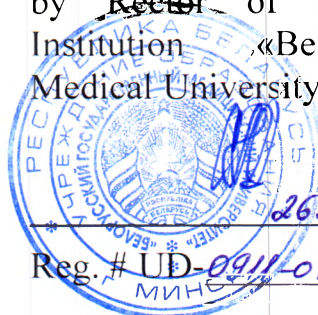


**MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS**  
Educational Institution  
**BELARUSIAN STATE MEDICAL UNIVERSITY**

**Контрольный  
экземпляр**

**APPROVED**

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



S.P.Rubnikovich

26.06.2024  
Reg. # UD-0911-01-17/2425 edu.

**PHTHISIOPULMONOLOGY**

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

**1-79 01 01 «General Medicine»**

Curriculum is based on the educational program «Phthisiopulmonology», approved 26.06.2024, registration # УД-0911-01-17/2425/уч.; on the educational plan in the specialty 1-79 01 01 «General Medicine», approved 15.05.2024, registration # № 7-07-0911-01/2425/mf.

**COMPILERS:**

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**RECOMMENDED FOR APPROVAL:**

by the Department of Phthisiopulmonology the educational institution «Belarusian State Medical University»  
(protocol № 14a of 05.03.2024);

by the Scientific and Methodological Council of the educational institution «Belarusian State Medical University»  
(protocol № 18 of 26.06.2024)

## EXPLANATORY NOTE

Phthisiopulmonology» – academic discipline of the module «Therapeutic module 2», containing systematized scientific knowledge on the clinical manifestations, treatment and prevention of tuberculosis, organization and conduct of sanitary and anti-epidemic measures, methods of diagnosis and differential diagnosis of tuberculosis with non-tuberculosis diseases of the respiratory system.

The aim of the educational discipline «Phthisiopulmonology» is the formation of specialized competence for the diagnosis, treatment of tuberculosis and similar diseases, the organization of preventive sanitary and anti-epidemic measures in tuberculosis.

The objectives of the educational discipline «Phthisiopulmonology» consist in formation of students' scientific knowledge about etiology, pathogenesis, morphological features of pathological processes in tuberculosis, general principles of diagnosis, treatment and prevention of tuberculosis, skills necessary for:

- screening of patients with tuberculosis;
- interpretation of the results of laboratory and instrumental methods of research in tuberculosis of the respiratory organs and some extrapulmonary forms;
- diagnosis and treatment prescription;
- epidemiological and hygienic measures for investigating cases of tuberculosis, in order to ensure the health and epidemics of the population;
- provision of emergency medical care for pulmonary bleeding and other conditions threatening human life and health.

The knowledge, skills and abilities acquired during the study of the academic discipline «Phthisiopulmonology» are necessary for successful mastering of the following academic disciplines: «Infectious Diseases», «Internal Diseases» and module «Surgical Module 3».

The student, who has mastered the content of the educational material of the discipline, should have the following specialized competence:

SC. Use knowledge of clinical symptoms, apply methods of patient examination, diagnosis and differential diagnosis, principles of treatment and prevention, make clinical diagnosis of dermatovenerological pathology, tuberculosis, major neurological and infectious diseases.

As a result of studying the discipline «Phthisiopulmonology», the student should

**know:**

- history of tuberculosis and tuberculosis control;
- modern strategies to combat tuberculosis;
- etiology and pathogenesis of tuberculosis;
- classification, clinical profile and diagnosis of tuberculosis;
- clinical manifestations of major emergency conditions in tuberculosis and the principles of their treatment;
- features of the course of tuberculosis in combination with other diseases;
- organization and implementation of early detection of tuberculosis;

treatment of patients with tuberculosis;  
 the basics of medical examination and rehabilitation of patients with tuberculosis,  
 the principles of prevention and medical and social examination;  
 principles of organization of vaccine prevention of tuberculosis;  
 procedures for organizing anti-tuberculosis measures among the urban and rural  
 population, depending on the epidemic situation;  
 forms of hygiene education and education of patients in the prevention of  
 tuberculosis;  
 the principles of infectious control in health organizations;  
 rules of medical ethics and deontology in the work with patients with  
 tuberculosis;

**be able to:**

conduct an examination and objective examination of a patient with tuberculosis;  
 draw up an examination plan for a tuberculosis patient;  
 interpret the results of laboratory and instrumental research methods;  
 formulate and substantiate the clinical diagnosis of tuberculosis;  
 determine the indications and contraindications to the conduct of immunological  
 tests (intradermal Mantoux test and diaskintest) and take into account their results;  
 make a treatment plan,  
 determine the type and degree of epidemic risk of the source of tuberculosis  
 infection;  
 draw up a plan of measures to improve the various centres of tuberculosis  
 infection;  
 draw up a plan for the hygiene and education of patients;  
 process the necessary medical documentation;

**master:**

methods of clinical and laboratory examination of patients with tuberculosis;  
 methods of carrying out specific vaccine prophylaxis;  
 methods of recording the results of skin tests for tuberculosis (Mantoux test,  
 diaskintest);  
 modern methods of infection control;  
 methods of treatment of tuberculosis;  
 skills for health education.

