

MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
EDUCATIONAL INSTITUTION
BELARUSIAN STATE MEDICAL UNIVERSITY

Контрольный
экземпляр



APPROVED

by First Vice-Rector, Professor

S.V. Gubkin

31.08.2016

Reg. # 562a/1618/yz

INTERNAL DISEASES

**Curriculum of higher educational institution
in the educational discipline for the specialty:**

1-79 01 01 "General Medicine"

Curriculum is based on the standard educational program "Internal Diseases", approved 31.08.2016 registration # ТД-б. 562/мун

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RECOMMENDED FOR APPROVAL:

by the 2nd Department of Internal Diseases of the Educational Institution "Belarusian State Medical University"
(protocol # 17 of 14th of April 2016);

by the Methodological Commission of Therapeutic Disciplines of the Educational Institution "Belarusian State Medical University"
(protocol #192/12 of 26th of April 2016)

EXPLANATORY NOTE

“Internal diseases” is the educational discipline containing systematized scientific knowledge on etiology, pathogenesis, clinical manifestations, methods of diagnosis, treatment and prevention of diseases of internal organs: heart, lungs, stomach, intestines, liver, kidneys, serous membranes, blood system, connective tissue and joints.

The aim of teaching and learning the discipline “Internal diseases” consists of clinical thinking, formation, as well as acquisition, of scientific knowledge on etiology, pathogenesis, clinical manifestations, methods of diagnostics, treatment and prevention of internal organs diseases by students.

“Internal diseases” is the fundamental academic discipline giving diagnostic abilities, knowledge and skills to provide medical care for patients.

While studying the discipline students acquire research skills, ability to work independently on algorithms for differential diagnostic of diseases with similar symptoms using techniques of comparative analysis.

The tasks of studying the discipline are to develop the students’ academic competences, based on the knowledge of:

- internal and environmental factors impact on disease development;
- basic mechanisms of pathogenesis of internal diseases;
- typical clinical manifestations of internal diseases;
- modern diagnostic methods;
- strategy and tactics of management of patients with evidence-based medicine.

The tasks of teaching the discipline include the formation of students’ social, personal and professional competences, based on the knowledge and application of:

- methods of individual examination of a patient;
- tactics of making diagnosis and differential diagnostics;
- methods for making examination plan for a patient and evaluation of obtained laboratory and instrumental data;
- methods and medicines for therapeutic treatment of internal diseases;
- prevention methods for internal diseases;
- principles of medical expertise and programs of medical rehabilitation of patients with internal diseases;
- methods for providing emergency medical care in major internal diseases.

Teaching and successful learning of the discipline “Internal diseases” is carried out on the basis of the knowledge and skills previously acquired by the students in the following disciplines:

Human anatomy. Structure of the human body, its organs and systems. Individual, gender and age characteristics of the organism. Topography of the internal organs and their anatomical and topographical relations. Projection of the internal organs on the body surface. Radiological anatomy. Impact of labor, physical exercises, social conditions and environmental factors on the development and structure of the organism.

Physiology. Physiological basis of cells, organs, tissues and the whole organism activity in terms of its interaction with the environment. Physiological functions of the body on different levels of organization, mechanisms of their regulation and self-regulation. Main indicators characterizing the normal physiological functions of the body and its systems. Physiological basis of a healthy lifestyle.

Histology, Cytology, Embryology. Principles of organization and histology structure of organs and systems, tissue and cellular composition of the structural and functional units, interrelation of various tissues in the composition of organs. Common patterns of tissue and organ reactions to external influences, characteristics of their radiosensitivity and radioresistance. Structural basis of homeostasis.

Pharmacology. Principles of drug pharmacokinetics and pharmacodynamics. Factors determining the therapeutic efficacy, side effects, toxicity and allergenicity of medicaments. Basic agents of drug therapy in various pathological processes and the most common diseases. Prescription. Writing prescriptions of drugs in various dosage forms.

Common and military hygiene. Influence of the environment on health, hygienic significance of air, soil, water and solar radiation. Diseases associated with adverse climatic and social factors. Hygienic aspects of nutrition. Organization and implementation of preventive measures. Personal hygiene, hygienic requirements for the organization of lifestyle, work and leisure. Ecology and environmental management.

Microbiology, Virology, Immunology. Classification, morphology, genetics, physiology, ecology and evolution of microorganisms. Normal microflora of the human body. Etiology, pathogenesis, immunity and microbiological diagnostics, basics of specific therapies and prevention of bacterial, viral, fungal and protozoan diseases. Characteristics of opportunistic pathogens. Opportunistic infections and their diagnosis. Nosocomial infections. Immune system of the organism, its age characteristics. Natural, anti-infective, anti-tumor and transplantation immunity. Allergy, immunological tolerance. Immunopathology, clinical immunology and environmental immunology.

Pathological physiology. General theory of disease. Concepts and pathology categories. Classification and nomenclature of diseases. Typical pathological processes. Common genesis patterns and development mechanisms of inflammation, tumor growth, fever, hypoxia, typical metabolic impairments, starvation and neurogenic dystrophies. Principles of correction of structural and functional disorders in the typical pathological processes. Common patterns of violations of various organs and systems. Compensation mechanisms of functions and structures violation, principles of violation correction.

Pathological anatomy. General pathological processes. Compensatory and adaptive processes. Immunopathology. General problems of tumor growth. Special pathological anatomy (etiology, patho- and morphogenesis, classification, structural characteristics at the macro- and micro- levels, pathomorphosis, outcomes, complications, thanatogenesis) of heart and blood vessels, respiratory system,

gastrointestinal tract, biliary system, liver and kidneys diseases; characteristics in different age groups.

Propaedeutics to internal medicine. Healthy person age-related anatomical and physiological characteristics of organs and body systems. Methods of examination of healthy and sick person. Additional examination methods and principles of diagnostic programs development. Diagnostic process. Semiotics and syndromes of major organs and systems lesions. Basics of nutrition therapy in therapeutic diseases for different age groups. International Classification of Diseases.

Radiodiagnosis and radiotherapy. Methods of radiological imaging (x-ray, radionuclide, ultrasound, magnetic resonance imaging, medical thermography) and methods of radiotherapy (ionizing radiation, ionizing radiation in combination with other methods) of various diseases, their characteristics in people of different age groups.

Topographic anatomy and operative surgery. Layered structure of anatomical regions. Organ interposition (syntopy), their skin projection (golotopiya), position over skeleton (skeletopy). Blood supply, innervation and lymph drainage in normal and pathological conditions.

As a result of studying the discipline "Internal diseases" the student should

know:

– etiology, pathogenesis, clinical characteristics, methods of diagnostics, principles of treatment and prophylaxis of main internal diseases, principles of patients rehabilitation.

be able to:

– conduct patient examination and evaluate the detected changes of the various organs and systems;

– make and prove plan of examination for differential diagnostics in patient with: focal and disseminated lung diseases with bronchial obstruction, heartache, heart murmur and cardiomegaly, abnormal heart rhythm and conduction, hypertension and hypotension, myocardial damage, abnormal urinary sediment, hepatomegaly and hepatolienal syndrome, jaundice, acute abdomen, gastric and intestinal dyspepsia, pulmonary and gastrointestinal bleeding, lymphadenopathy and splenomegaly, anemia, hemoblastosis, coma, fainting, edema, fever, hemorrhagic syndrome, lesions of the joints, shock, side effects of medicines;

– determine and assign minimum laboratory and instrumental investigations required for diagnosis,;

– evaluate and interpret the results of the examination (clinical and biochemical tests, sternal puncture, electrocardiogram, spirometry, bicycle ergometry, daily monitoring of blood pressure and electrocardiogram, bronchoscopy and esophagogastrosocopy, x-rays, etc.);

