**INTERNATIONAL HIGHER SCHOOL OF MEDICINE**

**Department PEDIATRICS**

# SYLLABUS
## Discipline PEDIATRIC HEMATOLOGY

2022-2023 academic year
for students of medical faculty
3 course VI semester, groups ___
0,9 credits (34 h, including auditorial 16 h, independent work – 18 h)


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The Syllabus is considered
at the meeting of the department of _Pediatrics__
Protocol №___8__dated__14/06__2023
Head of the department_____

## Course Objective of PEDIATRIC HEMATOLOGY

Recognize the development of hematological diseases in children using clinical, laboratory, instrumental diagnostic methods and determine treatment tactics.

After study of the discipline the student must:

**Knowledge:**

- Types anemia in children. Congenital and acquired anemia. Causes. Pathogenesis. Types of the deficiency anemia in children.
- Hemolytic anemia in children. Classification. Main clinical signs, diagnosis.
- Hereditary haemoglobinopathies. Sickle cell anemia. Causes, clinical signs, diagnosis and treatment
- Classification of hemostatic disorders in children and its diagnosis
- Idiopathic hemolytic anemia. Pathogenesis, clinical signs, diagnosis and treatment
- Idiopathic thrombocytopenic purpura. Pathogenesis, clinical signs, The approach to diagnosis of thrombocytopenic purpura. Complications of thrombocytopenic purpura. The basic principles of treatment of thrombocytopenic purpura. Hypoprothrombinemia in children. Types, clinical features and treatment.
- Hemophillia in children. Causes, clinical signs, diagnosis. The basic principles of treatment of Hemophilia
- Henoch-Schonlein Purpura (hemorrhagic vasculitis) in children. Causes, pathogenesis, clinical features. Complications of hemorrhagic vasculitis. The basic principles of treatment of hemorrhagic vasculitis.
- Immune status and immune deficiencies in children. Organs and cells of the immune system. Types and forms of the immune disorders. The approaches to diagnosis of the immune disorders. The basic principles of treatment of the immune disorders.

**Be able to (Skills):**

1. Perform independently Taking history
2. Perform independently Visual inspection and palpation of the skin, muscles, joints, the heart, peripheral vessels, chest, liver, lymph nodes and spleen;
3. Assessment of the laboratory blood and hemostatic tests
4. Interpret Methodology of blood transfusion
5. Interpret Methods of the hemostasis (arrest of bleeding)
6. Demonstrate Technique of investigations of blood, sternum puncture, lymph node and spleen puncture
7. Demonstrate Technique of the puncture peripheral and subclavian veins
8. Demonstrate Assessment of the immune status
9. Reading and interpreting the results of radiological and ultrasound diagnostics, ECG, CT scan;
10. Writing of medical history, calculate dosages of drugs according with patient's age, weight

**Attitude:**

1. Demonstrate understanding of questions _____

**Pre-requisites:**

- Module pathology of blood system in pediatrics IV semester.
- Anatomy (macro- microanatomy)
- pathological anatomy
- Topographic anatomy
- normal physiology
- pathological physiology
- Biochemistry
- Microbiology, virology and immunology
- Basic pharmacology
- Bioethics

**Post-requisites:**

- Childhood diseases
- Pediatric surgery
- Children's infectious diseases
- Pediatric neurology
- Family medicine
- Medical genetics
- Public health

## THEMATIC PLAN OF LECTURES

| № | Lecture | Hours | Date |
|---|---|---|---|
| 1. | Anemia in children. Background information about hematopoietic system. Hemolytic anemia | 2 | |
| 2. | Hemorrhagic diathesis in children | 2 | |
| 3. | Leukemia in children | 2 | |
| 4. | Immune status and immune deficiencies in children | 2 | |
| | Total | 8 | |

## THEMATIC PLAN OF PRACTICAL CLASSES

| № | Theme of practical class | Hours | Date |
|---|---|---|---|
| 1. | Hemolytic anemia in children | 2 | |
| 2. | Hemorrhagic diathesis in children | 4 | |
| 3. | Leukemia in children | 2 | |
| | Total | 8 | |