Total number of hours for the study of the discipline is 222 academic hours, of  
 which 122 classroom hours and 100 hours of student independent work. Classroom  
 hours according to the types of studies: lectures – 27 hours (including 6 hours of  
 supervised student independent work (SSIW)), practical classes – 95 hours.

Intermediate certification is carried out in accordance with the curriculum of the  
 specialty in the form of graded credit (8 semesters) and credit (11 semesters).

Form of higher education – full-time.

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

| Code, name specialties                       | semester | Number of academic hours |            |           |                                     |                   |                           | Form of intermediate assessment |
|--|----------|--------------------------|------------|-----------|-------------------------------------|-------------------|---------------------------|---------------------------------|
|  |          | total                    | in-class   | including |                                     |                   | out-of-class self-studies |                                 |
|  |          |                          |            | lectures  | supervised student independent work | practical classes |                           |                                 |
| <b>1-79 01 01<br/>«General<br/>Medicine»</b> | 7        | 72                       | 48         | 9         | 3                                   | 36                | 24                        |                                 |
|  | 8        | 60                       | 36         | 9         | 3                                   | 24                | 24                        | graded credit                   |
|  | 11       | 90                       | 38         | 3         | -                                   | 35                | 52                        | credit                          |
| Total hours                                  |          | <b>222</b>               | <b>122</b> | <b>21</b> | <b>6</b>                            | <b>95</b>         | <b>100</b>                |                                 |

## THEMATIC PLAN

| Section (topic) name  | Number of class hours    |           |
|---|--------------------------|-----------|
|   | lectures<br>(incl. SSIW) | practical |
| <b>1. History and general pathology of tuberculosis</b>   | <b>6</b>                 | <b>2</b>  |
| 1.1. History of the study of tuberculosis, epidemiology and etiology of tuberculosis  | 4,5                      | 2         |
| 1.2. Pathogenesis and pathological anatomy of tuberculosis. Immunology of tuberculosis  | 1,5                      | -         |
| <b>2. Diagnosis and screening of tuberculosis patients</b>  | <b>1,5</b>               | <b>4</b>  |
| <b>3. Classification and clinical forms of tuberculosis</b>   | <b>13,5</b>              | <b>61</b> |
| 3.1. Clinical classification of tuberculosis. Clinical forms of primary tuberculosis  | 1,5                      | 6         |
| 3.2. Clinical forms of secondary tuberculosis: focal, infiltrating pulmonary tuberculosis, caseous pneumonia, pulmonary tuberculoma, disseminated pulmonary tuberculosis                      | 4,5                      | 12        |
| 3.3. Cavernous, fibrosis-cavernous, cirrotic pulmonary tuberculosis. Complications of pulmonary tuberculosis  | 1,5                      | 6         |
| 3.4. Tuberculosis of extrapulmonary localization. Tuberculosis of the central nervous system. Tuberculosis pleurisy. Pulmonary tuberculosis in combination with other diseases and conditions | 3                        | 6         |
| 3.5. Differential diagnosis of tuberculosis with respiratory diseases of other etiology   | 1,5                      | 24        |
| 3.6. Sarcoidosis of the respiratory system  | 1,5                      | 4         |
| 3.7. Diseases caused by non-tuberculosis mycobacterium (Mycobacteriosis)  | -                        | 3         |
| <b>4. Treatment of patients with tuberculosis of the respiratory system</b>   | <b>3</b>                 | <b>6</b>  |
| <b>5. Prevention of tuberculosis. Organization of anti-tuberculosis assistance to the population. Modern international strategies to combat tuberculosis</b>                                  | <b>3</b>                 | <b>22</b> |
| <b>Total hours</b>  | <b>27</b>                | <b>95</b> |

## CONTENT OF THE EDUCATIONAL MATERIAL

### **1. History and general pathology of tuberculosis**

#### **1.1. History of the study of tuberculosis, epidemiology and etiology of tuberculosis**

The main stages of the development of the study of tuberculosis. Discoveries in the diagnosis, treatment and prevention of tuberculosis. Contribution of scientists to the theory and practice of tuberculosis control. History of formation of TB service in the Republic of Belarus.

Features of the epidemic process in tuberculosis and the factors that determine its development. Ways of the spread of tuberculosis infection. The role of socio-economic factors in the development of tuberculosis. Tuberculosis in countries with different economic levels. Social and medical groups at high risk of developing tuberculosis. Tuberculosis in prisons. Infection by mycobacteria, morbidity, sickness and mortality from tuberculosis, importance of epidemiological indicators in determining the epidemic situation of tuberculosis in various age groups, among residents of the city and in rural areas. Statistics and monitoring of tuberculosis in the Republic of Belarus. Republican register «Tuberculosis».

Taxonomy and classification of mycobacterium. Cause of tuberculosis: structure, main properties. Mycobacterium of tuberculosis complex. Rapidly and slowly multiplying mycobacteria, persistent forms, L-forms of mycobacterium, vaccine strain of Calmette and Geren (BCG). Drug resistance, types and genetic bases of drug resistance formation.

