Federal State Autonomic Educational Institution of Higher Education
«Peoples' Friendship University of Russia»

Medical Institute

Recommended MCSD

ACADEMIC COURSE WORKING PROGRAM

Course name

Topical issues of neonatology

Recommended for the direction of training (specialty)

31.05.01 General Medicine

Program (profile, specialization)

General Medicine

1. Aims and objectives of discipline:

Aims of the discipline:

training of qualified doctors with theoretical and practical knowledge, skills and competence in the field of diagnostics, emergency care, management, clinical examination and prevention of the most common neonatal diseases and also with the capability and willingness for independent professional activities.

Objectives of the discipline:

- Improvement of the professional training of doctors in the field of neonatology.
- Preparation of doctors with the skills of providing medical care for newborns in the outpatient and day hospital settings, emergency care.
- Improving the system of special knowledge and skills in the field of neonatal diseases prevention.

2. Place of discipline in the structure of OP HE:

Discipline ***Topical issues of neonatology*** refers to the variable part of Block 1 of discipline (modules) and is an elective.

Table №1 given preceding and following discipline aimed at forming competence discipline in accordance with the matrix competences OP HE.

Table 1. Preceding and following the discipline aimed at creating competencies

№ п/п	Code and title of competence	Precceding disciplines	Following disciplines
Professional Competences (type of professional activity medical activity)			
1	PC-2 Being able to examine a patient in order to determine a diagnosis	Biology, normal physiology, microbiology, virology, developmental physiology and anatomy, medical enzymology, introduction to nutrition, topographic anatomy, operative surgery, immunology, pathophysiology, clinical pathophysiology, dermatovenereology, neurology, medical genetics, neurosurgery, occupational diseases, general and faculty surgery, obstetrics and gynecology	Polyclinic therapy, hospital, pediatric surgery, urology, oncology, radiation therapy
2	PC-3 Being able to prescribe treatment and monitor its efficacy and safety	Pathological anatomy, topographical anatomy, operative surgery, dermatovenereology, neurology, medical genetics, neurosurgery, otorhinolaryngology, ophthalmology, forensic medicine, internal diseases	Disaster medicine, hospital therapy, oncology, radiation therapy, topical issues of neonatology

		propedeutics, faculty therapy, phthisiology, occupational diseases, general and faculty surgery, dentistry, urology, obstetrics and gynecology.	

3. Requirements to results of development of discipline:

The process of studying the discipline is aimed at the formation of the following competencies:

Competences	**Name**	**Achievement Indicator Code and Name**
PC-2	Being able to examine a patient in order to determine a diagnosis	PC-2.2. Being able to make a preliminary diagnosis and make up a plan of laboratory and instrumental examinations of a patient. PC-2.7. Being able to carry out differential diagnosis with other diseases/conditions, including the urgent ones, as well as to make a diagnosis taking into account the current international statistical classification of diseases and problems related to health (ICD).
PC-3	Being able to prescribe treatment and monitor its efficacy and safety	PC-3.1. Being able to develop a treatment plan for a disease or condition taking into account the diagnosis, age and clinical picture in accordance with the current procedures for the provision of medical care, clinical guidelines (treatment protocols) on the provision of medical care taking into account the standards of medical care. PC-3.2. Being able to prescribe medicinal drugs, medical devices and medical nutrition taking into account the diagnosis, age and clinical picture of the disease and in accordance with the current procedures for the provision of medical care, clinical guidelines (treatment protocols) on the provision of medical care taking into account the standards of medical care.

As a result of study of discipline a student must:

Know:

- the principles of the functioning of the body in neonates and mechanisms for ensuring health from the standpoint of the theory of functional systems;
- risk factors for disease in neonates;

- the essence of the methods of research of various functions in neonates to assess the state of health, the basic principles and the role of the causes, conditions and reaction of the body in the occurrence of diseases;
- causes, mechanisms of development, manifestation of the pathological processes underlying diseases in neonates;
- etiology, pathogenesis and pathology, main manifestations, outcomes of pulmonary diseases in neonates;
- methodological foundations of medicinal and non-medicinal methods for the prevention and treatment of pulmonary diseases in neonates;
- modern principles of treatment of pulmonary diseases in neonates.