## THEMATIC PLAN OF INDEPENDENT WORK OF STUDENTS

| № | Theme of independent work | Hours | Date |
|---|---|---|---|
| 1. | Prepare a medical history of the immune hemolytic anemia in children. | 30min | 1 practice |
| 2. | Prepare a medical history of hemophilia in children of school age | 30min | 1 practice |
| 3. | Prepare a medical history thrombocytopenic purpura child of preschool age | 30min | 1 practice |
| 4. | Prepare a medical history of hemorrhagic vasculitis child of school age | 30min | 1 practice |
| 5. | Prepare a medical history of the patient with sickle cell anemia | 30min | 2 practice |
| 6. | Prepare a medical history of the hypoprothrombinemia in children | 30min | 2 practice |
| 7. | Prepare a medical history of the patient with immune deficiency | 30min | 2 practice |
| 8. | Prepare a medical history of the patient acute lymphoblastic leukemia under 1 year | 30min | 3 practice |
| 9. | Prepare a medical history of the patient acute myeloid leukemia child of school age | 30min | 3 practice |
| 10. | Prepare a review of the hematopoietic system | 30min | 1 practice |
| 11. | Prepare a medical history of hyper immune disorder in children | 30min | 1 practice |

**Recommended reading for the discipline:**

**Basic:**

| No | Authors | Title | The year of publishing | publishing house | Availability in the IHSM library (number) |
|---|---|---|---|---|---|
| 1 | Kliegman RM, Geme III JW | Nelson textbook of pediatrics.Vol.1.-21th ed. | 2020 | 9 996 128 296 | 50 |
| 2 | Ghai OP, Paul VK, Bagga A. | Essentials of pediatrics. -8th ed. | 2013 | 978-81-239-2334-5 | 9 |
| 3 | Rafikova S., Alekseev V. | Children's Nutritional Abnormalities | 2013 | 978-9967-27-179-1 | 109 |
| 4 | Alekseev.V ., Starodubetz.U ., Isakova F. | Introduction to Pediatrics: Compendium for foreign student | 2012 | 978-9967-26-670-4 | 342 |
| 5 | Ghai OP, Paul VK, Bagga A. | Essentials Pediatrics.-6th ed. | 2005 | 81-239-1163-7 | 94 |
| 6 | Behraman RE | Nelson essentials of pediatrics. -4th ed. | 2002 | 0-7216-9406-3 | 12 |
| 7 | Nelson., Richard E. Berhman , Robert M. Kliegman | Essentials of Pediatrics | 2000 | 4th | 12 |
| 8 | A Parthasarathy | Case Scenarios in Pediatric and Adolescent Practice | 2014 | 1st edition - | http://library.ism.edu.kg/Online_Library/eBoo |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | kDetails.aspx?id=288 |
| 9 | Graham TP | Recommendations for Training in Pediatric Cardiology | 2005 | 7th -E d - | http://library.ism.edu.kg/Online_Library/eBookDetails.aspx?id=938 |
| 10 | William W. Hay Jr, et al By McGraw | Current Pediatric Diagnosis & Treatment | 2002 | 16th Ed | http://library.ism.edu.kg/Online_Library/eBookDetails.aspx?id=57 |
| 11 | Kenneth B Roberts MD By Lippincott Williams & Wilkins Publishers | Manual of Clinical Problems in Pediatrics | October 2000 | 5th edition | http://library.ism.edu.kg/Online_Library/eBookDetails.aspx?id=230 |
| 12 | Pervez Akber Khan | "Basis of Pediatrics" | 2000 | 7th -E d - | https://ketabton.com/book/14837 |
| 16 | Schwartz RS | Autoimmune and intravascular hemolytic anemias. | 2011 | eds. *Cecil Medicine* . 24th ed. | Philadelphia, Pa: Saunders Elsevier; 2011: chap 163 |