Pathogenesis and virulence of mycobacterium tuberculosis (MBT). Aerobiology of MBT transmission. The degree of contagiousness of the patient with different clinical forms of tuberculosis (TB). Methods of taking biological material for study. Methods of detection of MBT in sputum and other biological material, the significance of their results for diagnosing TB and determining the phase of the tuberculosis process. Accelerated and fast methods of diagnosis of TB with multidrug resistance of the causative agent (MDR-TB). MGIT-BACTEC-960. Methods of identification of mycobacterium, determination of sensitivity to anti-tuberculosis drugs. Modern molecular genetic methods for detecting MBT and determining their sensitivity to anti-tuberculosis drugs: INNO-LIPA test system (LPA, Hain-test), Xpert MTB/RIF, XMTB/RIF Ultra, XpertMTB/XDR on the platform Gene Xpert.

Non-tuberculosis «atypical» mycobacteria and their importance in the development of pulmonary pathology. Epidemiological and clinical significance of different types and forms of mycobacteria.

#### **1.2. Pathogenesis and pathological anatomy of tuberculosis. Immunology of tuberculosis**

Ways of penetration and spread of mycobacterium of tuberculosis in the human body. Stages of pathogenesis of primary tuberculosis. Latent tuberculosis infection. Mycobacterium infection and TB disease. Structure of TB granuloma. Morphology of

the main clinical forms of tuberculosis. Residual post-tuberculosis changes and their role in the development of tuberculosis. Pathomorphology of tuberculosis: species, especially in modern conditions.

Immunology and immunopathology in tuberculosis. Anti-tuberculosis immunity, species. Mechanism of formation of anti-tuberculosis immunity during vaccination and infection with mycobacterium tuberculosis. The importance of immunodeficiency in the development and course of tuberculosis infection. Allergy to tuberculosis and its types: post-vaccinative (in children vaccinated with BCG) and infectious (in mycobacterium infected tuberculosis). The definition of anergy.

## **2. Diagnosis and screening of tuberculosis patients**

Diagnostics of tuberculosis of the respiratory organs in healthcare organizations. Algorithm of tuberculosis diagnosis. Mandatory methods of examination (mandatory diagnostic minimum) of a patient suspected of tuberculosis.

Systematic screening for active tuberculosis in target populations.

Collection of anamnesis, physical methods of research, their clinical and differential diagnostic value; examination of patients at suspicion of extrapulmonary localization of tuberculosis.

Radial methods of examination, readings for assignment. Radiological syndromes of tuberculosis and other respiratory diseases, linear and computed tomography. Modern digital technology, special radiation research methods for tuberculosis and other lung diseases, indications for use. Radiation diagnostics for extrapulmonary tuberculosis.

Microbiological diagnosis of tuberculosis: methods, types of diagnostic material.

Immunodiagnostics of tuberculosis infection. Tuberculin sample Mantoux with 2 TU. Differential diagnosis of infectious and post-vaccine allergies to tuberculin. Modern immunodiagnostic methods: skin test with TB allergen recombinant (diaskintest), tests for the release of gamma interferon (Quantiferon-TB and T-SPOT-TB), their importance in the diagnosis of local forms of tuberculosis and latent tuberculosis.

Endoscopic research methods. Bronchoscopy: types, indications for conducting.

Functional tests of lung ventilation gas exchange, value in the diagnosis of lung diseases.

Surgical research methods and diagnostic operations.

Cytological examination of pleural exudate, bronchoalveolar fluids, punctates of lymph nodes, pleura and lung. Histological examination of lung and other organ tissues in tuberculosis and non-tubercular lung diseases.

## **3. Classification and clinical forms of tuberculosis**

### **3.1. Clinical classification of tuberculosis. Clinical forms of primary tuberculosis**

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



Pathogenesis and pathological anatomy of primary tuberculosis. Factors and groups at risk of developing primary forms of tuberculosis. Primary infection. Latent tuberculosis infection. The significance of skin tests (tuberculin test, diaskintest) in the diagnosis of primary tuberculosis.

Clinical forms of primary tuberculosis. Intrathoracic lymph node tuberculosis: pathogenesis, pathomorphology, clinical-radiological forms, clinical flow, diagnostic features, complications, treatment, outcomes, differential diagnosis with similar diseases.

Primary tuberculosis complex: pathogenesis and pathomorphology, clinical pattern, diagnosis, treatment, complications, differential diagnosis. The outcomes of the primary complex and the significance of residual changes in the pathogenesis of secondary forms of tuberculosis.

### **3.2. Clinical forms of secondary tuberculosis: Localized pulmonary tuberculosis, infiltrating pulmonary tuberculosis, caseous pneumonia, pulmonary tuberculoma, disseminated pulmonary tuberculosis**

The concept of secondary forms of tuberculosis. Localized pulmonary tuberculosis: detection, frequency of occurrence, pathogenesis and pathomorphology of fresh and chronic localized pulmonary tuberculosis, diagnosis, clinical pattern, differential diagnosis, treatment, medical and social examination, outcomes.

