DESCRIPTION OF COURSE UNIT FOR DOCTORAL STUDIES AT VILNIUS UNIVERSITY

Scientific Area/eas, Field/ds of Science	Medical and Health Sciences (M 000): Medicine (M 001)			
Faculty, Institute, Department/Clinic	Faculty of Medicine Institute of Clinical Medicine Clinic of Chest Diseases, Immunology, and Allergology			
Course unit title (ECTS credits, hours)	**Respiratory Functional System, Obstructive and Vascular Diseases of the Lungs** 9 credits (240 hours)			
Study method	**Lectures**	**Seminars**	**Consultations**	**Self-study**
Number of ECTS credits	-	-	2	7
Method of the assessment (in 10 point system)	The study of the subject is completed with an exam. The exam is written. It consists of 5 questions. The value of one question is up to 2 points (inclusive). Exam duration - 1 hour. 15 min. The minimum pass score is 5.			

PURPOSE OF THE COURSE UNIT

To familiarize the doctoral student with and help to understand the normal functioning of the respiratory system and in case of various lung diseases. To familiarize with the clinical, radiological, and laboratory manifestations of obstructive and vascular diseases of the lungs. To provide knowledge about the origin, causes, risk factors, pathogenesis, histological manifestation, and biological properties of obstructive and vascular lungs diseases, pathological physiology, modern research methods. To help learn how to diagnose, treat and prevent these diseases.

THE MAIN TOPICS OF COURSE UNIT

General part. Fundamentals of respiratory physiology and pathological physiology.
Lung ventilation. Normal lung ventilation. Regulation of airway smooth muscle tone: parasympathetic and sympathetic nervous system. Bronchial obstruction, its causes, types, severity. Increased bronchial reactivity. Bronchial obstruction evaluation methods. Bronchial provocative tests.
Examination of lung capacities and volumes. Causes and severity of lung restriction. Clinical interpretation of lung capacities and volumes test results.
Pulmonary circulation. Normal pulmonary circulation: a) pulmonary artery system, b) bronchial artery system. Volume of blood circulating in the pulmonary and bronchial arteries. Bronchial vascular networks. Area of pulmonary capillaries, arteries, arterioles, venules, and veins. Factors interfering with pulmonary perfusion. Pulmonary vascular pressure, methods of their determination. Gas metabolism in the lungs. Alveolocapillary diffusion. Alveolar ventilation to perfusion ratio. Local and systemic effects of hypoxaemia. Causes and etiological classification of pulmonary hypertension. Classification of the severity of pulmonary hypertension. Pathogenesis of pulmonary hypertension, role of endothelial dysfunction. Histological changes in pulmonary vasculature in pulmonary hypertension. Noninvasive and invasive diagnostic methods for pulmonary hypertension.
Evaluation of diffusion capacity of the lungs. Alveolocapillary membrane. Normal gas diffusion in the lungs. Causes and severity of gas diffusion impairment. Investigation of diffusion capacity of the lungs.
Examination of physical capacity (cardiopulmonary test). Indications, contraindications, clinical interpretation of test results.
PEF-metry. Indications, clinical interpretation of test results.

Examination of arterial blood gases. Indications, clinical interpretation of test results.
Polysomnography. Indications, clinical interpretation of test results.
Chronic obstructive pulmonary disease. Definition. Prevalence of the disease. Risk factors. Histological changes and pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria and differential diagnosis. Diagnostic criteria. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Bronchial asthma. Definition. Prevalence of the disease. Risk factors. Histological changes and pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria and differential diagnosis. Diagnostic criteria. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Sleep apnea. Definition. Types. Prevalence of the disease. Risk factors. Histological changes and pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria and differential diagnosis. Diagnostic criteria. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Primary pulmonary hypertension. Definition. Prevalence of the disease. Risk factors. Histological changes and pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria and differential diagnosis. Diagnostic criteria. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Pulmonary embolism. Definition. Prevalence of the disease. Risk factors. Histological changes and pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria and differential diagnosis. Diagnostic criteria. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring. Prevention.

RECOMMENDED LITERATURE SOURCES

1. Jurevičienė E, Burneikaitė G, Dambrauskas L, Kasiulevičius V, Kazėnaitė E, Navickas R, Puronaitė R, Smailytė G, Visockienė Ž, Danila E. Epidemiology of Chronic Obstructive Pulmonary Disease (COPD) Comorbidities in Lithuanian National Database: A Cluster Analysis. Int J Environ Res Public Health 2022; 19: 970.
2. Ragaišienė G, Kibarskytė R, Gauronskaitė R, Giedraitytė M, Dapšauskaitė A, Kasiulevičius V, Danila E. Diagnosing COPD in primary care: what has real life practice got to do with guidelines? Multidiscip Respir Med 2019; 14: 28 (1-7).
3. Ariel A, Altraja A, Belevskiy A, Boros PW, Danila E, Fležar M, Koblizek V, Fridlender ZG, Kostov K, Krams A, Milenkovic B, Somfay A, Tkacova R, Tudoric N, Ulmeanu R, Valipour A. Inhaled therapies in patients with moderate COPD in clinical practice: current thinking. Int J COPD 2018; 13: 45–56.
4. West JB, Luks AM. Respiratory physiology. The Essentials. 9th ed. Wolters Kluwer, 2017.
5. Broaddus VC, Mason RJ, Ernst JD, King TE, Lazarus SC et al. Murray and Nadel's textbook of respiratory medicine, 6th ed. Elsevier, Inc., 2016.
6. Weinberger SE, Cockrill BA, Mandel J. Principles of pulmonary medicine, 7th ed. Elsevier, 2019.
7. Landsberg JW. Manual for pulmonary and critical care medicine. Elsevier. 2018.
8. Konstantinides SV, Meyer G, Becattini C, Bueno H, Geersing G-J et al. 2019 ESC Guidelines for the diagnosis and management of acute pulmonary embolism developed in collaboration with the European Respiratory Society (ERS). Eur Heart J 2020; 41: 543–603.
9. https://goldcopd.org/
10. https://ginasthma.org/

CONSULTING LECTURERS
1. Coordinating lecteurer: Edvardas Danila (Prof. Dr. HP).
2. Rolandas Zablockis (Assoc. Prof. Dr.).
3. Virginija Šileikienė (Assoc. Prof. Dr.).
APPROVED:
By Council of Doctoral School of Medicine and Health Sciences at Vilnius University: 29th of September 2022
Chairperson of the Board: Prof. Janina Tutkuvienė