

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

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Reg. # УД-к. 545а / 1617 /уч.

PHTHISIOPULMONOLOGY

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

1-79 01 01 «General Medicine»

This curriculum is based on the standard educational program
“Phthisiopulmonology” approved 29.04.2016, registration No 7101-11.545/mca

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RECOMMENDED FOR APPROVAL

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Explanatory Note

Phthisiopulmonology - educational discipline containing systematic scientific knowledge about the tuberculosis clinic and treatment, the organization and carrying out anti-epidemic measures, methods of diagnosis and differential diagnosis of tuberculosis with other respiratory diseases.

Training program on the subject "Phthisiopulmonology" aimed at studying the latest data on the etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment and prevention of pulmonary and separate forms extrapulmonary tuberculosis.

The purpose of teaching and learning the discipline "Phthisiopulmonology" consists in the formation and acquisition students' knowledge of detection, diagnosis, differential diagnosis, treatment and prevention of tuberculosis and similar diseases.

The objectives of the discipline are to form students' academic competence, which based on the ability to self-search training and information resources, master the methods of gaining knowledge and understanding of:

- phthisiology basic concepts: tuberculosis epidemic process, tuberculosis cases, detection and prevention of tuberculosis, tuberculosis control, infection control;
- causes and mechanisms of the pulmonary tuberculosis and extrapulmonary forms origin;
- peculiarities of tuberculosis in patients of all ages, including those with comorbidities;
- principles and methods of diagnosis and differential diagnosis of tuberculosis with other lung diseases;
- principles and methods of tuberculosis prevention (social, specific, sanitary);
- principles and methods of tuberculosis treatment;
- principles of organization and carrying out sanitary-hygienic and antiepidemic measures.

Tasks of discipline teaching are to form students' social, personal and professional competence, the basis of which is in the knowledge and applying:

- detection, diagnosis, differential diagnosis of tuberculosis methods and similar diseases, contributing to the formation of clinical thinking in compliance with the rules of medical ethics and deontology,
- the methods of treatment, prevention and rehabilitation measures aimed at preventing diseases, cure tuberculosis process and rehabilitation of patients with tuberculosis,
- Methods of control activities aimed at preventing the spread of tuberculosis among the population.

Specificity of physicians' training in the specialty 1-79 01 01 "General Medicine" determines the need for students' focused study of pulmonary tuberculosis diagnosis and detection modern methods in different social and age groups, as well as in combination with other diseases of internal organs.

Teaching and successful study of discipline "Phthisiopulmonology" is carried out on the basis of acquired students' knowledge and skills in sections of the following disciplines:

Medical biology and general genetics. The general laws knowledge of living nature development and environmental influences on the formation of hereditary factors.

Biological chemistry. Structure and exchange in organism of proteins, fats, carbohydrates and vitamins. Biochemical methods of organism status monitoring, the basic principles of biochemical diagnostic methods. Molecular basis of pathological processes development.

Human anatomy. Features of the organs and tissues structure (particularly respiratory), the research of the respiratory function development in connection with the body and the surrounding environment.

Histology, cytology, embryology. Histogenesis and description of the organs and systems tissues structure.

Normal physiology. Metabolism and energy exchange. Regularities of functioning of cells, tissues, organs and systems of healthy body and mechanisms of their regulation. Parameters of healthy body function, with emphasis on the respiratory system.

Microbiology, virology, immunology. Morphological and biochemical characterization of Mycobacterium tuberculosis. Formation mechanisms of drug resistance in microorganisms. Methods of microbiological diagnostics. The notion of immunity and allergy, microbiological aspects of chemotherapy. Immunodiagnostic methods and assessment of immune status.

Pathological anatomy. Basic concepts of general nosology, morphogenesis and disease pathomorphism. Pathological characteristics and stage of granulomas development in tuberculosis and sarcoidosis. Pathological characteristics of different clinical forms of tuberculosis.

Pathological physiology. General patterns and mechanisms of pathological processes development, compensation mechanisms and functional disorders of the respiratory functions and structures. Structural and functional bases of pathological processes, the reasons, the main mechanisms of typical pathological processes development and outcomes.

Radial diagnostics and radiotherapy. The methods of respiratory diseases X-ray diagnosis. Basic radiological syndromes in respiratory diseases. Computered tomography, magnetic resonance imaging, ultrasound results interpretation. Radioisotope investigations in respiratory diseases

Pharmacology. Classification of anti-tuberculosis drugs, mechanism of action, possible adverse reactions.

General hygiene and military hygiene. Risk factors as the basis of modern ideas about the origin and prevention of disease, principles of preventive measures. Organization and carrying out of sanitary and antiepidemic measures in military collectives.

Propaedeutics of internal diseases. Technique of the patient's examination, assessment of clinical and laboratory parameters.