– choose the best treatment for a particular patient, individualized drug therapy considering mechanisms of action, pharmacokinetics and pharmacodynamics of drugs, preventing their undesirable side effects, possible interactions with concomitant administration of other drugs; recommend non-drug therapy;

- choose dosage form, dose and route of administration of drugs, implement the dosing regimen;
 - appoint and hold antibacterial, anti-inflammatory, immunosuppressive, antiplatelet and anticoagulant therapy;
 - maintain medical records (fill in medical history: examinations, rounds, justification of examination, diaries, appointment list, epicrises);
 - write prescriptions for regular medications, a.o. accounting social rights for preferential medicines;
 - provide medical assistance in the most common emergency;
 - ensure continuity in the provision of examination and treatment in outpatient and inpatient settings;
 - properly maintain the records for temporary disability, carry out the analysis of morbidity with temporary disability;
 - identify signs of disability on time, predict disability group, maintain records to be sent to a Medical Rehabilitation Expert Commission (MREC);
 - make the program of rehabilitation of the patient in inpatient and outpatient settings and monitor its implementation;
 - give to a patient recommendations for the primary prevention of internal diseases, healthy lifestyle, taking into account the state of his health;
 - organize medical examinations at health locality, evaluate its effectiveness;
 - use of educational, scientific, normative and reference literature;
 - comply with the rules of medical ethics and deontology;
- master the skills of:**
- recording of ECG;
 - perform puncture of pleural cavity in pleural effusion, abdominal cavity in ascites;
 - definition of blood group and rhesus factor;
 - subcutaneous, intramuscular and intravenous infusions;
 - lavage of stomach and esophagus;
 - chest compressions;
 - simple mechanical ventilation methods.

The structure of the curriculum in the educational discipline "Internal diseases" includes seven sections.

Total number of hours for the study of the discipline is 422 academic hours. Classroom hours according to the types of studies: lectures - 46 hours, practical classes - 176 hours, student independent work (self-study) - 200 hours.

Current assessment is carried out according to the syllabus of the specialty in the form of a credit (7th and 9th semesters), and examination (8th and 10th semester).

Final assessment – state examination.

Form of higher education – full-time.

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

Code, name of the specialty	semester	Number of academic hours					Form of current assessment
		total	in-class	including		out-of-class self-studies	
				lectures	practical classes		
1-79 01 01 "General Medicine"	7	90	60	12	48	30	credit
	8	134	62	14	48	72	exam
	9	90	57	12	45	33	credit
	10	108	43	8	35	65	exam
total:		422	222	46	176	200	

THEMATIC PLAN

Section (topic) name	Number of class hours	
	lectures	practical (laboratory)
Semester 7		
1. Purposes and objectives of the discipline "Internal diseases". Organization of therapeutic assistance in the Republic of Belarus.	2	-
2. Respiratory system diseases		
2.1. Acute and chronic bronchitis. Chronic obstructive pulmonary disease.	1	5
2.2. Pneumonia.	2	5
2.3. Asthma.	1	5
2.4. Pleural effusion. Suppurative lung diseases. Bronchiectasis.	-	5
2.5. Pulmonary embolism. Pulmonary hypertension, pulmonary heart disease.	-	6
3. Circulatory system diseases		
3.1. Hypertension. Secondary hypertension.	2	6
3.2. Atherosclerosis. Coronary heart disease. Angina pectoris.	2	6
3.3. Acute coronary syndrome. Myocardial infarction	2	10
Total	12	48
Semester 8		
4. Digestive system diseases		
4.1. Gastroesophageal reflux disease.	-	5
4.2. Functional gastric dispepsia Chronic gastritis. Gastroduodenal ulcers.	2	5
4.3. Enteropathy. Diseases of large intestine. Irritable bowel syndrome.	2	5
4.4. Functional biliary disorders. Chronic pancreatitis.	-	5
4.5. Chronic hepatitis. Metabolic liver diseases. Functional hyperbilirubinemia.	2	6
4.6. Cirrhosis of the liver. Inherited liver diseases.	2	6
6. Kidney and urinary tract diseases		
6.1. Acute and chronic glomerulonephritis.	2	5
6.2. Urinary tract infection. Tubulointerstitial kidney disease.	2	5
6.3. Nephrotic syndrome. Renal amyloidosis. Chronic kidney disease and chronic renal failure.	2	6
Total	14	48

Section (topic) name	Number of class hours	
	lectures	practical (laboratory)
Semester 9		
3. Circulatory system diseases		
3.4.-3.5. Myocarditis. Cardiomyopathy. Pericarditis	-	5
3.6. Infective endocarditis	2	5
3.7. Arrhythmias and heart blocks	2	10
3.8. Circulatory insufficiency (syncope, collapse, acute and chronic heart failure)	2	5
5. Musculoskeletal system and connective tissue diseases		
5.3. Joint diseases. Rheumatoid arthritis.	1	5
5.4. Osteoarthritis. Gout.	1	5
5.5. Systemic lupus erythematosus. Systemic sclerosis. Dermatomyositis/polymyositis.	2	5
5.6. Systemic vasculitis.	2	5
Total	12	45
Semester 10		
7. Blood diseases		
7.1. Anemias.	2	5
7.2. Hemorrhagic diathesis.	-	5
7.3. Hemoblastosis. Acute leukemia. Agranulocytosis.	2	5
7.4. Chronic leukemia.	2	5
7.5. Polycythemia. Multiple myeloma.	-	5
5. Musculoskeletal system and connective tissue diseases		
5.1. Acute rheumatic fever. Chronic rheumatic heart disease.	2	5
5.2. Acquired valvular heart disease. Mitral valve prolapse.	-	5
Total	8	35
Sum-total	46	176

EDUCATIONAL MATERIAL CONTENTS

1. Purposes and objectives of the discipline “Internal diseases”. Organization of therapeutic assistance in the Republic of Belarus

Purposes and objectives of the discipline “Internal diseases”, its relationship with all branches of medicine.

Main therapeutic schools in the Republic of Belarus. Development stages of therapy. Organization of therapeutic assistance in the Republic of Belarus. Local physician and general practitioner are the leading figures in health care.

2. Respiratory system diseases

2.1. Acute and chronic bronchitis. Chronic obstructive pulmonary disease

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

Chronic obstructive pulmonary disease (COPD): definition, epidemiology, risk factors. Pathological processes in COPD. Modern conception of COPD developed by World Health Organization (WHO) – GOLD. Clinical symptoms and variants of course of COPD (assessment of severity of dyspnea, severity of exacerbation). Extrapulmonary manifestations of COPD. Instrumental methods of examination of patients with COPD, respiratory function indices at different stages of the disease, differential diagnostics. Complications of COPD. Principles of management of patients with stable COPD and during exacerbation: bronchodilator therapy (changing of dose, multiplicity and the route of administration of drugs), oxygen therapy, use of antibiotic therapy for infectious episodes, use of glucocorticoid drugs, a. o. in combination with long-acting β 2-agonists, respiratory support.

Curation of patients with COPD: 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. Pneumonia

Pneumonia: definition, prevalence, etiology (bacterial, viral, caused by atypical pathogens, fungal pneumonia), predisposing factors, pathogenesis, classification, ways of penetration of the pathogen. Clinical manifestations of pneumonia, criteria for severity. Clinical features of pneumonia depending on the type of pathogen and immune system status. Verification of the causative agent of pneumonia (microbiologic, immunological methods). Laboratory, instrumental, radiological examination methods of pneumonia. Differential diagnostics of pneumonia. Complications of pneumonia. Emergencies in pneumonia: acute respiratory failure (acute respiratory distress syndrome), vasogenic shock, acute renal injury, toxic shock, acute psychosis, DIC. Treatment of pneumonia: indications for hospitalization, antibiotic therapy, stepwise antibacterial therapy, criteria of efficiency of antibacterial therapy, antiviral drugs, anti-inflammatory drugs, symptomatic treatment. Criteria for discharge from hospital and recovery. Prognosis, pneumonia outcomes. Prevention of pneumonia.