**Additional:**


1. Powers A, Silberstein LE. Autoimmune hemolytic anemia. In: Hoffman R, Benz EJ, Shattil SS, et al., eds.*Hematology: Basic Principles and Practice*. 5th ed. Philadelphia, Pa: Elsevier Churchill Livingstone; 2008:chap 47.
2. Glader BE. Hemolytic anemia in children. *Clin Lab Med*. Mar 1999;19(1):87-111, vi. [Medline].
3. Palek J, Jarolim P. Hereditary spherocytosis, elliptocytosis, and related disorders. In: Beutler E, Lichtman MA, Coller BS, Kipps TJ, eds. *Williams Hematology*. 5th ed. New York, NY: McGraw Hill; 1995:557-63
4. Coller BS, Schneiderman PI. Clinical evaluation of hemorrhagic disorders: the bleeding history and differential diagnosis of purpura. In: Hoffman R, Benz EJ Jr., Shattil SJ, et al, eds. *Hoffman Hematology: Basic Principles and Practice*. 5th ed. Philadelphia, Pa: Churchill Livingstone Elsevier; 2008:chap 121.
5. Kessler C. Hemorrhagic disorders: Coagulation factor deficiencies. In: Goldman L, Ausiello D, eds. *Cecil Medicine*. 23rd ed. Philadelphia, Pa: Saunders Elsevier;2007:chap 180.
6. Schwartz RS. Autoimmune and intravascular hemolytic anemias. In: Goldman L, Schafer AI, eds. *Cecil Medicine*. 24th ed. Philadelphia, Pa: Saunders Elsevier; 2011: chap 163.
7. Campana D, Pui CH. Childhood leukemia. In: Abeloff MD, Armitage JO, Niederhuber JE. Kastan MB, McKenna WG, eds. Abeloff's *Clinical Oncology*. 4th ed. Philadelphia, Pa: Elsevier; 2008:2139-2169.
8. Silverman LB, Sallan SE, Cohen HJ. Treatment of childhood acute lymphoblastic leukemia. In: Hoffman R, Benz EJ, Shattil SJ, Furie B, Cohen HJ, Silberstein LE, McGlave P, eds. *Hematology: Basic Principles and Practice*. 4th ed. Philadelphia, Pa. Elsevier; 2005: 1163-1174.
9. http://www.merckmanuals.com
10. http://www.childrenshospital.org
11. http://emedicine.medscape.com
12. http://en.wikipedia.org


**Grading policy and procedures for all types of work**

For the period of studying the discipline, the student gains points for the relevant parameters (per unit):
current score - 40 points
independent work - 20 points
control score (final assessment of knowledge per unit) - 40 points
Maximum score - 100 (40+20+40)

**Grading system for student's achievements**

| Criteria for grading for the discipline | | | | |
|---|---|---|---|---|
| Maximum score | Intervals | | | |
| | «unsatisfactory» | «satisfactory» | «good» | «excellent» |
| Current control - 40 | 0-23 | 24-30 | 31-35 | 36-40 |
| Interval Criteria | Does not complete the task, does not know and does not understand the lecture material of the lesson, which prevents further assimilation of the | Performs the task not in full, has gaps in the assimilation of lecture material, has difficulty in applying knowledge to solve situational problems, test questions; does not fully and | Completes the task in full, knows the lecture material, but sometimes makes mistakes when solving situational problems and test questions, understands the main content of the | Completes the task in full, easily applies knowledge and skills in solving situational problems and test questions, rarely makes mistakes, gives complete |

