



Некоммерческое образовательное учреждение
Учебно-научно-производственный комплекс
«Международный университет Кыргызстана»

Система менеджмента качества
Учебно-методический комплекс дисциплины «Пульмонологии»
ООП «Лечебное дело» МШМ МУК

INTERNATIONAL UNIVERSITY OF KYRGYZSTAN

INTERNATIONAL SCHOOL OF MEDICINE

Department of Therapy



«APPROVED»

Vice-Rector academic and
Administrative affairs
Prof. Musa kyzy Alina

“ ” _____ 2021

**ACADEMIC AND METHODOLOGICAL COMPLEX
OF THE DISCIPLINE**

«PULMONOLOGY»

Main educational program
specialty of **General medicine (for foreign citizens)**

Qualification of the graduate: general practitioner

Bishkek 2021



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**THE WORK PROGRAM OF THE DISCIPLINE
«PULMONOLOGY»**

Main educational program

specialty of **560001 General Medicine (for foreign citizens)**

(code, direction name / specialty)

qualification of the graduate: general practitioner

(the qualification of the graduate is indicated in accordance with SES HPE)

Full-time education

Course 3

Semester 6

Credit / Exam

Total curriculum credits 1.46

Work program developer: Zheenbekov T.A., assistant

(position, full name)

Reviewed and approved at a meeting of the department of Therapy

Minutes № ____ from « ____ » _____ 2021

Head of the Department Baitova G. M.

(full name, signature)

Bishkek 2021



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The work program for the discipline « **PULMONOLOGY** » has been developed in accordance with the requirements of the SES HPE in the specialty 560001 General Medicine.

The work program is agreed with academic and methodological sector of the ISM

Chief specialist _____
(full name) (signature)

« ____ » _____ 20__

The work program is agreed with the head of the main educational program in the direction / specialty _____

(code, specialty name/direction)

Head of the MEP _____
(Full name) (signature)

« ____ » _____ 20__

External review given _____

(place of work, position, academic degree, academic title, full name)

« ____ » _____ 20__ (review is attached)

The work program is agreed with the ISM “IUK” Quality and Monitoring Department

Head of the QMD _____
(Full name) (signature)

« ____ » _____ 20__



1. The work program of the academic discipline

1.1.Explanatory note

- **Mission of the ISM IUK** – *training of competent specialists in the field of medicine, consistent with international standards and traditions of medical ethics, ready for continuous professional growth using modern achievements of science and practice, to solve public health problems.*

Annotation of the academic discipline

The AMC for the "Nephrology" discipline is compiled in accordance with the Regulations on the Academic and Methodological Complex of the discipline, approved by the Protocol of the Academic Council No. 6 of October 20, 2020, by the Addendum to the Regulations on the modular grade-rating system for assessing the knowledge of students in the NCEI ESPC "IUK" (Protocol No. 42 of 07.26.2018, as well as on the basis of the State educational standard of higher professional education in the direction of "Medicine", approved by the Government Decree of 2015. The AMC of the "Nephrology" discipline was developed for third-year students in the direction of "General Medicine" 560001 in compliance with the requirements of the State Educational Standard of Higher Professional Education of the Ministry of Education and Science of the Kyrgyz Republic.

There is not a single condition and disease in which the kidneys are not "interested". In this case, most often, the dysfunction is masked by the symptoms of the underlying disease, or it proceeds latently. Timely identification of the main renal symptoms, verification of the disease and adequate treatment will not only improve the patient's quality of life, but will reduce the rate of progression of chronic renal failure of the natural outcome of all chronic diseases. Studying the discipline of nephrology will expand the understanding of the causes, the variety of manifestations, the subtleties of choosing therapy for various, currently most frequent injuries. This knowledge will be useful in any branch of medicine, regardless of the chosen specialization in the future.

The study of the discipline in the 3rd year is necessary for the preparation of a general practitioner who knows the basics of clinical research of a nephrological patient with subsequent symptoms and syndromes, who knows the basics of etiology, clinical picture, classification, treatment of the main, most common diseases of the kidneys and urinary tract and their prevention.



• Goals and objectives of the discipline

The purpose of the training: to work out the skills of recognizing diseases, understanding their causes and mechanisms of development, choosing the tactics of patient management.

Tasks: to be able to identify the main renal syndromes, draw up a plan for laboratory and instrumental examination of the patient, formulate a diagnosis in accordance with modern classifications, outline a rational pharmacotherapy of the disease

• Place of discipline in the structure of MEP (prerequisites, postrequisites).

Requirements for the preliminary preparation of the student:

To study this academic discipline (module), you need the following knowledge, skills and abilities formed by previous disciplines:

- Pathophysiology, clinical pathophysiology
- Propedeutics of internal diseases
- Pharmacology
- Pathological anatomy
- Psychology and pedagogy
- Normal physiology

Subsequently, the knowledge gained in the course of studying the discipline "Nephrology" will be necessary in the study of disciplines: "Internal medicine", "Polyclinic therapy", production practice "Physician assistant".

Competencies of students, formed as a result of mastering discipline, the planned results of mastering the discipline.

The study of this academic discipline is aimed at the formation of the following students general cultural (GC), general professional (GPC) and professional (PC) competencies:

	code / content of competency	As a result of studying the academic discipline, students must to:
--	------------------------------	--



2	<p>PC-2 - is able and ready to conduct and interpret a survey, physical examination, clinical examination, the results of modern laboratory and instrumental studies, to write a medical record of an adult outpatient and inpatient.</p>	<p>know: - the basics of organizing outpatient and inpatient care for children, adolescents and adults, modern organizational forms of work and diagnostic capabilities of outpatient services; be able to: - collect anamnesis; interview the patient and his relatives, conduct a physical examination of the patient of various ages (examination, palpation, auscultation, blood pressure measurement, determination of pulse characteristics, respiratory rate, etc.); master: - methods of general clinical examination of patients;</p>
3	<p>PC-3 - is able to conduct pathophysiological analysis of clinical syndromes, substantiate pathogenetically justified methods (principles) of diagnosis, treatment, rehabilitation and prevention among adults and children, taking into account their age and sex groups;</p>	<p>know: - the concepts of etiology, pathogenesis, morphogenesis, pathomorphosis of the disease in an adult and adolescent, the principles of classification of diseases; basic concepts of general nosology; be able to: - interpret the results of the most common methods of laboratory and functional diagnostics, thermometry to identify pathological processes in human organs and systems; master: - interpretation patients' results of laboratory, instrumental diagnostic methods;</p>
Diagnostic activity:		
6	<p>PC-13 - is able to identify in patients the main pathological symptoms and syndromes of diseases, using knowledge of the basics of biomedical and clinical disciplines, taking into account the course of pathology in organs, systems of the body as a whole, to analyze the patterns of functioning of organs and systems in various diseases and pathological processes, use the algorithm for making a diagnosis</p>	<p>know: - functional systems of the human body, their regulation and self-regulation when exposed to the external environment in normal and pathological processes; the structure and function of the immune system in adults and adolescents, its age characteristics, mechanisms of development and functioning, the main methods of immunodiagnostics, methods for assessing the immune status and indications for the use of immunotropic therapy; be able to: - analyze the histophysiological assessment of the state of various cellular, tissue and organ structures in patients; master: - interpretation patient's results of laboratory, instrumental diagnostic methods;</p>



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	(main, concomitant, complications), taking into account the ICD-10, carry out the main diagnostic measures to identify urgent and life-threatening conditions;	
Treating activity:		
7	PC-14 - is able to perform basic therapeutic measures for the most common diseases and conditions in adults and children;	<p>know: - the clinical picture, features of the course and possible complications of the most common diseases occurring in a typical form in children, adolescents and adults;</p> <p>be able to: - to substantiate the need for clinical and immunological examination of a sick adult and adolescent, to analyze the effect of drugs in terms of the totality of their pharmacological properties and the possibility of their use for therapeutic treatment of patients of different ages;</p> <p>master: - an algorithm for setting a preliminary diagnosis of patients with their subsequent referral for additional examination and to specialist doctors; an algorithm for setting a detailed clinical diagnosis.</p>

Requirements for the level of preparation of the student who completed the studying the program of this discipline.

As a result of studying the basic part of the cycle, the student have to:

know:

- the definition of the disease, etiology, risk factors (RF), pathogenesis, pathomorphology, classification, clinical picture, laboratory and instrumental diagnostics, principles of treatment;
- the etiology, pathogenesis, clinic, diagnostic methods and emergency care of urgent conditions;
- to list the complications of diseases.



- the principles of drug therapy, indications and contraindications for the use of drugs (Treatment Agent).
- the prognosis of diseases, RF of development of life-threatening conditions.

Understand:

- the pathogenesis of the formation of certain syndromes and symptoms in nephrology, pathomorphology of the main syndromes;
- the results of laboratory and instrumental diagnostic methods;
- the principles of emergency care for nephrological patients;
- the principles of drug therapy and principles of treatment control.

Able to use:

- the methods of physical examination for making a preliminary diagnosis and determining a plan for the examination of a nephrological patient;
- the results of laboratory and instrumental studies in determining the tactics of treatment;
- the data of an objective examination and the results of the patient's study in writing a student's medical history with a substantiation of the clinical diagnosis.

Able to carry out:

- the recognition and correct diagnosis of the most common nephrological syndromes in their typical course;
- the assessment of the activity of the pathological process, its form, stage and phase of the course in accordance with the officially approved classifications, the severity of complications;



- the drawing up a plan for laboratory and instrumental examination to confirm the alleged diagnosis and interpret the results obtained;
- the formulation a detailed clinical diagnosis, guided by the modern classification of diseases;
- the detailed diagnosis in a particular patient, exactly, the etiology, mechanism of development and pathomorphology of the disease, to highlight complications.

Able to analyze:

- the substantiation of the underlying disease of the clinical diagnosis in a particular patient with an assessment of the examination results and identify the criteria for the diagnosis of this disease;
- the substantiation of the etiology of the disease in the patient;
- the appointment of adequate individual therapy by filling out the "Prescription sheet" and "Temperature sheet" of the supervised patient;
- the clinical manifestations of some emergency conditions, to carry out a detailed condition, urgent diagnostics and have the skills to provide emergency medical care.

Able to evaluate:

- the scheme of non-and drug treatment of the patient in accordance with the diagnosis and morphological changes, including determining the indications and therapeutic contraindications for surgical intervention, and its urgency;
- the prognosis of the disease for the life of a particular patient;
- measures of primary and secondary prevention; the latter (including) in the supervised patient;

Master:

- the methodology for collecting complaints and anamnesis of the patient;



- the methods of propaedeutics of various body systems: examination, palpation, percussion and auscultation of internal organs;
- the skills of interpreting the anamnesis data, objective examination of the patient, his laboratory and instrumental data;
- the skills of presenting an independent point of view, analysis and logical thinking, public speech, ethical argumentation, conducting discussions and round tables, the principles of medical deontology and medical ethics;
- the skills of informing the patient and their relatives;
- the foreign language in the volume for communication and obtaining information from foreign sources.

1.1. Recommended educational technologies

The following types of educational work are used: lecture-visualization, lecture, press conference, trainings, debates among students, master classes, discussions of various formats, business and role-playing educational games, small group method, classes using simulators, dummies, imitators, analysis of clinical cases, preparation and defense of medical history, participation in research work, conducting subject Olympiads, preparation and defense of abstracts.

1.2. The scope of the discipline and types of academic work

Form of education – full time

Academic plan for 2021	6 sem.	Total	
		in hours	in credits
Total labor intensity	44	44	1,46
Classroom works	28	28	0.93
Lectures	10	10	0.33
Practical classes	18	18	0.6
Independent work	16	16	0.53
SIWT	16	16	0.53
Type of final control			Exam



1.4 Structure of Discipline

1.4.1 Thematic plan for studying the Discipline.

№	Name sections and topics disciplines (lectures and workshops)	Auditory lessons				Total hours	SIWT	Student independent work	Formed competence	Used educational technologies, methods and methods of teaching	Forms of current and midterm control academic performance
		lectures	seminars	practical занятия	laboratory работы						
	Module 1										
1	<i>Topic 1. Introduction. Characteristics of the main complaints, anamnesis of patients with pathology of the respiratory system. Features of examination and additional research methods in pulmonology. Principles of Treatment and Prevention of Patients with Respiratory System Diseases</i>			2		2	1	1	<i>PK-2, PK-3, PK-11, PK-12, PK-13, PK-14, PK-15, PK-16, PK-19</i>		
2	<i>Topic 2. Bronchial asthma</i>	2		2		4	1	1	<i>PK-2, PK-3, PK-11, PK-12, PK-13, PK-14, PK-15, PK-16, PK-19</i>		
3	<i>Topic 3. Chronic obstructive pulmonary disease</i>	2		2		4	1	1	<i>PK-2, PK-3, PK-11, PK-12, PK-13, PK-14, PK-15, PK-16, PK-19</i>		
4	<i>Topic 4. Pneumonia</i>	2		2		4	1	2	<i>PK-2, PK-3, PK-11, PK-12, PK-13, PK-14, PK-15, PK-16, PK-19</i>		
5	<i>Topic 5. Pleurisy</i>	2		2		4	1	1	<i>PK-2, PK-3, PK-11, PK-12, PK-13, PK-14, PK-15, PK-16, PK-19</i>		
6	<i>Topic 6. Bronchiectasis.</i>	2		2		4	1	1	<i>PK-2, PK-3, PK-11, PK-</i>		



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									12, PK-13, PK-14, PK- 15, PK-16, PK-19		
7	Topic 7. Idiopathic fibrosing alveolitis.	2		2		4	1	1	PK-2, PK-3, PK-11, PK- 12, PK-13, PK-14, PK- 15, PK-16, PK-19		
8	Topic 8. Pulmonary heart	2		2		4	1	1	PK-2, PK-3, PK-11, PK- 12, PK-13, PK-14, PK- 15, PK-16, PK-19		
9	Topic 9. Respiratory failure	2		2		4	2	1	PK-2, PK-3, PK-11, PK- 12, PK-13, PK-14, PK- 15, PK-16, PK-19		
10	Offset			2		2					
	Total hours by discipline:	16		20		36	11	11			

Abbreviation of the designations of educational technologies, methods and methods of teaching:

traditional lecture (L), lecture-visualization (LV), problem lecture (PL), lecture-press conference (LPC), lesson-conference (LC), training (T), debates (D), brainstorming (BS), master class (MC), round table (RT), activation of creative activity (ACA), regulated discussion (RD), forum type discussion (FD), business and role-based educational game (B, RBEG), small group method (SGM), classes using simulators, simulators (SM), computer simulation (CS), analysis of clinical cases (ACS), preparation and protection of medical history (PMH), use of computer training programs (CTP), interactive atlases (IA), attendance at medical conferences, consultations (AMC), participation in scientific and practical conferences (PSPC), congresses, symposia (CS), student educational research work (SERW), subject Olympiads (SO), preparation of written analytical works (PWAW), preparation and defense of referats (PDR), project technology (PT), excursions (E), distance educational technologies (DET).

