

Ministry of Health of Ukraine
O.O. Bogomolets National Medical University

METHODOLOGICAL RECOMMENDATIONS
to practical (seminar) classes
FOR STUDENTS

Academic discipline OK30 Pediatrics with pediatric infectious diseases
Field of knowledge "Healthcare"
Specialty 222 "Medicine"
Department of Pediatrics No. 2

Approved at the meeting of the Department of Pediatrics №1

August 27, 2026, Protocol № 1

Considered and approved: CMC on pediatric disciplines dated August 28, 2026, Protocol № 1

Lesson topic: Hemolytic disease of the newborn (HDN). Hemorrhagic syndrome in newborns.

Competencies:

- assess the general condition of the newborn and child by making an informed decision based on existing algorithms and standard schemes, adhering to relevant ethical and legal norms,
- to identify and identify the leading clinical symptoms and syndromes (anemic syndrome, jaundice, edematous syndrome, hemorrhagic syndrome); using standard methods, using preliminary data from the patient's history, patient examination data, knowledge about the person, his /her organs and systems, to establish a preliminary clinical diagnosis of the disease (hemolytic disease of the newborn, hemorrhagic disease),
- based on the results of laboratory and instrumental studies, evaluate information regarding the diagnosis (complete blood count, urine analysis, blood proteins, blood glucose, bilirubin and its fractions, neurosonography),
- establish a final clinical diagnosis by making a reasoned decision and analyzing the obtained objective data of clinical, additional examination, and conducting differential diagnostics, adhering to relevant ethical and legal norms,
- assess and monitor the child's development, provide recommendations on feeding and nutritional needs ,
- determine tactics and provide medical care for emergency conditions (anemia, hyperbilirubinemia, bleeding) in accordance with existing clinical protocols and treatment standards,
- perform medical manipulations (perform indirect heart massage, artificial respiration, install a nasogastric and orogastric tube, restore airway patency).

Goal: Formation of professional competencies to achieve program learning outcomes in the diagnosis, treatment and prevention of hemolytic disease of the newborn and hemorrhagic syndrome in newborns and their complications.

Equipment: newborn baby mannequin, artificial lung ventilation and oxygen therapy kit, neonatal stethoscope, pulse oximeter, intra-umbilical catheters, syringes, diapers, disposable gloves, hand sanitizer.

Lesson plan and organizational structure

Stage name	Stage description	Levels of assimilation	Time
Setting up training goals and motivation Output control equal knowledge, skills, abilities	Organizational issues. Test control Individual oral poll Frontal conversation Motivation training: Hemolytic disease of the newborn and hemorrhagic syndrome are among the life-threatening pathological conditions of the child that require emergency care. The prognosis of the disease depends on the timeliness of diagnosis and promptness in treatment. The complexity of establishing a diagnosis, the variety of causes of the	*	25 min

	development of these conditions requires the doctor to have a clear knowledge of this problem. Children who have suffered severe forms of HDN are at high risk of hearing loss, delayed psychomotor and emotional development, extrapyramidal motor disorders, memory and intelligence decline. Most of these children suffer from anemia and are prone to acute infectious and allergic diseases. level control knowledge (test control and oral survey): Task #1 A full-term boy from the 3rd pregnancy the 1st birth of a mother with blood group B(III) Rh-negative affiliation during the initial examination is noted jaundice, pastiness, hepatosplenomegaly. The mother has a history of 2 medical abortions during the current pregnancy in the antenatal clinic was not observed. The result of the umbilical cord blood analysis: blood group O(I) Rh-positive affiliation, total bilirubin 80 $\mu\text{mol/l}$ due to the indirect fraction. What method of examination allows to confirm the diagnosis: hemolytic disease of the newborn, Rh-conflict? A. Hemoglobin and red blood cell levels. B. Transaminase levels. C. Direct Coombs test. D. Hourly bilirubin rise. E. Peripheral blood test with blood smear evaluation. 2. A full-term newborn girl weighing 3500 g from the 1st pregnancy, 1st physiological delivery of a mother with blood group O(I) and Rh-positive affiliation developed jaundice on the second day of life, indirect bilirubin 24 hours after birth was 100 $\mu\text{mol/l}$, and 48 hours later - 240 $\mu\text{mol/l}$ due to the unconjugated fraction. Hemoglobin level - 140 g/l, ALT - 48 U/l, AST - 55 U/l. The child's blood group is A(II), Rh factor is negative. What is the most likely diagnosis? A. Physiological jaundice		
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	B. Hemolytic disease of the newborn, ABO conflict C. Hemolytic disease, Rh- conflict D. Fetal hepatitis E. Biliary atresia.		
	3. In a premature girl weighing 3100 g from the 4th pregnancy third full-term birth 35 weeks gestation mothers with a group blood type O(I) with Rh-negative affiliation during the primary review is noted severe condition: severe pallor skin, universal edema, hepatosplenomegaly, tachycardia. In the mother's history: 2 medical abortions, in the previous child diagnosed with HDN, anti-Rhesus antibody titer 1:1028. General bilirubin umbilical cord blood 35 $\mu\text{mol/l}$, hemoglobin – 85 g/l, group blood type O(I), Rh-positive. What treatment method is indicated in this case? A. Exchange blood transfusion B. Phototherapy C. Infusion therapy D. Phenobarbital E. Enterosorbents		
	4. A newborn girl from the 1st uncomplicated pregnancy, 1st physiological birth at a gestational age of 37 weeks, on the 4th day of life, developed repeated regurgitation of “coffee grounds”, melena and bleeding from the umbilical wound, which lasted for 3 days. From the anamnesis it is known that the parents are healthy. Laboratory examination: hemoglobin 150 g/l, platelet count – $300 \times 10^9/\text{l}$, clotting time 7-8 min, prothrombin time – 30s, activated partial thromboplastin time – 80 s, prothrombin index – 40%, fibrinogen – 3.0g/l, fibrin degradation products – 5 mg/l. What is the most likely diagnosis? A. Early hemorrhagic disease B. Classical hemorrhagic disease C. Later hemorrhagic disease D. Hemophilia A E. DIC		

