic) name	Number of classroom hours		Supervised student independent work	Practical skills	Form of control	
		lectures	practical			of practical skills	of current / intermediate assessment
<b>Semester 7</b>							
	<b>Lectures</b>	<b>9</b>	-	<b>6</b>			
1.1.	Acute and chronic bronchitis. Chronic obstructive pulmonary disease.	1,5	-	-			
2.1.	Arterial hypertension.	1,5	-	-			
2.3.	Atherosclerosis. Coronary artery disease. Angina pectoris	1,5	-	-			
2.4.	Acute coronary syndrome. Myocardial infarction.	1,5	-	-			
2.9.	Arrhythmias and blockages: supraventricular arrhythmias	1,5	-	-			
2.9.	Arrhythmias and blockages: ventricular arrhythmias; blockages	1,5	-	-			
1.2.	Bronchial asthma	-	-	1,5			Oral response assessment, testing
1.3.	Pneumonias	-	-	1,5			Oral response assessment, testing
1.5.	Pulmonary embolism. Pulmonary hypertension. Core pulmonale	-	-	1,5			Oral response assessment, testing

2.5.	Complications of myocardial infarction	-	-	1,5			Oral response assessment, testing
	<b>Practical classes</b>	-	<b>78</b>	-			
1.1.	Acute and chronic bronchitis. Chronic obstructive pulmonary disease	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of spirometers	Performing at the patient's bedside or on-screen patient simulator, solving situational problems*	Survey, electronic testing
1.2.	Bronchial asthma	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of spirometers. Management of bronchial asthma attack	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
1.3.	Pneumonias	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of radiographs	Performing at the patient's bedside or on-screen patient simulator, solving situational problems	Survey, electronic testing
1.4.	Pleural effusion. Pneumonic diseases of the lungs. Bronchiectasis	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of radiographs	Performing at the patient's bedside, solving situational problems*	Survey, electronic testing
1.5.	Pulmonary embolism. Pulmonary hypertension. Core pulmonale	-	6	-	Interviewing the patient. Physical examination of the patient. ECG interpretation	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
2.1.	Arterial hypertension	-	6	-	Interviewing the patient. Physical examination of the patient. Management of uncomplicated hypertensive crisis	Performing at the patient's bedside, case study	Survey, electronic testing

2.2.	Secondary hypertension	-	6	-	Interviewing the patient. Physical examination of the patient	Performing at the patient's bedside	Survey, electronic testing
2.3.	Atherosclerosis. Coronary artery disease. Angina pectoris	-	6	-	Interviewing the patient. Physical examination of the patient. ECG interpretation. Management of angina attacks. Interpretation of blood chemistry	Performing at the patient's bedside or on-screen patient simulator, solving situational problems	Survey, electronic testing
2.4.	Acute coronary syndrome. Myocardial infarction	-	6	-	Interviewing the patient. Physical examination of the patient. ECG interpretation. Interpretation of blood chemistry	Performing at the patient's bedside or on-screen patient simulator, solving situational problems*	Survey, electronic testing
2.5.	Complications of myocardial infarction	-	6	-	Interviewing the patient. Physical examination of the patient. ECG interpretation	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
2.9.	Arrhythmias and blockages: supraventricular arrhythmias	-	6	-	Interviewing the patient. Physical examination of the patient. ECG interpretation. Management of supraventricular arrhythmias	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
2.9.	Arrhythmias and blockages: ventricular arrhythmias; blockages	-	6	-	Interviewing the patient. Physical examination of the patient. ECG interpretation.	Performing at the patient's bedside or on-screen patient simulator, solving situational problems	Survey, electronic testing