Follow-up of patients with pneumonia: 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. Asthma

Asthma: definition, etiology, risk factors, pathogenesis, classification (GINA), symptoms. Diagnosis of the various forms of asthma: with prevailing of allergic component, non-allergic, mixed, unspecified. Role of spirometry and peakflowmetry in establishing the variability of symptoms and respiratory function indices. Identification of allergy. Status asthmaticus, diagnostic criteria, treatment. Patient management depending on the severity of asthma in early disease and on the extent of the control over disease during its development (in a controlled, partially controlled, uncontrolled asthma). Inhalation therapy of asthma, types of inhalers. Nebulizer therapy for asthma. Prevention of asthma. Prognosis for asthma.

Curation of patients with asthma: 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. Pleural effusion. Suppurative lung diseases. Bronchiectasis

Pleural effusion: etiology and pathogenesis. Clinical and laboratory signs of exudate and transudate. Classification of pleurisy (dry, exudative, encapsulated, meta- and parapneumonic, tumorous, tuberculous, post-traumatic, in pulmonary artery branches embolism). Clinical manifestations, diagnostics, course of pleural effusion. Indications and technique of thoracentesis. Laboratory evaluation of effusion, differential diagnostics. Complications and outcomes in pleural effusion. Treatment of pleural effusion, indications for surgical treatment. Prophylaxis of pleural effusion.

Suppurative lung diseases: definition, classification. Acute infectious destruction: abscess and gangrene. Risk factors for suppurative lung diseases. Etiology of abscess and gangrene. Clinic and diagnostics of acute and chronic lung and mediastinal abscess, pulmonary gangrene. Differential diagnostics of lung abscess with tuberculous caverns, bronchiectasis, suppurative cysts and hypoplasia, pleural empyema, mycotic suppurations and cavitary forms of cancer. Complications of suppurative lung diseases. Principles for therapeutic methods of lung abscess treatment, indications for surgical treatment. Outcomes of suppurative lung diseases, prognosis. Prophylaxis of suppurative lung diseases.

Pulmonary hemorrhage: clinical manifestations, diagnostics, therapeutic and diagnostic fiberoptic bronchoscopy, conservative treatment.

Bronchiectasis: definition, etiology and pathogenesis, predisposing factors. Detection of hereditary diseases related to bronchiectasis formation. Clinical manifestations of bronchiectasis. Basic methods of diagnostics of bronchiectasis: chest X-ray, computed tomography (CT), magnetic resonance imaging (MRI), bronchoscopy, bronchography. Complications of bronchiectasis: pulmonary and extrapulmonary. Conservative treatment of bronchiectasis: antibacterial (in case of suppurations), postural drainage, remedial bronchoscopy, improving of mucociliary

transport, correction of immune disorders, oxygen therapy, physiotherapy. Indications for surgical treatment of bronchiectasis. Prognosis of bronchiectasis.

Curation of patients with pleural effusion: 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. Pulmonary embolism. Pulmonary hypertension, pulmonary heart disease

Pulmonary embolism: risk factors, causes and mechanisms of development, classification, clinical manifestations, diagnostics, differential diagnostics, emergency management. Principles of treatment depending on the risk of early death from pulmonary embolism. Primary and secondary prophylaxis of pulmonary embolism.

Pulmonary hypertension: concept, mechanisms of development, risk factors. Clinical classification: pulmonary arterial hypertension; pulmonary hypertension caused by diseases of the left heart; pulmonary hypertension associated with lung diseases and/or hypoxia; chronic thromboembolic pulmonary hypertension; pulmonary hypertension with multifactorial or unknown mechanisms. Clinical and instrumental diagnostics of pulmonary hypertension: electrocardiography (ECG), ultrasound examination of the heart and blood vessels, chest X-ray, respiratory function examination, ventilation-perfusion lung scan, high resolution CT with contrast of blood vessels of the lungs, MRI, cardiac catheterization. Laboratory methods for diagnostics of pulmonary hypertension. Risk assessment in pulmonary hypertension. Complications of pulmonary hypertension. Principles of treatment of pulmonary hypertension (general, supportive, primary, specific, combination therapy, surgical treatment). Outcomes and prognosis of pulmonary hypertension.

Pulmonary heart disease: definition, causes and mechanisms of development of acute and chronic pulmonary heart disease, classification, clinical signs, laboratory and instrumental methods of diagnostics, principles of medical treatment, outcomes, prognosis, prevention.

Curation of patients with pulmonary heart disease: 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. Circulatory system diseases

3.1. Hypertension. Symptomatic hypertension

Hypertension. Medical and social significance of the problem. Etiology and pathogenesis of self-existing hypertension. Risk factors for hypertension. Classification of high blood pressure rates. "Target organ" damage. Clinical conditions associated with hypertension. Risk stratification and prognosis in hypertension. Classification of hypertension, Examination pattern for the patient with hypertension. Principles of treatment of hypertension: physical activity, diet, main and additional groups of antihypertensive drugs, preferred drug combinations. Diagnostics and treatment of diseases characterized by high blood pressure in pregnant women. Complications of hypertension. Prognosis of hypertension. Prevention of hypertension.

Hypertensive crisis: definition, classification, clinical manifestations of different variants, basic principles of treatment (crisis arresting).

Secondary hypertension. Classification of secondary hypertension: renal (parenchymal, renovascular), endocrine (thyrotoxic, in Cushing's syndrome, pheochromocytoma, Conn's syndrome), hemodynamic (coarctation of the aorta, arteriosclerosis of arteries, aortic insufficiency), cerebral. Characteristics of clinical manifestations. Diagnostics, differential diagnostics in secondary hypertension. Therapeutic approach in secondary hypertension.

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.

3.2. Atherosclerosis. Coronary heart disease. Angina pectoris

Atherosclerosis. Etiology and pathogenesis of atherosclerosis. Formation of atherosclerotic plaque. Risk factors of atherosclerosis. Types of hyperlipidemia. Clinical manifestations and diagnostics of atherosclerosis depending on its prevailing localization (aorta, vessels of heart, brain, limbs, kidneys, intestines). Methods for detection of atherosclerotic plaque: coronary angiography, CT, MRI, multislice computed tomography. Principles of atherosclerosis treatment depending on the risk of cardiovascular disease developing and type of hyperlipidemia: lifestyle modification, lipid-lowering diet, physical activity, lipid metabolism normalizing drugs, statins. Primary and secondary prophylaxis of atherosclerosis. Indications for surgical treatment of atherosclerosis, including endovascular techniques.

Coronary heart disease (CHD). Medical and social significance of the problem of CHD. Etiology and pathogenesis of CHD. Significance of stenotic coronary atherosclerosis, vasospastic factor and thrombosis in CHD development. Clinical forms of coronary heart disease (WHO classification). Instrumental methods for diagnostics of angina pectoris: ECG, exercise and pharmacological tests, electrophysiological and radionuclide testing, coronary angiography. Definition of "sudden cardiac death". Algorithm of resuscitation in cardiology. Diagnostic criteria of atherosclerotic cardiosclerosis. High-tech methods of surgical treatment of coronary artery disease: aorto-, mammaro-coronary bypass, angioplasty and stenting. Prognosis of coronary heart disease.

Indications for coronary angiography. Indications and methods of invasive (angioplasty, stenting) and surgical treatment of CHD.

Angina pectoris. Classification of angina pectoris. Pathogenesis and characteristics of stenocardial pain syndrome. Functional classification of exertional angina. Diagnostic criteria and clinical variants of unstable angina: new onset, progressing, spontaneous, early post-infarction, after successful coronary bypass surgery or balloon angioplasty. Atypical clinical manifestations of angina. Silent myocardial ischemia. Differential diagnostics of angina pectoris. Principles of angina treatment: drugs affecting the symptoms and prognosis of the disease, groups of antianginal drugs, drugs improving microcirculation and metabolism of the myocardium. Rapid relief of symptoms of angina pectoris. Organizational and therapeutic approach to stable and unstable angina, possible outcomes.