As a result of studying the discipline "Phthisiopulmonology" the student should

know:

- tuberculosis study history and struggle against tuberculosis history; tuberculosis etiology and pathogenesis, allergy, immunity peculiarities, classification, pathogenesis, clinical features, diagnosis and differential diagnosis, peculiarities of patients with tuberculosis examinations;
- clinical features and specifics of the main urgent tuberculosis conditions and its treatment;
- organizing and carrying out early and timely revealing of tuberculosis, principles of treatment of patients with tuberculosis in different stages of medical care, basics of tuberculosis patients' rehabilitation, principles of rehabilitation of tuberculosis prevention and medical and social expertise;
- organization of vaccination against tuberculosis;
- organization of antituberculosis activities depending on epidemiological situation;
- structure, tasks and organization of antituberculosis dispensary and office, role of the therapists in the system of tuberculosis prevention and carrying out of anti-tuberculosis activities, organization principles of mass screening investigations for tuberculosis;
- tuberculosis treatment principles, modern strategies against tuberculosis, the State Programme "Tuberculosis";
- principles of deontology and medical ethics in diagnosis and tuberculosis treatment;
- clinical features, diagnosis and treatment of pulmonary mycobacteriosis;
- classification, clinical features, diagnosis and treatment of respiratory system sarcoidosis.

be able to:

- collect anamnesis, to carry out an objective examination of the patient with pulmonary tuberculosis and some extrapulmonary tuberculosis forms, develop tuberculosis patient's examination plan, identify on the chest X-ray the tuberculosis symptoms and execute protocol of radiographic examination;
- assign basic and additional examinations methods, evaluate the results of examination laboratory and instrumental methods;
- formulate and justify clinical diagnosis of tuberculosis;
- assign primary chemotherapy according to the patient's clinical category;
- identify adverse reactions to anti-tuberculosis drugs, prescribe medications and perform adverse reactions prevention;
- determine the indications for chemoprevention of tuberculosis;
- put intradermal tuberculin Mantoux test and consider its results;
- determine the indications for lumbar puncture, evaluate the cerebrospinal fluid finding results;

- determine the type and degree of the tuberculosis hotbeds epidemic danger and prepare an action plan for its recovery.

master:

- clinical and laboratory examination, treatment of patients with tuberculosis;
- emergency treatment of pulmonary hemorrhage, spontaneous pneumothorax;
- prevention of tuberculosis;
- tuberculin test and estimate the results of tuberculin test;
- differential diagnosis of tuberculosis with non-tuberculous disease;
- activities for infection control;
- organization of sanitary-hygienic education of the population.

The structure of the teaching curriculum for the discipline «Phthisiopulmonology» program consists of six sections.

Total number of hours for the discipline study is 184 academic hours. Classroom hours according to the type of training: of lectures-28 hours, practical classes- 90 hours, students' independent work -66 hours.

Current assessment is carried out in accordance with the specialty curriculum in the form of credit with a differentiated mark (semester 8) and credit (11 semester).

Form of high education - full-time.

Study hours distribution per semesters

Code, name specialties	Semester	The number of study hours					Forms of current assessment
		Total	in-class hours	of them			
				Lectures	Practical classes	Independent work hours	
1-79 01 01 «General Medicine»	7	64	37	12	25	27	
	8	60	42	12	30	18	credit with a differentiated mark
	11	60	39	4	35	21	credit
Total hours		184	118	28	60	66	

Topic Plan

Topic, contents	The number of study hours	
	lectures	practical
1. Historical information and general pathology of tuberculosis	6	2
1.1. Development of the tuberculosis study history, epidemiology of tuberculosis, tuberculosis etiology	4	2
1.2. Pathogenesis and pathological anatomy of tuberculosis, tuberculosis immunology	2	-
2. Diagnosis and examination methods of tuberculosis patients	2	5
3. Classification and clinical forms of tuberculosis	8	21
3.1. Clinical classification of tuberculosis. Primary forms of tuberculosis	2	4
3.2. Secondary forms of tuberculosis: disseminated pulmonary tuberculosis, focal pulmonary tuberculosis, infiltrative pulmonary tuberculosis, caseous pneumonia, pulmonary tuberculoma	2	5
3.3. Cavernous pulmonary tuberculosis, fibrotic-cavernous pulmonary tuberculosis, cirrhotic tuberculosis. Complications of pulmonary tuberculosis	2	6
3.4. Extrapulmonary tuberculosis. Tuberculous pleurisy. Pulmonary tuberculosis in combination with other diseases	2	6
4. Differential diagnosis of tuberculosis	4	33
4.1 General principles of tuberculosis differential diagnosis	2	28
4.2. Sarcoidosis of the respiratory system	2	4
4.3. Pulmonary mycobacteriosis	-	1
5. Treatment of patients with pulmonary tuberculosis	2	5
6. Prevention of tuberculosis	2	6
7. Organization of tuberculosis control. Modern strategy for tuberculosis control	4	19
Total hours	28	90

CONTENTS OF EDUCATIONAL MATERIAL

1. Historical information and general pathology of tuberculosis

1.1. Development of the tuberculosis study history, epidemiology of tuberculosis, tuberculosis etiology

Main stages of the tuberculosis doctrine development. Value of works of Hippocrates, Abu Ali Ibn Sina, Laennec, Villemain, Koch. Role N.I. Pirogov, G.A. Zakharyin, A.I. Abrikosov, A.I. Strukov, F.V. Shebanov, A.E. Rabuhin, A.G. Homenko in the development of tuberculosis doctrine. Discoveries in the diagnostics, treatment and prevention of tuberculosis (V.Rentgen, K.Forlanini, K.Pirke, Sh. Mantoux, A. Calmette, C. Guerin, Z.Vaksman). Creation of the state system for tuberculosis control.