	5. A newborn girl from the 1st uncomplicated pregnancy, 1st physiological birth was born at a gestational age of 39 weeks, birth weight - 2850 g. Apgar score 8-9 points. The mother is healthy. On the first day of life the child has melena. What study should be performed for the purpose of differential diagnosis of hemorrhagic disease and "swallowed maternal blood" syndrome? A. Apt's test B. Coagulogram C. General urine analysis D. General blood analysis E. Biochemical blood analysis		
Main stage Analysis of theoretical material Patient care	Methods of skill development: professional training, solutions to tests, typical problems a) demonstration of a thematic patient by a teacher; b) independent work - care of newborns (collection of history, objective observation, processing of preliminary diagnosis, drawing up an examination and treatment plan); c) clinical analysis of the patient with the participation of the teacher. Differential diagnostics, evaluation of clinical data, results of laboratory and instrumental research, treatment; d) learning and practicing practical skills	** * **, *** *, **, *** **, ***	120 min
Final stage Control of the final level of training Overall assessment of the student's academic performance Informing students about the topic of the next lesson	Methods of skill control : individual control of practical skills and their Results Analysis and Evaluation results work. <i>Control of the final level of training (situational tasks)</i> : 1. A prematurely born child weighing 3100 g from the 4th pregnancy of 3 deliveries at a gestational age of 35 weeks of a mother with blood group O(I) and Rh-negative affiliation is noted during the initial examination in a serious condition: pronounced pallor of the skin, universal edema, hepatosplenomegaly , tachycardia. The mother's history: 2 medical abortions , the previous child was diagnosed	* , **	35 min

	with HDN, anti-Rh antibody titer 1: 1028. Total bilirubin of umbilical cord blood 35 μmol / l, hemoglobin - 85 g / l, blood group O(I), Rh-positive affiliation. Preliminary diagnosis? Tactics? Answer. HDN, Rh-conflict, edematous form. Prematurity (GA – 34-35 weeks). It is indicated to conduct EBT, two-volume isovolumetric erythrocyte mass with a procurement period of no more than 3 days of O(I) group of Rh-negative affiliation and AB(IV) plasma in a ratio of 2:1. 2. A full-term boy from the 1st pregnancy, 1st birth at a gestational age of 37 weeks, was born with a body weight of 3000 g, height of 50 cm. Apgar score 7-8 points. On the second day of life the child had bloody vomiting, a pink rim was found on the diaper around the feces. No pathology was detected from the internal organs. The child was breastfed. What is the most likely diagnosis? Examination plan? Treatment? Answer. Hemorrhagic disease, classic variant. Treatment: vitamin K₁ i/v 1-2 mg, fresh frozen plasma 10 ml/kg. The basic principles of emergency care for bleeding of any etiology before establishing the cause of bleeding should include these two points: parenteral administration of vitamin K and fresh frozen plasma of the appropriate blood group.		
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* Familiarization , ** reproducible , *** reconstructive , **** creative levels assimilation

Recommended reading :

1. Neonatology : textbook : in 3 volumes/ T.K. Znamenska , Y.G. Antipkin , M.L. Aryaev and others ; edited by T.K. Znamenska - Lviv: Publisher Marchenko T.V., 2020.- Vol. 2.-p. 371-455
2. Nelson's Essentials of Pediatrics : in 2 volumes. Volume 1 / Karen J. Markdante , Robert M. Kligman ; translation of the 8th English edition . Scientific translation editors V.S. Berezenko , T.V. Pochynok. Kyiv : VSV "Medicine", 2019. T 1. - p . 25 4 -2 62 .

3. Nelson Textbook of Pediatrics, 2-Volume Set, 20th Edition, 2020 by Robert M. Kliegman , Bonita MD Stanton, Joseph St. Geme and Nina F Schor, 5315 p. <https://www.elsevierhealth.com/nelson-textbook-of-pediatrics-2-volume-set-9781455775668.html>

4. Pediatrics (neonatology , hematology, endocrinology): Educational and methodological manual / Edited by O.P. Volosovets . – Kyiv: MEDPRINT, 2023. – 432 p.

Information resources:

Unified clinical protocol of specialized medical care "Jaundice of newborns", approved by Order of the Ministry of Health of Ukraine dated 04/27/2023 No. 783

https://www.dec.gov.ua/wp-content/uploads/2023/04/ukpmd_783_27042023_zhovt.pdf

Questions for student self-preparation for practical classes:

1. Risk factors for hemolytic disease of the newborn and hemorrhagic disease of the newborn.
2. Clinical variants and complications of hemolytic disease of the newborn and hemorrhagic disease of the newborn.
3. Methods for diagnosing hemolytic disease of the newborn and hemorrhagic disease of the newborn.
4. Diagnostic criteria for physiological and pathological jaundice.
5. Differential diagnosis of hemorrhagic disorders in newborns.
6. Tactics of managing newborns with hemolytic disease of the newborn and hemorrhagic disease of the newborn.
7. Indications and technique for conducting EBT.
8. Complications of EBT.
9. Methods for preventing hemolytic disease of the newborn
10. Prevention of hemorrhagic disease of the newborn.

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