Curation of patients with chronic CHD, angina pectoris: 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.

3.3. Acute coronary syndrome. Myocardial infarction

Acute coronary syndrome: definition, clinical manifestations, diagnostics, doctor's tactics in acute coronary syndrome with/without ST-segment elevation. Differentiated treatment of acute coronary syndrome. Revascularization of the coronary arteries. Prophylaxis of acute coronary syndrome.

Myocardial infarction: risk factors, pathogenetic mechanisms of myocardial necrosis development, typical and atypical clinical variants of myocardial infarction, characteristics of pain syndrome, myocardial infarction severity classes, periods of myocardial infarction. Laboratory and instrumental methods of diagnostics of myocardial infarction: ECG, echocardiography, scintigraphy, radionuclide ventriculography, coronary angiography). Electrocardiographic diagnostics of myocardial infarction: by the depth of lesions, localization, periods. Biochemical markers of myocardial damage. Differential diagnostics of myocardial infarction. Complications of myocardial infarction in acute and subacute periods: cardiogenic shock, arrhythmia, acute left ventricular failure, progressive chronic heart failure, acute and chronic cardiac aneurysm, cardiac tamponade, myocardial syndrome and thrombotic endocarditis. Principles of treatment of acute myocardial infarction: reduction of pain syndrome, reperfusion of the affected artery, limiting the area of ischemic damage, prevention of complications. Indications and contraindications to thrombolysis. Provision of medical care in myocardial infarction at prehospital phase. Emergency medical care in complications of myocardial infarction. Characteristics of treatment in different periods of myocardial infarction. Indications for surgical treatment of myocardial infarction. Principles of physical and psychological rehabilitation of patients after myocardial infarction. Prognosis of myocardial infarction. Primary and secondary prophylaxis of myocardial infarction.

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.

3.4. Myocarditis. Cardiomyopathy

Myocarditis: definition, etiology and pathogenesis, classification, pathomorphology, clinical symptoms, instrumental and laboratory diagnostics of myocarditis. Myocardial biopsy. Diagnostic criteria, differential diagnostics of myocarditis. Complications of myocarditis. Principles of treatment of myocarditis. Characteristics of course and treatment of viral myocarditis. Outcomes and prognosis of myocarditis. Prevention of myocarditis in risk groups.

Cardiomyopathy: definition, etiology, pathogenesis, disorders of intracardiac hemodynamics in patients with dilated, hypertrophic, restrictive cardiomyopathy and arrhythmogenic right ventricular dysplasia, classification. Secondary cardiomyopathy: alcoholic, peripartum, etc. Main clinical syndromes in cardiomyopathy. Instrumental methods of diagnosis of cardiomyopathy: ECG,

echocardiography, MRI, radionuclide techniques, myocardial biopsy. Complications of cardiomyopathy. Drug treatment of cardiomyopathy, indications for surgical treatment. Prognosis of cardiomyopathies.

Curation of patients with cardiomyopathy: 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.

3.5. Pericarditis

Pericarditis: definition, etiology and pathogenesis, classification, clinical manifestations. Diagnostics of dry, exudative and adhesive (constrictive) pericarditis. Principles of treatment of pericarditis. Complications of pericarditis. Cardiac tamponade. Indications for pericardiocentesis and surgical treatment of pericarditis. Outcomes and prognosis of pericarditis. Plan of examination and treatment of patients with pericarditis.

3.6. Infective endocarditis

Infective endocarditis (IE): definition, epidemiology, etiology and pathogenesis, classification, groups and factors of risk, pathomorphology, main clinical manifestations. Characteristics of a clinical picture of IE depending on the etiology and in patients with prosthetic heart valves, elderly, diabetic, suffering from alcoholism and drug addiction, HIV-infected.

Laboratory diagnostics of IE: blood culture, markers of inflammation. Instrumental diagnostics of IE: echocardiography, cardiac CT and MRI. Diagnostic criteria and differential diagnostics of IE with other diseases accompanied by fever (acute rheumatic fever, systemic connective tissue diseases, hemoblastosis, tumors). Complications of IE. Medical treatment of IE (etiologic, pathogenetic and symptomatic), criteria of cure. Prognosis of IE. Indications for surgical treatment of IE. Prevention of IE risk groups.

Curation of patients with IE: 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.

3.7. Arrhythmias and heart blocks

Risk factors, electrophysiological mechanisms of arrhythmias and heart blocks. Classification of arrhythmias. Basic methods of diagnostics of arrhythmias and heart blocks, daily monitoring of ECG.

Extrasystole: etiology, Lown classification, organic and functional extrasystoles, clinical manifestations, ECG diagnostics of extrasystole, antiarrhythmic therapy, prevention of extrasystole.

Atrial fibrillation and flutter: etiology, pathogenesis, classification, violations of hemodynamics, clinical symptoms. Drug treatment of atrial fibrillation and flutter: characteristics of treatment of paroxysmal and persistent forms, risk scale of thromboembolic events and bleeding, antiplatelet and anticoagulant therapy. Preparing the patient for cardioversion. Prognosis of atrial fibrillation and flutter.

Paroxysmal arrhythmias, clinical picture (characteristics of hemodynamics during attack). ECG diagnostics of paroxysmal tachycardia. Differences between

ventricular and supraventricular forms of paroxysmal tachycardia. Syndromes of ventricular pre-excitation (WPW, CLC syndromes). Algorithms of arresting of paroxysmal tachycardia attack. Indications for cardioversion, transcatheter radiofrequency ablation of arrhythmia source. Preventing of paroxysmal tachycardia attacks. Prognosis of paroxysmal cardiac arrhythmias.

Ventricular fibrillation: etiology, clinical manifestations, ECG-diagnostics, algorithms of resuscitation, sudden cardiac death (main causes and prevention).

Heart block (sinuauricular, atrioventricular and intraventricular): etiology, pathogenesis, ECG diagnostics. Complications of heart block: Morgagni-Adams-Stokes syndrome, heart failure. Drug treatment of heart block, temporary pacing, pacemaker implantation. Prognosis of heart block.

Sick sinus syndrome: classification, diagnostics, medical tactic.

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

Curation of patients with atrial fibrillation: 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.

3.8. Circulatory insufficiency (syncope, collapse, acute and chronic heart failure)

Vasogenic shock (syncope, collapse): causes, difference between syncope and collapse, diagnostics and emergency medical care.

Acute heart failure (left ventricular (cardiac asthma and pulmonary edema) and right ventricular (acute pulmonary heart disease)): causes, pathogenesis, pathophysiology, clinical manifestations. Instrumental diagnosis of acute heart failure: echocardiography, ECG, chest X-ray, CT scan with contrast, angiography. Emergency medical care in acute heart failure in prehospital phase and in hospital. Prognosis of acute heart failure. Prevention of acute heart failure.

Chronic heart failure (CHF): epidemiology, etiology and pathogenesis, classification (by Strazhesko-Vasilenko and New York Heart Association - NYHA), criteria for diastolic and systolic myocardial dysfunction. Clinical manifestations of heart failure according to stages (functional classes). Instrumental diagnosis of CHF, six minute walk test. Brain natriuretic peptide. Treatment of chronic heart failure: non-drug methods, drug (basic, additional and supplementary medicines), apparatus and surgical treatment (revascularization, resynchronization therapy, implantable cardioverter-defibrillators, cardiac transplantation, plasma ultrafiltration). Prognosis of CHF. Prevention of heart failure.

Curation of patients with CHF: 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.