Features of the tuberculosis epidemic process and the factors determining its development. The spread of tuberculosis infection. The role of socio-economic factors in the development of tuberculosis. Tuberculosis in countries with different economic levels. Social risk groups for tuberculosis. Tuberculosis in prisons. The infection, morbidity and mortality from tuberculosis, value of epidemiological indicators in determining tuberculosis epidemic situation in different age groups among the inhabitants of cities and villages. Status and prospects of tuberculosis control in the Republic of Belarus. Statistical records and monitoring of tuberculosis in the country.

Taxonomy and classification of mycobacteria. Tuberculosis causative agent, structure, basic properties. Species of *Mycobacterium tuberculosis*. Pathogenicity and virulence of mycobacteria. Genetics of mycobacteria. Fast-and slow-growth mycobacteria, persistent forms, L - forms of mycobacteria. Drug resistance, the genetic basis of drug resistance development. Types of resistance: primary, acquired, monoresistance, polyresistance, multiple, extensive resistance. Nontuberculous "atypical" mycobacteria and their role in pulmonary pathology. Epidemiological and clinical significance of different types and forms of mycobacteria.

1.2. Pathogenesis and pathological anatomy of tuberculosis, tuberculosis immunology

Mycobacterium tuberculosis infection. Pathways and the spread of *Mycobacterium tuberculosis* in humans. Stages of primary tuberculosis. Pathogenesis. Mycobacterial infection and tuberculosis. Secondary period of tuberculosis infection in humans. Local and general reactions to tubercular infection. Morphological types of reactions in tuberculous inflammation. Structure of tuberculous granulomas. The morphology of the tuberculosis main clinical forms. Features of morphological processes in progression and healing of tuberculosis. Residual post tubercular changes and their role in tuberculosis development. Pathophysiological changes in tuberculosis. Pathomorphosis of tuberculosis, its types. Features of tuberculosis pathomorphism in modern conditions.

Factors of nonspecific resistance from tuberculosis. Humoral regulation system of reactivity. Value of human genotype in occurrence and course of tuberculosis. Anti-tubercular immunity, types. Mechanism of antituberculosis immunity formation

in vaccination and Mycobacterium tuberculosis infection. Importance of the mycobacteria various components in immunogenesis. The spectrum of impaired immunity in tuberculosis. Value of immunodeficiency in the development and course of tuberculosis infection. Hypersensitivity of delayed type. Types of allergy in tuberculosis. The role of genetic factors in the occurrence of tuberculosis and the formation of immunity.

2. Diagnosis and methods of tuberculosis patients' examination

Diagnosis of pulmonary tuberculosis in outpatient and hospital health care organizations. Tuberculosis diagnostic algorithm. Obligatory diagnostic methods of examination (obligatory diagnostic minimum): anamnesis, physical examination methods, chest x-ray in direct and lateral projections, sputum smear microscopy in 3 samples, clinical analysis of blood and urine, tuberculin Mantoux test with 2 TU.

Additional methods of investigations: linear and computed tomography, fluorescent smear microscopy, cultivation of biological material on the solid and liquid media, rapid methods of Mycobacterium tuberculosis detection, polymerase chain reaction, investigation of lavage fluid, immunological investigations. Bronchoscopy, surgical methods of investigation and diagnostic operations. Cytological and histological investigations. Methods of tuberculosis diagnosis verification.

Functional methods of examination: spirometry, general plethysmography, electrocardiography, biochemical blood test.

Questioning. Physical methods of investigations, their clinical and differential diagnostic value; examination of patients with extrapulmonary tuberculosis. Clinical interpretation of detected changes, the diagnostic value. Blood and urine tests and their diagnostic value in various forms and phases of tuberculosis.

Methods of pathological material sampling for the investigation for the presence of mycobacteria. Methods for detection of Mycobacterium tuberculosis in sputum and other pathological material, the value of their results for the tuberculosis diagnosis and determine the phase of tuberculosis. Automated systems of mycobacteria cultivation: MGIT-BACTEC-960 MB / Bact. Methods for the mycobacteria identification, determine of virulence and sensitivity to chemotherapeutic drugs. Modern molecular genetic methods for mycobacteria detection and determine their resistance to drugs: GeneXpert, LPA (Hain-test), test system INNO-LIPA, biochips.

Radiologic methods of investigation, the indications. The roentgenological syndromes of tuberculosis and other respiratory diseases. Computer tomography in the tuberculosis diagnosis and other lungs diseases, mediastinum, pleura, and in assessing the dynamics of tuberculosis. Radiologic methods of investigation with contrast bronchi and vessels (bronchography, angiopulmonography). Modern digital technology in radiodiagnostics. Value of magnetic resonance imaging and ultrasound in the diagnosis of the lung, pleura and mediastinum pathology. Special radiologic methods of tuberculosis investigation and other pulmonary diseases, indications for their use. Radiologic methods of diagnosis in extrapulmonary tuberculosis. Radioisotope research methods (scintigraphy, positron emission tomography) in the diagnosis of lung diseases.

Endoscopic methods of investigation. Bronchoscopy, types, indications. Bronchoalveolar lavage, the diagnostic value of lavage fluid in tuberculosis and other pulmonary diseases. Types of biopsies during bronchoscopy. Transthoracic lung, pleura biopsy, videothoracoscopy, open lung biopsy, mediastinoscopy. Cytological examination of the pleural exudate, bronchoalveolar lavage, punctates of lymphatic nodes, lung and pleura. Histological investigation of lung tissue and other organs in tuberculosis and non-tuberculous pulmonary diseases.