6.2.	Hemorrhagic diatheses	-	6	-	Interviewing the patient. Physical examination of the patient. Coagulogram interpretation	Performing at the patient's bedside, solving situational problems	Interviews, electronic testing. Defense of the study card of an inpatient* Credit
<b>8 semester</b>							
	<b>Lectures</b>	<b>9</b>	<b>-</b>	<b>3</b>			
3.1.	Functional dyspepsia. Chronic gastritis. Gastroduodenal ulcers	1,5	-	-			
3.4.	Diseases of the large intestine. Irritable bowel syndrome	1,5	-	-			
3.6.	Chronic hepatitis. Steatosis of the liver. Gilbert's syndrome	1,5	-	-			
3.7.	Cirrhoses of the liver. Hemochromatosis. Wilson-Conovalov disease	1,5	-	-			
5.1.	Acute and chronic glomerulonephritis	1,5	-	-			
5.3.	Nephrotic syndrome. Renal amyloidosis. Chronic kidney disease and chronic renal failure	1,5	-	-			
3.3.	Enteropathies. Celiac disease	-	-	1,5			Oral response assessment, testing
5.2.	Urinary tract infections. Tubulointerstitial kidney diseases	-	-	1,5			Oral response assessment, testing
	<b>Practical exercises</b>	<b>-</b>	<b>60</b>	<b>-</b>			
3.1.	Esophagitis. Gastroesophageal reflux disease. Functional diseases of the esophagus	-	6	-	Interviewing the patient. Physical examination of the patient	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
3.2.	Functional dyspepsia. Chronic gastritis. Gastroduodenal ulcers		6		Interviewing the patient. Physical examination of the patient	Performing at the patient's bedside, solving situational problems	Survey, electronic testing

3.3.	Enteropathies. Celiac disease	-	6	-	Interviewing the patient. Physical examination of the patient	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
3.4.	Diseases of the large intestine. Irritable bowel syndrome				Interviewing the patient. Physical examination of the patient	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
3.5.	Functional biliary disorders. Chronic pancreatitis	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of blood chemistry test	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
3.6.	Chronic hepatitis. Steatosis of the liver. Gilbert's syndrome	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of blood chemistry test	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
3.7.	Cirrhoses of the liver. Hemochromatosis. Wilson-Conovalov disease	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of blood chemistry test	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
5.1.	Acute and chronic glomerulonephritis	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of blood chemistry test. Interpretation of urinalysis	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
5.2.	Urinary tract infections. Tubulointerstitial kidney diseases	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of blood chemistry test. Interpretation of urinalysis	Performing at the patient's bedside, solving situational problems*	Survey, electronic testing
5.3.	Nephrotic syndrome. Renal amyloidosis. Chronic kidney disease and chronic renal failure	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of blood chemistry test. Interpretation of urinalysis	Performing at the patient's bedside, solving situational problems*	Survey, electronic testing. Control work* Exam

9 semester							
	<b>Lectures</b>	<b>6</b>	<b>-</b>	<b>3</b>			
2.6.	Cardiomyopathies. Myocarditis	1,5	-	1,5		Oral response assessment, testing	
4.3.	Joint diseases. Rheumatoid arthritis.	1,5	-	-			
4.4.	Osteoarthritis. Gout						
4.5.	Systemic lupus erythematosus. Systemic sclerosis. Dermatomyositis/polymyositis	1,5	-	-			
4.6.	Systemic vasculitis	1,5	-	-			
2.10.	Circulatory insufficiency (syncope, collapse, shock, acute and chronic heart failure)	-	-	1,5		Oral response assessment, testing	
	<b>Practical exercises</b>	-	<b>36</b>	-			
2.6, 2.7.	Cardiomyopathies. Myocarditis. Pericarditis	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of blood chemistry test. ECG interpretation	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
2.10.	Circulatory insufficiency (syncope, collapse, shock, acute and chronic heart failure)	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of blood chemistry test. Interpretation of radiographs. Emergency care for anaphylaxis	Performing at the patient's bedside, solving situational problems. Performance on simulation equipment	Survey, electronic testing
4.3.	Joint diseases. Rheumatoid arthritis.	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of radiographs	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
4.4	Osteoarthritis. Gout	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of radiographs	Performing at the patient's bedside, solving situational problems	Survey, electronic testing