Reducing the forms of current and midterm monitoring of progress: T - testing, Pr - assessment of the development of practical skills (abilities), ZS - solving situational problems, KR - control work, KZ - control task, IB - writing and protecting a medical history, CL - writing and protection of the curator's list, R - writing and defense of the abstract, C - interview on control questions, D - preparation of a report, etc.



1.4.2. Organization of Student's Individual Work

SIW topic	часов	SIW topic with teacher	часов
<p>Propedeutics for respiratory diseases. Functional research methods in pulmonology (spirometry, peak flowmetry)</p> <p>Working with literature:</p> <p>1. Anthony S.Fauci, Braunwald, Kasper, Longo, Jameson, Loscalzo Harissons Principles of Internal Medicine 2012, 17thEdition</p> <p>2. Graham Douglas&FionaNicol Macleod's Clinical examination 13th Edition</p> <p>3. Stuart Ralston, Ian Penman, Mark Strachan, Richard Hobson Davidsons Principles & Practice Of Medicine 23th Edition</p> <p>4. O.N. Kovalyova, T.V. Ashcheulova – Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>5. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p> <p>6. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p>	3	<p>Radioisotope scintigraphy. Chest scan, diagnostic value</p> <p>Working with literature:</p> <p>1. Anthony S.Fauci, Braunwald, Kasper, Longo, Jameson, Loscalzo Harissons Principles of Internal Medicine 2012, 17thEdition</p> <p>2.Graham Douglas&FionaNicol Macleod's Clinical examination 13th Edition</p> <p>3. Stuart Ralston, Ian Penman, Mark Strachan, Richard Hobson Davidsons Principles & Practice Of Medicine 23th Edition</p> <p>4. O.N. Kovalyova, T.V. Ashcheulova –Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>5. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p> <p>6. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p>	3



<p>The mechanism of development of bronchial obstruction in COPD</p> <p>Working with literature:</p> <p>1. O.N. Kovalyova, T.V. Ashcheulova – Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>2. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p> <p>3. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p>	2	<p>Treatment of bronchial asthma in a mountain climate</p> <p>Working with literature:</p> <p>1. O.N. Kovalyova, T.V. Ashcheulova – Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>2. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p> <p>3. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p>	2
<p>Principles of antibiotic therapy for community-acquired pneumonia</p> <p>Working with literature:</p> <p>1. O.N. Kovalyova, T.V. Ashcheulova – Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>2. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p>	2	<p>Pathogenesis of cor pulmonale: Euler-Liljestrand phenomenon</p> <p>Working with literature:</p> <p>1. O.N. Kovalyova, T.V. Ashcheulova – Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>2. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal</p>	2



<p>3. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p> <p>Pathophysiology of PAH</p> <p>Working with literature:</p> <p>1. O.N. Kovalyova, T.V. Ashcheulova – Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>2. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p> <p>3. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p> <p>Methods for functional diagnostics of the respiratory system. Respiratory function in various types of pulmonary insufficiency.</p> <p>Working with literature:</p> <p>1. O.N. Kovalyova, T.V. Ashcheulova – Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>2. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher</p>	<p>2</p> <p>2</p> <p>2</p>	<p>Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p> <p>3. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p> <p>Determination of blood gas composition</p> <p>Working with literature:</p> <p>1. O.N. Kovalyova, T.V. Ashcheulova – Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>2. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p> <p>3. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p> <p>Methods for functional diagnostics of the respiratory system. Respiratory function in various types of pulmonary insufficiency.</p>	<p>2</p>
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<p>medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p> <p>3. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p>		<p>Working with literature:</p> <p>1. O.N. Kovalyova, T.V. Ashcheulova –Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.</p> <p>2. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;</p> <p>3. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012</p>	<p>2</p>
<p>Итого:</p>	<p>11</p>		<p>11</p>

1.4.3 Evaluative Assessment Tools

1. Epidemiology of respiratory diseases. Research methods in pulmonology.
2. The role of upper respiratory tract infection in the development of bronchopulmonary diseases.
3. New infections in pulmonology.
4. Pneumonia (etiology, classification, clinical picture).
5. Pneumonia caused by atypical pathogens (differential diagnosis, treatment).
6. Pneumonia (treatment). Principles of antibiotic therapy.



7. Antibiotic resistance: basic mechanisms and ways to overcome them.
8. Complications of pneumonia in the early and late periods. Features of therapy.
9. Differential diagnosis of pneumonia and pulmonary tuberculosis.
10. Tuberculin diagnostics, diaskin test.
11. Chronic obstructive pulmonary disease (etiology, pathogenesis, classification, clinical picture).
12. Pleural effusion. Differential diagnosis. Study of pleural effusion.
13. Bronchial asthma (definition, epidemiology, pathophysiology, clinical picture, diagnosis).
14. Differential diagnosis of allergic and non-allergic asthma.
15. Basic therapy for asthma. Stepwise approach.
16. Severe exacerbation of asthma (status asthmaticus): clinical manifestations, complications, treatment.
17. Differential diagnosis of broncho-obstructive syndrome
18. Hyperventilation syndrome: a diagnostic algorithm.
19. Cough, hemoptysis.
20. Bronchiectasis and its complications.
21. Cor pulmonale: modern classification
22. Chronic cor pulmonale. Development pathogenesis. Clinic. Diagnostics. Treatment
23. Modern classification of pulmonary hypertension: design criteria.
24. ODN (definition, classification, differential diagnosis and treatment principles).
25. Chronic DN (definition, classification, differential diagnosis and treatment principles).
26. Indications for oxygen therapy in DN. Respiratory support techniques.



27. Idiopathic pulmonary hemosiderosis: diagnostic algorithm.
28. Exogenous allergic alveolitis: diagnostic algorithm.
29. Idiopathic pulmonary fibrosis (epidemiology, clinical presentation, diagnosis, therapy).
30. Immunological diagnostic methods in pulmonology
31. The concept of biological markers in pulmonology, diagnostic value. 32. Functional research methods in pulmonology.
33. X-ray research methods in pulmonology.
34. The use of GCS in pulmonology. Possible complications.
35. Principles of immunotherapy in pulmonology. Modern approaches to vaccine prevention of acute and exacerbation of chronic lung diseases.

Test questions:

1. Specify the main radiological sign of pneumonia:
 - a) + darkening according to the share or segment
 - b) picture of atelectasis
 - c) heavy pulmonary pattern
 - d) increased transparency of lung tissue
 - e) diffuse decrease in transparency

2. A 55-year-old patient was found to have a lag in the right half of the chest when breathing, bluntness below the level of 3 ribs, weakened breathing and bronchophonia in the same place. Radiologically-displacement of the heart to the left. Likely diagnosis:
 - a) + pleural effusion
 - b) lobar pneumonia
 - C) atelectasis
 - d) pneumocytes
 - d) pneumothorax

3. Which of the following studies is crucial in the diagnosis of pneumonia?
 - a) spirometry
 - b) clinical blood test



- c) sputum examination
g) + x-ray
d) bronchoscopy
4. What is the mechanism of action of eufillin?
a) + bronchial dilatation
b) decreased secretion
c) anti-allergic effect
d) adrenomimetic effect
e) antihistamine effect
5. Which of the diseases will cause clear crepitation?
a) + lobar pneumonia
b) tuberculosis
c) lung abscess
d) bronchitis
e) none of the above
6. In the patient, chest movements are symmetrical, box sound with percussion, weakened vesicular breathing with extended exhalation, hepatic dullness is shifted downwards. Your diagnosis:
a) hydropneumothorax
b) fibrosis
c) + diffuse emphysema of the lungs
d) bronchial asthma
e) lobular pneumonia
7. In moderate to severe asthmatic patient you find all except:
a. Decrease $Po_2 < 60$
b. + $PCO_2 > 60$
c. HCO_3 decreased
d. IV hydrocortisone relief after few hours
e. Dehydration
8. In moderate to sever asthmatic patient, you will find all the following except:



- a) $P_{O_2} < 60$
 - b) $+ PCO_2 > 60$
 - c) low HCO_3
 - d) IV hydrocortisone will relieve the symptoms after few hours.
 - e) dehydration.
9. Regarding moderately severe asthma, all true except:
- a) $PO_2 < 60 \text{ mmHg}$
 - b) $+ PCO_2 > 60 \text{ mm Hg}$, early in the attack
 - c) Pulsus Paradoixcus
 - d) I.V cortisone help in few hours
10. After the breakthrough of an acute single abscess in the bronchus
- a) a cavity with a horizontal level is not observed on the radiograph
 - b) $+ \text{increase in body temperature to } 39^\circ\text{C}$ and above
 - c) cough with the release of a large amount of sputum with an unpleasant smell
 - d) improvement in general condition
 - e) hemoptysis
11. Most often causes lung destruction
- a) Pneumococcus
 - b) streptococcus
 - c) $+ \text{staphylococcus}$
 - d) legionella
 - e) virus
12. What is the main trigger pathogenetic mechanism for the development of chronic pulmonary heart disease in patients with chronic obstructive bronchitis?
- a) pneumosclerosis
 - b) emphysema of the lungs
 - c) atelectasis
 - d) $+ \text{alveolar hypoxia}$
 - e) damage to the pulmonary vessels



13. A sign that distinguishes viral pneumonia from bacterial

- a) infiltrative changes on the radiograph
- b) leukocytosis with a left shift
- c) + mild physical changes
- d) pulse corresponds to temperature
- e) cough with purulent sputum

14. The main early sign of peripheral lung cancer:

- a) chest pain
- b) hemoptysis
- c) anemia
- d) recurrent pneumothorax
- e) + dark spot with uneven contours

15. What factor is not involved in the mechanism of suffocation in bronchial asthma?

- a) + alveolar edema
- b) edema of the bronchial mucosa
- c) bronchospasm
- d) increased mucus secretion
- e) violation of sputum secretion

16. The components of bronchial obstruction are as follows, except:

- a) sputum retention
- b) + laryngospasm
- c) inflammation of the bronchi
- d) bronchospasm
- e) mucosal edema

17. The most informative indicator of bronchial obstruction

- a) diffusion capacity (for CO₂)
- b) residual volume
- c) maximum ventilation of the lungs
- d) + volume of forced exhalation for 1 second. (FEV₁)
- e) vital capacity of the lungs

18. A sign corresponding to local infiltration in pneumonia:



- a) percussion box sound
- b) + wet wheezing
- c) weakened breathing
- d) hard breathing

19. Specify the indications for diagnostic pleural puncture:

- a) persistent effusion
- b) suspected pleural empyema
- c) suspected cancer etiology
- d) unclear causes of effusion
- e) + in all listed cases

20. In case of asthmatic status of the 1st stage, the following treatment is carried out, except:

- a) eufillin
- b) + inhaled steroids
- c) prednisone or hydrocortisone intravenously
- d) administration of fluids
- e) correction of acidosis

21. Treatment of pneumonia caused by legionella is performed with

- a) penicillin
- b) ceftriaxone
- c) + erythromycin
- d) lincomycin
- e) gentamicin

22. Pneumonia is considered nosocomial (hospital) if it is diagnosed:

- a) upon admission to the hospital
- b) + 2-3 days after hospitalization
- c) after discharge from the hospital
- d) outside the hospital

23. A man in full health after a strong cough had an attack of sharp pain in the chest on the right. During _____ examination: the right-tympanitis, weakened breathing and bronchophony. The probable diagnosis is:



- a) croup pneumonia
- b) acute bronchitis
- c) pleurisy
- d) pulmonary embolism
- e) + spontaneous pneumothorax

24. What sign is not characteristic of acute lung abscess?

- a) hectic fever
- b) + thin-walled cavity without liquid level
- c) elastic fibers in sputum
- d) neutrophilic leukocytosis
- e) blood admixture in sputum

25. The leading diagnostic syndrome of patients with pneumonia is:

- a) pleural
- b) intoxication c
- c) respiratory failure
- d) + local infiltration
- e) bronchoobstruktive

26. What is the most important instrumental method for the diagnosis of bronchiectasis?

- a) lung X-ray examination
- b) lung tomography
- c) bronchoscopy
- d) + bronchography
- e) spirometry

27. The manifestations of bronchoobstructive syndrome in chronic bronchitis include

- a) purulent sputum
- b) wet wheezing
- c) + expiratory shortness of breath
- d) dulling of percussion sound
- e) inspiratory dyspnea

28. In a 60-year-old patient suffering from chronic obstructive bronchitis, paroxysms of atrial fibrillation began to occur, passing independently or under the influence of cardiac glycosides. which of the antiarrhythmic drugs is inappropriate in this situation?



- a) cordaron
- b) corinfar
- C) procainamide
- d) + anaprilin
- e) digoxin

29. The patient was admitted with complaints of cough with the release of up to 200 ml of mucopurulent sputum with an odor, hemoptysis, increased t to 38.2°C, malaise, shortness of breath. As a child, I often noticed a cough. Over the past 5 years, there have been annual exacerbations. Diagnosis?

- a) + bronchiectatic disease
- b) lung cancer
- c) chronic lung abscess
- d) chronic bronchitis
- e) polycystic lung disease

30. What disease can lead to the development of chronic pulmonary heart disease?

- a) chronic obstructive bronchitis
- b) silicosis c
- c) bronchial asthma
- d) cytoskeleton
- d) + all of the above conditions

31. Specify which of the following objective signs corresponds to chronic bronchitis of large and medium bronchi:

- a) whistling wheezes on exhalation
- b) crepitation c
- c) + dry buzzing wheezes on inhalation and exhalation
- d) ringing wet local wheezes
- e) non-ringing wet wheezes over the projection of the basal divisions

32. A patient with varicose veins of the lower extremities suddenly developed chest pain, shortness of breath of a mixed nature, wheezing wheezes on the right. On the ecg, S in I and Q in III standard leads are recorded.

- A) acute myocardial infarction
- b) spontaneous pneumothorax
- c) bronchial asthma
- d) + pulmonary embolism
- e) focal pneumonia



33. Prolonged hemoptysis with a dry cough causes first of all to suspect:

- a) + bronchial cancer
- b) cavernous form of pulmonary tuberculosis
- c) bronchiectatic disease
- d) pneumoconiosis
- e) chronic bronchitis

34. Traube space disappears

- a) + with left-sided exudative pleurisy
- b) with emphysema of the lungs
- c) with hypertrophy of the right ventricle of the heart
- d) with perforation of gastric ulcers
- e) with bronchiectasis

35. A smoker who complains of a dry cough has lost 4 kg of weight during the year. Objectively: the neck and face are puffy, cyanosis of the lips. Heart rate 102 per minute. AD 165/95, palpable dense supraclavicular lymph nodes on the left. Erythrocyte sedimentation rate 70 mm / hour, Hb 175 g/l, white blood cells 9000. Diagnosis?