| | | | | |
|---|---|---|---|---|
| | program; cannot apply the acquired knowledge to solving situational problems, test questions. Does not answer teacher's questions Does not have practical skills when examining a patient | accurately answer the questions of the teacher. When examining a patient, he has poor practical skills | lecture material, gives correct answers to the teacher's questions. When examining a patient, he partially possesses practical skills | and correct answers to the teacher's questions. When examining a patient, he has full practical skills |
| Independent work - 20 | 0-11 | 12-14 | 15-17 | 18-20 |
| Interval Criteria | Presentation, report, table, situational task is missing | The content of the presentation, report, tables partially correspond to the given topic, the sequence of presentation of theoretical issues is violated: etiology, pathogenesis, epidemiology, clinic, differential diagnosis, laboratory diagnosis, treatment and prevention. Situational tasks contain little description of a clinical case | The content of the presentation, report, tables does not fully correspond to the given topic, the sequence of presentation of theoretical issues (etiology, pathogenesis, epidemiology, clinic, differential diagnosis, laboratory diagnosis, treatment and prevention) is not fully preserved. Situational tasks incompletely contain a description of a clinical case | The content of the presentation, report, tables correspond to the given topic, the sequence of presentation of theoretical issues (etiology, pathogenesis, epidemiology, clinic, differential diagnosis, laboratory diagnosis, treatment and prevention) is fully preserved. Situational tasks contain a description of the clinical case in its entirety |
| Line control (module) - 40 | 0-23 | 24-30 | 31-35 | 36-40 |
| Interval Criteria | Does not know the answers to test questions and situational tasks | Poor knowledge of answers to test questions and situational tasks | Knows well the answers to test questions and situational tasks | Knows the answers to test questions and situational tasks |

**Conduct Policy: (lateness, absence, behavior in the auditorium, late submission of work).**
- Punctuality and completion of tasks.
- Mandatory attendance of classes.
- Attending class in a clean medical uniform.
- Eliminating conversations on a cell phone in the classroom.
- Active participation in the learning process.
- Doing homework on time.
- Academic detention at the time specified by the teacher.

For violations of the Conduct Policy, the total points for discipline might be reduced to 1-5 points.

**Academic Ethics Policy.**
- Be tolerant, respect the opinions of others.
- Formulate objections in the correct form.
- Constructively support feedback in all classes.
- Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the following: the absence of references when using printed and electronic materials, quotes, thoughts and works of other authors or students.
- Prompting and cheating during tests, exams, classes is unacceptable as well as passing an exam for another student, unauthorized copying of materials.

For violations of the Academic Ethics Policy, the total points for the discipline may be reduced to 1-5 points.

**Guidelines for the lessons of the discipline**

**Key questions covered in lesson #1 Hemolytic anemia in children.**

1. Normal parameters f the blood cells

2. Physiology of the hematopoietic system.
3. Acquired and hereditary hemolytic anemia
4. Pathophysiology of hemolysis.
5. The approach to diagnosis of hemolytic anemia s
6. Complications of hemolytic anemia
7. The basic principles of treatment of hemolytic anemia
8. Hereditary haemoglobinopathies: sickle cell anemia, thalassemia.
9. The approach to diagnosis of sickle cell anemia
10. The basic principles of treatment of sickle cell anemia
11. Complications of sickle cell anemia
12. The approach to diagnosis of immune hemolytic anemia.
13. Complications and the basic principles of immune hemolytic anemia.
14. To prepare Recipes (in copybook) on Medicine on each theme according scheme, this must be prepared:

| Standard form (solution/tab) | Calculation doses of medicine(mg/kg; ml/day...) | Group of Medicine |
|---|---|---|
| Methylprednizolon (IV) | | |
| Methylprednizolon (oral) | | |
| Dexamethasone | | |
| Ciclosporin | | |
| | | |

**Recommended reading for this discipline:**

1. Lecture "Anemia" materials
2. Alekseev.V ., Starodubetz.U ., Isakova F.Introduction to Pediatrics: Compendium for foreign student
3. Glader BE. Hemolytic anemia in children. *Clin Lab Med.* Mar 1999;19(1):87-111, vi. [Medline]
4. Kliegman RM, Geme III J.W. Nelson textbook of pediatrics.Vol.1.-21th ed.
5. Ghai OP, Paul VK, Bagga A.Essentials of pediatrics.-8th ed.

