

**DESCRIPTION OF COURSE UNIT FOR DOCTORAL STUDIES
AT VILNIUS UNIVERSITY**

Scientific Area, Field of Science	Medical and Health Sciences (M 000): Medicine (M 001)			
Faculty, Institute, Department/Clinic	Medical Faculty Institute of Clinical Medicine Clinic of Children's Diseases			
Course unit title (ECTS credits, hours)	Paediatric Pulmonology 8 credits (216 hrs)			
Study method	Lectures	Seminars	Consultations	Self-study
Number of ECTS credits	-	-	2	6
Method of the assessment (in 10 point system)	<p>The student should prepare a short presentation of a review of the literature and some simulation research project on the earlier selected topic of paediatric pulmonology. The presentation is based on a focus topic agreed upon with the coordinator of the course of Paediatric Pulmonology.</p> <p>Assessment criteria for the presentation (minimum score 5): (a) Relevance and novelty of the material presented (1 point); (b) Overall structure and scope of the presentation, style of presentation, argumentation, and concreteness (2 points); (c) Raising and justifying problematic issues (2 points); (d) Ability to produce a summary, formulate a hypothesis, develop a research plan and justify it (3 points); (e) Presentation of visual material, ability to participate in discussion, answering questions (2 points).</p>			
PURPOSE OF THE COURSE UNIT				
<p>The anatomical and physiological peculiarities of the respiratory system in children, the development of the respiratory system in the intrauterine and postnatal periods, with special emphasis on the early postnatal period, the examination of the respiratory function of children at different ages (spirometry, exercise samples, inert gas leakage, NO in exhaled air), the respiratory radiological examination, and the ultrasonographic examination are all studied, bronchoscopy and other methods of invasive pulmonology, the basics of paediatric thoracic surgery, the relationship of the respiratory system to other vital systems of the child's body in normal and diseased conditions, emergency care, problem-oriented diagnosis of paediatric lung diseases, evidence-based principles of prophylaxis, differential diagnosis and treatment of paediatric respiratory diseases.</p>				
THE MAIN TOPICS OF COURSE UNIT				
<p>The intrauterine period of respiratory development, the timing of differentiation of the different parts of the respiratory system, critical periods of development. Postnatal development of the respiratory system, alveolisation of the lungs. Factors influencing the development of the respiratory system (passive and active smoking, environmental pollution, infection, oxygen starvation, thermo- and barotrauma, etc.). Maturity of the surfactant system, diseases caused by surfactant deficiency and fuccal maturity. Gas metabolism in the prenatal and postnatal period. Alkaline-acid balance and methods of its assessment. Acute respiratory failure, first aid, treatment. Resuscitation of neonates and older children. Intubation of children of different ages. Types of artificial lung ventilation, indications, techniques. Neonatal asphyxia. Neonatal pneumonia, respiratory distress syndrome. Chronic neonatal</p>				

lung disease. Congenital anomalies of the airways (tracheomalacia, bronchomalacia, oesophagogastric fistula, vascular rings, etc.). Chest X-ray, computed tomography in children of different ages. Bronchoscopy, bronchoalveolar lavage, transbronchial biopsy, lung echoscopy and other instrumental tests. Pleural puncture, pleural drainage. Chloride test in sweat. Measurement of basal nasal potentials. Genetic testing in pulmonology, common genetic syndromes in paediatric pulmonology. Pulmonary function testing. Screening for congenital diseases with respiratory impairment in the neonatal period. Acute rhinitis, tonsillitis, sinusitis, otitis. Sinobronchial reflex. Allergic and infectious rhinitis, their classification, assessment of severity. Aetiology and differential diagnosis of obstructive upper respiratory tract diseases: obstructive laryngitis, epiglottitis, bacterial tracheitis. Acute viral respiratory infection, influenza and its complications.