- a) Cushing's disease
- b) + lung cancer
- c) chronic pneumonia
- d) echinococcosis of the lung
- e) pulmonary tuberculosis

36. The patient has chills, dry cough, pain in the right side, fever up to 38.9°C. The right half of the gr. cell lags behind when breathing. perk-but: on the right, a dull sound, breathing is not carried out. the left border of the heart is shifted 1.5 cm outwards from the mid-key line. diagnosis?

- a) focal pneumonia in the lower lobe of the right
- b) croup pneumonia on the right
- c) exacerbation of chronic bronchitis
- d) + right-sided exudative pleurisy
- e) right-sided hydrothorax

37. The first priority in the treatment of massive exudative pleurisy is

- a) intravenous administration of antibiotics
- b) the appointment of anti-inflammatory drugs
- c) + pleural puncture
- d) appointment of diuretics



38. For what pathological process is characterized by listening to dry whistling wheezes over the entire surface of the lungs:

- a) increased airiness of the lungs
- b) the presence of fluid in the pleural cavity
- c) + violation of bronchial patency
- d) compaction of the lung tissue
- e) the presence of a cavity in the lung tissue

39. Treatment of community-acquired pneumonia not complicated in young patients is advisable to start with the use of:

- a) penicillins
- b) + tingling cephalosporins III
- c) aminoglycosides
- d) macrolides
- e) fluoroquinolones

40. The patient in connection with the exacerbation of bronchial asthma is prescribed prednisone inside 20 mg per day. After a week, the signs of bronchial obstruction disappeared, but there were pain in the epigastric region, heartburn, "acid belching". Make a correction of treatment:

- a) immediately cancel prednisone
- b) halve the daily dose of prednisone c
- c) prescribe the drug in the same dose, but with an interval of several days
- d) + prescribe m-cholinolytics, antacids, replace prednisone with becotide
- e) prescribe prednisone parenterally

41. Treatment of hospital pneumonia is advisable to start with the use of:

- a) penicillins +aminoglycosides
- b) cephalosporins of the third sting c
- c) + cephalosporins + fluoroquinolones
- d) macrolides
- e) fluoroquinolones

42. In which pathogen of pneumonia is the most often observed destruction of the lungs?

- a) pneumococcus
- b) streptococcus
- c) + staphylococcus
- d) legionella



e) virus

43. Which of the following drugs is not a mucolytic?

- a) acetylcysteine
- b) potassium iodide
- c) + sodium bromide
- d) trypsin
- d) ambroxol

44. Chronic bronchitis should be treated with antibiotics:

- a) in the autumn-winter period
- b) for a long time
- c) should not be used at all
- d) + with the release of purulent sputum
- e) with the appearance of hemoptysis

45. What is the most reliable in the differentiation of chronic bronchitis and bronchiectatic disease?

- a) sputum analysis
- b) bronchoscopy
- c) tomography
- g) + bronchography
- d) scintigraphy of the lungs

46. Indicate signs of heart failure in the pulmonary heart:

- a) dyspnea of varying degrees
- b) + swelling of the cervical veins
- c) cyanosis
- d) tachycardia
- e) pulsation in the epigastrium

47. Characteristics of massive atelectasis:

- a) bluntness, weakened breathing and bronchophonia, displacement of the mediastinum in the opposite direction
- b) + the same, but a shift in the direction of blunting
- c) blunting with a tympanic sound, amphoric breathing, large-bubble wheezing
- d) dullness, bronchial respiration, increased bronchophonia
- e) inspiratory dyspnea, decreased lung volume, crepitation



48. In which variant of pneumonia should metronidazole be used?

- A) community-acquired
- B) + aspiration
- C) hospital
- D) atypical

49. Characteristics of the lung abscess connected to the bronchus:

- a) bluntness, weakened breathing and bronchophonia, displacement of the mediastinum in the opposite direction
- b) the same, but a shift in the direction of blunting
- c) + blunting with a tympanic sound, amphoric breathing, large-bubble wheezing
- d) dullness, bronchial respiration, increased bronchophonia
- e) inspiratory dyspnea, decreased lung volume, crepitation

50. Indicate which of the following studies can diagnose bronchial obstruction:

- a) Lung radiography
- b) bronchography
- c) bronchoscopy
- d) electrocardiography
- e) + spirometry

51. The main trigger pathogenetic mechanism of the development of chronic pulmonary heart in patients with chronic obstructive bronchitis

- a) pneumosclerosis
- b) emphysema of the lungs
- c) atelectasis
- d) alveolar hypoxia
- e) + lesion of the pulmonary vessels

52. In the pleural cavity, transudate can accumulate in the disease

- a) pneumonia
- b) + cirrhosis of the liver
- c) lung cancer
- d) tuberculosis
- e) lung abscess

53. Specify one of the signs that distinguish viral pneumonia from bacterial:



- a) infiltrative changes on the radiograph
- b) leukocytosis with a left shift
- c) + mild physical changes
- d) pulse corresponds to temperature
- e) cough with purulent sputum

54. What symptom is not characteristic of obstructive bronchitis?

- a) box sound
- b) + inspiratory shortness of breath
- c) prolonged exhalation
- d) dry wheezing on exhalation
- e) often unproductive cough

55. Specify one of the signs that distinguish a tuberculous cavity from a lung abscess:

- a) + cavity with foci of dissemination
- b) smooth-walled cavity with fluid level
- c) hemoptysis
- d) signs of intoxication
- e) increased esr

56. All factors can contribute to the complication of pneumonia with an abscess, except:

- a) development of atelectasis
- b) diabetes mellitus
- c) + 1-antitrypsin deficiency
- d) alcoholism
- e) immunodeficiency states

57. Characteristics of the lung abscess connected to the bronchus

- a) dullness, weakened breathing and bronchophonia, displacement of the mediastinum in the opposite direction
- b) the same, but the displacement in the direction of dullness
- c) + dullness with a tympanic sound, amphoric breathing, large-bubble wheezing
- d) dullness, bronchial respiration, increased bronchophonia
- e) inspiratory dyspnea, decreased lung volume, crepitation

58. A sign that distinguishes a tuberculous cavity from a lung abscess

- a) + a cavity with foci of dissemination
- b) a smooth-walled cavity with a fluid level



- c) hemoptysis
- d) signs of intoxication
- e) an increase in ESR

59. The destruction of lung tissue is reliably indicated by the following sputum element

- a) Charcot - Leyden crystals
- b) leukocytes
- c) + elastic fiber
- d) spiral Kurchman
- e) erythrocytes

60. Which of the elements of sputum reliably indicates the destruction of lung tissue:

- a) Charcot - Leyden crystals
- b) leukocytes
- c) + elastic fiber
- g) spiral Kurchman
- d) erythrocytes

61. A 62-year-old patient suffering from bronchial asthma began to notice attacks of pain behind the sternum of an angina pectoris nature and interruptions in the work of the heart. Which of the drugs is contraindicated in this situation?

- a) corinfar
- b) + obsidan
- c) nitrosorbid
- d) sustak
- e) isoptin

62. The patient has bronchial asthma in combination with hypertension. Which drug is preferred for the correction of arterial hypertension?

- a) trazikor
- b) + corinfar
- C) reserpine
- d) captopril

63. What drug is indicated for the treatment of asthmatic status?

- a) atropine
- b) salbutamol



- c) intal
- d) + prednisone

64. An attack of bronchial asthma is not characterized by:

- a) respiratory dyspnea
- b) treble dry wheezes
- c) + fine bubbly wet wheezes
- d) cough with difficult-to-separate viscous sputum

65. What are the symptoms of bronchiectasis?

- a) dry cough
- b) suffocation attacks
- c) + cough with copious purulent sputum
- d) cough with vitreous sputum
- e) expiratory dyspnea

66. What is the mechanism of action of salbutamol (berotek)?

- a) decreased vagal tone
- b) + stimulation of b-receptors
- c) blockade of a-receptors
- d) blockade of histaminoreceptors
- e) direct effect on the smooth muscles of the bronchi

67. Very rapid re-accumulation of fluid in the pleural cavity is a typical sign of:

- a) chronic circulatory failure
- b) + mesothelioma of the pleura
- C) adenocarcinoma of the bronchus
- d) pulmonary tuberculosis
- e) systemic lupus erythematosus

68. Traube space disappears:

- a) + with left-sided exudative pleurisy
- b) with emphysema of the lungs
- c) with hypertrophy of the right ventricle of the heart
- d) with perforation of gastric ulcers
- e) with bronchiectasis



69. Patient, alcoholic, with severe dental caries. For 2 weeks, weakness, pain in the chest on the right. Fever, cough with purulent sputum. On the X-ray, a cavity 3 cm in diameter in the upper lobe on the right, filled with liquid. Diagnosis?

- a) bronchiectasis
- b) + abscess
- c) lung infarction
- d) lung cancer
- e) tuberculosis

70. The most common complications of chronic obstructive bronchitis are

- a) pneumonia
- b) bronchiectasis
- c) pulmonary hypertension
- d) + respiratory failure
- e) cough

71. Characteristics of massive atelectasis

- a) bluntness, weakened breathing and bronchophonia, displacement of the mediastinum in the opposite direction
- b) + dullness, weakened breathing and bronchophonia, mediastinal displacement in the direction of dullness
- c) dullness with tympanic sound, amphoric breathing, large-bubble wheezing
- d) dullness, bronchial respiration, increased bronchophonia
- e) inspiratory dyspnea, decreased lung volume, crepitation

72. Basic therapy of chronic obstructive bronchitis should begin with the appointment of:

- a) salbutamol
- b) + ipratropium bromide (atrovent)
- c) ingacort
- d) methylxanthines

73. In the basic therapy of chronic obstructive bronchitis, do not use:

- a) + intal
- b) berodual
- c) berotec
- d) atrovent
- e) salbutamol



74. Prednisone tablets are indicated for basic therapy of:

- a) mild bronchial asthma
- b) moderate bronchial asthma
- c) + severe bronchial asthma
- d) for all types of bronchial asthma
- e) not used in basic therapy

75. In the basic therapy of severe bronchial asthma, the following are used:

- a) prolonged beta-2-agonists
- b) prolonged metilksantina
- C) preformed corticosteroids
- d) the stabilizers of membranes of mast cells
- d) all medications, except for the stabilizers of membranes of mast cells

76. Protected penicillins include:

- a) azlocillin
- b) amoxicillin
- c) + amoxiclav
- d) carbenicillin

77. Pneumocystis pneumonia develops in patients with:

- a) diabetes mellitus
- b) after influenza
- c) + AIDS
- d) stroke

78. Ciprofloxacin belongs to the group of:

- a) penicillins
- b) aminoglycosides
- c) cephalosporins
- d) + fluoroquinolones

79. In the treatment of decompensated chronic pulmonary heart, it is not advisable to use:

- a) diuretics
- b) + cardiac glycosides
- c) ACE inhibitors
- d) nitrates
- e) calcium antagonists



80. An AIDS patient is diagnosed with pneumonia. What drugs should be prescribed to the patient?

- a) rovamycin
- b) ampicillin c
- c) trimethoprim
- d) sulfamethoxazole
- e) + preparations " b " and " d»

81. Signs of heart failure in the pulmonary heart

- a) dyspnea of varying degrees
- b) + swelling of the cervical veins
- c) cyanosis
- d) tachycardia
- e) pulsation in the epigastrium

82. What drug is not desirable in the treatment of a 50-year-old patient with chronic purulent-obstructive bronchitis in the acute phase, emphysema of the lungs, respiratory failure of stage II ?

- a) penicillin antibiotics
- b) soda inhalations
- c) inhalation of trypsin
- d) acetylcysteine inside
- e) + preparation of the polymicrobial vaccine bronchomunil

83. Local infiltration syndrome is characterized by

- a) emphysema
- b) decreased breath sounds
- C) bronchial breathing
- d) + crepitation or small-bubble wheezing
- e) amphoric respiration

84. What drug should be prescribed for staphylococcal pneumonia?

- a) ampicillin
- b) + oxacillin
- c) ciprofloxacin
- d) gentamicin
- d) carbenicillin

85. Nosocomial (hospital) pneumonia is more often caused by



- a) pneumococcus
- b) staphylococcus
- c) legionella
- d) mycoplasma
- e) + gram-negative flora

86. Treatment of pneumonia caused by legionella is carried out with a) penicillin

- b) kefzol
- c) + erythromycin
- d) lincomycin
- e) gentamicin

87. Pneumonia is considered nosocomial (hospital) if it is diagnosed

- a) upon admission to the hospital
- b) + 2-3 days after hospitalization
- c) after discharge from the hospital
- d) all listed
- e) none of the listed

88. The leading diagnostic syndrome of patients with pneumonia is:

- a) pleural
- b) intoxication
- c) respiratory failure
- d) + local infiltration
- e) bronchoobstructive

89. The development of pneumocystis pneumonia is most likely in

- a) after kidney transplantation
- b) chronic alcoholism
- c) + AIDS
- d) primary immunodeficiency
- e) acute leukemia with neutropenia

90. The development of a lung abscess is more often caused by

- a) pneumococcus
- b) staphylococcus aureus
- C) Klebsiella
- d) Bacteroides



e) all of these reasons, in addition to pneumococcus

91. In pneumonia caused by mycoplasma,

- a) penicillins
- b) cephalosporins
- c) + macrolides and tetracyclines
- d) fluoroquinolones are effective
- e) Aminoglycosides

92. Anaerobes are involved in the development of pneumonia

- a) community-acquired
- b) + aspiration
- c) atypical
- d) in patients with immunodeficiency

93. In the treatment of patients with decompensated pulmonary heart, the use of the following methods is justified:

- a) infusion of nitroglycerin solutions
- b) calcium channel blockers
- c) cardiac glycosides
- d) aldosterone antagonists
- e). + all of the above, except cardiac glycosides

94. In a patient, 3 days on a ventilator for the aggravation of respiratory failure against the background of exacerbation of chronic respiratory failure. purulent-obstructive bronchitis, a large amount of viscous purulent sputum is released through the intubation tube. therapeutic tactics

- a) administration of large doses of eufillin
- b) + sanation bronchoscopy
- c) steroid hormone therapy
- d) increased mucolytic therapy
- e) all of the above

95. The nature of dyspnea in patients with chronic obstructive bronchitis

- a) + expiratory constant
- b) inspiratory constant
- c) expiratory paroxysmal (suffocation)
- d) inspiratory paroxysmal
- e) mixed