Methods for specific sensitization detection. Types of tuberculin units. Types of tuberculin tests. Mantoux tuberculin 2 TU, diaskintest. Infectious and post-vaccination tuberculin sensitivity differential diagnosis. Quantiferon-TB and T-SPOT-TB tests and other tests value to tuberculosis infection detection.

3. Classification and clinical forms of tuberculosis

3.1. Clinical classification of tuberculosis. Primary forms of tuberculosis

Principles of tuberculosis classification. Sections of classification reflecting the main clinical forms, characteristic of tuberculosis process and its complications, residual changes after the treatment of tuberculosis. Formulation of the tuberculosis diagnosis. The concept of the active, inactive (clinically cured) tuberculosis, primary and secondary tuberculosis. International Classification of Diseases (ICD-10).

Pathogenesis and pathological anatomy of primary tuberculosis. Factors and risk groups of tuberculosis primary forms developing. Primary infection. Concept of «latent mikrobizm». Meaning of tuberculin tests and conversion of tuberculin sensitivity in the diagnosis of primary tuberculosis.

Forms of primary tuberculosis. Tuberculous intoxication in children: early and chronic, toxic and allergic reactions. The clinical course, diagnosis, differential diagnosis, treatment.

Tuberculosis of intrathoracic lymphatic nodes: pathogenesis, pathomorphology of intrathoracic lymphatic nodes tuberculosis. Clinico-radiological forms. Their courses, diagnostic features, complications, treatment, outcomes, differential diagnosis.

Primary tuberculosis complex: pathogenesis and pathomorphology of the primary complex. The clinical picture, diagnosis, treatment, complications, differential diagnosis. Outcomes of primary complex and the value of residual changes in the tuberculosis secondary forms pathogenesis.

Chronically primary tuberculosis. Pathogenesis and pathomorphology, clinical picture, diagnosis, treatment.

3.2. Secondary forms of tuberculosis: disseminated pulmonary tuberculosis, focal pulmonary tuberculosis, infiltrative pulmonary tuberculosis, caseous pneumonia, pulmonary tuberculoma

Understanding of tuberculosis secondary forms.

Miliary tuberculosis: definition, incidence, pathogenesis and pathomorphology of miliary tuberculosis. Diagnosis, clinical forms of military tuberculosis and their courses, complications, treatment, outcomes, differential diagnosis, prognosis, medical and social assessment.

Subacute and chronic disseminated pulmonary tuberculosis: diagnosis, clinical picture, treatment, differential diagnosis.

Focal pulmonary tuberculosis: definition, incidence, pathogenesis and pathomorphology fresh and chronic focal pulmonary tuberculosis. Diagnosis, clinical picture, differential diagnosis, treatment, medical and social assessment, outcomes. Methods of tuberculosis activity detection. Meaning fluorography and radiological methods of investigation for detection and diagnosis of focal tuberculosis.

Infiltrative pulmonary tuberculosis: definition, incidence, pathogenesis and pathomorphology. Clinico-radiological variants and features of their course and diagnosis, prognosis, differential diagnosis, treatment, medical and social assessment, outcomes.

Caseous pneumonia: definition, incidence, pathogenesis and pathomorphology, clinical feature. Clinico-radiological forms of caseous pneumonia, diagnosis, differential diagnosis, treatment, complications, outcomes, medical and social assessment, prognosis, outcomes.

Tuberculoma: definition, incidence, pathogenesis, pathomorphology and types of tuberculoma. Clinical course, diagnosis, differential diagnosis, treatment, medical and social assessment, prognosis, outcomes.

3.3. Chronic forms of tuberculosis: cavernous pulmonary tuberculosis, fibrous-cavernous pulmonary tuberculosis, cirrhotic tuberculosis. Complications of pulmonary tuberculosis.

Cavernous pulmonary tuberculosis: definition, incidence, pathogenesis and morphological structure. Clinical, radiological and laboratory signs of cavities, types of cavity healing. Diagnosis, differential diagnosis, treatment, medical and social assessment, prognosis, outcomes.

Fibrous-cavernous pulmonary tuberculosis: definition, incidence, causes of formation. Pathogenesis and pathological anatomy of fibrous-cavernous pulmonary tuberculosis, variants of clinical course, diagnosis, differential diagnosis, treatment, evaluation of epidemiological risk of the patient, prognosis, outcomes.

Cirrhotic pulmonary tuberculosis: definition, the frequency of occurrence. Pathogenesis and pathomorphology of cirrhotic pulmonary tuberculosis, the clinical course, diagnosis, differential diagnosis, treatment, prognosis, and outcomes. Complications of chronic tuberculosis (amyloidosis of the internal organs, chronic "cor pulmonale").

Pulmonary hemorrhage, pneumothorax, acute respiratory distress syndrome: pathogenesis, pathological anatomy, classification, clinical picture, diagnosis, differential diagnosis, emergency medical care, outcomes, prognosis.

3.4. Extrapulmonary tuberculosis. Tuberculous pleurisy. Pulmonary tuberculosis in combination with other diseases

Tuberculosis of the central nervous system. Tuberculous meningitis: pathogenesis and pathological anatomy, clinical forms, diagnosis, differential diagnosis, treatment, medical and social assessment, prognosis, outcomes. Laboratory parameters of cerebrospinal fluid.

Tuberculosis of peripheral and mesenteric lymphatic nodes: pathogenesis and pathological anatomy, clinical forms, diagnosis, differential diagnosis, treatment, prognosis, outcomes.