**Key questions covered in lesson #2 Hemorrhagic diathesis in children.**

1. To describe the clinical features of Hemorrhagic vasculitis
2. The approach to diagnosis of hemorrhagic vasculitis
3. The basic principles of treatment of hemorrhagic vasculitis
4. Complications of hemorrhagic vasculitis
5. To describe the clinical features of Thrombocytopenic purpura
6. The approach to diagnosis of Thrombocytopenic purpura
7. The basic principles of treatment of Thrombocytopenic purpura
8. Complications of Thrombocytopenic purpura
9. Indications for splenectomy in case of Thrombocytopenic purpura
10. To describe the clinical features of Hemophilia
11. The approach to diagnosis of Hemophilia
12. The basic principles of treatment of Hemophilia
13. Complications of Hemophilia
14. To prepare Recipes (in copybook) on Medicine on each theme according scheme, this must be prepared:

| Standard form (solution/tab) | Calculation doses of medicine(mg/kg; ml/day….) | Group of Medicine |
|---|---|---|
| Methylprednizolon (IV) | | |
| Methylprednizolon (oral) | | |
| Heparin | | |
| Warfarin | | |
| Dexamethasone | | |

**Recommended reading for this discipline:**

1. Lecture "Hemostatic disorders" materials
2. Alekseev.V ., Starodubetz.U ., Isakova F. Introduction to Pediatrics: Compendium for foreign student
3. Kessler C. Hemorrhagic disorders: Coagulation factor deficiencies. In: Goldman L, Ausiello D, eds. *Cecil Medicine*. 23rd ed. Philadelphia, Pa: Saunders Elsevier; 2007:chap 180Kliegman RM, Geme III J.W. Nelson textbook of pediatrics.Vol.1.-21th ed.
4. Ghai OP, Paul VK, Bagga A.Essentials of pediatrics.-8th ed.

**Key questions covered in lesson #3 Leukemia in children.**

1. Acute lymphoblastic leukemia.
2. To describe the clinical features of Acute lymphoblastic leukemia.
3. The approach to diagnosis of Acute lymphoblastic leukemia.

4. Complications of Acute lymphoblastic leukemia.
5. The basic principles of treatment of Acute lymphoblastic leukemia.
6. Acute myeloid leukemia. Peculiarities. Differential diagnosis.
7. To prepare Recipes (in copybook) on Medicine on each theme according scheme, this must be prepared:

| Standard form (solution/tab) | Calculation doses of medicine (mg/kg; ml/day….) | Group of Medicine |
|---|---|---|
| Mycophenolate mofetil | | |
| Dexamethasone | | |
| Prednizolon | | |
| Ciclosporin | | |

**Recommended reading for this discipline:**


1. Lecture "Leukemia" materials
2. Alekseev.V ., Starodubetz.U ., Isakova F. Introduction to Pediatrics: Compendium for foreign student
3. Ghai OP, Paul VK, Bagga A.Essentials of pediatrics.-8th ed
4. Campana D, Pui CH. Childhood leukemia. In: Abeloff MD, Armitage JO, Niederhuber JE. Kastan MB, McKenna WG, eds. Abeloff's *Clinical Oncology*. 4th ed. Philadelphia, Pa: Elsevier; 2008:2139-2169.
5. Silverman LB, Sallan SE, Cohen HJ. Treatment of childhood acute lymphoblastic leukemia. In: Hoffman R, Benz EJ, Shattil SJ, Furie B, Cohen HJ, Silberstein LE, McGlave P, eds. *Hematology: Basic Principles and Practice.* 4th ed. Philadelphia, Pa. Elsevier; 2005: 1163-1174.


**Methodological instructions for the implementation of independent work on the discipline**

Each student of group must prepare project of THE ONE THEME consisting of 10 slides with less text and in view pictures, scheme, charts
The first slide should include "IHSM", "Department of pediatrics", "the theme of presentation", "the full name of the student", group, semester, "the data of teacher", the filing date, and the last slide - list of references, resources.
Assessment of Independent work includes: design, content, and answering.