Lung Infiltration Tuberculosis: Detection, frequency of occurrence, pathogenesis and pathomorphology. Clinical x-ray syndroms of infiltrating tuberculosis, features of their course and diagnosis, prognosis, differential diagnosis, treatment, medical and social examination, outcomes.

Caseous pneumonia: detection, frequency of occurrence, pathogenesis and pathomorphology, clinical picture of the disease. Clinical x-ray forms of caseous pneumonia, diagnosis, differential diagnosis, treatment, complications, medical and social examination, prognosis, outcomes.

Pulmonary tuberculoma: definition, frequency of occurrence, pathogenesis, pathomorphology and tuberculoma species. Clinical flow, diagnosis, differential diagnosis of pulmonary tuberculoma, treatment, medical-social examination, prognosis, outcomes.

Disseminated tuberculosis: definition, classification. Miliar tuberculosis: definition, frequency of occurrence, pathogenesis and pathomorphology of miliary tuberculosis. Diagnosis, clinical forms of miliary tuberculosis and their course, complications, treatment, outcomes, differential diagnosis, prognosis, medical and social expertise.

Suspected and chronic disseminated pulmonary tuberculosis: diagnosis, clinical profile, treatment, differential diagnosis medical-social examination, outcomes.

### **3.3. Cavernous, fibrosis-cavernous, cirrotic pulmonary tuberculosis. Complications of pulmonary tuberculosis**

Cavernous pulmonary tuberculosis: detection, frequency of occurrence, pathogenesis and morphological structure. Clinical, X-ray and laboratory signs of

caverns, types of healing caverns. Diagnosis, differential diagnosis of cavernous pulmonary tuberculosis, treatment, medical and social expertise, prognosis, outcomes.

Fibrosis-cavernous pulmonary tuberculosis: detection, frequency of occurrence, causes of formation. Pathogenesis and pathological anatomy of pulmonary fibrosis cavernous tuberculosis, variants of the clinical current, diagnosis, differential diagnosis, treatment, assessment of the epidemiological danger of the patient, prognosis, outcomes.

Cirrhotic pulmonary tuberculosis: detection, frequency of occurrence. Pathogenesis and pathomorphology of cirrhotic pulmonary tuberculosis, clinical flow, diagnosis, differential diagnosis, treatment, prognosis, outcomes.

Complications of chronic tuberculosis (internal amyloidosis, chronic pulmonary heart).

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

Tuberculosis of the respiratory system, combined with dust occupational diseases of the lungs. Silicotuberculosis.

### **3.4. Tuberculosis of extrapulmonary localization. Tuberculosis of the central nervous system. Tuberculosis pleurisy. Pulmonary tuberculosis in combination with other diseases and conditions**

Tuberculosis of the central nervous system. Tuberculosis meningitis: pathogenesis and pathological anatomy, clinical forms, diagnosis, differential diagnosis, treatment, medical and social examination, prognosis, outcomes. Lab readings of cerebrospinal fluid.

Peripheral and mesenteric lymph node tuberculosis: pathogenesis and pathological anatomy, clinical forms, diagnosis, differential diagnosis, treatment, prognosis, outcomes of the disease.

Tuberculosis pleurisy: pathogenesis, pathological anatomy, classification, clinical pattern, diagnosis, treatment principles, prognosis, possible outcomes. Laboratory examination of exudate and transudate.

Clinical picture of tuberculosis pleura, diagnosis, differential diagnosis, treatment, prognosis and outcome of the disease. Upper respiratory and bronchial tuberculosis: detection, frequency of occurrence, pathogenesis, pathological anatomy, diagnosis, treatment, prognosis, outcome.

Tuberculosis in people living with the human immunodeficiency virus (HIV) is decrypted and patients with AIDS. Epidemiology of HIV-TB, impact of tuberculosis on HIV infection. Features of the clinical course of tuberculosis in people living with HIV, diagnosis and methods of verification of HIV-related tuberculosis. Prevention of tuberculosis in people living with HIV.

Tuberculosis of the respiratory system, combined with dust occupational diseases of the lungs. Tuberculosis in HIV-infected and AIDS patients. Combination of tuberculosis with diabetes mellitus, chronic non-specific inflammatory respiratory

diseases, gastrointestinal diseases, mental illness, alcoholism, drug addiction, lung cancer. Tuberculosis and motherhood.

### **3.5. Differential diagnosis of tuberculosis with respiratory diseases of other etiology**

General principles of differential diagnosis of tuberculosis of the respiratory system. Differential diagnosis of primary forms of tuberculosis (pneumonia, lymphogranulomatosis, lymphoma, lymphocytes, sarcoidosis). Differential diagnosis of secondary forms of tuberculosis with pneumonia, lung tumors, alveolitic, granulomatosis (mycobacteriosis, histiocytosis X, pneumoconiosis, pneumocotics), systemic pulmonary vasculitis (Wegener granulomatosis, Churg-Strauss syndrome, idiopathic lung haemoderosis, etc.), accumulation diseases, pulmonary dissemination of tumor nature (bronchioloalveolar cancer, leiomyomatosis, lung metastatic lesion) development defects, lung damage from systemic connective tissue diseases, pneumonia, cystic fibrosis, etc.