Be handy at:

- applying the principles of evidence-based medicine when conducting preventive measures for diseases in neonates;
- giving recommendations on the correction of risk factors for diseases in neonates;
- providing emergency medical care such as first pre-hospital medical care in case of emergency and life-threatening conditions in neonates;
- evaluating and explaining of the basic principles of the development and regulation of the physiological functions of the neonates in the process of their vital activity;
- evaluating and explaining of the age characteristics of the body of the neonates and their functional systems;
- explaining of the general questions of nosology, including etiology, pathogenesis and morphogenesis;
- understanding of the role of pathological processes in the development of diseases of neonates with different etiologies and pathogeneses;
- using of the theoretical foundations of medicinal and non-medicinal methods for neonatal diseases prevention and treatment.
- organizing of the neonatal pulmonary diseases prevention;
- conducting of early diagnostics based on clinical symptoms and syndromes, differential diagnosis, assess the severity of neonates condition, determining the indications for hospitalization;
- determining of the amount and sequence of special diagnostic measures, assessing of their results;
- making and justifying of therapeutic procedures plan;
- understanding of the need for the participation of other specialists in the complex treatment of neonates.

Manage:

- the methods of assessing the newborns condition depending on the Apgar score, physical development centile tables;
- the basic principles of primary resuscitation care for newborns;
- the procedure for providing medical care to newborns;
- the assessment newborn maturity rating and the criteria for body birth weight;
- the newborns sucking technique and feeding methods for full-term and premature newborns;
- the determining of neonatal risk groups for different pathology;
- the tactics of organizing medical care for newborns depending on the disease;
- the interpretation of the laboratory and instrumental diagnostic methods results depending on the age features of newborns;
- the diagnostic algorithm in newborns;
- the main medical diagnostic and therapeutic procedures for providing medical care for newborns in a polyclinic and day hospital;
- the main medical diagnostic and therapeutic procedures for providing first medical aid in emergency and life-threatening conditions in newborns.

4. Volume of discipline and types of study

General credit value of the discipline is 2 credit units.

Type of study load	Total hours	Semesters
		9
Class hours (total)	72	72
Include:	-	-
Lectures		
Practical training (PT)	36	36
Seminars (S)		
Laboratory research (LR)		
Independent work (total)	36	36
Total labor input hours	72	72
Credit Unit	2	2

5. Content of the discipline

5.1. The content of the discipline sections

1. Introduction to neonatology. Basic concepts of neonatology. Perinatal history. Neonatal risk groups.

Anatomical and physiological features and methods of medical examination of neonates.

Adaptation of the newborn (borderline, transient states).

Neonatal screening.

Gestational age and its evaluation. Causes of prematurity, anatomical and physiological features of premature newborns. Typical pathology. Features of premature babies nursing and feeding. Consequences of prematurity and low birth weight.

2. Perinatal pathology of the nervous system and birth injury.

Perinatal asphyxia, hypoxic-ischemic encephalopathy and its consequences. Etiology. Pathogenesis. Diagnostic criteria. Classification. Apgar score. Clinical picture. Hypoxic-ischemic encephalopathy (HIE). Sarnat classification. Features of hypoxic brain damage in prematurity (intraventricular hemorrhage, periventricular leucomalacia). Therapy. Primary resuscitation of newborns. Prognosis. Consequences of HIE.

Birth injury. Etiology. Pathogenesis. Birth injury to the skin and subcutaneous fat, musculoskeletal system, internal organs, central (brain, spinal cord) and peripheral nervous system. Diagnostics. Therapy. Prevention. Prognosis. The consequences of traumatic perinatal lesions of the nervous system.

3. Diseases associated with metabolic disorders.

Neonatal jaundice (hyperbilirubinemia). Peculiarities of bilirubin metabolism in newborns. Indirect hyperbilirubinemia (hemolytic disease of the newborn and other hemolytic anemias, conjugation hyperbilirubinemia) and its complications (kernicterus). Direct hyperbilirubinemia. Protracted jaundice. Etiology. Pathogenesis. Classification. Clinical picture. Diagnostics. Therapy. Prevention. Prognosis.

Hemorrhagic disease of the newborn. Etiology. Pathogenesis. Clinical picture. Diagnostics. Therapy. Prevention. Prognosis.

4. Neonatal pulmonology.

Respiratory diseases in newborns. Respiratory distress syndrome of newborns. Bronchopulmonary dysplasia (BPD). Congenital pneumonia. Causes. Frequency. Etiology. Classification. Pathogenesis. Clinical picture. Diagnostic criteria. Differential diagnosis. Therapy. Prevention.

5. Perinatal infections.

Localized purulent-inflammatory diseases of the newborn. Clinical forms of localized infections (infections of the skin and subcutaneous fat, omphalitis, conjunctivitis). Predisposing factors. Etiology. Epidemiology. Classification. Pathogenesis. Clinical picture. Diagnostics. Diagnostic criteria. Therapy. Prognosis. Prevention.