96. In the development of chronic pulmonary heart disease in patients with chronic bronchitis plays a role:

- a) alveolar hypoxia
- b) reflex pulmonary hypertension
- c) reduction of the arterial bed
- d) +all of the above
- e) there is no correct answer

97. Which of the following drugs is an anticholinergic agent ?

- a) eufillin
- b) berotek
- c) adrenaline
- d) becotide
- e) + Ipratropium bromide

98. Berodual is :

- a) adrenomimetic
- b) holinolitiki
- c) + a combination of agonists and cholinolitiks
- d) antispasmodic
- e). corticosteroid

99. Atrovent is:

- a) adrenomimetic
- b) + cholinolytic
- c) antispasmodic
- d) glucocorticosteroid
- e) mast cell membrane stabilizer

100. What is the most effective treatment for bronchoscopic lavage?

- a) Bronchial asthma with a high level of immunoglobulin E
- b) + chronic purulent bronchitis
- c) progressive emphysema of the lungs
- d) chronic obstructive bronchitis
- e) lung cancer with disintegration

Задачи:

1. 55-year-old male presented to your office for assessment of chronic cough. He stated that he has been coughing for the last 10 years but the cough is becoming more bothersome lately. Cough productive of mucoid sputum, occasionally becomes



purulent. Past history: 35 years history smoking 2 packs per day. On examination: 124 kg, wheezes while talking. Auscultation: wheezes all over the lungs. The most likely diagnosis is:

- A. Smoker's cough
- B. Bronchiectasis
- C. Emphysema
- D. + Chronic bronchitis
- E. Fibrosing alveolitis

2. In a patient who is 3 days on a ventilator, regarding the weighting of respiratory failure in exacerbation of chronic suppurative obstructive bronchitis, through the endotracheal tube produces a large number of viscous purulent sputum.. therapeutic tactics:

- a) administration of high doses of eufillin
- b) + sanation bronchoscopy
- c) steroid hormone therapy

3. A 24-year-old man presents to the emergency room complaining of shortness of breath and right-sided chest pain. The symptoms began abruptly about 2 hours previously. The pain is worse with inspiration. He denies fevers or chills and has not had any leg swelling. He has no past medical history but smokes 1 pack of cigarettes daily. On physical examination, he is tachypneic with a respiratory rate of 24 breaths/min. His oxygen saturation is 94% on room air. Breath sounds are decreased in the right lung, and there is hyperresonance to percussion. A chest radiograph confirms a 50% pneumothorax of the right lung. What is the best approach for treatment of this patient?

- a.+ Needle aspiration of the pneumothorax
- b. Observation and administration of 100% oxygen
- c. Placement of a large-bore chest tube
- d. Referral for thoracoscopy with stapling of blebs and pleural abrasion

4. A 52-year-old female presents with a community-acquired pneumonia complicated by pleural effusion. A thoracentesis performed, with the following results: Bacterial cultures are sent, but the results are not currently available. Which characteristic of the pleural fluid is most suggestive that the patient will require tube thoracostomy?

- a. Presence of more than 90% polymorphonucleocytes (PMNs)
- b. Glucose less than 100 mg/dL
- c. Presence of more than 1000 white blood cells
- d.+ pH less than 7.20



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Учебно-методический комплекс дисциплины «Пульмонологии»
ООП «Лечебное дело» МШМ МУК

5. 58 yrs. old male pt. came with HX of fever, cough with purulent foul smelling sputum and CXR showed: fluid filled cavity ... the most likely diagnosis is :

- a.+ Abscess
- b. TB
- c. bronchieactesis
- d. bronchitis

1.4.4 Course policy and assessment criteria

Methodological materials defining procedures for assessing knowledge, abilities, skills and (or) experience

Current control and test-examination session.

The rating system has the following goals:

- a. activating the systematic work of students, developing students' skills of individual work; fostering responsibility for the quality of one's own training;
- b. enhancing the work of teachers to improve the methods of teaching students;
- c. developing a genuine partnership between teacher and student;
- d. obtaining an accurate and objective assessment of the level of knowledge, abilities and skills in the professional training of students.

1.2. The rating system for assessing students' knowledge in the course of all forms of control is carried out on a 100 point scale.

1.3. Module is the unit to be assessed within each discipline.

- A student's rating is defined as the average number of points per semester, academic year, период обучения. The rating is calculated by the dean's office with an accuracy of two decimal places and serves to assess the academic work of students and rank them in the group, flow, course.

- The formula for the overall student rating is as follows:

$$R = \frac{\sum R_i}{n}$$



where R_i – rating for each discipline, n - the number of disciplines per semester, academic year, for the entire period of study.

- The final rating for the discipline is calculated as the arithmetic mean of the total score for the discipline and the marks for the final control (exam / test). The final rating is entered in the statement and record book.

- The total score for the discipline is calculated by the formula:

$$E = \frac{B_1 + B_2 + \dots + B_n}{n}$$

where B – total point per unit, n – unit quantity in discipline.

- Each module is evaluated on a 100 point system. Maximum point - 100, from them:

a. attendance – 20 points

b. current academic performance – 40 points (20 points – for classroom works, 20 points- for individual works)

c. checkpoint (final assessment of knowledge per unit) - 40 points

- The final control (exam / test) in the discipline is estimated at a maximum of 100 points.

- Before passing the checkpoint for each unit, the student has the opportunity to attend a teacher's consultation. The consultation is carried out strictly on the day of the teacher's duty.

- The retake of the checkpoint is provided only in case of a valid reason, which is determined by the dean's office. The deadline is no later than 1 week after the checkpoint date.

- The student is allowed to pass the next module, regardless of the results of the previous unit.



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- A student with 40% or more absences in the humanities and natural sciences and 30% or more absences in general professional and special disciplines without a valid reason is not allowed to take the final control of the discipline (test, exam).
- A student is allowed to pass the final control (exam / test) if he has a total score in the discipline of 36 or more points.
- A student has not mastered the discipline if his total score / rating for the discipline is less than 36 points.
- A student is automatically exempted from passing the exam if his total score in the discipline is 90-100 (excellent).
- A student is exempt from passing the test if his total score in the discipline is 60 - 100 (satisfactory, good, excellent)
- The decision to dismiss a student is made by the instructor based on the student's current progress.

Description of indicators and criteria for assessing competencies at various stages of their formation, description of assessment scales. Calculation of a student's rating score

1. The attendance coefficient is calculated based on the formula:

$$k = \frac{20}{n}$$

where n = total number of classes (lectures and practical) in the given unit. For each attended class student gets k points; за пропущенное занятие – 0 баллов.

2. The teacher has the right to reduce the amount of points by 1/2 of the total score for attendance due to student late arrivals.

3. The current and final progress of the student is assessed by the teacher based on the knowledge, skills and abilities shown by this student.



4. To assess the student's progress, the teacher can use the scale correspondence of grades and points.

Scale of correspondence of grades and points

Maximum points	Intervals			
	«unsatisfactory»	«satisfactory»	«good»	«excellent»
20	0-11	12-15	16-17	18-20
40	0-23	24-30	31-35	36-40
60	0-35	36-45	46-53	54-60
100	0-59	60-75	76-89	90-100

Discipline Policy

The policy of the discipline lies in the consistent and purposeful implementation of the educational process. Teachers' requirements for students are based on general teaching principles in ISM IUK.

1. Obligatory, regular attendance of lectures, practical classes.
2. Mandatory attendance at lectures. For one missed lesson, 2 points are deducted when calculating ratings.
3. Mandatory implementation of the SIW in various forms.
4. Delivery of the SIW assignments at the appointed time according to the thematic plan no later than the week corresponding to this section.
5. Passing midterm control according to the thematic plan.
6. Active participation in the educational process (synopsis of laboratory work, preparation of theoretical material, exercise, solving situational problems and tests, laboratory work under the guidance of a teacher and a teacher's assistant).
7. Working off missed classes is possible only with the permission of the dean's office indicating the exact number of classes.
8. Don't be late for class.
9. The presence of a clean, ironed, white robe.
10. Respectful attitude to the teaching staff, teaching and support staff and students.



11. Respect for the property of the department: furniture, appliances, flowers, chemical dishes, etc.

Assessment Criteria:

The mark "Excellent" is given if the student 1) fully sets out the studied material, gives the correct definition of linguistic concepts; 2) reveals an understanding of the material, can substantiate their judgments, apply knowledge in practice, give the necessary examples not only from the textbook, but also independently; 3) presents the material consistently and correctly from the point of view of the rules of the Russian language.

The mark "Good" is given if the student gives an answer that meets the same requirements as for the mark "excellent", but 1-2 mistakes are allowed, which he corrects himself, and 1-2 shortcomings in the sequence and language design.

The grade "Satisfactory" is given if the student discovers knowledge and understanding of the main provisions of the given topic, but: 1) expresses the material incompletely and makes inaccuracies in the definition of concepts or formulation of the rules; 2) does not know how to substantiate his judgments deeply and convincingly and give examples; 3) presents the material inconsistently and makes mistakes in the language of the presentation.

The grade "Unsatisfactory" is given if a student reveals ignorance of most of the relevant section of the studied material, makes mistakes in the formulation of definitions and rules that distort their meaning, and presents the material in a disorderly and uncertain way. The mark "unsatisfactory" marks such shortcomings in the preparation of the student, which are a serious obstacle to the successful mastering of the subsequent material.

Oral questioning is rated on a 40-point scale:

№	points	Knowledge, skills, competencies	Rating
1	0	No answer or refusal to answer	0
2	1-9	Recognition of the object of study, recognition of certain known terms and facts; the manifestation of the desire to overcome learning difficulties; manifestation of situational interest in the teaching and the subject	Low (receptive)



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3	10-12	Recognition of the object of study, differentiation of definitions, structural elements of knowledge, manifestation of volitional efforts and motivation for learning	Low (receptive)
4	13-16	Incomplete reproduction of programmatic educational material at the memory level; the presence of significant errors that can be eliminated with the help of a teacher; difficulty in using special, general educational and intellectual skills; striving to overcome difficulties; situational manifestation of responsibility, self-criticism.	Satisfactory (receptive-productive)
5.	17-19	Mastering educational material at the reproductive level and incomplete reproduction; the presence of correctable errors with additional (leading) questions; difficulties in the use of certain special, general educational and intellectual skills or certain skills; manifestation of volitional efforts, interest in learning, adequate self-esteem, independence, meaningfulness of actions, etc.	Satisfactory (receptive-productive)
6.	20-23	Conscious reproduction of programmatic educational material, including those of varying degrees of complexity, with insignificant errors; difficulties in the use of certain special, general educational and intellectual abilities and skills; interest in learning and achieving results.	Medium (reproductive-productive)
7.	24-28	Full reproduction of program material with insignificant errors; applying knowledge in a familiar situation according to a model; application of special, general educational and intellectual skills and abilities with little help from a teacher; persistence and desire to overcome difficulties; situational manifestation of the desire for creativity.	Medium (reproductive-productive)



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8	28-30	Possession of program training material, including those of varying degrees of complexity, operating it in a familiar situation; the presence of single insignificant errors in actions; independent use of special, general educational and intellectual abilities and skills; manifestation of aspirations for the creative transfer of knowledge, organization, self-criticism, reflection, etc.	Sufficient (productive)
9	31-34	Possession of program training material and operating it in familiar and unfamiliar situations; the presence of single insignificant errors in actions, independently corrected by the student; the presence of a certain experience of creative activity; manifestation of conscientiousness, responsibility, self-esteem, reflection, etc.	Sufficient (productive)
10	35-37	Free operation with program educational material of varying degrees of complexity in an unfamiliar situation; performing tasks of a creative nature; high level of independence and erudition.	Sufficient (productive)
11	38-40	Free operation of program educational material of varying degrees of complexity using information from other educational courses and disciplines; the ability to consciously and quickly transform the acquired knowledge to solve problems in non-standard situations; manifestation of purposefulness, responsibility, cognitive activity, creative attitude to learning.	High (productive creative)

1.4.5 EDUCATIONAL – METHODOLOGICAL AND INFORMATIONAL SUPPORT OF THE DISCIPLINE

List of recommended literature:

1. Anthony S.Fauci, Braunwald, Kasper, Longo, Jameson, Loscalzo Harissons Principles of Internal Medicine 2012, 17thEdition
2. Graham Douglas&FionaNicol Macleod’s Clinical examination 13th Edition



3. Stuart Ralston, Ian Penman, Mark Strachan, Richard Hobson Davidsons Principles & Practice Of Medicine 23th Edition
4. O.N. Kovalyova, T.V. Ashcheulova –Vinnytsya Propaedeutics to Internal Medicine: Diagnostics; textbook for English learning Students of higher medical schools; Part 1. Nova Knyha publishers, 2011. – 424 p.
5. O.N. Kovalyova, S. Shapovalova – Vinnytsya Propaedeutics to Internal Medicine: Syndromes; textbook for English learning Students of higher medical schools; Part 2. Nova Knyha publishers, 2011. – 424 p.;
6. Bates Guide to Physical Examination and History taking LWW, 11 ed,2012

Указывать не менее 2 – х основных учебников (учебных пособий), преимущественно имеющиеся в библиотеках УНПК «МУК».

Additional literature:

1. 1. Stephen J. Mcphee, «Current Medical Diagnosis & Treatment». 2009
2. Elsevier «Clinical Examination.A Systematic Guide To Physical Diagnosis » Australia. 2014
3. Tao Le. «First Aids in Internal Medicine» Boards 2 Edition Copyright 2008
4. Schneider, M-J. Introduction to Public Health 3rd Edition. 2011. Jones & Bartlett Publishers,
Sudbury,Mass.
- 5.ABM Abdullah, MN Alam MRCP, “Long Cases in Clinical Medicine” First Edition: 2013.
- 6.RAlagappan. Chennai, Tamil Nadu Manual of Practical Medicine” Fourth Edition. India.

The list of resources of the information and telecommunication network "Internet" necessary for mastering the discipline

1. <http://meduniver.com/Medical/Book/34.html>
2. www.jaypeebrothers.com
3. www.booksmed.com
4. www.bankknig.com
5. Blaufuss Multimedia:
<http://www.blaufuss.org>



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6. The R.A.L.E. Repository: Respiratory sounds:

<http://www.rale.ca/Recordings.htm>

7. David Arnall: Pulmonary Breath Sounds:

http://faculty.etsu.edu/arnall/www/public_html/heartlung/breathsounds/contents.html

8. Frontiers in Bioscience, Virtual Library: Heart Sounds

http://www.lf2.cuni.cz/Projekty/interna/heart_sounds/h14/sound.htm

1.4.6 Material and technical support of the discipline

In accordance with the requirements of NCEI ESPC "IUK", the department has a specially equipped classroom for lectures on flows of students, premises for practical training for students of 30 people and an auxiliary room for storing chemical reagents and preventive maintenance of educational and scientific equipment.