Differential diagnosis of diseases manifested by major X-ray syndromes (hearth, infiltration, rounded and annular shadow, bronchoadenopathy, dissemination, etc.).

Differential diagnosis of pleuritis, tuberculosis of the central nervous system. Differential diagnosis of highly progressive forms of tuberculosis.

### **3.6. Sarcoidosis of the respiratory system**

Sarcoidosis: definition, epidemiology, classification, potential etiological factors, pathogenesis, pathomorphology, clinical current variants, major clinical syndromes (Lefgren, Heerford-Waldenstrom), extrapulmonary manifestations of sarcoidosis, diagnostics, differential diagnostics, types of biopsies for morphological verification of diagnosis, treatment tactics, prognosis, clinical observation.

### **3.7. Diseases caused by non-tuberculosis mycobacterium (Mycobacteriosis)**

Mycobacteriosis of the lungs: detection of pathology, prevalence among different population groups, importance of individual microorganisms in disease development, pathomorphology, clinical flow, diagnosis, differential diagnosis, treatment tactics.

## **4. Treatment of patients with tuberculosis of the respiratory system**

Basic principles of tuberculosis treatment. Treatment regime and nutrition of patients with tuberculosis. Etiotropic treatment in tuberculosis. Anti-tuberculosis drugs, classification, methods of administration, combinations. Treatment of patients with drug resistance to TB causative agent (multiple and wide). Use of non-injecting regimes of chemotherapy of tuberculosis.

Unwanted adverse reactions to pharmacotherapy in the treatment of tuberculosis.

Organization of outpatient treatment for tuberculosis patients in urban and rural areas. Controlled chemotherapy of tuberculosis in outpatient conditions (day hospital, home treatment, video-controlled treatment). Equal access to quality treatment for all people with tuberculosis and related diseases, support for patients.

Types of surgery in tuberculosis, indications and contraindications to use. Artificial pneumothorax and pneumoperitoneum: indications for application, contraindications.

Drugs of pathogenetic therapy, indications for prescription. Palliative treatment.

### **5. Prevention of tuberculosis. Organization of anti-tuberculosis assistance to the population. Modern international strategies to combat tuberculosis**

Definition of the concept and objectives of social prevention of tuberculosis. Preventive measures of social orientation. Priority of a healthy lifestyle.

The concept of specific prevention (immunoprophylaxis) of tuberculosis. Characteristics of anti-tuberculosis vaccines BCG (BCG-M). Deadlines, indications, contraindications to vaccination, local vaccination responses. Serious adverse reactions to preventive vaccination against tuberculosis: classification, features of the clinical course, diagnosis, treatment principles.

Chemoprophylaxis of tuberculosis, contingents subject to chemoprophylaxis.

Sanitary prevention of tuberculosis. Centers of tuberculosis infection, classification, characteristic. The concept of index patient, bacterium separator, contact (contact person). Types and priority of centers of tuberculosis infection. Sanitary and anti-epidemic measures in the centers of tuberculosis infection. Characteristics, priority of contacts and their investigation. Current and final disinfection in the center of tuberculosis infection. Conducting information and education.

Infectious control in the anti-tuberculosis health organization, definition, purpose, forms (levels). Zones with high risk of infection. Rules for the use of respirators.

Ensuring the sanitary and epidemic well-being of the population with tuberculosis.

The role of health organizations in the timely detection of tuberculosis. The concept of early, timely and late detection of tuberculosis. Organization and planning of activities for early detection of tuberculosis in the population. X-ray fluorographic examination of the population for tuberculosis using continuous and differentiated methods. Population groups subject to mandatory X-ray screening («mandatory» and «threatened» population groups). Application of low-dose digital X-rays to detect respiratory pathology. The use of a Mantoux test with 2 TU and a skin test with an allergen TB recombinant (diaskintest) to diagnose tuberculosis in children.

The role of health organizations in the timely identification of patients with tuberculosis. Indications for bacteriological examination of adults and children. Identification of patients with tuberculosis during mass examinations, at-risk groups and when seeking medical assistance.

Methods of early detection of patients with extrapulmonary forms of tuberculosis. Groups at risk, organization of their examination.

Tuberculosis dispensaries. Tasks of the tuberculosis dispensary, methods and organization of its work. Types of dispensaries, structure. Grouping of units of tuberculosis dispensaries, number and frequency of examinations, duration of observation.

Organizational and methodical management of the dispensary of anti-tuberculosis work of health organizations in the conditions of the city and village. Comprehensive

plan of anti-tuberculosis measures in the dispensary service area. Management of activities on diagnosis, prevention of tuberculosis, X-ray, bacteriological examination on mycobacteria tuberculosis.

Organization and maintenance of anti-tuberculosis work in hospitals, outpatient clinics. Algorithm of examination of patients in outpatient conditions at suspicion of tuberculosis.

The concept of rehabilitation of patients with tuberculosis.