Neonatal sepsis. Predisposing factors. Etiology. Epidemiology. Classification. Pathogenesis. Clinical picture. Diagnostics. Diagnostic criteria. Therapy. Prognosis. Prevention.

Congenital (intrauterine) infections. Congenital infections: toxoplasmosis, rubella, syphilis, cytomegalovirus and herpes infections. Etiology. Classification. Pathogenesis. Clinical picture. Diagnosis and differential diagnosis. Therapy. Prevention. Prognosis.

6. Skin diseases of newborns. Diaper dermatitis. Seborrheic dermatitis. Etiology. Classification. Pathogenesis. Clinical picture. Diagnosis and differential diagnosis. Therapy. Prevention. Prognosis.

5.2. Sections of disciplines and types of classes

9 semester

№ п/п	Name of the section of discipline	*L*	*PC*	*LR*	*S*	Ssgw	Total hours
1.	Introduction to neonatology			6		5	12
2.	Perinatal pathology of the nervous system and birth injury			6		5	12
3.	Diseases associated with metabolic disorders			6		5	12
4.	Neonatal pulmonology			6		5	12
5.	Perinatal infections			6		5	12
6.	Skin diseases of newborns			6		5	12
7.	*Intermediate certification* Credit					6	
	TOTAL			36		36	72

6. Laboratory training (not provided by the curriculum)

7. Practical training (seminars)

№ п/п	№ discipline section	Themes of practical training (seminars)	Workload (hours)
1.	Introduction to neonatology	Basic concepts of neonatology. Perinatal history. Neonatal risk groups. Anatomical and physiological features and methods of medical examination of neonates. Adaptation of the newborn (borderline, transient states).	6

		Neonatal screening. Gestational age and its evaluation. Causes of prematurity, anatomical and physiological features of premature newborns. Typical pathology. Features of premature babies nursing and feeding. Consequences of prematurity and low birth weight.	
2.	Perinatal pathology of the nervous system and birth injury	Perinatal asphyxia, hypoxic-ischemic encephalopathy and its consequences. Etiology. Pathogenesis. Diagnostic criteria. Classification. Apgar score. Clinical picture. Hypoxic-ischemic encephalopathy (HIE). Sarnat classification. Features of hypoxic brain damage in prematurity (intraventricular hemorrhage, periventricular leucomalacia). Therapy. Primary resuscitation of newborns. Prognosis. Consequences of HIE. Birth injury. Etiology. Pathogenesis. Birth injury to the skin and subcutaneous fat, musculoskeletal system, internal organs, central (brain, spinal cord) and peripheral nervous system. Diagnostics. Therapy. Prevention. Prognosis. The consequences of traumatic perinatal lesions of the nervous system.	6
3.	Diseases associated with metabolic disorders	Neonatal jaundice (hyperbilirubinemia). Peculiarities of bilirubin metabolism in newborns. Indirect hyperbilirubinemia (hemolytic disease of the newborn and other hemolytic anemias, conjugation hyperbilirubinemia) and its complications (kernicterus). Direct hyperbilirubinemia. Protracted jaundice. Etiology. Pathogenesis. Classification. Clinical picture. Diagnostics. Therapy. Prevention. Prognosis. Hemorrhagic disease of the newborn. Etiology. Pathogenesis. Clinical picture. Diagnostics. Therapy. Prevention. Prognosis.	6
4.	Neonatal pulmonology	Respiratory diseases in newborns. Respiratory distress syndrome of newborns. Bronchopulmonary dysplasia (BPD). Congenital pneumonia. Causes. Frequency. Etiology. Classification. Pathogenesis. Clinical picture. Diagnostic criteria. Differential diagnosis. Therapy. Prevention.	6
5.	Perinatal infections	Localized purulent-inflammatory diseases of the newborn. Clinical forms of localized infections (infections of the skin and subcutaneous fat, omphalitis, conjunctivitis). Predisposing factors. Etiology. Epidemiology. Classification. Pathogenesis. Clinical picture. Diagnostics. Diagnostic criteria. Therapy. Prognosis. Prevention. Neonatal sepsis. Predisposing factors. Etiology.	6

		Epidemiology. Classification. Pathogenesis. Clinical picture. Diagnostics. Diagnostic criteria. Therapy. Prognosis. Prevention. Congenital (intrauterine) infections. Congenital infections: toxoplasmosis, rubella, syphilis, cytomegalovirus and herpes infections. Etiology. Classification. Pathogenesis. Clinical picture. Diagnosis and differential diagnosis. Therapy. Prevention. Prognosis.	
6.	Skin diseases of newborns	Diaper dermatitis. Seborrheic dermatitis. Etiology. Classification. Pathogenesis. Clinical picture. Diagnosis and differential diagnosis. Therapy. Prevention. Prognosis.	6