4.5.	Systemic lupus erythematosus. Systemic sclerosis. Dermatomyositis/polymyositis	-	6	-	Interviewing the patient. Physical examination of the patient. Interpretation of radiographs. Hemogram interpretation	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
4.6.	Systemic vasculitis	-	6	-	Interviewing the patient. Physical examination of the patient	Performing at the patient's bedside, solving situational problems	Interviews, electronic testing. Defense of the study card of an inpatient*. Credit
<b>10 semester</b>							
	<b>Lectures</b>	<b>9</b>	<b>-</b>	<b>3</b>			
6.1.	Anemias	1,5	-	1,5			Oral response assessment, testing
6.3.	Hemoblastoses. Acute leukemia. Agranulocytosis	1,5	-	-			
6.4.	Chronic leukemia. True polycythemia. Multiple myeloma	1,5	-	-			
4.1.	Acute rheumatic fever. Chronic rheumatic heart disease	1,5	-	-			
4.2.	Acquired heart defects. Mitral valve prolapse	1,5	-	1,5			Oral response assessment, testing, discussion of abstracts
2.8.	Infective endocarditis	1,5	-	-			
	<b>Practical exercises</b>	<b>-</b>	<b>35</b>	<b>-</b>			
6.1.	Anemias	-	6	-	Interviewing the patient. Physical examination of the patient. Hemogram interpretation	Performing at the patient's bedside, solving situational problems*	Survey, electronic testing

6.3.	Hemoblastoses. Acute leukemia. Agranulocytosis	-	5	-	Interviewing the patient. Physical examination of the patient. Hemogram interpretation	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
6.4.	Chronic leukemia. True polycythemia. Multiple myeloma	-	6	-	Interviewing the patient. Physical examination of the patient. Hemogram interpretation	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
4.1.	Acute rheumatic fever. Chronic rheumatic heart disease	-	6	-	Interviewing the patient. Physical examination of the patient. ECG interpretation	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
4.2.	Acquired heart defects. Mitral valve prolapse	-	6	-	Interviewing the patient. Physical examination of the patient. ECG interpretation	Performing at the patient's bedside, solving situational problems	Survey, electronic testing
2.8.	Infective endocarditis	-	6	-	Interviewing the patient. Physical examination of the patient. ECG interpretation	Performing at the patient's bedside or on-screen patient simulator, solving situational problems*	Survey, electronic testing. Control work*
		<b>48</b>	<b>209</b>	<b>16</b>			Exam

\* is a mandatory form of current certification



## INFORMATION AND METHODOLOGICAL PART

### LITERATURE

#### **Basic:**

1. Internal diseases : textbook. In 2 Vols. Vol. 1 / ed. by A. I. Martynov, J. D. Kobalava, S. V. Moiseev. – Moskow : Geotar-Media, 2022. – 683 p.
2. Internal diseases : textbook. In 2 Vols. Vol. 2 / ed. by A. I. Martynov, J. D. Kobalava, S. V. Moiseev. – Moskow : Geotar-Media, 2022. – 614 p.

#### **Additional:**

3. Patorskaya, O. A. Methodological recommendations for case history : a methodological rec. / O. A. Patorskaya. – Minsk : BSMU, 2023. – 26 c.
4. Diagnostic methods in the internal medicine : workbook / E. A. Docenko, [et all] . – Minsk : BSMU, 2021. – 158 p.
5. Samsonova, I. M. Cardiopulmonary resuscitation. Post-resuscitation syndrome : textbook / I. M. Samsonova, L.G. Zakharova. – Vitebsk : VGMU, 2022. – 149 p.
6. Internal medicine : textbook for English-speaking students of higher medical educational esablishment. P. 1 : Cardiology. Rheumatology. Hematology / ed. by M. A. Stanislavchuk, V. K. Sierkova. – Vinnytsya : Nova Knyha, 2019. – 407 p.
7. Internal medicine : textbook for English-speaking students of higher medical educational esablishment. P. 2 : Pulmonology. Gastroenterology. Nephrology. Diseases of the internal organs in countries with hot climate / ed. by M. A. Stanislavchuk, V. K. Sierkova. – Vinnytsya : Nova Knyha, 2019. – 359 p.
8. Internal medicine : textbook. In 2 books. Book 1 . Diseases of the Cardiovascular and Respiratory Systems / N. M. Seredyuk [et al.]. – Kyiv : AUS Medicine Publishing, 2019. – 663 p.
9. Internal medicine : textbook : in 2 books. Book 2. Diseases of the Digestive System, Kidney, Rheumatic and Hematological Diseases / Seredyuk, Nestor Mykolayovych [и др.]. – Kyiv : AUS Medicine Publishing, 2020. – 463 p.
10. Harrison`s principles of internal medicine. Vol. 1 / ed. by D. L. Longo, D. L. Kasper, J. L. Jameson [et. al]. – 20th ed. – New York [etc.] : McGrawHill Medical, 2018. – 1796 p.
11. Harrison`s principles of internal medicine. Vol. 2 / ed. by D. L. Longo, D. L. Kasper, J. L. Jameson [et. al]. – 20th ed. – New York [etc.] : McGrawHill Medical, 2018. – 3610 p.
12. Internal medicine : critical care : textbook / Babak, O. Ya. [и др.] ; ed. by O.Ya. Babak, O. M. Bilovol. – Kyiv : AUS Medicine Publishing, 2018. – 368 p.
13. Sidzenka, V. M Peptic ulcer disease : a study-methodological guide for students of higher educational institutions studying on the english language for the speciality 1-79 01 01 «General Medicine».– Minsk : BSMU, 2019 – 24 p.
14. Textbook of hematology : a study-methodological guide for students of higher educational institutions studying.on the english language for the speciality 1-79 01 01 «General Medicine» / V. M. Pyrochkin, A. T. Fiyas, Y. I. Karpovich. – Grodno : GRSMU, 2018. – 188 p.