Normative legal provision of anti-tuberculosis assistance to the population of the Republic of Belarus. Current international strategies and programmes of the World Health Organization (WHO) «Stop tuberculosis», «Eliminate tuberculosis» to eliminate tuberculosis. Role of the International Union to Fight Tuberculosis and other organizations, joint action of countries to effectively protect people from health emergencies, including outbreaks of tuberculosis. United Nations (UN) Global Tuberculosis Goals.

Features of work in tuberculosis organizations. Issues of medical ethics and deontology in tuberculosis organizations.

## ACADEMIC DISCIPLINE CURRICULAR CHART

| №                 | Section (topic) name   | Number of hours |           | Supervised student independent work (SSIW) | Practical skills   | Form of control  |                                      |
|-------------------|--|-----------------|-----------|--|--|--|--------------------------------------|
|                   |  | lectures        | practical |  |  | of practical skills  | of current / intermediate assessment |
| <b>7 semester</b> |  |                 |           |  |  |  |                                      |
|                   | <b>Lectures</b>  | <b>9</b>        | <b>-</b>  | <b>3</b>                                   |  |  |                                      |
| 1.1               | Historical sketch of the development of the study of tuberculosis. Epidemiology of tuberculosis                      | 1,5             | -         | -  |  |  |                                      |
| 1.1               | Etiology of tuberculosis   | 1,5             | -         | 1,5  |  |  | testing                              |
| 1.2               | Pathogenesis and pathomorphology of tuberculosis. Immunology of tuberculosis   | 1,5             | -         | -  |  |  |                                      |
| 2.                | Diagnosis and screening of tuberculosis patients   | 1,5             | -         | -  |  |  |                                      |
| 3.1               | Clinical classification of tuberculosis. Clinical forms of primary tuberculosis                                      | 1,5             | -         | -  |  |  |                                      |
| 3.2               | Clinical forms of secondary tuberculosis: focal, infiltrating pulmonary tuberculosis, tuberculoma, caseous pneumonia | 1,5             | -         | 1,5  |  |  | testing                              |
|                   | <b>Practical lessons</b>   | <b>-</b>        | <b>36</b> | <b>-</b>                                   |  |  |                                      |
| 1.1.<br>2.        | Etiology of tuberculosis. Diagnosis and methods of examination of patients with tuberculosis                         | -               | 6         | -  | 1. Objective examination of a patient with respiratory tuberculosis and some extrapulmonary forms of tuberculosis;<br>2. Evaluation of laboratory and instrumental methods;<br>3. Detection of signs of suspected tuberculosis | 1. performing practical skills at the patient's bedside<br>2. reading the overview X-ray of the respiratory organs;<br>3. solving a situation task | survey,<br>test control              |

|      |   |   |   |   |  |   |  |
|------|---|---|---|---|--|---|--|
|      |   |   |   |   | at the screening X-ray of the chest organs and preparation of the X-ray report.  |   |  |
| 3.1. | Diagnostics and methods of examination of patients with tuberculosis. Clinical classification of tuberculosis. Clinical forms of primary tuberculosis | - | 6 | - | Determination of indications and contraindications for the intradermal tuberculin test Mantoux and skin test with an allergen TB recombinant (diaskin test) and consideration of their results | solving a situation task  | survey;<br>business game based evaluation;   |
| 3.2  | Clinical forms of secondary tuberculosis: focal, infiltrating pulmonary tuberculosis, tuberculoma, caseous pneumonia                                  | - | 6 | - | 1. Formulation and substantiation of the clinical diagnosis of tuberculosis;<br>2. Identification of basic and additional screening methods for tuberculosis diagnosis.                        | solving a situational task<br><br>establishment and protection of the educational medical card of inpatient | survey;<br>business game based evaluation;   |
| 3.2  | Disseminated pulmonary tuberculosis.  | - | 6 | - | 3. Identification of signs suspicious of tuberculosis on the X-ray imaging of the chest organs and registration of the X-ray examination.  | protection of the educational medical card of inpatient   | test control;<br>establishment and protection of the educational medical card of inpatient |
| 3.3. | Cavernous, fibrosis-cavernous, cirrotic pulmonary tuberculosis. Complications of pulmonary tuberculosis   | - | 6 | - |  | solving a situation task  | defending hospital patient's medical case  |
| 4.   | Treatment of patients with tuberculosis of the respiratory system   | - | 6 | - | Determination of chemotherapy regimen for different categories of patients   | solving a situation task,   | survey;<br>business game based evaluation;<br>test work*                                   |