4. Digestive system diseases

4.1. Gastroesophageal reflux disease

Gastroesophageal reflux disease (GERD): definition, epidemiology, risk factors, pathogenesis, classification, clinical picture. Nonesophageal manifestations

of GERD: pulmonary, otolaryngologic, cardiac, stomatological. Instrumental diagnostics of GERD: esophageal endoscopy, 24-hour pH-metry, X-ray examination, histological examination, manometry. GERD complications: strictures of esophagus, bleeding, Barrett's esophagus. Risk factors for GERD complications. Treatment of GERD. Management of patients with Barrett's esophagus.

4.2. Functional gastric dyspepsia Chronic gastritis. Gastroduodenal ulcers

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

Chronic gastritis: definition, prevalence, role of exogenous and endogenous factors in development of disease, pathogenesis, classification. Basic methods of diagnostics of chronic gastritis: endoscopic, morphological, detection of *Helicobacter pylori* infection. Evaluation of secretory function. Leading morphological signs of chronic gastritis: degree of inflammation, activity of gastritis, degree of atrophy and intestinal metaplasia, intensity of *Helicobacter pylori* contamination. Treatment of *Helicobacter pylori*-associated gastritis, other types of gastritis.

Gastroduodenal ulcers: definition, prevalence, etiology and pathogenesis, factors of aggression and protection of gastric mucosa, clinical manifestations depending on localization of ulcers. Instrumental diagnostics of gastroduodenal ulcers: endoscopic and radiological methods, histological examination, tests for *Helicobacter pylori* detection. Differential diagnostics of gastroduodenal ulcers. Complications of gastroduodenal ulcers: bleeding, perforation, penetration, perivisceritis, pyloric stenosis, malignancy. Tactics of an internist in case of detection of gastroduodenal ulcers complications. Treatment of uncomplicated ulcers: diet, eradication of *Helicobacter pylori*, antisecretory therapy, symptomatic medicines, gastroprotective medicines. Duration of basic therapy depending on localization of ulcers. Methods of secondary prophylaxis of gastroduodenal ulcers: continuous maintenance therapy and "on demand" therapy. Indications for surgical treatment of gastroduodenal ulcers.

Symptomatic ulcers: definition, NSAID-induced gastropathy, mechanisms of symptomatic ulcers formation, endoscopic characteristics, clinical manifestations, risk factors of bleeding, treatment, prophylaxis. Palliative care of patients with oncological diseases of the gastroduodenal region.

Curation of patients with gastrointestinal ulcers: 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.

4.3. Enteropathy. Diseases of the large intestine. Irritable bowel syndrome

Enteropathy: definition, etiology, pathogenesis, classification, role of intestinal bacterial overgrowth, enzymopathies, symptoms. Main syndromes of enteropathy: poor digestion, insufficient absorption, exudative enteropathy. Methods for diagnostics of enteropathy (endoscopic, morphological, radiological, functional methods for investigation of absorption processes), changes in laboratory parameters, differential diagnostics. Treatment of enteropathy: diet, antibiotic therapy, probiotics

and prebiotics, enzyme therapy, regulators of motor and evacuation function of the intestine.

Gluten enteropathy (celiac disease): etiology, pathogenesis, clinical manifestations, diagnosis, treatment, prevention, prognosis.

Ulcerative colitis, Crohn's disease: definition, prevalence, etiology and pathogenesis, classification, clinical manifestations, extraintestinal manifestations. Instrumental methods of diagnostics of ulcerative colitis and Crohn's disease: endoscopic, morphological, x-ray, ultrasound. Criteria of activity of ulcerative colitis and Crohn's disease, complications. Treatment of ulcerative colitis and Crohn's disease: diet, basic (induction and maintenance) therapy depending on extent and degree of activity (derivatives of 5-aminosalicylic acid, 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.

Irritable bowel syndrome: definition, prevalence, etiology and pathogenesis, pathophysiology. Clinical manifestations and diagnostic criteria for the major variants of irritable bowel syndrome: constipation-predominant, diarrhea-predominant, mixed and non-specific. Treatment of irritable bowel syndrome: diet, impact on psycho-emotional sphere, pain relief, correction of disturbed intestine functions. Prevention of irritable bowel syndrome in risk groups.

Curation of patients with ulcerative colitis: 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.

4.4. Functional biliary disorders. Chronic pancreatitis

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

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

Curation of patients with chronic pancreatitis: 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.

4.5. Chronic hepatitis. Metabolic liver diseases. Functional hyperbilirubinemia

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

Autoimmune hepatitis: definition, prevalence, etiology (genetic and triggering factors), pathogenesis (defects of immune regulation, main autoantibodies and target organs), main clinical symptoms (hepatic and extrahepatic), diagnostics, prognosis.

Chronic viral hepatitis: characteristics depending on the viral infection (B, C, D, E), verification of viral hepatitis, complications, prognosis, primary prophylaxis, vaccination.

Chronic drug-induced hepatitis: prevalence, drugs that cause hepatitis, direct cytotoxic mechanisms of drugs metabolites action on the liver, clinical, biochemical, serological, morphological manifestations, prognosis.

Cryptogenic hepatitis: definition, differential diagnosis.

Hepatitis treatment: diet, indications for use of antiviral drugs, corticosteroids, immunosuppressive drugs, hepatic protectors, methods of extracorporeal therapy.

Metabolic liver diseases: fatty liver (globular and atomizing), alcoholic and non-alcoholic liver disease (steatosis and steatohepatitis). Etiology, pathogenesis, clinical manifestations, diagnosis and treatment of metabolic liver diseases.

Functional hyperbilirubinemia (Gilbert, Dubin-Johnson, Rotor syndromes): clinical manifestations, diagnosis, treatment, prognosis.

Curation of patients with chronic hepatitis: collection of complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

4.6. Cirrhosis of the liver. Hereditary liver diseases

Cirrhosis of the liver: the definition, epidemiology, etiology and pathogenesis, classification, severity classes. Clinical manifestations of viral, alcoholic, primary and secondary biliary liver cirrhosis. Diagnosis of liver cirrhosis: transient elastography of the liver, liver biopsy, evaluation of portal hypertension. Hypersplenism. Complications of liver cirrhosis: bleeding from varicose veins of the esophagus and stomach, ascites, hepatic encephalopathy, hepatopulmonary syndrome, hepatorenal syndrome, portal hypertensive gastropathy and colopathy, spontaneous bacterial peritonitis. Disorders associated with liver cirrhosis: eating disorders, disorders of systemic hemodynamics, respiratory system disorders, hemostasis disorders, hepatocellular cancer. Differential diagnostics of liver cirrhosis, chronic hepatitis and hepatocellular carcinoma. Tumor markers. Principles of treatment of liver cirrhosis: general measures, drug treatment and its features in various forms of cirrhosis. Treatment of liver cirrhosis complications. Indications for liver transplantation. The prognosis of liver cirrhosis. Prevention of liver cirrhosis.

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

Hereditary liver diseases (hemochromatosis, a syndrome of primary and secondary iron overload, Wilson's disease): etiology, pathogenesis, clinical manifestations, diagnosis, treatment, prevention, prognosis.

Curation of patients with liver cirrhosis: collection of complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

5. Diseases of the musculoskeletal system and connective tissue

5.1. 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 prophylaxis.

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

5.2. Acquired heart valvular disease. Mitral valve prolapse

Acquired heart valvular disease. Insufficiency of the mitral valve. Mitral stenosis. Insufficiency of the aortic valve. Aortic stenosis. The etiology of valvular defects. The pathogenesis of hemodynamics in acquired heart defects. Clinical manifestations, direct and indirect signs of heart valvular disease. The value of instrumental methods in the diagnosis of heart diseases (ECG, echocardiography, radiography of heart, MRI).

Mixed and matched heart valvular defects: clinical features, determining the prevalent defect, diagnostics, course, complications, prognosis. Relative and absolute failure of valves.