15. Clinical electrocardiography : manual for students of higher education institutions studying in the specialty 1-79 01 01 «General Medicine»/ V. M. Parochkin, [et. al]. – Grodno : GRSMU, 2019.–200 p.

16. Emergency and urgent medical care : student training manual / O. Y. Vodulev [et. al]; Ukrainian Medical Stomatological Academy; под общ. ред. Д. А. Шкурупия. – Винница : Нова книга, 2019. – 200 p.

17. Malaeva, E.G. Gastroenterology : manual for students of higher education institutions studying in the specialty 1-79 01 01 «General Medicine» / E. G. Malaeva. – Gomel : GomGMU, 2017. – 124 p.

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

The time allotted for independent work can be used by students for:  
 preparation for lectures, practical classes;  
 preparation for credits and exams in the academic discipline;  
 solving situational tasks;  
 preparing presentations;  
 testing.

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

The main forms of organization of managed independent work:  
 writing and presentation of an abstract;  
 computerized testing.

#### **LIST OF AVAILABLE DIAGNOSTIC TOOLS**

The following forms of current attestation are used to diagnose competencies:  
 electronic testing;  
 survey;  
 solving situational tasks;  
 defense of the study card of an inpatient;  
 evaluation using virtual simulations.

#### **LIST OF AVAILABLE TEACHING METHODS**

Traditional method (practical exercises);  
 active (interactive) methods:  
     CBL (Case-Based Learning);  
     Problem-Based Learning (PBL);  
     simulation-based training.

**LIST OF PRACTICAL SKILLS**

Name of practical skill	Form of practical skill control
1. Interviewing the patient	Performing at the patient's bedside
2. Physical examination of the patient	Performing at the patient's bedside or on-screen patient simulator
3. Interpretation of radiographs	Performing at the patient's bedside or on-screen patient simulator. Solution of situational tasks
4. ECG interpretation	Performing at the patient's bedside or on-screen patient simulator. Solution of situational tasks
5. Interpretation of spirograms	Solution of situational tasks
6. Hemogram interpretation	Solution of situational tasks
7. Interpretation of a urinalysis	Solution of situational tasks
8. Coagulogram interpretation	Solution of situational tasks
9. Interpretation of blood chemistry	Solution of situational tasks
10. Management of a bronchial asthma attack	Solution of situational tasks
11. Management of uncomplicated hypertensive crisis	Solution of situational tasks
12. Management of an angina attack	Solution of situational tasks
13. Management of supraventricular arrhythmias	Solution of situational tasks
14. Emergency care for anaphylaxis	Performance on simulation equipment

**LIST OF SIMULATION EQUIPMENT USED**

1. Screen-based patient simulator (SbPS).
2. Patient Mannequin.

**PROTOCOL OF THE CURRICULUM APPROVAL  
BY OTHER DEPARTMENTS**

Title of the discipline requiring approval	Department	Amendments to the curriculum in the academic discipline	Decision of the department, which designed the curriculum (date, protocol # )
1. Clinical immunology, allergology	2nd Department of Internal Medicine	no amendments	Protocol # 13 of 29.03.2024
2.Occupational diseases	1st Department of Internal Medicine	no amendments	Protocol # 12 of 29 .03.2024

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Curriculum content, composition and the accompanying documents comply with  
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