8. Material and technical support of the discipline:

№ п/п	Address № of classes	Material and technical support
1	Moscow, Miklukho-Maklaya st., 10 k.2 Room № 455 Room № 155	Educational posters, moulage and tables; A set of video films (CD, DVD), multimedia presentations; A set of analog and digital radiographs, tomograms. Training defibrillator PROFI-AED-02 (Training electronic simulator) Document cupboards A-310, walnut, locked ECG device "KENZ-1203" Computerized wearable blood pressure and pulse rate monitor "SOYUZ-DMS" MDP-NC-02
2	Children's Infectious Clinical Hospital №6. Moscow, Bolshaya Akademicheskaya st, d.28-2, room 22 room 36	Classrooms for practical trainings, tests and intermediate certification, storage of educational equipment Photocopier XEROX WC 4118p Asus Laptop K52JU (90N1X36W1714RD13AU) 00000706 from 07/27/11 CPU Celeron 2400/256 Mb DDR / GeForce4 MX440 64 / HDD 40Gb 7200 / CD-ROM / LAN / FDD / KB + MOUSE Sch 859 Microtek ScanMaker 3600 scanner (tablet) Educational posters, moulages and tables; A set of video films (CD, DVD), multimedia presentations; A set of analog and digital radiographs, tomograms. SCHILLER CARDIOVIT AT-10 electrocardiograph Pulse oximeter NONIN 8500 Ultrasonic diagnostic scanner SONOACE X8-RUS with accessories Ultrasonic diagnostic scanner MyLab 70 with accessories Ultrasound MicroMaxx with SonoSite MicroMaxx accessories Dash 4000 Patient Monitor with Accessories Ultrasound device Aplio MX with accessories Aplio MX Holter Monitoring System Schiller AD with accessories Electrocardiograph SCHILLER CARDIOVIT CS-200 with a system of long-term Holter monitoring of blood pressure CARDIOLINE AR 2100 electrocardiograph Patient Monitor IntelliVue model MP20 with accessories

		Incubator IDN-03-UOMZ Medical suction vacuum ATMOS C451 Giraffe Omnibed neonatal resuscitation system with Giraffe Omnibed accessories Phototherapeutic irradiator OFN-02-UOMZ Oximeter cerebral / somatic INVOS 5100C with accessories Neonatal monitor with accessories A device for mechanical ventilation Babylog 8000plus with accessories Mattress for warming children Biotherm 5-U Thermotrib with heating for newborns Babe 12-01 Manipulation table 750x580x1020 Little mobile procedural table with 3 shelves Scales B1-15 Sasha Spirotest Lung Capacity Tester Cot for babies with hood Anesthesiologist's table Baby Sanitation Table Negatoscope 3-films A device AGF-02 (Bilitest) Syringe Pump DSh-08 Inhaler AEROMIST Radiant Heat device A device for the treatment of hypothermia of newborns Kanmed Baby Warmer Complex electroencephalographic MBN 20 with accessories Electronic scales SECA CPU Lenovo M72e Tower (NoneES) 3597CTO Samsung monitor S20B300B Perrsonal Printer Samsung ML-3750ND Projector Canon LV-7260
3	Moscow, st. Miklukho-Maklaya d.6 ESILC (Science Library) RUDN	Classrooms for the assessment of term papers, independent study, equipped with computerized equipments and connected to the Internet and with access to EIES: Co-working space, Hall №2, Hall №6

9. Information support of the discipline:

During the entire training period, each student is provided with individual unlimited access to the following electronic library systems:

Databases, reference and search systems:

1. Electronic Library System (ELS) of the RUDN University and third-party ELS, to which university students have access on the basis of concluded contracts:

- Electronic library system of RUDN - ELS RUDN http://lib.rudn.ru/MegaPro/Web
- University Library Online http://www.biblioclub.ru
- ELS Yurayt http://www.biblio-online.ru
- ELS Elibrary http://elibrary.ru
- Student Consultant www.studentlibrary.ru
- ELS "Lan" http://e.lanbook.com/

2. Databases and search engines:

- search engine Yandex https://www.yandex.ru/

- search engine Google https://www.google.ru/
- SCOPUS database http://www.elsevierscience.ru/products/scopus/
- WHO center http://whodc.mednet.ru/

10. Educational and methodical support of the discipline:

а) Main literature

1. Practicum in pediatrics: A manual for students of the 5th year / Edited by D.Yu. Ovsyannikov, M.G. Kantemirova. - M.: RUDN, 2013. - 201 p. - ISBN 978-5-209-05482-5:89.77.