Differential diagnosis of acute lower airway obstruction: exacerbation of bronchial asthma, obstructive bronchitis, bronchiolitis, foreign body in airways. Bronchial asthma and its phenotypes, endotypes, diagnosis in children of different ages, assessment of severity, exacerbation and long-term stepwise treatment. Specific immunotherapy, biological therapy. Post-infectious and other aetiologies of bronchiectasis syndrome. Differential diagnosis and treatment of persistent and chronic cough in children. Psychogenic causes of cough (cough tic, vocal cord dysfunction, etc.). Lung and mediastinal tumours, thymic hyperplasia. Pneumoconioses. Interstitial lung disease. Drowning, chest compression syndrome, poisoning by smoke and other combustion products. Primary and secondary mucociliary clearance failure. Pulmonary pathology in neuromuscular degenerative diseases, collagenoses. Gastroesophageal reflux disease. Pulmonary pathology in congenital and acquired heart diseases. Primary pulmonary hypertension. Alpha 1 antitrypsin deficiency. Pulmonary pathology in sepsis of various aetiologies.

Acute community-acquired pneumonia, its aetiology in children of different ages, diagnosis, severity assessment, indications for hospitalisation, home and hospital treatment algorithms, rational antibiotic therapy. Complications of pneumonia. Hospital-acquired pneumonia. Pleurisy, empyema. Respiratory tuberculosis, its forms, diagnosis, treatment, specific prophylaxis. Extrapulmonary tuberculosis. Chronic suppurative diseases of the respiratory system: cystic fibrosis, bronchiectasis, primary ciliary dyskinesia. Congenital and acquired immunodeficiencies and lung diseases. Aetiology, diagnosis, exacerbation and long-term treatment of cystic fibrosis. Basics of oxygen therapy. Indications for invasive and non-invasive long-term therapy, principles of home treatment. Fundamentals of paediatric thoracic surgery, acute respiratory haemorrhage, indications for surgical treatment of respiratory diseases. Indications for bronchial and pulmonary parenchymal biopsies, techniques and methods of collection. Transplantation of the lung and lung-heart complex in children - indications, donor and recipient selection, post-operative care. Fundamentals of high altitude pulmonology. Sport and lung disease. Clinical pharmacology of antibiotics, antiasthmatic and other drugs for pulmonary diseases

RECOMMENDED LITERATURE SOURCES

1. Lietuvos Sveikatos apsaugos ministerijos vaikų ligų diagnostikos ir gydymo protokolai (2015 redakcija, protokolų kūrimo grupės vadovas Valiulis A.) <http://sam.lrv.lt/diagnostikos-gydymo-metodikos-ir-rekomendacijos/diagnostikos-ir-gydymo-protokolai>.
2. European Master Course in Paediatrics / Eds: Tenore A, Levene M) – Edinburgh: Churchill Livingstone, 2011. – 815 p.

3. Lietuvos vaikų tuberkuliozės diagnostikos, gydymo ir kontrolės sutarimas. Įrodymais pagrįstos metodinės rekomendacijos gydytojams ir slaugos specialistams / Red.: Valiulis A. – Vilnius: VU leidykla, 2011. – 72 p.
4. Lietuvos cistinės fibrozės diagnostikos ir gydymo sutarimas. Įrodymais pagrįstos metodinės rekomendacijos gydytojams ir slaugos specialistams / Red.: Valiulis A. – Vilnius: Vilniaus universiteto leidykla, 2011. – 70 p.
5. Imaging of the diseases of the chest / Eds: Armstrong P, Wilson AG, Dee P, Hansell DM. – London: Mosby, 2002. – 1039 p.
6. Kending's disorders of the respiratory tract in children / Eds: Chernick V, Boat TF, Wilmott RW, Bush A. – Philadelphia: Saunders Elsevier, 2006. – 1110 p.
7. Pediatric Pulmonology. Policy of American Academy of Pediatrics / Ed: Light MJ. – Chicago: AAP Publ., 2011. – 1181 p.
8. ERS Handbook in Paediatric Respiratory Medicine / Eds: Eber E., Midulla F. – Lousane: European Respiratory Society Publ., 2013. – 720 p.
9. Comprehensive Pediatric Hospital Medicine / Eds: Zaoutis LB, Chiang VW. – Philadelphia: Mosby Elsevier, 2007. – 1350 p.
10. American Academy of Pediatrics Textbook of Pediatric Care. 1st ed./ Eds: McInerny TK, Adam HM, Campbell DE, Kamat DK, Kelleher KJ. – Elk Grove Village: AAP Publ., 2009. – 2935 p.

CONSULTING LECTURERS

1. Coordinating lecturer: Arūnas Valiulis (Prof. Habil. Dr.).

2. Sigita Petraitienė (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