Tuberculosis of pleura: definition, incidence, pathogenesis, pathological anatomy, classification of pleurisy tuberculous. Clinical picture, diagnosis, differential diagnosis, treatment, prognosis, and outcomes. Therapeutic and diagnostic puncture of the pleural cavity: indications, technique of carrying out, laboratory investigations of exudate and transudate. Tuberculous pericarditis: pathogenesis, clinical forms, diagnosis, differential diagnosis, treatment, prognosis, outcomes.

Tuberculosis of the upper respiratory tract and bronchi: definition, incidence, pathogenesis and pathomorphology, diagnosis, treatment, prognosis, outcomes of disease.

Pulmonary tuberculosis in combination with other diseases, combined with dust related occupational lung diseases. Tuberculosis in HIV-infected and AIDS patients. The combination of tuberculosis with diabetes mellitus, chronic nonspecific inflammatory respiratory diseases, diseases of the gastrointestinal tract, mental illnesses, alcoholism, drug addiction, lung cancer. Tuberculosis and motherhood.

Note. Other forms of extrapulmonary Tuberculosis are studied on educational disciplines: "Traumatology and Orthopedics", "Urology", "Obstetrics and Gynecology", "Ophthalmology", "Dermatology".

4. Differential diagnosis of pulmonary tuberculosis with non-tuberculous disease. Sarcoidosis of the respiratory system

4.1. General principles of the pulmonary tuberculosis differential diagnosis.

General principles of the pulmonary tuberculosis differential diagnosis. Differential diagnosis of primary tuberculosis (pneumonia, lymphogranulomatosis, lymphoma, lymphocytic leukemia, sarcoidosis). Differential diagnosis of tuberculosis secondary forms with pneumonia, tumors, alveolitis, granulomatosis (mycobacterioses, histiocytosis X, pneumoconiosis, pneumomycoses), pulmonary systemic vasculitis (Wegener's granulomatosis, Churg-Strauss syndrome, idiopathic pulmonary hemosiderosis and others), storage diseases, pulmonary dissemination of tumor nature (adenocarcinoma in situ of the lung, leiomyomatosis, metastatic lung disease), malformations, lung involvement in systemic connective tissue diseases, suppurative lung disease, cystic fibrosis, etc.

Differential diagnosis of diseases with the basic radiological syndromes (focus, infiltration, round and annular shadows, bronchoadenopathy, dissemination, etc.).

Differential diagnosis of pleurisy, tuberculosis of the central nervous system. Differential diagnosis of acutely tuberculosis progressive forms.

4.2. Pulmonary sarcoidosis

Sarcoidosis: definition, classification, potential etiological factors, pathogenesis, pathomorphology, variants of clinical course, clinical syndromes, diagnosis, differential diagnosis (tuberculosis, lymphogranulomatosis), tactics of treatment, prognosis, dispensary follow-up.

4.3. Pulmonary mycobacteriosis

Pulmonary mycobacteriosis: identification of pathology, the prevalence among different population groups, the value of individual microorganisms in the

development of the disease, pathomorphology, clinical course, diagnosis, differential diagnosis, treatment strategy.

5. Pulmonary tuberculosis treatment

Basic principles of tuberculosis treatment. Treatment regimen and diet of patients suffering from tuberculosis. Etiotropic treatment in tuberculosis. Antituberculosis drugs (ATD), classification, dose, the method of administration, the combination of drugs. The main course, stages, chemotherapy regimens. Clinical categories of tuberculosis patients. Standard chemotherapy regimens. Controlled treatment. Maps of treatment. Clinical monitoring.

Concept of drug-resistant tuberculosis. Types of drug resistance. The reasons for the development of drug resistance, a risk group. Features of the chemotherapy of patients depending on the type of drug resistance.

Adverse reactions to antituberculosis drugs, prevention and elimination (accompany therapy). Treatment of tuberculosis patients in outpatient setting. Creation of patient adherence to treatment.

Surgical interventions in tuberculosis, indications and contraindications to their usage. Artificial pneumothorax and pneumoperitoneum: the main indications for the application, contraindications, technique of application, complications.

Medications for pathogenic therapy, the indications. Palliative treatment.

6. Tuberculosis prevention

The definition and tasks of the tuberculosis social prevention. Preventive measures of social orientation. Priority of a healthy life style.

Specific prevention of tuberculosis. The features of BCG, BCG-M vaccines. Indications, contraindications to vaccination and revaccination with BCG, records of local reactions. Complications of vaccination, revaccination with BCG: classification, clinic, treatment.

Chemoprevention of tuberculosis: definition, indications. Organization of chemoprophylaxis, contingents for chemoprophylaxis.

Sanitary prevention of tuberculosis. The foci of tubercular infection, classification, characteristics. Concept of persons discharging micobacteria, their records, observation periods. Determining factors of the danger of hotbed; conducting anti-epidemic prevention work in hotbed. Infection control in antituberculosis establishment. Means and methods of disinfection in the hotbed of the tuberculosis; conducting anti-epidemic prevention work in the hotbed. TB Infection Control in Healthcare Organisation definition, purpose, forms (levels). Areas with high risk of infection. Rules of respirators usage.

Provision of sanitary-epidemiological welfare on tuberculosis among the population.

7. Organization of tuberculosis control. Modern strategy of tuberculosis control.

Understanding of early, in time and late tuberculosis detection.