The room for lectures is equipped with a power supply set for floor switchboards (220 V, 2 kW, complete with an RCD), specialized furniture and organizational tools (classroom board for writing with chalk and felt-tip pen, stand-lectern, lecturer's table, chair, classroom tables, classroom chair, as well as technical training aids (wall screen with electric drive and remote control, multimedia projector with a laptop).

№	<i>Material and technical equipment</i>
1.	Theoretical and practical study of the Nephrology program is carried out at the Department of Therapy
2.	Technical equipment: 2 laptops, 2 multimedia projectors.
3.	Visual aids: educational stands, educational tables, educational histories of disease.
4.	Presentations of lectures on all topics of the lecture course

During the pandemic, all clinical sessions were conducted remotely: on the basis of electronic platforms: whats app, ZOOM, youtube and test.edu.kg. using visual aids of ISM.

Clinical skills were practiced at the place of residence in the relevant clinics at the place of residence.



1.4.7 Student's research work

Research work includes preparing students through their mastering in the learning process the methods, techniques and skills of performing research work, developing their creative abilities, independence, initiative in learning and future professional activity within the specialty.

The program of students' research work (SRW), as a section of the development of practical skills, includes:

- study of special literature and other scientific and medical information, achievements of domestic and foreign science and technology in the field of medical knowledge, preparation of scientific abstracts (literature reviews);
- participation in scientific research or in the implementation of certain developments at the theoretical or clinical departments of ISM;
- the implementation of the collection, processing, analysis and systematization of scientific information on a topic or on an assignment;
- preparation of reports and presentation of a report at the conference, preparation of scientific work for publication;
- participation in mass events of the SRW system (student scientific conferences, seminars, subject Olympiads, competitions, "Week of Science", exhibitions, discussions, disputes, etc.).

2. Teaching materials

2.1. Lecture notes

Thematic plan of lectures

#	Lecture topic	Hours
1	Bronchial asthma.	2
2	Chronic obstructive pulmonary disease.	2
3	Pneumonia.	2
4	Pleurisy.	2
5	Bronchiectasis.	2



6	Idiopathic fibrosing alveolitis	2
7	Pulmonary heart	2
8	Respiratory failure	2
	Total	16
	generally	16

1 module (16 hours)

Lecture number 1. Bronchial asthma.

Bronchial asthma is a chronic inflammatory disease of the airways, accompanied by their hyperreactivity, which is manifested by repeated episodes of shortness of breath, difficulty breathing, a feeling of tightness in the chest and coughing, which occurs mainly at night or in the early morning. These episodes are usually associated with widespread but not permanent bronchial obstruction that is reversible either spontaneously or with treatment.

EPIDEMIOLOGY

- The prevalence of bronchial asthma in the general population is 4-10%, and among children - 10-15%. Prevailing gender: children under 10 years old - male, adults - female.

CLASSIFICATION

- Of greatest practical importance are the classifications of bronchial asthma by etiology, severity of the course and features of manifestation of bronchial obstruction.
- Most important is the division of bronchial asthma into allergic (atopic) and non-allergic (endogenous) forms, since in the treatment of allergic bronchial asthma, specific methods are effective that are not used in the non-allergic form.
- International classification of diseases of the tenth revision (ICD-10): J45 - Bronchial asthma (J45.0 - Asthma with a predominance of an allergic component; J45.1 - Non-allergic asthma; J45.8 - Mixed asthma), J46. - Status asthmaticus.



- The severity of asthma is classified by the presence of clinical signs before starting treatment and / or by the amount of daily therapy needed to optimally control symptoms.

◇ Criteria for severity:

- ◆ clinical: the number of nocturnal seizures per week and daytime seizures per day and per week, the severity of physical activity and sleep disorders;

- ◆ objective indicators of bronchial patency: forced expiratory volume in 1 s (FEV1) or peak expiratory flow rate (PSV), daily fluctuations in PSV;

- ◆ therapy received by patients.

◇ Depending on the severity, there are four stages of the disease (which is especially convenient for treatment).

- ◆ Stage 1: mild intermittent (episodic) bronchial asthma. Symptoms (cough, shortness of breath, wheezing) are noted less than 1 time per week. Night attacks no more than 2 times a month. In the interictal period, there are no symptoms, lung function is normal (FEV1 and PSV are more than 80% of the proper values), daily fluctuations in PSV are less than 20%.

- ◆ Stage 2: mild persistent bronchial asthma. Symptoms occur once a week or more often, but not daily. Night attacks more often than 2 times a month. Flare-ups can interfere with normal activity and sleep. PSV and FEV1 outside the attack are more than 80% of the proper values, daily fluctuations in PSV are 20-30%, which indicates an increasing reactivity of the bronchi.

- ◆ Stage 3: persistent bronchial asthma of moderate severity. Symptoms occur daily, exacerbations disrupt activity and sleep, and reduce the quality of life. Night attacks occur more often than once a week. Patients cannot do without daily intake of β 2-adrenergic agonists short action. PSV and FEV1 are 60-80% of the required values, PSV fluctuations exceed 30%.

- ◆ Stage 4: severe persistent bronchial asthma. Symptoms persistent throughout the day. Exacerbations and sleep disturbances are frequent. The manifestations of the disease limit physical activity. PSV and FEV1 are below 60% of the proper values even outside the attack, and daily fluctuations in PSV exceed 30%.



It should be noted that it is possible to determine the severity of bronchial asthma by these indicators only before starting treatment. If the patient is already receiving the required therapy, the volume should be considered. If a patient's clinical picture corresponds to stage 2, but at the same time he receives treatment corresponding to stage 4, he is diagnosed with severe bronchial asthma.

- Phases of the course of bronchial asthma: exacerbation, subsiding exacerbation and remission.
- ◆ Status asthmaticus - a serious and life-threatening condition - a prolonged attack of expiratory suffocation that is not relieved by conventional anti-asthmatic drugs for several hours. Distinguish between anaphylactic (rapid development) and metabolic (gradual development) forms of status asthmaticus. Clinically manifests itself as significant obstructive disorders up to the complete absence of bronchial conduction, unproductive cough, severe hypoxia, increasing resistance to bronchodilators. In some cases, there may be signs of an overdose of β_2 -agonists and methylxanthines.
- According to the mechanism of impairment of bronchial patency, the following forms of bronchial obstruction are distinguished.
 - ◇ Acute bronchoconstriction due to smooth muscle spasm.
 - ◇ Subacute bronchial obstruction due to edema of the mucous membrane of the respiratory tract.
 - ◇ Sclerotic bronchial obstruction due to sclerosis of the bronchial wall with prolonged and severe course of the disease.
 - ◇ Obstructive bronchial obstruction caused by impaired discharge and changes in the properties of sputum, the formation of mucous plugs.

ETIOLOGY

- Allocate risk factors (causal factors) that predetermine the possibility of developing bronchial asthma, and provocateurs (triggers), realizing this predisposition.
- The most significant risk factors are heredity and exposure to allergens.



◇ The likelihood of bronchial asthma is associated with the person's genotype. Examples of hereditary diseases accompanied by manifestations of bronchial asthma are increased IgE production [IgE-dependent allergic (atopic) bronchial asthma, usually combined with allergic rhinitis and conjunctivitis,] a combination of bronchial asthma, nasal polyposis and intolerance to acetylsalicylic acid (hypersensitivity to respiratory tract) pathways, hyperbradykininemia. Genetic polymorphism in these conditions determines the readiness of the airways for inadequate inflammatory reactions in response to triggers that do not cause pathological conditions in people without a hereditary predisposition.

◇ Of the allergens, the most important are the waste products of house dust mites (*Dermatophagoides pteronyssinus* and *Dermatophagoides farinae*), mold spores, plant pollen, dandruff, saliva and urine components of some animals, bird fluff, cockroach allergens, food and drug allergens.

- Provoking factors (triggers) can be respiratory tract infections (primarily acute respiratory viral infections), intake of β -blockers, air pollutants (sulfur and nitrogen oxides, etc.), cold air, physical activity, acetylsalicylic acid and other NSAIDs in patients aspirin bronchial asthma, psychological, environmental and professional factors, strong odors, smoking (active and passive), concomitant diseases (gastroesophageal reflux, sinusitis, thyrotoxicosis, etc.).

PATHOGENESIS

- The pathogenesis of bronchial asthma is based on chronic inflammation.
- For bronchial asthma, a special form of bronchial inflammation is characteristic, leading to the formation of their hyperreactivity (increased sensitivity to various nonspecific stimuli compared to the norm); the leading role in inflammation belongs to eosinophils, mast cells and lymphocytes.
- Inflamed hyperreactive bronchi respond to triggers with spasm of airway smooth muscles, hypersecretion of mucus, edema and inflammatory cellular infiltration of the airway mucosa, leading to the development of obstructive syndrome, clinically manifesting as an attack of dyspnea or dyspnea.
- ◇ Early asthmatic reaction is mediated by histamine, prostaglandins, leukotrienes and is manifested by contraction of the smooth muscles of the airways, hypersecretion of mucus, edema of the mucous membrane.



- \diamond Late asthmatic reaction develops in every second adult patient with bronchial asthma. Lymphokines and other humoral factors cause the migration of lymphocytes, neutrophils and eosinophils and lead to the development of a late asthmatic reaction. Mediators produced by these cells are capable of damaging the epithelium of the respiratory tract, maintaining or activating the process of inflammation, and stimulating afferent nerve endings. For example, eosinophils can secrete most of the major proteins, leukotriene C₄, macrophages are sources of thromboxane B₂, leukotriene B₄ and platelet activating factor. T-lymphocytes play a central role in the regulation of local eosinophilia and the appearance of excess IgE. In the bronchial lavage fluid in patients with atopic asthma, the number of T-helpers (CD4 + lymphocytes) is increased.
- \blacklozenge The prophylactic administration of β 2-adrenergic agonists blocks only the early reaction, and inhaled HA preparations - only the late one. Cromones (eg, nedocromil) act on both phases of the asthmatic response.
- \diamond The mechanism of development of atopic bronchial asthma is the interaction of antigen (Ag) with IgE, which activates phospholipase A₂, under the action of which arachidonic acid is cleaved from the phospholipids of the mast cell membrane, from which prostaglandins (E₂, D₂, F₂ α), thromboxane A₂ are formed under the action of cyclooxygenase, prostacyclin, and under the action of lipoxygenase - leukotrienes C₄, D₄, E₄, through specific receptors that increase the tone of smooth muscle cells and lead to inflammation of the airways. This fact provides a rationale for the use of a relatively new class of anti-asthma drugs - leukotriene antagonists.

PATHOMORPHOLOGY

- In the bronchi, inflammation, mucous plugs, edema of the mucous membrane, hyperplasia of smooth muscles, thickening of the basement membrane, signs of its disorganization are detected. During an attack, the severity of these pathomorphological changes is significantly enhanced. Signs of pulmonary emphysema are possible (see chapter 20 "Pulmonary emphysema"). Endobronchial biopsy of patients with stable chronic (persistent) bronchial asthma reveals desquamation of bronchial epithelium, eosinophilic infiltration of the mucous membrane, thickening of the basement membrane of the epithelium. With bronchoalveolar lavage, a large number of epithelial and mast cells are found in the lavage fluid. In patients with nocturnal attacks of bronchial asthma, the highest



content of neutrophils, eosinophils and lymphocytes in the bronchial lavage fluid was noted in the early morning hours. For bronchial asthma, unlike other diseases of the lower respiratory tract, the absence of bronchiolitis, fibrosis, and granulomatous reactions is characteristic.

CLINICAL PICTURE AND DIAGNOSTICS

- Bronchial asthma is characterized by extremely unstable clinical manifestations, therefore, a thorough history taking and examination of the parameters of external respiration are necessary. In 3 out of 5 patients, bronchial asthma is diagnosed only in the late stages of the disease, since clinical manifestations of the disease may be absent during the interictal period.

TREATMENT

- Bronchial asthma is an incurable disease. The main goal of therapy is to maintain a normal quality of life, including physical activity.

TREATMENT TACTICS

Treatment goals:

- achieving and maintaining control over the symptoms of the disease;
- prevention of exacerbation of the disease;
- maintaining lung function as close to normal values as possible;
- maintaining a normal level of activity, including physical;
- elimination of side effects of anti-asthma drugs;
- prevention of the development of irreversible bronchial obstruction;
- prevention of mortality associated with bronchial asthma.

Control of bronchial asthma can be achieved in most patients, it can be determined as follows:

- minimal severity (ideally no) chronic symptoms, including nocturnal;
- minimal (infrequent) exacerbations;



- no need for ambulance and emergency care;
- minimal need (ideally no) in the use of β -adrenergic agonists (as needed);
- lack of restrictions on activity, including physical;
- daily fluctuations in PSV less than 20%;
- normal (close to normal) indicators of PSV;
- minimal severity (or absence) of undesirable effects of drugs.

The management of patients with bronchial asthma includes six main components.

1. Education of patients for the formation of partnerships in the process of their management.
2. Assessment and monitoring of the severity of the disease, both by recording symptoms and, if possible, by measuring lung function; for patients with moderate and severe course, daily peak flowmetry is optimal.
3. Elimination of exposure to risk factors.
4. Development of individual plans of drug therapy for long-term management of the patient (taking into account the severity of the disease and the availability of anti-asthma drugs).
5. Development of individual plans for relieving exacerbations.
6. Providing regular follow-up monitoring.

EDUCATIONAL PROGRAMS

- The basis of the educational system for patients in pulmonology - asthma schools. According to specially developed programs, patients are explained in an accessible form the essence of the disease, methods of preventing seizures (elimination of the effects of triggers, preventive use of drugs). In the course of the implementation of educational programs, it is considered mandatory to teach the patient to independently manage the course of bronchial asthma in various situations, to develop for him a written plan for getting out of a severe attack, to ensure the availability of access to a medical worker, to teach how to use a peak flow meter at home and maintain a daily PSV curve, as well as correctly use metered-dose



inhalers. Asthma schools are most effective among women, nonsmoking patients and patients with high socioeconomic status.

MEDICAL THERAPY

- Based on the pathogenesis of bronchial asthma, bronchodilators (β 2-adrenomimetics, m-anticholinergics, xanthines) and anti-inflammatory anti-asthma drugs (GCs, mast cell membrane stabilizers and leukotriene inhibitors) are used for treatment.

ANTI-INFLAMMATORY ANTI-ASTHMIC DRUGS (BASIC THERAPY)

- HA: the therapeutic effect of drugs is associated, in particular, with their ability to increase the number of β 2-adrenergic receptors in the bronchi, inhibit the development of an immediate allergic reaction, reduce the severity of local inflammation, edema of the bronchial mucosa and secretory activity of the bronchial glands, improve mucociliary transport, reduce reactivity bronchi.