| 8 semester |   |     |           |     |   |   |   |
|------------|---|-----|-----------|-----|---|---|---|
|            | Lectures  | 9   | -         | 3   |   |   |   |
| 3.2        | Disseminated pulmonary tuberculosis   | 1,5 | -         | -   |   |   |   |
| 3.3        | Cavernous, fibrosis-cavernous, cirrotic pulmonary tuberculosis. Complications of pulmonary tuberculosis   | 1,5 | -         | -   |   |   |   |
| 3.4        | Tuberculosis of extrapulmonary localization. Tuberculosis of the central nervous system. Tuberculosis pleurisy  | 1,5 | -         | -   |   |   |   |
| 4          | Treatment of patients with tuberculosis of the respiratory system   | 1,5 | -         | 1,5 |   | testing   |   |
| 3.4        | Pulmonary tuberculosis in combination with other diseases and conditions  | 1,5 | -         | -   |   |   |   |
| 5.         | Tuberculosis Prevention. Organization of anti-tuberculosis assistance to the population. Modern international strategies to combat tuberculosis   | 1,5 | -         | 1,5 |   | testing   |   |
|            | <b>Practical lessons</b>  | -   | <b>24</b> | -   |   |   |   |
| 3.4.<br>2  | Tuberculosis of extrapulmonary localization. Tuberculosis of the central nervous system. Tuberculosis pleurisy. Pulmonary tuberculosis in combination with other diseases and conditions. Prevention of tuberculosis. | -   | 6         | -   | 1. Formulation and justification of clinical diagnosis of tuberculosis;<br>2. Identification of basic and additional screening methods for tuberculosis diagnosis.<br>3. Evaluation of results of the study of spinal fluid | practical skills at the patient's bedside;<br><br>solving the situational problem;<br><br>filling out the inpatient medical training card | survey;<br>business game based rating   |
| 3          | Tuberculosis Prevention   | -   | 6         | -   |   |   | test work*                              |
| 4          | Organization of anti-tuberculosis assistance to the population. Modern international strategies to combat tuberculosis  | -   | 6         | -   | Determination of the type and extent of the epidemiological risk of a tuberculosis infection  | situation solution  | test control<br><br>differential credit |



| <b>11 semester</b> |   |          |           |   |   |   |
|--------------------|---|----------|-----------|---|---|---|
|                    | <b>Lectures</b>   | <b>3</b> | -         | - |   |   |
| 3.5                | Differential diagnosis of tuberculosis with non-tubercular respiratory diseases.                          | 1,5      | -         | - |   |   |
| 3.6                | Sarcoidosis of the respiratory system   | 1,5      | -         | - |   |   |
|                    | <b>Practical lessons</b>  | -        | <b>35</b> | - |   |   |
| 5.                 | Modern international strategies to combat tuberculosis.   | -        | 7         | - | 1.Objective examination of a patient with tuberculosis of the respiratory organs and some extrapulmonary forms of tuberculosis; | performing the practical skill at the patient's bed           |
| 3.5                | Differential diagnosis of tuberculosis with respiratory diseases of other etiology                        |          |           |   | 2.Detection of signs of suspected tuberculosis in the screening chest X-ray   | survey, business game based evaluation; defense of the review |
| 3.6                | Sarcoidosis of the respiratory system. Diseases caused by non-tuberculosis mycobacteria (Mycobacteriosis) | -        | 7         | - | 1.Objective examination of a patient with tuberculosis of the respiratory organs and some extrapulmonary forms of tuberculosis; | performing the practical skill at the patient's bed           |
|                    |   |          |           |   | 2. Detection of signs of suspected tuberculosis in the screening chest X-ray  | survey, business game based evaluation; defense of the review |
| 3.5                | Differential diagnosis of tuberculosis with respiratory diseases of other etiology                        | -        | 7         | - | 1.Objective examination of a patient with tuberculosis of the respiratory organs and some extrapulmonary forms of tuberculosis; | performing the practical skill at the patient's bed           |
|                    |   |          |           |   | 2. Detection of signs of suspected tuberculosis in the screening chest X-ray  | survey, business game based evaluation; defense of the review |
| 4                  | Differential diagnosis of tuberculosis with respiratory diseases of other etiology                        | -        | 7         | - | 1.Objective examination of a patient with tuberculosis of the respiratory organs and some extrapulmonary forms of tuberculosis; | performing the practical skill at the patient's bed           |
|                    |   |          |           |   |   | survey, business game based evaluation; defense of the review |

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|   |  |           |           |          |   |   |   |
|---|--|-----------|-----------|----------|---|---|---|
|   |  |           |           |          | 2. Detection of signs of suspected tuberculosis in the screening chest X-ray  |   |   |
| 5 | Differential diagnosis of tuberculosis with respiratory diseases of other etiology | -         | 7         | -        | 1.Objective examination of a patient with tuberculosis of the respiratory organs and some extrapulmonary forms of tuberculosis.<br>2. Detection of signs of suspected tuberculosis in the screening chest X-ray | performing the practical skill at the patient's bed | abstract defense test work*<br><br>Credit |
|   |  | <b>21</b> | <b>95</b> | <b>6</b> |   |   |   |

\*This is a mandatory form of current certification

## INFORMATION AND INSTRUCTIONAL UNIT

### LITERATURE

#### **Basic (relevant):**

1. Туберкулез : учеб.-метод. пособие = Tuberculosis : teaching workbook / И. В. Буйневич, С. В. Гопоняко.– 2-е изд., стер. – Гомель : ГомГМУ, 2022. –150 с.