Complications of acquired heart valvular defects. Causes of decompensation of heart valvular disease. Prognosis of acquired heart valvular defects. Principles of treatment of heart valvular disease, the indications for surgical treatment. Features of medical tactics in patients with prosthetic valves.

Mitral valve prolapse: definition, causes of primary and secondary mitral valve prolapse, classification, small heart anomalies, diagnostics, the value of ECG and echocardiography, course, complications, prognosis, principles of therapeutic treatment, indications for surgical treatment.

Curation of patients with valvular heart disease: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

5.3. Diseases of the joints. Rheumatoid arthritis

The prevalence of diseases of the joints, social significance, nomenclature of joint disease.

Rheumatoid arthritis: definition, prevalence, etiology, predisposing factors, pathogenesis, classification, clinical manifestations, other organs and systems lesion. Diagnostic criteria, laboratory and instrumental methods of diagnosis of rheumatoid arthritis. Differential diagnostics 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: a

basic, pathogenetic, symptomatic non-drug treatment, physical rehabilitation. Prevention of rheumatoid arthritis exacerbations.

Palliative care for patients with diseases of the musculoskeletal system and connective tissue with the loss of ability to self-service and the presence of persistent pain syndrome.

Curation of patients with rheumatoid arthritis: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

5.4. Osteoarthritis. Gout

Osteoarthritis: definition, prevalence, etiology, pathogenesis, risk factors, clinical manifestations, depending on the process localization, diagnosis, differential diagnosis. Treatment of osteoarthritis: non-drug, drug therapy, 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, other organs and systems lesion). Acute gout attack: provocative factors, clinical manifestations. Laboratory and instrumental diagnosis of gout, differential diagnosis. Complications of gout. Treatment of gout: basic, anti-inflammatory, rapid relief of acute gout, dietary advice, physical rehabilitation. Prevention of gout. Prognosis of gout.

Curation of patients with osteoarthritis and gout: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

5.5. Systemic lupus erythematosus. Systemic sclerosis. Dermatomyositis/polymyositis

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

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

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

Curation of patients with systemic lupus erythematosus, systemic sclerosis: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

5.6. Systemic vasculitis

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

Vasculitis, mainly affecting the blood vessels of small caliber (Henoch-Schönlein -IgA-vasculitis, granulomatosis with polyangiitis): clinical manifestations, course options, diagnostics, treatment.

Vasculitis, mainly affecting medium-caliber vessels (polyarteritis nodosa): clinical manifestations, course options, diagnostics, treatment.

Vasculitis, mainly affecting the large vessels (nonspecific aortoarteritis, temporal arteritis): clinical manifestations, diagnosis, treatment. Diagnostic criteria for polymyalgia rheumatica.

Curation of patients with systemic vasculitis: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

6. Diseases of the kidneys and urinary tract

6.1. Acute and chronic glomerulonephritis

Acute glomerulonephritis: etiology, pathogenesis, clinical manifestations. The concept of the nephritic syndrome. Methods of acute glomerulonephritis diagnosis, principles of treatment, outcomes, prognosis. Prevention of post-streptococcal glomerulonephritis.

Chronic glomerulonephritis: pathogenesis of various forms, classification (clinical and morphological). The role of renal biopsy in the diagnosis of nephrological diseases. Assessment of renal function. Urinary syndrome. The differentiated approach to the treatment of chronic glomerulonephritis.

Curation of patients with chronic glomerulonephritis: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

6.2. Urinary tract infection. Tubulointerstitial renal diseases

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

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

Tubulointerstitial nephritis: causes, diagnosis, differential diagnostics with glomerulonephritis, treatment. Features of drug-induced interstitial nephritis.

Curation of patients with urinary tract infection: collection of complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

6.3. Nephrotic syndrome. Renal amyloidosis. Chronic kidney disease and chronic renal failure

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

Renal amyloidosis: modern concepts of etiology and pathogenesis, classification. The most common disease associated with the development of

amyloidosis. Clinical stages of renal amyloidosis, diagnostics, the role of morphological studies, therapeutic tactics, preventive measures.

Chronic kidney disease (CKD) stages classification. The main diseases that lead to the development of CKD. CKD progression factors. Monitoring of renal function. Clinical manifestations, diagnostic methods, conservative treatment of CKD. Therapeutic aspects in case of using the methods of extracorporeal detoxification and efferent methods (hemodialysis, peritoneal dialysis). Kidney transplantation.

Palliative care for patients with terminal stage of chronic kidney disease.

Curation of patients with nephrotic syndrome, chronic renal disease: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

7. Diseases of the blood system

7.1. Anemias

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

Iron deficiency anemia: prevalence, iron metabolism in the body, etiology and pathogenesis, clinical manifestations. Laboratory signs of iron deficiency. Differential diagnostics of iron deficiency anemia with sideroachrestical anemia. Treatment and prevention of iron deficiency anemia: diet, iron drugs. Indications for parenteral use of iron-containing drugs.

Anemia associated with impaired DNA and RNA (megaloblastic anemia) synthesis: etiology, pathogenesis of B₁₂ deficiency and folic acid deficiency anemia, clinical manifestations, hematological picture, myelogram, differential diagnostics of deficiency of vitamin B₁₂ and folates. Treatment, prevention and prognosis of megaloblastic anemias.

Hemolytic anemia: causes, pathogenesis depending on the etiology, classification, symptoms of intravascular and intracellular hemolysis, hemolytic crisis, clinical manifestations, laboratory diagnostics, immunological diagnostics. Basic therapy of hemolytic anemia, treatment of hemolytic crises, the indications for surgical treatment.

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

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

Indications for transfusion of red blood cells, "washed" red blood cells in various types of anemia. Laws of transfusion, control, registration of medical documentation. Prevention of blood transfusion reactions.

Curation of patients with anemia: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the

results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

7.2. Hemorrhagic diathesis

Hemorrhagic diathesis: definition, causes, classification, general features, types of bleeding, diagnostic methods.

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

Hemophilia: significance of hereditary factors in the development of the disease, forms, bleeding pathogenesis, clinical manifestations, diagnosis, treatment, prevention, prognosis.

Hemorrhagic telangiectasia (Rendu-Osler disease): pathogenesis of bleeding, the role of genetic factors, clinical manifestations, diagnosis, treatment.

Curation of patients with hemorrhagic diathesis: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

7.3. Hemoblastosis. Acute leukemias. Agranulocytosis

Hemoblastosis. Significance of inherited factors, radiation, chemicals, viruses, changes in the tryptophan metabolism in hemoblastosis development. The pathogenesis, classification, clinical and hematologic syndromes of hemoblastosis, myeloproliferative and lymphoproliferative diseases, paraproteinemic hemoblastosis.

Acute leukemia: classification, main clinical syndromes, laboratory and morphological diagnostics, immunological phenotyping of leukemia cells. The course and complications of acute leukemia. The principles of treatment of acute leukemia (cytostatic and detoxification therapy, immunotherapy, treatment of hemorrhagic syndrome and anemia, bone marrow transplantation). Cytostatic disease. Outcomes of acute leukemia.

Palliative care for patients with hematologic malignancies.

Agranulocytosis: etiology and pathogenesis, clinical variants (myelotoxic, immune), laboratory diagnostics. Complications and course of agranulocytosis. Treatment and prevention of agranulocytosis. The prognosis of agranulocytosis.

Curation of patients with acute leukemia: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

7.4. Chronic leukemia

Chronic myeloid leukemia: pathogenesis, laboratory and morphological diagnosis, clinical manifestations, course stages, complications, treatment, prognosis.

Leukemoid reactions: diagnosis and differential diagnosis.

Chronic lymphocytic leukemia: pathogenesis, laboratory and morphological diagnostics, main clinical syndromes, course stages, the principles of treatment, prognosis.