- \diamond Inhaled GCs * (beclomethasone, budesonide, fluticasone), in contrast to systemic ones, have a predominantly local anti-inflammatory effect and practically do not cause systemic side effects. The dose of the drug depends on the severity of the disease.

* When taking medications in the form of dosing cans, it is recommended to use a spacer (especially with a valve that excludes exhalation into the spacer), which contributes to more effective control of bronchial asthma and reduces the severity of some side effects (for example, associated with the sedimentation of drugs in the oral cavity, ingestion into the stomach) ... A special form of aerosol delivery is represented by the "light breathing" system, which does not require pressing the can, the aerosol dose is issued in response to negative pressure on the patient's inhalation. When using preparations in the form of a powder using a cyclohaler, turbuhaler, etc., a spacer is not used.

- \diamond Systemic GCs (prednisolone, methylprednisolone, triamcinolone, dexamethasone, betamethasone) are prescribed for severe bronchial asthma in minimal doses or, if possible, every other day (alternating regimen). They are administered intravenously or orally; the latter route of administration is preferable. Intravenous administration is justified if oral administration is impossible. Appointment of depot drugs is permissible only for seriously ill



patients who do not follow medical recommendations, and / or when the effectiveness of other drugs has been exhausted. In all other cases, their appointment is recommended to be avoided.

- Mast cell membrane stabilizers (cromoglicic acid and nedocromil, as well as drugs combined with short-acting β 2-adrenergic agonists) act locally, preventing the degranulation of mast cells and the release of histamine from them; suppress both immediate and delayed bronchospastic reaction to inhaled Ag, prevent the development of bronchospasm when inhaling cold air or during exercise. With prolonged use, they reduce bronchial hyperreactivity, reduce the frequency and duration of bronchospasm attacks. They are more effective in childhood and youth. Drugs in this group are not used to treat an attack of bronchial asthma.
- Antagonists of leukotriene receptors (zafirlukast, montelukast) - a new group of anti-inflammatory anti-asthma drugs. The drugs reduce the need for short-acting β 2-adrenergic agonists and are effective for the prevention of bronchospasm attacks. Used internally. Reduces the need for blood glucose ("sparing effect").

BRONCHOOILING PREPARATIONS

- It should be remembered that all bronchodilators in the treatment of bronchial asthma have a symptomatic effect; the frequency of their use serves as an indicator of the effectiveness of basic anti-inflammatory therapy.
 - Short-acting β 2-adrenomimetics (salbutamol, fenoterol) are administered by inhalation, they are considered the means of choice for relieving attacks (more precisely, exacerbation) of bronchial asthma. When administered by inhalation, the action usually begins in the first 4 minutes. The drugs are produced in the form of metered aerosols, dry powder and solutions for inhalers (if necessary, long-term inhalation, the solutions are inhaled through a nebulizer).
- ◇ Metered dose inhalers, powder inhalers, and nebulizer spraying are used to administer drugs. For the correct use of metered dose inhalers, the patient needs certain skills, since otherwise only 10-15% of the aerosol enters the bronchial tree.

Lecture number 2. Chronic obstructive pulmonary disease.



Chronic obstructive pulmonary disease (COPD) is a progressive, life-threatening lung disease that causes shortness of breath (initially with exertion) predisposing to exacerbation and serious illness.

According to the Global Burden of Disease Study, in 2016, the global prevalence of COPD was 251 million cases.

An estimated 3.17 million people globally died from the disease in 2015, accounting for nearly 5% of all global deaths this year.

More than 90% of COPD deaths occur in low- and middle-income countries.

The main cause of COPD is tobacco smoke (from tobacco consumption or secondhand smoke inhalation).

Other risk factors include outdoor and indoor air pollution and exposure to air pollution from smoke and dust in the workplace.

Indoor air pollution can negatively impact unborn babies and put them at risk of developing COPD later in life.

In some cases, COPD is associated with long-term asthma.

The likelihood of an increase in COPD prevalence is high in an increase in smoking prevalence among the adult population in many countries.

Many cases of COPD are preventable through smoking cessation or early smoking cessation. It is therefore important that countries adopt the WHO Convention on Tobacco Control (WHO FCTC) and implement the MPOWER package to make smoking cessation the norm around the world.

COPD is incurable, but treatment can relieve symptoms, improve quality of life, and reduce the risk of death.

Chronic obstructive pulmonary disease is a lung disease characterized by a chronic restriction of airflow in the airways. COPD symptoms worsen over time. Dyspnea on exertion gradually turns into dyspnea at rest. This disease is often underdiagnosed and can be life-threatening. Previously, COPD was often referred to as chronic bronchitis and emphysema.

Symptoms



Chronic obstructive pulmonary disease develops slowly and, as a rule, manifests itself in people over 40-50 years old. The most common symptoms of COPD are shortness of breath (“shortness of breath”), chronic cough, and sputum production. As the patient's health deteriorates, it may be difficult to even carry out normal daily activities, such as climbing a short flight of stairs or carrying a suitcase. In addition, patients often experience exacerbations, i.e. severe episodes of severe shortness of breath, cough, and sputum production that last from several days to several weeks. These episodes can lead to a marked decrease in working capacity and the emergence of a need for emergency medical care (including hospitalization), and sometimes death.

Diagnosis and Treatment

Chronic obstructive pulmonary disease (COPD) is usually suspected in people who have the symptoms described above. The diagnosis can be confirmed by a breath test called spirometry, which measures how much air a person can breathe out at a time with maximum effort, and how quickly.

Chronic obstructive pulmonary disease is incurable. However, available drugs and physical therapy can relieve symptoms, increase exercise capacity and quality of life, and reduce the risk of death. The most effective and cost-effective treatment for COPD in smokers is smoking cessation. This will slow down the course of the disease and reduce mortality from causes associated with COPD. Some (but not all) patients with COPD benefit from inhaled corticosteroids.

Lecture number 3: Pneumonia

Main complaints: cough, hemoptysis, chest pain, shortness of breath.

Cough. The nature of the cough and its intensity depends on the cause of pulmonary infiltration, on the stage

process. At the onset of the disease - dry (edema of the bronchial wall + pleural infiltration → irritation

cough receptors), then wet. An inaudible weak short cough is a sign

beginning infiltration. The character of the sputum has a DS value: pink sputum - the stage of red hepatization, then the sputum becomes mucopurulent, purulent (the



height of pneumonia). By the end of the disease, the amount of sputum increases, it becomes liquid, mucopurulent.

Hemoptysis. Reasons - an increase in the permeability of the vascular wall under the influence of mediators

inflammation (with infiltration of viral etiology), disintegration of lung tissue (tb, lung cancer, abscess pneumonia).

Chest pain - with dry pleurisy (i.e., only if the pleura is involved in the inflammatory process). The pain is localized, worse with deep breathing and coughing or in the position on a healthy side; decreases in position on the sore side. Dyspnea. Exudate → part of the alveoli is flooded with exudate, in the other part the wall is thickened → decrease in the respiratory surface of the lungs, impaired ventilation according to the restrictive type, impaired diffusion of gases → hypercapnia → shortness of breath (mixed in nature)

General complaints. Increased body temperature (croupous pneumonia is characterized by high fever with tremendous chills and increased sweating).

General examination data Croupous pneumonia affects people with suppressed immunity (children, the elderly) → condition

severe or extremely severe (depending on the degree of prevalence of infiltration). Severe - at the beginning and height of the disease, satisfactory - at the stage of resolution

Consciousness. Irritative types of disorders of consciousness (delirium, hallucinations) + motor excitement (especially if pneumonia is in the upper lobe or in chronic alcoholics - a violation of the blood supply to the GM) Forced position: on the sore side (pain and cough reduction) Face. Facies pneumonica - febrile face with a bright blush on the affected side Lips cyanotic, dry, cracked

Leather. Diffuse cyanosis. Due to low blood pressure (toxic vascular dilatation, expansion of peripheral arterioles), the skin is pale, ash-gray, with pronounced acrocyanosis. Large drops of cold, clammy sweat (circulatory collapse). At the onset of the disease, a herpetic rash is often noted on the wings of the nose and on the lips.

Chest examination.



Inspection. The rib cage is irregular in shape, asymmetric (due to the defeat of one half). Breathing is frequent, shallow (restrictive ventilation disorders), auxiliary muscles are involved. Palpation. Local soreness and rigidity are noted. Increased vocal tremor (especially in the peak stage - the lobe is absolutely dense) Percussion and auscultation

Stage I - onset (corresponds to the anatomical stage of high tide)

Percussion. The walls of the alveoli are thickened, there is a small amount of exudate in them → the percussion sound is dull or dull-tympanic.

Auscultation. Above the affected area - weakening of vesicular respiration, in other areas -

gain. There is a small amount of exudate in the alveoli → sonorous crepitus above the affected area (index). Pleural friction (pleurisy)

Stage II - in the midst (red and gray hepatization)

Percussion. Absolutely dull percussion sound (like over a liver)

Auscultation. Laryngo-tracheal breathing is carried out to the surface - this breathing is called bronchial. Small and medium bronchi are filled with exudate → moist sonorous rales (medium and fine bubbling). The pleural friction murmur persists.

Stage III - resolution. Percussion. Exudate is secreted in the form of sputum → a dull or dull-tympanic percussion sound appears. The topography is similar to that in stage I. Auscultation. At the beginning - broncho-vesicular breathing (a transitional stage, air enters the alveoli), then - more and more vesicular. Abundance of sonorous moist rales, at the end - crepitus (reduction - before recovery). Pleural rubbing noise (which remains after recovery).

Data from laboratory and instrumental research methods.

Laboratory research methods

KLA: - pronounced NF-th leukocytosis with a shift to the left - toxic granularity of NF-s (purulent intoxication) - aneosinophilia (suppression of BM, prognostically unfavorable sign) - ESR sharply increased (up to 40-60 mm / h)



OAM. Doesn't matter much

b / x: nonspecific markers of inflammation. - increased content of C-reactive protein (++ / +++) and fibrinogen - dysproteinemia (increased γ -globulin, decreased albumin)

Sputum analysis: - at the beginning - mucopurulent or hemorrhagic, moderate amount, turbid - microscopy: alveolar macrophages (cover the walls of the alveoli), siderophages (MF containing Hb), a large amount of NF (pus); if there is a tumor - atypical cells, tumor growth - fresh unchanged Er; tb - mycobacteria, lymphocytes

Instrumental research methods

Examination of the function of external respiration

-spirometry, pneumotachometry, peak flowmetry (\downarrow VC, \uparrow MOD, \uparrow RR, \downarrow MAV)
- restrictive type of ventilation disorders

-R-graphy: signs of infiltration.

Lecture 4. Pleurisy

Pleurisy is a secondary disease with clinical and physiological manifestations of fibrinous inflammation, retention of exudate at the site of injury (dry) or accumulation of exudate (transudate) in the pleural cavity (exudative pleurisy).

Etiology and pathogenesis. Exudative pleural effusion is a consequence of pleural damage and is observed with an increase in the permeability of the pleura for protein, a decrease in intrapleural pressure, and a decrease in the excretion of fluid from the pleural cavity through the lymphatic vessels when they are damaged. Its appearance is most often noted with lung disease, malignant neoplasms, and infectious processes.

Transudative pleural effusions are formed in those pathological conditions when plasma oncotic pressure is reduced (hypoprotrombinemia with cirrhosis of the liver) or pulmonary capillary pressure is increased (right or left ventricular failure).

2. Classification.

By the nature of the effusion:

- dry (fibrinous);



- exudative pleurisy (with serous, serous-fibrinous, fibrinous, purulent, hemorrhagic, chyle, cholesterol effusion).

By the volume of the lesion:

- left-sided;
- right-sided;
- bilateral.

With the flow:

- sharp;
- subacute;
- chronic.

Inflammatory pleurisy can be roughly divided into:

- purulent-inflammatory - infectious (bacterial, fungal, etc.);
- parasitic (amebiasis, echinococcosis, paragonimiasis, etc.);
- enzymatic (pancreatogenic).

Allergic or autoimmune:

- exogenous allergic alveolitis;
- drug allergy.

For rheumatic diseases:

- systemic lupus erythematosus;
- rheumatoid arthritis;
- rheumatism, etc.

Traumatic - radiation therapy, burns, etc.

Stagnant effusions (impaired blood and lymph circulation) are characteristic of heart failure of various origins and pulmonary embolism.



Dysproteinemic effusions (a decrease in the colloid-osmotic pressure of blood plasma) are found in nephrotic syndrome, liver cirrhosis, myxedema, etc.

Tumor pleurisy is a manifestation of a primary tumor of the pleura (mesothelioma), metastases, leukemia.

Effusions in violation of the integrity of the pleural sheets occur with spontaneous hemo- and pneumothorax, spontaneous chylothorax.

Lecture number 5. Bronchiectasis.

1. Bronchiectasis is characterized by regional expansion of the bronchi with a predominant localization of the process in the lower parts of the lungs, manifested by symptoms of purulent bronchitis, often hemoptysis.

Of great importance in the origin of bronchiectasis is attached to factors that disrupt the patency of the bronchi and contribute to the stagnation of bronchial secretions with subsequent infection, which can be observed in patients with a long course of chronic bronchitis and chronic pneumonia, with pneumoconiosis, tuberculous pulmonary disease. The development of bronchiectasis can be observed in the area of atelectasis, which develops during obstruction of the bronchi by cicatricial processes, foreign bodies or tumors. The development of a purulent process in the lumen of the bronchus leads to destructive changes in all layers of the bronchial wall, replacement of cartilaginous plates and muscle fibers with scar tissue, which also contributes to the loss of elasticity of the bronchi and the occurrence of bronchiectasis. Pneumonia, measles, whooping cough, and influenza transferred in childhood increase the risk of developing bronchiectasis.

Hereditary diseases cystic fibrosis, immunodeficiency states, Sievert-Kartagener syndrome also contribute to the development of bronchiectasis.

2. Pathological and anatomical picture. The mucous membrane in the area of bronchiectasis is often ulcerated. Muscle fibers and cartilage undergo destruction with replacement by connective tissue.

The process is accompanied by a violation of the drainage function and stagnation of secretions in the lumen of the dilated bronchi. The phenomena of chronic diffuse bronchitis are also often found.



Microscopic examination reveals the replacement of the ciliated epithelium with stratified or cylindrical epithelium, infiltration of the bronchial wall with neutrophils.

Classification. Bronchiectasis is divided into:

- primary (bronchiectasis precede the development of chronic bronchopulmonary diseases);
- secondary (are a complication of chronic lung diseases).

Depending on the form of expansion of the bronchi, there are:

- cylindrical;
- saccular (or cyst-like);
- mixed bronchiectasis.

Bronchiectasias are:

- one-sided;
- bilateral.