#### **Additional:**

2. Budritsky, A. M. Phthisiopulmonology : manual / A. M. Budritsky. - Vitebsk : VGMU, 2019. – 253 p.

3. Perelman, M. I. Phthiziatria / M. I. Perelman textbook. - Moscow : GEOTAR-Media, 2015. – 448 p.

4. Krivonos, P. S. Tuberculosis in children : educational manual / P. S. Krivonos, J. I. Krivosheeva, N. S. Morozkin. - Minsk : Register, 2015. – 232 p.

5. Krivosheeva, J. I. Map of monitoring of the center of tuberculosis infection : educational and methodical manual / J. I. Krivosheeva, N. V. Manovitskaya, O. V. Mikhailova. - Minsk : BGMU, 2023. – 20 p.

6. Sanitary prophylaxis of tuberculosis : educational and methodical manual / G. L. Borodin [et al. ]. - Minsk : BSMU, 2019. – 18 p.

7. Krivosheeva, J. I. Prevention of tuberculosis : educational and methodical manual / J. I. Krivosheeva, N. A. Yemelyanova, M. I. Dyusmikeeva. – Minsk : BRGMU, 2022. – 24 p.

8. Consolidated WHO Manual for Tuberculosis Control. Module 2: Screening. Systematic screening for tuberculosis. - Geneva : World Health Organization, – 2021.

9. WHO Strategy for the Elimination of Tuberculosis: Global Strategy and Goals for the Prevention, Treatment and Control of Tuberculosis beyond 2015. – Geneva: World Health Organization, – 2015.

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

The time allocated for independent work can be used by students for:

- preparing for lectures, practical classes;
- preparation for the examination and differentiated examination on the academic discipline;
- study of topics (questions) for self-study;
- problem solving;
- preparing thematic reports, abstracts, presentations;
- preparation of tests by students for the organization of mutual knowledge assessment.

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

Main forms of supervised student independent work:  
 preparation and presentation of abstracts;  
 presentation of reports;  
 studying topics and problems that have not been discussed at the lectures;  
 taking notes of original sources (sections of reading books, collections of documents, monographs, teaching aids);  
 computer testing;  
 preparation of tests for the organization of mutual assessment;  
 training and participation in active forms of training.

Control of supervised student independent work is carried out in the form of:  
 control work;  
 testing;  
 discussion of abstracts;  
 protection of training assignments;  
 evaluation of the oral response to a question, communication, report or task;  
 reviews of abstracts, written reports;  
 verification of medical records;

**LIST OF AVAILABLE DIAGNOSTIC TOOLS**

The following forms are used for competence assessment:  
 control work;  
 test;  
 electronic test;  
 A quick survey on the practical training;  
 interview;  
 protection of abstract (report);  
 solving situational problems;  
 evaluation based on business play.

**LIST OF AVAILABLE TEACHING METHODS**

Linear (traditional) method;  
 Active (interactive) methods:  
     Case-Based Learning (CBL)

## LIST OF PRACTICAL SKILLS

| Name of practical skills   | Form of practical skills control  |
|--|---|
| 1. Objective examination of a patient with respiratory tuberculosis and some extrapulmonary forms of tuberculosis  | performing a practical skill at the patient's bedside                                     |
| 2. Detection of signs of suspected tuberculosis at the screening X-ray of the chest organs and preparation of the X-ray report   | situation solution  |
| 3. Assignment of basic and supplementary screening methods for diagnosis of tuberculosis   | outpatient card completion  |
| 4. Determination of indications and contraindications for the intradermal tuberculin test Mantoux and skin test with an allergen TB recombinant (diaskintest) and consideration of their results | situation solution  |
| 5. Formulation and justification of the clinical diagnosis of tuberculosis   | situation solution, registration and protection of the patient's educational medical card |
| 6. Evaluation of the results of the spinal fluid study   | solving a situation problem, inpatient card completion                                    |
| 7. Evaluation of results of laboratory and instrumental methods of research  | solving a situation problem, processing and protection of the patient's medical records   |
| 8. Determination of chemotherapy regimen for different categories of patients  | solving a situation problem, inpatient card completion                                    |
| 9. Detection of side reactions to anti-tuberculosis drugs, prescription of treatment   | solving a situation problem, inpatient file completion                                    |
| 10. Determination of the type and degree of epidemic hazard of the source of tuberculosis infection  | solving a situation problem   |
| 11. Prioritization of contact persons;   | solving a situation problem   |

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

| Title of the discipline requiring approval | Department                                      | Amendments to the curriculum in the academic discipline | Decision of the department, which designed the curriculum (date, protocol # ) |
|--|---|---|---|
| 1. Internal Diseases                       | 1 <sup>st</sup> Department of Internal Diseases | No offers   | protocol № 14a of 05.03.2024  |
| 2. Infectious Diseases                     | Infectious Diseases                             | No offers   | protocol № 14a of 05.03.2024  |

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T.O. Apanasevich

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

Dean of the Medical Faculty for International Students of the educational institution «Belarusian State Medical University»

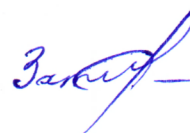
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