Curation of patients with chronic leukemia: collection of complaints and medical history; physical examination; preparation of the examination plan;

interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan

7.5. Polycythemia. Multiple myeloma

Polycythemia: pathogenesis, stages of disease and main clinical syndromes, differential diagnostics with symptomatic erythrocytosis, course and outcomes of the disease. Principles of polycythemia and its complications treatment. The prognosis of polycythemia.

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

Waldenstrom's macroglobulinemia: Clinical manifestations, diagnosis, treatment principles.

Curation of patients with polycythemia, multiple myeloma: collection complaints and medical history; physical examination; preparation of the examination plan; interpretation of the results of laboratory and instrumental methods of examination; making diagnosis; treatment plan.

EDUCATIONAL METHODOLOGICAL CARD OF EDUCATIONAL DISCIPLINE «INTERNAL DISEASES»

Number of theme, section	Section (topic) name	Number of class hours		out-of-class self-studies	Literature, workbooks etc.	Form of knowledge assessment
		lectures	practical			
Semester 7						
1.	Purposes and objectives of the discipline “Internal diseases”. Organization of therapeutic assistance in the Republic of Belarus (Main therapeutic schools in the Republic of Belarus, subject and purposes of the discipline).	2	-	1	1, 2, 3	interviews, electronic tests
2.1.	Acute and chronic bronchitis. Chronic obstructive pulmonary disease (Definition, etiology, pathogenesis, classification, clinical variants, purposes and stages of treatment, complications, exacerbation prophylaxis).	1	5	4	1, 2, 3, 8	interviews, tests, electronic tests, exercises, control works.
2.2.	Pneumonia (Definition, etiology and pathogenesis, classification, clinical manifestations, diagnosis, course, principles of antibiotic treatment, criteria for recovery, prognosis, outcomes).	2	5	4	1, 2, 3, 8	interviews, tests, electronic tests, exercises, control works.
2.3	Asthma (Etiology, causes, mechanisms of attack development, classification, diagnosis, therapy, prevention).	1	5	4	1, 2, 3, 8	interviews, tests, electronic tests, exercises, control works..
2.4	Pleural effusion. Suppurative lung diseases. Bronchiectasis (Definition, etiology, pathogenesis,					interviews, tests,

	classification, obstruction mechanisms, differential diagnosis, principles of treatment and prevention).	-	5	3	1, 2, 3, 8	electronic tests, exercises, control works.
2.5	Pulmonary embolism. Pulmonary hypertension, pulmonary heart disease (Causes and mechanisms of development, classification, clinical manifestations, diagnosis, principles of treatment, prognosis, prevention).	-	6	3	1, 2, 3, 7, 8	interviews, tests, electronic tests, exercises, control works.
3.1	Hypertension. Symptomatic hypertension (Etiology, pathogenesis, classification, diagnosis and differential diagnosis, treatment tactics, diagnosis and acute care in hypertensive crisis, prognosis, prevention).	2	6	3	1, 2, 3, 7	interviews, tests, electronic tests, exercises, control works.
3.2	Atherosclerosis. Coronary heart disease. Angina pectoris (Etiology, pathogenesis, clinical forms of CHD, silent myocardial ischemia, ischemic cardiomyopathy, methods for diagnosis of angina pectoris, clinical forms, principles of treatment, indications and methods of surgical treatment of CHD).	2	6	4	1, 2, 3, 7	interviews, tests, electronic tests, exercises, control works.
3.3	Acute coronary syndrome. Myocardial infarction (Step-by-step provision of medical care, main complications in acute and subacute periods, physical and psychological rehabilitation, prophylaxis).	2	10	4	1, 2, 3, 7	interviews, tests, electronic tests, exercises, control works. Credit.
Semester 8						
4.1	Gastroesophageal reflux disease (Definition, main risk factors, pathogenesis, classification, clinical picture, nonesophageal manifestations of GERD, instrumental diagnosis, risk factors for GERD complications).	-	5	8	1, 2, 3, 4	interviews, tests, electronic tests, exercises, control works.

4.2	Functional gastric dyspepsia Chronic gastritis. Gastroduodenal ulcers (Definition, causes, pathogenesis, classification, diagnosis, significance of endoscopic investigation, complications, treatment).	2	5	8	1, 2, 3, 4	interviews, tests, electronic tests, exercises, control works.
4.3	Enteropathy. Diseases of the large intestine. Irritable bowel syndrome (Definition, etiology, pathogenesis, classification, clinical manifestations, diagnosis, treatment. Gluten enteropathy Ulcerative colitis, Crohn's disease: etiology and pathogenesis, classification, clinical manifestations, extraintestinal manifestations, diagnostics, treatment).	2	5	8	1, 2, 3, 4	interviews, tests, electronic tests, exercises, control works.
4.4	Functional biliary disorders. Chronic pancreatitis (Etiology, pathogenesis, significance of infection, motor dysfunction, clinical picture, diagnosis, laboratory and instrumental diagnostics, treatment, indications for surgical treatment).	-	5	8	1, 2, 3, 4	interviews, tests, electronic tests, exercises, control works.
4.5	Chronic hepatitis. Metabolic liver diseases. Functional hyperbilirubinemia (Etiology, pathogenesis, classification depending on etiology and morphology, clinical manifestations, syndromes, diagnostics, treatment, complications).	2	6	8	1, 2, 3, 4	interviews, tests, electronic tests, exercises, control works.
4.6	Cirrhosis of the liver. Hereditary liver diseases (Etiology, pathogenesis, classification according to etiology and morphology, clinical manifestations, syndromes, diagnosis, treatment, acute liver failure, complications).	2	6	8	1, 2, 3, 4	interviews, tests, electronic tests, exercises, control works.

6.1	Acute and chronic glomerulonephritis (Etiology, pathogenesis, nephritic, nephritic, urinary syndromes, diagnostic methods, renal biopsy, principles of treatment).	2	5	8	1, 2, 3, 5	interviews, tests, electronic tests, exercises, control works.
6.2	Urinary tract infection. Tubulointerstitial renal diseases (Etiology, pathogenesis, classification, clinical manifestations, renal function monitoring, diagnostic methods, treatment).	2	5	8	1, 2, 3, 5	interviews, tests, electronic tests, exercises, control works.
6.3	Nephrotic syndrome. Renal amyloidosis. Chronic kidney disease and chronic renal failure (Pathogenesis, classification, clinical manifestations, diagnostic methods, complications, treatment. The main diseases that lead to the development of CKD Monitoring of renal function. Clinical manifestations, diagnostic methods, conservative treatment of CKD. Kidney transplantation).	2	6	8	1, 2, 3, 5	interviews, tests, electronic tests, exercises, control works.
Semester 9						
3.4 – 3.5	Myocarditis. Cardiomyopathias. Pericarditis. (Etiology, pathogenesis, classification, clinical manifestations, instrumental and laboratory diagnostics, principles of treatment, cardiac tamponade, indications for pericardiocentesis).	-	5	5	1, 2, 3, 7	interviews, tests, electronic tests, exercises, control works.
3.6.	Infective endocarditis (Etiology, pathogenesis, classification, laboratory and instrumental diagnostics, diagnostic criteria, differential diagnostics, medical treatment, criteria of cure, indications for surgical treatment, prevention).	2	5	4	1, 2, 3, 7	interviews, tests, electronic tests, exercises, control works.
3.7.	Arrhythmias and heart blocks (Electrophysiological					