According to the severity of the course:

- light form;
- pronounced form;
- complicated severe form.

Disease phase:

- remission;
- aggravation.

3. The clinical picture. The initial manifestations of the disease are characterized by relapses of persistent cough with sputum production, frequent damage to the paranasal sinuses, and repeated hemoptysis. In the lower parts of the lung, intermittent local rales are heard.



Gradually, a cough with sputum production becomes the main complaint, it is most pronounced in the morning, when the patient separates a large amount (with a full mouth) of pus or mucopurulent sputum. A feature of the cough is its intensification when changing the position of the body, which is explained by the passive flow of bronchial secretions into intact areas of the bronchial tree, where the sensitivity of the mucous membrane is preserved.

During the period of exacerbation of the disease, most patients separate a significant amount of purulent sputum - 100-200 ml per day. With prolonged stagnation of bronchial secretions, putrefactive processes join, the sputum becomes fetid, and when standing, it usually breaks up into three layers. A significant number of patients have hemoptysis.

Often, patients complain of dull pain in the chest, as well as rapid fatigue, weakness, headaches, increased irritability, depression of the psyche, especially in the presence of fetid sputum, dyspeptic symptoms. Periods of exacerbation are usually accompanied by a slight increase in body temperature up to 38 ° C.

The appearance of patients in the initial period of the disease has no characteristic features. However, gradually the skin color becomes earthy, the face is puffy, exhaustion appears, nails in the form of watch glasses and fingers in the form of drumsticks. This last symptom is associated with the presence of intoxication and hypoxemia. There are no characteristic percussion symptoms in bronchiectasis. Restriction of respiratory excursions of the chest is noted.

During the period of exacerbation of the disease during auscultation against the background of hard breathing over the affected part of the lung, an abundance of dry and sonorous large and medium bubbly moist rales is heard.

In the study of blood, neutrophilic leukocytosis, an increase in the erythrocyte sedimentation rate are detected.

With common bronchiectasis, spirographic examination reveals a decrease in lung capacity.

Bronchiectasis is characterized by a long course with relapses of exacerbations mainly in the autumn and spring periods. Exacerbations are most often triggered by hypothermia, flu, or respiratory infections.



Complications of bronchiectasis:

- emphysema of the lungs;
- pulmonary insufficiency;
- cor pulmonale;
- bronchial asthma;
- massive pulmonary bleeding;
- pleural empyema, etc.

3. The diagnosis of bronchiectasis is based on the presence of:

- a history of indications of repeated illnesses with influenza, sinusitis, bronchitis, prolonged, often from childhood, cough with sputum production, hemoptysis. The separation of a large amount of purulent, with an unpleasant odor of sputum, mainly in the morning, its three-layer nature, the presence of changes in the terminal phalanges of the fingers in the form of drumsticks;
- X-ray examination (against the background of an increase in the pulmonary pattern and rough, radially converging to the root of the severity, the cellularity of the pattern is often revealed, as well as signs of a decrease in the volume of the affected area of the lung);
- bronchography (not only the presence, but also the form of bronchiectasis is established);
- bronchoscopy.

4. Treatment. Conservative methods:

- antibacterial therapy (antibiotics, sulfonamides). The most effective are therapeutic bronchoscopy with washing and removing purulent contents from the lumen of the bronchi, with the introduction of antibiotics;
- introduction of proteolytic enzymes (trypsin, chymotrypsin);
- administration of mucolytic drugs (acetylcysteine, bromhexine);
- anabolic hormones, vitamins C, B;



- immunostimulating therapy (removal of the affected area of the lung).

Lecture number 6. Idiopathic fibrosing alveolitis

The group of fibrosing alveolitis includes diseases characterized by a similar morphological picture with the development of widespread and tending to progression of pneumofibrosis. Fibrosing alveolitis can be not only an independent nosological form, but also a syndrome of other diseases, in particular diffuse connective tissue diseases. This chapter is devoted to the main nosological forms of primary fibrosing alveolitis.

IDIOPATHIC FIBROSING ALVEOLITIS

Idiopathic fibrosing alveolitis (ELISA) is one of the most common and poorly understood diseases from the group of interstitial lung diseases (ILD). ELISA is characterized by inflammation and fibrosis of the pulmonary interstitium and airways, disorganization of the structural and functional units of the parenchyma, which leads to the development of restrictive changes in the lungs, impaired gas exchange, progressive respiratory failure and, ultimately, to the death of the patient.

ELISA synonyms are "idiopathic pulmonary fibrosis", a term most commonly used in the English (idiopathic pulmonary fibrosis) and German (idiopatische Lungenfibrose) literature, and "cryptogenic fibrosing alveolitis", which has become more prevalent in the UK. The concepts "idiopathic" and "cryptogenic", despite the slight semantic difference, are now considered synonyms, denoting the hidden, unclear nature of the disease.

Epidemiology and predisposing factors

Data on the prevalence and incidence of ELISA vary considerably; this, apparently, is due to the fact that in previous epidemiological studies, patients were taken into account not only with ELISA, but also with other IIPs [1]. The prevalence of the disease among men is 20 cases per 100 thousand of the population, among women - 13 cases per 100 thousand of the population.



ELISA is 11 cases per 100 thousand people / year for men and 7 cases per 100 thousand people / year for women.

Despite the presence of the term "idiopathic" or "cryptogenic" in the name of the disease, active attempts are being made to search for the causes of ELISA. There is a point of view that there is a genetic predisposition to the development of excessive fibrosis in the lungs in response to nonspecific damage to the epithelium. This hypothesis is supported by the presence of familial forms of the disease, the frequent development of pulmonary fibrosis in some hereditary diseases (Gaucher disease, etc.).

Morphological picture

The morphological picture with ELISA corresponds to the histologically common interstitial pneumonia (IPP). The key features of OIP are: dense fibrosis of the pulmonary parenchyma, spotty inhomogeneous type of distribution of morphological changes and involvement of the peripheral part of the acin in the pathological process. Spotting or heterogeneity of the lesion of the parenchyma is manifested by the alternation of unchanged pulmonary units, foci of interstitial inflammation, fibrosis and cystic ("cellular") changes.

Criteria for the diagnosis of idiopathic fibrosing alveolitis (ATS / ERS, 2000)

Main criteria

1. Exclusion of other interstitial lung diseases caused by known causes (medication, exposure to harmful environmental factors, systemic connective tissue diseases).
2. Restrictive changes in the function of external respiration and impaired gas exchange.
3. Bilateral reticular changes in the pulmonary pattern in the basal parts of the lungs with minimal changes of the "ground glass" type according to high-resolution computed tomography of the lungs.
4. Lack of data in favor of other diseases according to the data of transbronchial biopsy of the lung or bronchoalveolar lavage.

Additional criteria



1. Age over 50.
2. Invisible, gradual onset of shortness of breath during exercise.
3. The duration of the disease is more than 3 months.
4. Crepitation in the basal parts of the lungs.

To diagnose ELISA, it is necessary to identify all 4 main criteria and at least 3 additional criteria.

Current guidelines for the treatment of idiopathic fibrosing alveolitis (ATS / ERS, 2000)

1. Corticosteroids (prednisone or other steroid drugs in a dose equivalent to prednisolone):

- 0.5 mg / kg of actual body weight per day for 4 weeks, - 0.25 mg / kg of ideal body weight per day for 8 weeks. Reduce the dose by 0.125 mg / kg per day or 0.25 mg / kg every other day

2. Plus Azathioprine - 2-3 mg / kg of actual body weight per day. Maximum dose 150 mg per day

The initial dose is 25-50 mg per day, the dose is increased by 25 mg every 1-2 weeks until the maximum dose is reached

or Cyclophosphamide - 2 mg / kg of actual body weight per day. Maximum dose 150 mg

per day

The initial dose is 25-50 mg per day, the dose is increased by 25 mg every 1-2 weeks until the maximum dose is reached.

Therapy is carried out for at least 6 months. The response to therapy is determined by the dynamics of clinical symptoms, radiographic data and functional parameters. Careful monitoring of the side effects of therapy is imperative.

Lecture 7. Pulmonary heart

Cor pulmonale is hypertrophy and dilation or only dilation of the right ventricle resulting from hypertension of the pulmonary circulation, which developed as a



result of diseases of the bronchi and lungs, chest deformities, or primary lesions of the pulmonary arteries. (WHO 1961).

Hypertrophy of the right ventricle and its dilation with changes as a result of primary heart damage, or congenital defects do not belong to the concept of cor pulmonale.

Recently, clinicians have noticed that hypertrophy and dilation of the right ventricle are already late manifestations of cor pulmonale, when it is no longer possible to rationally treat such patients, so a new definition of cor pulmonale was proposed:

"Cor pulmonale is a complex of hemodynamic disorders in the pulmonary circulation, which develops as a result of diseases of the bronchopulmonary apparatus, chest deformities, and primary lesions of the pulmonary arteries, which at the final stage is manifested by right ventricular hypertrophy and progressive circulatory failure."

ETIOLOGY OF THE PULMONARY HEART.

Cor pulmonale is a consequence of diseases of three groups:

1. Diseases of the bronchi and lungs, primarily affecting the passage of air and alveoli. This group includes approximately 69 diseases. They cause the development of cor pulmonale in 80% of cases.

- chronic obstructive bronchitis
- pneumosclerosis of any etiology
- pneumoconiosis
- tuberculosis, not by itself, like post-tuberculosis outcomes
- SLE, Boeck's sarcoidosis, fibrosing alveolitis (endo- and exogenous)
- others

2. Diseases primarily affecting the chest, diaphragm with limited mobility:

- kyphoscoliosis
- multiple injuries to the ribs



- Pickwick's syndrome in obesity
- ankylosing spondylitis
- pleural suppuration after postponed pleurisy

3. Diseases primarily affecting the pulmonary vessels

- primary arterial hypertension (Ayerza`s disease)
- recurrent pulmonary embolism (PE)
- compression of the pulmonary artery from the veins (aneurysm, tumor, etc.).

Diseases of the second and third groups are the cause of the development of cor pulmonale in 20% of cases. That is why they say that, depending on the etiological factor, three forms of cor pulmonale are distinguished:

- bronchopulmonary
- thoracodiaphragmatic
- vascular

CLINIC OF CHRONIC PULMONARY HEART.

Patients are worried about shortness of breath, the nature of which depends on the pathological process in the lungs, the type of respiratory failure (obstructive, restrictive, mixed). With obstructive processes, dyspnea of an expiratory nature with an unchanged breathing rate, with restrictive processes, the duration of exhalation decreases, and the respiratory rate increases. In an objective study, along with signs of the underlying disease, cyanosis appears, most often diffuse, warm due to the preservation of peripheral blood flow, in contrast to patients with heart failure. In some patients, cyanosis is so pronounced that the skin acquires a cast-iron color. Swollen neck veins, edema of the lower extremities, ascites. The pulse is speeded up, the borders of the heart expand to the right, and then to the left, the tones are muffled due to emphysema, the accent of the second tone over the pulmonary artery. Systolic murmur at the xiphoid process due to dilation of the right ventricle and relative insufficiency of the right tricuspid valve. In some cases, with severe heart failure, you can listen to a diastolic murmur on the pulmonary artery - the Graham-Still murmur, which is associated with a relative insufficiency



of the pulmonary valve. Above the lungs percussion, the sound is boxy, vesicular breathing, hard. In the lower parts of the lungs, stagnant, non-sounding moist rales. On palpation of the abdomen - an enlarged liver (one of the reliable, but not early signs of cor pulmonale, since the liver can be displaced due to emphysema). The severity of symptoms depends on the stage.

The first stage: against the background of the underlying disease, shortness of breath increases, cyanosis appears in the form of acrocyanosis, but the right border of the heart is not expanded, the liver is not enlarged, physical data in the lungs depend on the underlying disease.

The second stage - shortness of breath turns into attacks of suffocation, with difficulty breathing, cyanosis becomes diffuse, from the data of objective research: pulsation appears in the epigastric region, the tones are muffled, the accent of the second tone over the pulmonary artery is not constant. The liver is not enlarged, it can be omitted.

The third stage - signs of right ventricular failure join - an increase in the right border of cardiac dullness, an increase in the size of the liver. Constant swelling in the lower limbs.

The fourth stage - shortness of breath at rest, forced position, often accompanied by respiratory rhythm disorders such as Cheyne-Stokes and Biota. Edema is constant, not amenable to treatment, pulse is weak, frequent, bovine heart, muffled tones, systolic murmur at the xiphoid process. There is a mass of moist wheezing in the lungs. The liver is of considerable size, does not contract under the influence of glycosides and diuretics, as fibrosis develops. Patients are constantly asleep.

Diagnostics of the thoracodiaphragmatic heart is often difficult, one must always remember about the possibility of its development in kyphoscoliosis, ankylosing spondylitis, etc. The most important sign is the early appearance of cyanosis, and a noticeable increase in shortness of breath without asthma attacks. Pickwick's syndrome is characterized by a triad of symptoms - obesity, drowsiness, severe cyanosis. This syndrome was first described by Dickens in the Posthumous Papers of the Pickwick Club. Associated with traumatic brain injury, obesity is accompanied by thirst, bulimia, arterial hypertension. Diabetes mellitus often develops.



Chronic cor pulmonale in primary pulmonary hypertension is called Aërza's disease (described in 1901). A polyetiological disease, of unknown origin, mainly affects women from 20 to 40 years old. Pathomorphological studies have established that in primary pulmonary hypertension, thickening of the intima of the precapillary arteries occurs, that is, thickening of the media is noted in the arteries of the muscle type, and fibrinoid necrosis develops, followed by sclerosis and the rapid development of pulmonary hypertension. Symptoms are varied, usually complaints of weakness, fatigue, pain in the heart or joints, 1/3 of patients may experience fainting, dizziness, Raynaud's syndrome. And in the future, shortness of breath increases, which is the sign that indicates that primary pulmonary hypertension passes into a stable final stage. Cyanosis rapidly grows, which is expressed to the degree of a cast-iron shade, becomes permanent, swelling rapidly increases. The diagnosis of primary pulmonary hypertension is established by exclusion. Most often, this diagnosis is pathological. In these patients, the entire clinic progresses without background in the form of obstructive or restrictive breathing disorders. With echocardiography, the pressure in the pulmonary artery reaches its maximum values. Treatment is ineffective, death occurs from thromboembolism.

Additional research methods for cor pulmonale: with a chronic process in the lungs - leukocytosis, an increase in the number of erythrocytes (polycythemia associated with increased erythropoiesis due to arterial hypoxemia). X-ray data: appear very late. One of the early symptoms is a bulging of the trunk of the pulmonary artery on an x-ray. The pulmonary artery is bulging, often flattening the waist of the heart, and many doctors mistake this heart for the mitral configuration of the heart.