Main methods of tuberculosis detection: X-ray examinations, microbiological testing, immunodiagnosics. Organization and planning of undertakings for the early detection of tuberculosis among the population. Screening examinations. X-ray examinations for tuberculosis, complete and differential methods. Population groups

liable to obligatory fluorographic examination ("obligatory" and "threatened" population contingents). Application of low-dose digital radiographic examination methods for identifying respiratory diseases. Using the Mantoux test with 2 TU and diaskintest for diagnosing tuberculosis in different age groups. Risk groups for tuberculosis among children. Indications to children examination in the antituberculosis dispensary.

The role of health care organizations in tuberculosis detection. Method of bacteriological examination for the presence of acid-fast mycobacteria. Indications to bacteriological examination of adults and children. Revealing tuberculosis patients in mass screening examinations, in high-risk groups and seeking help.

Methods for extrapulmonary tuberculosis early detection. Risk groups, the organization of their examination.

The tasks and structure of the antituberculosis dispensary. Types of dispensary establishments and the organization of its work. Comprehensive plan for antituberculosis activities in the service area.

Tuberculosis patients contingents under observation in antituberculosis dispensary establishments, the volume and frequency of examinations, observation periods.

Organizational and methodological guidance for the dispensary in antituberculosis activities of health care institutions in urban and rural areas. Supervision of activities for the diagnosis, prevention of tuberculosis, X-ray examination, bacteriological testing for *Mycobacterium tuberculosis*.

Organization of tuberculosis treatment in an outpatient setting in urban and rural areas (DOT-offices, day hospitals, care at home).

Antituberculous work of health care organizations. Modern approaches to the prevention and detection of tuberculosis. Organization and maintenance of antituberculous work at outpatient department, hospital, medical station, maternity hospital, children's care centers, at the rural medical station, at medical and obstetric station. Organization and carrying out X-ray examinations of population for tuberculosis by health organizations and their value for clinical examination of the population. Algorithm for patients' examination with suspected tuberculosis at an outpatient department. Social and medical risk tuberculosis groups, indications for referral to phthisiologist.

Antituberculous work of hygiene and epidemiology center. Analysis of the dynamics of the tuberculosis epidemic situation in the service area of the dispensary. Work in home and industrial foci of tuberculosis infection. Control of medical examinations of persons entering or working at the enterprises where tuberculosis patients are prohibited to work. Observance of the infection control rules at antituberculosis health care organizations. Planning of mass screening investigations for tuberculosis and BCG vaccination, supervision of their carrying out. Participation in sanitary and veterinary supervision. The sanitary and epidemiological welfare of the population.

Temporary disability in tuberculosis, terms. Clinical and employment prognosis, permanent disability, disability groups, the indications for referral of patients for medical rehabilitation expert commission (MREC). Tasks of MREC on

vocational rehabilitation of tuberculosis patients. Disability groups. Measures for prevention of disability in patients with tuberculosis. The idea of rehabilitation of patients with tuberculosis. Types of rehabilitation, principles of individual rehabilitation program composing.

Normative legal support of tuberculosis care to the population of the Republic of Belarus. The current strategy for tuberculosis control. State Programme "Tuberculosis", goals, objectives. World Health Organization and international tuberculosis control program. Role of the International Union of tuberculosis control and other public organizations in prevention of the spread of tuberculosis in different countries. International Strategy "Stop TB".

**EDUCATIONAL-METHODICAL MAP OF DISCIPLINE
"PHTHISIOPULMONOLOGY"**

The number of chapter, topic	Title of the chapter, topic	Number of class hours		Self-study of student	The forms of knowledge control
		lectures	Practical		
VII Semester					
1.1.	Development of the tuberculosis study history, epidemiology of tuberculosis, tuberculosis etiology	4	2	4	A survey, standardized tests.
1.2.	Pathogenesis and pathological anatomy of tuberculosis, tuberculosis immunology	2		3	standardized tests.
2.	Diagnosis and examination methods of tuberculosis patients	2	5	4	A survey, standardized tests.
3.	Clinical classification of tuberculosis.				A survey, standardized tests, situational tasks solving.
3.1.	Primary forms of tuberculosis Tuberculosis immunodiagnostics.	2	4	4	A survey, standardized tests, situational tasks solving.
3.2.	Clinical forms of secondary tuberculosis: focal pulmonary tuberculosis, infiltrative pulmonary tuberculosis, caseous pneumonia, pulmonary tuberculoma	2	4	4	A survey, standardized tests, situational tasks solving.
3.2.	Disseminated pulmonary tuberculosis. Miliary tuberculosis.		1	4	A survey, standardized tests, situational tasks solving.
3.4.	Extrapulmonary tuberculosis. Tuberculous meningitis. Tuberculous pleurisy. Tuberculosis of peripheral and mesenteric lymphatic nodes.		4		A survey, standardized tests, situational tasks solving.
4.	Principles and methods of tuberculosis treatment. Antituberculosis drugs (ATD), classification. Clinical categories chemotherapy regimens. Collapse therapy and surgical treatments. Pathogenic drugs in the treatment of tuberculosis.		5	4	A survey, standardized tests, situational tasks solving.
Total in the semester		12	25	27	
VIII semester					
3.3.	Chronic forms of tuberculosis.: cavernous, fibrotic-cavernous pulmonary and cirrhotic tuberculosis.	2	6	3	A survey, standardized tests, situational clinical tasks solving.