	mechanisms of arrhythmias, classification, clinical manifestations, diagnostics, principles of drug treatment, cardioversion, pacemakers).	2	10	4	1, 2, 3, 7	interviews, tests, electronic tests, exercises, control works.
3.8.	Circulatory insufficiency (syncope, collapse, acute and chronic heart failure) (Vasogenic shock, acute heart failure, emergency medical care, chronic heart failure, classification, diagnosis, treatment, resynchronization devices).	2	5	4	1, 2, 3, 7	interviews, tests, electronic tests, exercises, control works.
5.3	Diseases of the joints. Rheumatoid arthritis (Epidemiology, pathogenesis, clinical manifestations, diagnostic criteria, laboratory and instrumental diagnostics, classification, treatment, course, outcomes).	1	5	4	1, 2, 3, 6	interviews, tests, electronic tests, exercises, control works.
5.4	Osteoarthritis. Gout (Epidemiology, pathogenesis, clinical manifestations, laboratory and instrumental diagnostics, treatment, prophylaxis).	1	5	4	1, 2, 3, 6	interviews, tests, electronic tests, exercises, control works.
5.5	Systemic lupus erythematosus. Systemic sclerosis. Dermatomyositis/polymyositis (epidemiology, etiology and pathogenesis, classification, clinical manifestations, laboratory and instrumental diagnostics, diagnostic criteria, course, treatment principles, outcomes, complications, prognosis).	2	5	4	1, 2, 3, 6	interviews, tests, electronic tests, exercises, control works.
5.5	Systemic vasculitis (Etiology and pathogenesis, classification, general principles of diagnosis and treatment).	2	5	4	1, 2, 3, 6	interviews, tests, electronic tests, exercises, control works. Credit.
	Semester 10					

7.1.	Anemias (Types of anemias, classification, iron deficiency anemia, B ₁₂ deficiency and folic acid deficiency anemia, hemolytic anemia, aplastic anemia).	2	5	8	1, 2, 3, 9	interviews, tests, electronic tests, exercises, control works.
7.2.	Hemorrhagic diathesis (Definition, classification, types of bleeding, diagnostic methods, diagnosis, treatment).	-	5	10	1, 2, 3, 9	interviews, tests, electronic tests, exercises, control works.
7.3.	Hemoblastosis. Acute leukemias. Agranulocytosis (Classification, main clinical syndromes, laboratory and morphological diagnostics, immunological phenotyping of leukemia cells, principles of treatment, prognosis).	2	5	8	1, 2, 3, 9	interviews, tests, electronic tests, exercises, control works.
7.4.	Chronic leukemia (Classification, main clinical syndromes, laboratory and morphological diagnostics, immunological phenotyping of leukemia cells, principles of treatment, prognosis).	2	5	8	1, 2, 3, 9	interviews, tests, electronic tests, exercises, control works.
7.5.	Polycythemia. Multiple myeloma (Pathogenesis, stages of disease, main clinical syndromes, differential diagnostics with symptomatic erythrocytosis, principles of treatment).	-	5	9	1, 2, 3, 9	interviews, tests, electronic tests, exercises, control works.
5.1	Acute rheumatic fever. Chronic rheumatic heart disease (Definition, epidemiology, etiology, pathogenesis, classification, clinical manifestations, diagnosis, diagnostic criteria, differential diagnosis, treatment, outcomes, primary and secondary prophylaxis).	2	5	8	1, 2, 3, 6, 7	interviews, tests, electronic tests, exercises, control works.
5.2	Acquired heart valvular defects. Mitral valve prolapsed (Causes, pathogenesis of hemodynamics in acquired heart defects, clinical manifestations, diagnostics, course, complications, prognosis).	-	5	9	1, 2, 3, 6, 7	interviews, tests, electronic tests, exercises, control works.

INFORMATION AND METHODOLOGICAL PART

LITERATURE

Basic:

1. *Conn's Current Therapy 2016* / E.T. Bope, R.D. Kellerman. – Elsevier, 2015. – 1344 p.
2. *Harrison's Principles of Internal Medicine* / D. Kasper [et al.]. – 19th ed. – McGraw-Hill Education, 2015. – 3000 p.
3. *Internal Medicine Bulletpoints Handbook: Intended For: Healthcare Practitioners and Students at all Levels* / R.M. Gullberg. – 1st ed. – BookBaby, 2015. – 117 p.

Additional:

4. *Clinical Gastroenterology* / C. G. Weber. – 16th ed. – Pacific Primary Care Software. PC, 2013. – 856 p.
5. *Comprehensive Clinical Nephrology* / R.J. Johnson, J. Feehally, J. Floege. – 5th ed. – Saunders, 2014. – 1320 p.
6. *Kelley's Textbook of Rheumatology: Expert Consult Premium Edition* / G.S. Farestein [et al.]. – 9th ed. – Saunders, 2012. – 2292 p.
7. *Mayo Clinic Cardiology: Concise Textbook* / ed. G.J. Murphy, M. A. Lloyd. – 4th ed. – Oxford University Press, 2012. – 1120 p.
8. *Murray & Nadel's Textbook of Respiratory Medicine* / V.C. Broaddus [et al.]. – 6th ed. – Elsevier, 2015. – 2064 p.
9. *The Bethesda Handbook of Clinical Hematology* / G.P. Rogers, N.S. Yong. – 3rd ed. – LWW, 2013. – 512 p.

A LIST OF RECOMMENDED DIAGNOSTIC TOOLS

The following forms are used for the diagnosis of competencies:

1. The oral form:

- interviews;
- reports on the practical classes;
- presentations at conferences;
- the oral credit;
- tests;
- exercises.

2. The written form:

- tests;
- quizzes;
- control works;
- essays;
- publication of articles, reports;
- standardized tests;
- estimation is based on module-rating system;

- estimation is based on the method of developing cooperation;
 - estimation is based on the project method;
3. Oral-written form:
- reports on classroom practical exercises with their oral defense;
 - reports on home practical exercises with their oral defense.
4. Technical form:
- electronic tests.

LIST OF LECTURES

7th semester

1. Purposes and objectives of the discipline “Internal diseases”. Organization of therapeutic assistance in the Republic of Belarus.
2. Acute and chronic bronchitis. Chronic obstructive pulmonary disease. Asthma.
3. Pneumonia
4. Hypertension. Symptomatic arterial hypertension.
5. Atherosclerosis. Coronary heart disease. Angina pectoris.
6. Acute coronary syndrome. Myocardial infarction

8th semester

1. Functional gastric dyspepsia. Chronic gastritis. Gastroduodenal ulcers.
2. Enteropathy. Diseases of the large intestine. Irritable bowel syndrome.
3. Chronic hepatitis. Metabolic liver diseases. Functional hyperbilirubinemia.
4. Liver cirrhosis. Hereditary liver diseases.
5. Acute and chronic glomerulonephritis.
6. Urinary tract infection. Renal tubulointerstitial diseases.
7. Nephrotic syndrome. Renal amyloidosis. Chronic kidney disease and chronic renal failure.

9th semester.

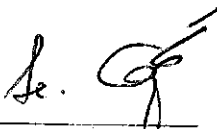
1. Infective endocarditis.
2. Arrhythmias and heart blocks.
3. Circulatory insufficiency (syncope, collapse, acute and chronic heart failure).
4. Rheumatoid arthritis. Osteoarthritis. Gout.
5. Systemic lupus erythematosus. Systemic sclerosis. Dermatomyositis / polymyositis.
6. Systemic vasculitis.

10th semester

1. Anemias.
2. Hemoblastosis. Acute leukemias. Agranulocytosis
3. Chronic leukemias.
4. Acute rheumatic fever. Chronic rheumatic heart disease.

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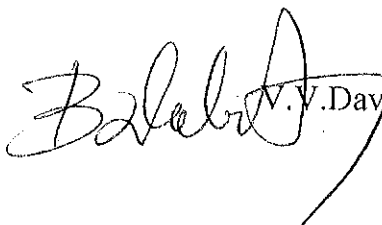

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O.A. Patorsraya

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

Dean of the Medical Faculty of International Students

02.08 2016


V.V. Davyдов

Methodologist of Educational Institution

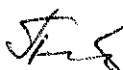
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