ECG: there are indirect and direct signs of right ventricular hypertrophy:

1. deviation of the electrical axis of the heart to the right - $R_3 > R_2 > R_1$, $S_1 > S_2 > S_3$, the angle is more than 120 degrees. The most basic indirect sign is an increase in the interval of the R wave in V1 by more than 7 mm.
2. direct signs - blockade of the right bundle of His bundle, the amplitude of the R wave in V1 is more than 10 mm with complete blockade of the right bundle of His bundle. The appearance of a negative T wave with a displacement of the wave below the isoline in the third, second standard lead, V1-V3.



Spirography is of great importance, which reveals the type and degree of respiratory failure. On ECG, signs of right ventricular hypertrophy appear very late, and if only deviations of the electrical axis to the right appear, then they already speak of pronounced hypertrophy. The most basic diagnostics is Doppler cardiography, echocardiography - an increase in the right heart, an increase in pressure in the pulmonary artery.

PRINCIPLES OF PULMONARY HEART TREATMENT.

Treatment of cor pulmonale consists in treating the underlying disease. With an exacerbation of obstructive diseases, bronchodilators, expectorants are prescribed. With Pickwick's syndrome - obesity treatment, etc.

Reduce the pressure in the pulmonary artery with calcium antagonists (nifedipine, verapamil), peripheral vasodilators that reduce preload (nitrates, corvaton, sodium nitroprusside). Of greatest importance is sodium nitroprusside in combination with angiotensin-converting enzyme inhibitors. Nitroprusside 50-100 mg intravenously, kapoten 25 mg 2-3 times a day, or enalapril (second generation, 10 mg per day). They also use prostaglandin E treatment, antiserotonin drugs, etc. But all these drugs are effective only at the very beginning of the disease.

Heart failure treatment: diuretics, glycosides, oxygen therapy.

Anticoagulant, antiplatelet therapy - heparin, trental, etc. Due to tissue hypoxia, myocardial dystrophy develops rapidly, therefore cardioprotectors (potassium orotate, panangin, riboxin) are prescribed. Cardiac glycosides are prescribed very carefully.

PREVENTION.

The primary one is the prevention of chronic bronchitis. Secondary - treatment of chronic bronchitis.

Lecture 9. Respiratory failure.

Respiratory failure -

The state of the body in which the external respiration system does not provide a normal arterial blood gas composition or its maintenance at a normal level is achieved due to excessive functional stress of this system



Etiology

- * Violation of external respiration
- * Change in diffusion processes
- * Perfusion providing the lungs with blood

Respiratory failure forms

- * Pulmonary
- * Extrapulmonary

Extrapulmonary forms

- * Dysfunction of the central nervous system
- * Nerve - muscular
- * Thoraco-diaphragmatic

Pulmonary forms

- * Obstructive
- * Restrictive
- * Diffuse lung diseases
- * Mixed

2.2. Development of practical exercises

LIST OF PRACTICAL EXERCISES

1 module (20 hours)

№	Practical lesson topic	Hours
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1	Introduction. Characteristics of the main complaints, anamnesis of patients with pathology of the respiratory system. Features of examination and additional research methods in pulmonology. Principles of treatment and prevention of patients with diseases of the respiratory system.	2
2	Bronchial asthma.	2
3	Chronic obstructive pulmonary disease.	2
4	Pneumonia.	2
5	Pleurisy.	2
6	Bronchiectasis.	2
7	Idiopathic fibrosing alveolitis	2
8	Pulmonary heart	2
9	Respiratory failure	2
10	Offset	2
	Total	20
	Total	20

3. Methodological recommendations / instructions for students

3.1. Methodical recommendations for students on the study of the discipline

The study of the theoretical part of the disciplines is designed not only to deepen and consolidate the knowledge gained in the classroom, but also to promote the development of students' creative skills, initiative and organize their time.



The material outlined in the lectures must be regularly worked out and supplemented with information from other sources of literature, presented not only in the discipline program, but also in periodicals.

When studying the discipline, you must first read the recommended literature for each topic and make a short synopsis of the main provisions, terms, information that require memorization and are fundamental in this topic for mastering the subsequent topics of the course. To expand knowledge of the discipline, it is recommended to use Internet resources; conduct searches in various systems and use materials from sites recommended by the teacher.

Each student maintains a workbook, the design of which must meet the requirements, the main of which are as follows:

- indicate the subject, course, group, surname, name, patronymic of the student on the title page;
- each work is numbered in accordance with the methodological instructions, indicate the date of the work;
- completely write down the name of the work, the purpose and principle of the method, briefly characterize the progress of the task and the object of research;
- if necessary, provide a graphic image; the results of the assignments are presented in the form of graphic images with obligatory signatures to them, as well as tables or described verbally;
- at the end of each work, a conclusion or conclusion is made, which are discussed when summing up the results of the lesson.

All primary entries must be made in a notebook in the course of completing tasks.

To check the student's academic activity and the quality of the student's work, the teacher periodically checks the workbook.

The material outlined in the lectures must be regularly worked out and supplemented with information from other sources of literature, presented not only in the discipline program, but also in periodicals.

When studying the discipline, you must first read the recommended literature for each topic and make a short synopsis of the main provisions, terms, information



that require memorization and are fundamental in this topic for mastering the subsequent topics of the course. To expand knowledge of the discipline, it is recommended to use Internet resources; conduct searches in various systems and use materials from sites recommended by the teacher.

3.2. Methodical recommendations for the implementation of practical / seminar classes, laboratory work.

Practical classes are held after lectures, and are of an explanatory, generalizing and reinforcing nature. They can be held not only in the classroom, but also outside the educational institution.

In the course of practical training, students perceive and comprehend new educational material. The practice sessions are systematic, regularly following each lecture or two or three lectures.

Practical lessons are carried out according to the schedule of the educational process and independent work of students in disciplines.

When preparing for practical training, it is necessary to study in advance the methodological recommendations for its implementation. Pay attention to the purpose of the lesson, to the main questions for preparing for the lesson, to the content of the topic of the lesson.

Before each practical lesson, the student studies the plan of the seminar with a list of topics and questions, a list of references and homework based on the material presented to the seminar. The student is recommended the following scheme of preparation for the seminar:

1. work out the lecture notes;
2. read the basic and additional literature recommended for the studied section;
3. answer the questions of the plan of the seminar lesson;
4. study the topic and select literature for writing abstracts, reports, etc .;

3.3. Methodical recommendations for the implementation of independent work.



When studying the discipline "Pulmonology", the following types of independent work of students are used:

- study of theoretical material based on lecture notes and recommended teaching aids, educational literature, reference sources;
- independent study of some theoretical issues not considered in the lectures, with writing abstracts, preparing presentations;

Students are offered for reading and meaningful analysis of monographs and scientific articles on public health problems. The results of working with texts are discussed in practical lessons.

To develop the skills of independent work, students complete tasks, independently referring to educational, reference and scientific-methodological literature.

Checking the fulfillment of tasks is carried out both in practical classes with the help of oral presentations of students and their collective discussion, and with the help of written independent work.

Section 1.4.2 contains topics for self-study of theoretical material, an assignment for each topic, deadline for work, educational literature.

Section 1.4.3. the topics for writing the abstract are indicated.

Section 2.2. assignments, tasks and exercises are given for each topic of the course. A list of literature required for self-preparation is provided.

Independent work contributes to the development of such necessary skills in the student as the choice and solution of the task, the collection and analytical analysis of published data, the ability to highlight the main thing and make a well-founded conclusion.

3.3. Methodological instructions for the implementation of abstracts, reports, essays

Abstract - a summary in writing of the content of scientific work on the topic provided. This is an independent research work, where the student reveals the essence of the problem under study with elements of analysis on the topic of the abstract.



Provides various points of view, as well as his own views on the problems of the topic of the abstract. The content of the abstract should be logical, the presentation of the material should be worn

problematic and thematic in nature.

Requirements for abstract design:

The volume of the abstract can range from 9-10 printed pages.

Main sections: table of contents (plan), introduction, main content, conclusion, list of references.

The abstract text should contain the following sections:

- title page indicating: the name of the university, department, topic of the abstract, full name of the author and full name of the teacher

- introduction, relevance of the topic.
- main section.
- conclusion (analysis of literary search results); conclusions.
- the list of literary sources must have at least 10 bibliographic titles, including network resources.

The textual part of the abstract is drawn up on a sheet of the following format:

- top margin - 2 cm; left indent - 3 cm; indent on the right - 1.5 cm; bottom margin - 2.5 cm;
- text font: Times New Roman, font height - 14, space - 1.5;
- page numbering - from the bottom of the sheet. There is no number on the first page.

The essay must be completed correctly in compliance with the culture of presentation. There must be references to the literature used, including periodicals for the last 5 years.

Abstract evaluation criteria:



- relevance of the research topic;
- correspondence of the content to the topic;
- depth of elaboration of the material;
- the correctness and completeness of the development of the questions raised;
- the significance of the conclusions for further practical activities;
- the correctness and completeness of the use of literature;
- compliance of the abstract design with the standard;
- the quality of the message and answers to questions when defending the abstract.

3.4. Methodical instructions for preparation for the final certification.

Final certification in the form of a credit in the discipline "Public health" is carried out based on the results of attending classes, current and midterm (modular) control.

In this regard, for the successful passing of the final control, it is recommended to attend all classes and actively participate in classroom studies and the student's independent work.

All modules are carried out according to a modular schedule. The tests themselves have three sections: exam, module and training regimen. The exam and the module are available on schedule, the training mode is available on the electronic educational platform www.test.edu.kg, where students can practice solving tests online.

Methodological materials are also placed on the electronic educational platform www.test.edu.kg. Each student has his own ID number and password to enter this platform. The student has the ability to log into the system both from a computer, from a tablet and from a phone, select a discipline and, for each topic of the selected discipline, view the necessary training materials, lecture notes (in PPT or PDF format), and complete a test task (MCQ).



3.6. Methodical recommendations for the student's research work.

The purpose of the research work is to develop the intellectual abilities of students by studying the algorithm of scientific research and gaining initial experience in the implementation of a research project on the educational material of the chosen specialty.

The main tasks and results of the implementation of scientific research work are:

- mastering scientific methods of cognition and deepening the theoretical knowledge of students in the specialty;
- mastering modern methods of scientific research;
- development of students' practical skills of independent search for scientific and technical information, conducting theoretical and / or experimental work;
- the acquisition by students of the ability to analyze the results of research, formulate conclusions and recommendations;
- development of students' ability for independent, creative, vigorous activity in continuous renewal and enrichment of scientific baggage.

When performing NIRS, you must learn the following basic steps:

- independent search for information on a given topic;
- selection of essential information necessary for full coverage of the problem under study, separation of this information from secondary (within the framework of this topic);
- analysis and synthesis of knowledge and research on the problem;
- generalization and classification of information on research problems;
- logical and consistent disclosure of the topic;
- generalization of psychological knowledge on the problem and the formulation of conclusions from the literature review of the material;
- stylistically correct design of a scientific thought of an abstract type;
- competent design of scientific abstract text;



- correct design of scientific work.

List of teaching materials for the lessons.

1. Phonograms with recording:

- a) "Basic and additional breathing sounds"
- b) "Heart sounds in norm and pathology"
- c) "Murmurs of the heart"

2. Sets of tables:

- a) "Pulmonary syndromes"

3. Sets of ECG and PCG.

4. Sets of results of laboratory and biochemical studies: blood test, urinalysis, analysis of gastric juice, duodenal intubation, biochemical indicators of liver function, etc.

5. Sets of slides:

- a) "General inspection"
- b) "Respiratory organs"

6. Sets of photos by topic:

- a) examination of the patient,
- b) palpation, percussion, chest auscultation

In order to optimize the educational process and familiarize students with a number of modern functional and instrumental studies, the material and technical capabilities of the structural diagnostic units of the university are used.

4. GLOSSARY

Breathing (Respiration) - the process of gas exchange between the body and the environment. Breathing is aimed at the destruction of organic substances in order to obtain the energy necessary for the vital activity of organisms.



Denitrification is an energetic process of oxidation by microorganisms of organic substances under anaerobic conditions, in which the oxidant is not free oxygen, but nitrates, nitrites and sulfates.

Anoxia (from Latin Oxigenium - oxygen) is a condition in which the body is not sufficiently supplied with oxygen due to dysfunctions of the respiratory system.

Asphyxia - cessation of breathing, choking caused by oxygen starvation and excess carbon dioxide in the blood.

Aeration - natural or artificial ventilation, saturation with air, oxygen.

Aerobiont - in a broad sense - an organism that breathes the air of the troposphere.

Aerobiont - in the narrow sense - an organism-inhabitant of the aerobiosphere of water droplets of the lower layers of the atmosphere.

Aerobic respiration is the biochemical oxidation of organic matter in the presence and expense of molecular oxygen.

External respiration is a set of physicochemical and physiological processes occurring in the body, during which the supply of oxygen and the removal of carbon dioxide is ensured.

Gas exchange - the movement and change in the composition of gases inside the body, during which:

- when breathing - oxygen is taken from the consumed gas mixtures of the atmosphere and carbon dioxide, a lot of minor gas impurities, inert nitrogen and water vapor are released;
- with gas feeding of plants - carbon dioxide is taken in and oxygen is released.

Hypercarp is a painful condition caused by an increased content of carbon dioxide in the inhaled air, which causes its high partial pressure in the arterial blood.

Hypocapnia is a reduced content and partial pressure of carbon dioxide in arterial blood. Hypocapnia is observed when breathing air with a reduced content of carbon dioxide or pure oxygen. Hypocapnia causes shortness of breath.

Hypoxia is a low oxygen content in the tissues of the body, observed with a lack of oxygen in the air, some diseases and poisoning.



Human breathing is a set of human respiratory movements. In humans, chest, mixed and abdominal types of breathing are distinguished. At the same time, there is some difference in breathing between men and women. Men are characterized by "low" breathing, close to the abdominal one. Women breathe more "high" and their breathing is closer to the chest type.

The respiratory system is a collection of specialized organs and tissues that provide:

- 1- intake of oxygen from the environment into the body;
- 2- its use in biological oxidation; and
- 3- removal of the oxidation product (carbon dioxide) from the body.

The human respiratory system consists of a pair of lungs located in the chest cavity, and several air tubes that connect them with atmospheric air.

Cell respiration (Tissue respiration; Cells respiration; Internal respiration) is a set of physical, chemical and physiological processes in the body, during which the use of oxygen by cells and tissues is ensured for the oxidation of organic substances with the release of energy necessary for their vital activity. In multicellular animals and humans, cellular respiration is provided by blood.

5. Reference materials and applications - indicated as necessary.

Change registration sheet

№	Document (order, order, etc., indicating the number and date), which reflects the changes	Sign	Full name (sign)



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