	Silicotuberculosis. Complications of pulmonary tuberculosis.				
4.	Treatment of tuberculosis	2			
3.4.	Extrapulmonary tuberculosis. HIV – associated tuberculosis. Pulmonary tuberculosis in combination with other diseases.	2	2	3	quizes, standardized tests, written credits
3.6.	Pulmonary sarcoidosis	2	4	3	A survey, situational clinical tasks solving.
5.	Prevention of tuberculosis Specific prevention of tuberculosis. Vaccination and revaccination with BCG. Chemoprevention of tuberculosis. Sanitary prevention of tuberculosis. The foci of the tubercular infection. Infection control at antituberculosis establishments.	2	6	3	A survey, standardized tests, business game.
6.	Organization of fight against tuberculosis. Antituberculosis dispensary, structure, tasks and organization of work. Groups of dispensary supervision. Tuberculosis patients' rehabilitation and disability expertise	2	6	3	A survey, standardized tests, business game, written credits.
6.	Methods of early detection of tuberculosis in children and adults. Screening of the population. WHO Guidelines for detection of tuberculosis among the population. Modern laboratory and radiological methods for detection of tuberculosis and other respiratory diseases.		6	3	A survey, standardized tests, a business game, a differential credit.
Total in the semester		12	30	18	
XI semester					
6.	Current international strategy against tuberculosis, role of general practitioners in carrying out anti-TB activities. General principles and methods of the differential diagnosis of pulmonary tuberculosis.	2	7	5	A survey, standardized tests, situational clinical tasks solving.
3.5. 3.7.	Differential diagnosis of disseminated pulmonary processes (tuberculosis, sarcoidosis, interstitial pulmonary disease). Mycobacteriosis.	2	7	4	A survey, situational clinical tasks solving, presentations at the conference.
3.5.	Differential diagnosis of infiltrative processes in the lungs. Tuberculosis in		7	4	A survey, situational clinical tasks solving,

	combination with COPD, diabetes, HIV and others.				presentations at the seminar, credit.
3.5.	Differential diagnosis of pulmonary rounded formations, chronic forms of pulmonary tuberculosis. Differential diagnosis of acutely progressive forms of pulmonary tuberculosis.		7	4	A survey, a report at the seminar, e-tests.
3.5.	Differential diagnosis of chronic forms of tuberculosis and pulmonary cavity formations. Differential diagnosis of pleurisy, the central nervous system tuberculosis.		7	4	A survey, a report at the seminar, essay, credit
Total in the semester		4	35	21	

INFORMATIONAL-METHODOLOGICAL PART

Literature

1. Budritsky, A.M. / Medical card of a pulmonary tuberculosis in-patient: Study Guide on Phthisiopulmonology / A.M. Budritsky, R.V. Romanovsky, Vitebsk: VSMU, 2010. - 17 p.
2. Crofton, J. / Clinical tuberculosis. Second edition / J. Crofton, N. Horne, F. Miller, 1999. - 222 p.
3. Global tuberculosis control: WHO report (tuberculosis epidemiology, prevention and control, economics, directly observed therapy, treatment outcome, national health programs), 2012. - 246 p.
4. Koshechkin, V.A. / Tuberculosis / V.A. Koshechkin, Z.A. Ivanova, M. : 2006. - 276 p.
5. Treatment of tuberculosis / Guideline for national programs/WHO. Geneva, 1997. - 74 p.
6. Phthisiology: textbook / edited by V.I. Petrenko. - K. : AUS Medicine Publishing, 2015. - 416 p.
7. Tuberculosis. A manual for medical students / edited by N. Ait-Knaled and D. Enarson / WHO. Geneva, 2003. - 141p.

The list of recommended diagnostic tools

The following forms are used for the diagnosis of competencies:

1. Oral form:
 - survey;
 - reports at the seminars;
 - reports at the conferences;
 - credits;
 - business game.
2. Written form:
 - quizzes;
 - essays;
 - written credits;
 - standardized test;
3. Oral-written form:
 - credits;
 - differentiated credit.
4. Technical Form:
 - Electronic tests.

THE LIST OF LECTURES

VII semester

- Number 1. Historical background of the doctrine of tuberculosis. Epidemiology of tuberculosis.
- Number 2. The etiology and laboratory methods of tuberculosis diagnostics.
- Number 3. Pathogenesis and pathomorphology of tuberculosis. Immunology of Tuberculosis.
- Number 4. Diagnosis and examination methods of patients with tuberculosis.
- Number 5. Clinical classification and primary forms of tuberculosis.
- Number 6. Clinical forms of secondary tuberculosis (disseminated, focal, infiltrative pulmonary tuberculosis, tuberculoma, caseous pneumonia).

VIII semester

- Number 1. Chronic forms of pulmonary tuberculosis. Causative agent of tuberculosis with multidrug-resistance.
- Number 2. Pulmonary sarcoidosis.
- Number 3. Treatment of tuberculosis.
- Number 4. Extrapulmonary tuberculosis. HIV-associated tuberculosis.
- Number 5. Prevention of Tuberculosis.
- Number 6. Organization of antituberculosis care.

XI semester

- Number 1. Differential diagnosis of pulmonary and extrapulmonary tuberculosis.
- Number 2. Differential diagnosis of sarcoidosis.

THE LIST OF PRACTICAL LESSONS

VII semester.