б) Additional literature

1. Pediatric Integrative Medicine: An Emerging Field of Pediatrics, 2015. 1 c. ISBN 9783038420620 URL: http://books.mdpi.com/pdfview/book/121

2. Neonatal and Pediatric Cerebro-Cardiopulmonary Resuscitation / Michael Shoykhet [et al.]. 2018. 1 c. ISBN 9782889456598 URL: https://www.frontiersin.org/research-topics/4942/neonatal-and-pediatric-cerebro-cardio-pulmonary-resuscitation-ccpr

3. Wynn J.L., Bliss J.M.. The Neonatal Immune System: A Unique Host-Microbial Interface, 2018. 1 c. ISBN 9782889454037 URL: https://www.frontiersin.org/research-topics/5017/the-neonatal-immune-system-a-unique-host-microbial-interface

4. Lissauer Tom. Illustrated Textbook of Paediatrics / T. Lissauer, W. Carrol. - Fifth Edition - China : Elsevier, 2017. - 583 p.: il. - ISBN 978-0-7234-3871-7: 6113.30.

11. Guidelines for students on the development of the discipline (module)

For successful mastering of the discipline, students need independent preparation for practical exercises, acquaintance with the recommended basic and additional literature.

To support the educational process and the intensification of independent work of students, an electronic training course "Actual issues of neonatology" is available on in the TEIS, including theoretical material about all sections of the discipline. Questions for self-study are available there too. Access to the e-learning course is possible at any convenient time for the students. Textbooks, educational and methodical manuals of the discipline in electronic form are available on ELS RUDN.

The practical training plan includes:

1. Discussion of the lesson’s topic, determination of the amount of knowledge gained by students in self-training and during the study of the Neonatology section of the Pediatrics discipline. An analysis of the most difficult issues of the studied topic carries out.

2. The solution of cases about current topic (case-method). Clinical cases allow the student to demonstrate interactively the knowledge and skills in working with a virtual patient. The student is invited to analyze the clinical situation described in the case and answer all the questions for this case. The student independently determines the patient management in a particular clinical situation and discusses with the teacher and groupmates possible diagnostic algorithms, treatment and prophylaxis. When solving a case, the student must answer the following questions:

1) Analyze complaints, data of anamnesis, examination, laboratory and instrumental methods of investigation. Highlight the main symptoms and syndromes.

2) Formulate the diagnosis in accordance with the sections of the classification and the International Classification of Diseases.

3) What do you know about the causes, conditions of occurrence and mechanisms of disease development?

4) Determine the diagnostic and therapeutic tactics of patient management.

5) What drug(s) is/are indicated to the patient? Justify.

6) How can the patient / parents / relatives of the patient be trained in case of this disease? List the main preventive measures.

3. Demonstration of patients. During the supervision, a student must understand the skills of dealing with newborns and their parents, collect, analyze and summarize information about the health status of newborns, make a preliminary diagnosis and a final clinical diagnosis based on the obtained data.

4. The current test of knowledge and successful understanding of the discipline is carried out in the form of an oral survey during practical exercises using clinical cases (case method).

The student's out-of-class study allows to master the skills of self-education, self-tutoring, and self-control in preparation for the professional activities of a doctor.

Out-of-class work for the students includes preparation for practical exercises, mastering topics for self-study.

12. Fund of estimated means for the interim assessment of students in the discipline (module)

Materials for assessing the level of development of educational material of the discipline «*Topical issues of neonatology*» (estimated materials), including a list of competencies, indicating the stages of their formation, description of the indicators and criteria of assessment of competencies at different stages of their formation, the description of the scales of assessment, typical assignments, or other materials needed for the assessment of knowledge, skills and (or) experience activities that characterize the stages of formation of competences in the process of development of educational programs, instructional materials, procedures evaluation of knowledge, skills and (or) experience activities that characterize the stages of formation of competences, fully developed and available to students on the page of discipline in TUIS RUDN.

The program is compiled in accordance with the requirements of the FSES HE.

Developers:

Assistant Professor, Department of Pediatrics	Krsheminskaya I.V.
Associate Professor, Department of Pediatrics	Illarionova T.Yu.
Head of the Department of Pediatrics	Ovsyannikov D.Yu.
Head of the Department of Pediatrics	Ovsyannikov D.Yu.
Head of Program	**Radysh I.V.**