1st. Safety measures instruction, preventive fire-fighting regulations and infection control at the clinic. Deontology in phthisiology. Methodology of clinical examination of the patient with tuberculosis (TB). Diagnostic minimum in tuberculosis. Methods of laboratory diagnosis of *M.tuberculosis*. Methods of determining virulence, drug resistance. Work at the bacteriological laboratory. X-ray diagnosis of diseases of the respiratory system. The main X-ray syndromes of the respiratory diseases. Examination and description of X-ray pictures. Patient's curation.

2nd. Immunodiagnostics. Types and use of tuberculin skin tests. Diaskintest. Latent tuberculosis infection Clinical classification of tuberculosis. Primary forms of tuberculosis: clinic, course, complications, treatment. Practical work on the setting of diagnostic tests. Curation and clinical analysis of the patients.

3rd. Focal pulmonary tuberculosis. Infiltrative pulmonary tuberculosis. Caseous pneumonia. Tuberculoma. Clinical features, diagnosis, treatment. Methods for determining the activity of tuberculosis. Curation and clinical analysis of the patients.

4th. Disseminated pulmonary tuberculosis. Miliary tuberculosis. Clinical features, diagnosis, treatment, prevention. Complications of disseminated tuberculosis. Tuberculous meningitis. Tuberculous pleurisy. Extrapulmonary TB (tuberculosis of peripheral and mesenteric lymphatic nodes). Clinical features, diagnosis, treatment. Curation and clinical analysis of the patients.

5th. Principles and methods of the treatment of patients with tuberculosis. Anti-TB drugs, classification. Clinical categories and chemotherapy regimens. Adverse reactions to drugs and their elimination. Collapsotherapy and surgical treatment. Pathogenic agents in the treatment of tuberculosis patients. Outpatient treatment. Work at the department. Discussion and defence of medical cards of patient with tuberculosis.

VIII semester.

1st Safety measures instruction, preventive fire-fighting regulations and infection control at the clinic. Cavernous and fibrotic cavernous pulmonary tuberculosis. Cirrhotic pulmonary tuberculosis. The diagnosis, clinic, course, complications, treatment, prevention. Silicotuberculosis. Complications of pulmonary tuberculosis, first aid.

2nd. Sarcoidosis of the respiratory system. Epidemiology, pathogenesis and pathomorphology, classification, clinical course, diagnosis and treatment. Work at the department.

3rd. Organization of TB control and planning TB control activities. Tuberculosis dispensary (clinic), structure, objectives and organization of its work. Group of dispensary supervision. Medical, professional and social rehabilitation of patients with tuberculosis. Examination of working ability in tuberculosis. Current international tuberculosis control strategy, the State Program "Tuberculosis". Work of the dispensary department.

4th. Prevention of tuberculosis. Specific prevention. Vaccination with BCG revaccination. Indications, technique, complications. Chemoprevention of tuberculosis (methodology of performance, evaluation of efficacy). Sanitary prevention of tuberculosis. Foci of tuberculous infection. Infection control in TB institutions. The periodic and final disinfection. Permission to work and removal from work patients with tuberculosis. Work at the dispensary department.

5th. Methods of early detection of tuberculosis in children and adults. Screening examinations of the population. WHO guidelines on the identification of TB among

the population. Current laboratory and radiologic methods of tuberculosis and other respiratory diseases detection. The role of the public in the TB control. Self-work at the dispensary departments. Credit with a differentiated mark.

XI semester.

1stTheme. Safety measures instruction, preventive fire-fighting regulations and infection control at the clinic.

Current international tuberculosis control strategy. WHO guidelines on the tuberculosis revealing, treatment and prevention. The role of the general practitioner in the fight against tuberculosis. General principles and methods of the differential diagnosis of pulmonary tuberculosis. Differential diagnosis of primary forms of tuberculosis. Work at the clinical and diagnostic departments.

2ndTheme. Sarcoidosis of the respiratory system and and extrapulmonary sarcoidosis. The clinic, diagnosis, differential diagnosis. Differential diagnosis of disseminated pulmonary processes. Pulmonary mycobacteriosis. Work at clinical and diagnostic departments.

3rdTheme. Differential diagnosis of infiltrative processes in the lungs. Tuberculosis in combination with COPD, diabetes mellitus, lung cancer, alcoholism, HIV, etc. Work at clinical and diagnostic departments.

4thTheme. Differential diagnosis of rounded processes in the lungs. Differential diagnosis of acutely progressive forms of tuberculosis. Emergency conditions in Phthisiopulmonology. Work at clinical and diagnostic departments.


5thTheme. Differential diagnosis of chronic forms of tuberculosis. Differential diagnosis of lung cavities. Differential diagnosis of pleurisy, tuberculosis of the central nervous system. Work at clinical and diagnostic departments. Credit with a differentiated mark.

PROTOCOL OF CURRICULUM COORDINATION

Name of the discipline, requiring coordination	Name of the department	Proposals for changes in the content of the curriculum of higher education institutions by academic discipline	Decision taken by the Department developing the curriculum (with the date and number of record)
1. Internal diseases	Internal diseases No 1	no changes are added	approved by the Phthisiopulmonology Department May 2016r., report No
2. Infectious diseases	Infectious diseases	no changes are added	- // -
3. Radiology and radiotherapy	Radiology and radiotherapy	no changes are added	- // -

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Curriculum content, composition and the accompanying documents conform to specified requirements.

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