

**ANATOMO-PHYSIOLOGICAL PECULIARITIES, METHODS OF EVALUATION,  
PARACLINICAL METHODS OF INVESTIGATION AND SEMEIOLOGY OF THE  
URINARY SYSTEM DISEASES IN CHILDREN**

**Academic discipline «Pediatric Propedeutics»  
*Teacher's guide for the 3<sup>rd</sup> year  
English medium students***

**АНАТОМО-ФІЗІОЛОГІЧНІ ОСОБЛИВОСТІ, МЕТОДИ ОБСТЕЖЕННЯ ТА  
СЕМІОТИКА ЗАХВОРЮВАНЬ СЕЧОВИДІЛЬНОЇ СИСТЕМИ У ДІТЕЙ**

**З дисципліни «Пропедевтика педіатрії»  
*Методичні розробки для викладачів до аудиторної роботи студентів 3-го курсу  
медичного факультету***

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ**  
**Харківський національний медичний університет**

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Затверджено  
Вченою радою ХНМУ  
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**Харків**  
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Compiled by: Klymenko V.A.  
Sirenko T.V.  
Karpushenko J.V.

Анатомо-фізіологічні особливості, методи обстеження та семіотика захворювань сечовидільної системи у дітей: метод. розр. для викладачів до аудит. роботи студентів 3 курсу медичних факультетів / упор. В.А.Клименко, Т.В. Сіренко, Ю.В.Карпушенко. – Харків, ХНМУ, 2016. – 16 с.

Упорядники: Клименко В.А.  
Сіренко Т.В.  
Карпушенко Ю.В.

**Amount of educational hours:**

Independent work – 4;

Practical training – 4.

**Contents**

The urinary system of children has certain anatomical and physiological peculiarities. It works in conjunction with the lungs, skin and intestines to excrete waste and keep body chemicals and water in balance. The urinary system is regulated by blood pressure, the nervous system, and hormones produced by the endocrine system. Problems of the urinary tract system can be a result of aging, illness or injury. Changes in kidney function due to aging can be caused by changes in kidney structure, affecting their ability to remove wastes from the blood. Knowledge of the features and the gradual maturing of the system required a doctor during the diagnosis, treatment and prevention of diseases of the urinary system in children of all ages.

**Specific goals**

- to collect anamnesis for a patient with diseases of the urinary system.
- to conduct an objective examination of the urinary system taking into account the child's age characteristics.
- to interpret the survey data.
- to prescribe the number of laboratory and instrumental investigations in case of urinary system diseases in children.
- to provide syndrome-based diagnosis of urinary system diseases in children

**To know:**

1. Embryogenesis of the urinary system in children
2. The main morphofunctional peculiarities of the urinary system in children.
3. Main symptoms and signs of the urinary organs affection in children.
4. How to interpret results of laboratory and instrumental methods of examination of the urinary system of children.

**Aims of the practice:**

1. To demonstrate the technique of interrogation and inspection of the urinary system.
2. To interpret the results of clinical and paraclinical investigations.
3. To appoint laboratory and instrumental methods of investigations of the urinary system of children.
4. To conduct syndromic diagnosis of the urinary system diseases of children.  
To get skills of care of children with diseases of the urinary system of children.

**Providing initial level of knowledge, skills**

To apply the materials of the guidelines for independent extra-curricular activities of students to the subject 14.

**Materials needed for methodological support:**

Medical case history of the child with urinary system disease, the results of laboratory tests: blood (clinical, biochemical), urine (bacteriological research Nechiporenko test, Zimnitsky test, Amburzhe's tes), instrumental methods: urography, ultrasound, X - ray of the urinary organs.

### The technological card of the lesson

№ 3/II	Stage classes	Training time (min.)	Study Materials		Place of the lesson
			learning Tools	Equipment	
1.	Determination of the initial level of knowledge	20	Testing	Tests	Classroom
2.	Determination of the main positions of the topic	25	Quiz, discussion	Graphology structure of the topic, sample the case histories of child with disease of the urinary system, echosonogramm, X-ray, laboratory test samples	Classroom
3.	Break	10			
4.	Solution for the training tasks of the topic	45	Independent work of a student under the guidance of a teacher - training of practical skills	Premises and equipment of the hospital	Department s of the hospital
5.	Break	30			
6.	Solution for the training tasks of the topic	45	Independent work of a student under the guidance of a teacher - training of practical skills. Completion of the diary of practical training.	Premises and equipment of the hospital	Department s of the hospital
7.	Break	10			
8.	Determination of the output level of skills readiness.	20	Checking of the practical skills of a student while work in the departments.	Premises and equipment of the hospital	Department s of the hospital
9.	Determination of the output level of knowledge and skills readiness.	15	Solving and discussion of situational assignments Checking entries in the diary of practical training	Situational tasks	Classroom
10.	Summation of the lesson. Assignment to the next lesson.	10	Quiz, discussion		Classroom

**Approximate basis of action in solving educational problems topics:**

1. Studying the medical case history of a child with disease of the urogenital system, determination of physiological characteristics depending on age.
2. Independent classroom work in somatic branch - work at the bedside: interrogation, examination, palpation, percussion, auscultation, review of the results of further investigation, analysis and the interpretation.

**Assignments for testing the final level of knowledge  
Tasks**

**Task № 1.**

In a 5 –days old girl the red stains are remained after every urination. The urine is cloudy with red or brown sediment. Erythrocytes amount is not more than 1-2 in field view.

1. Which cause of the urine changes in this case?
2. Is this norm or pathology?

*Key answer:*

1. The reason is in urine acid diathesis.
2. It is a physiological condition and doesn't need to be treated.

**Task № 2.**

The frequency of urination in 2 month baby is up to 15 per day.

1. Is it norm or pathology?

*Key answer:*

1. It is physiological norm for the age.

**Task № 3.**

In a 3 year old well-developed child, there was only 1 time involuntary urination during playing, that was absent before.

1. What is the diagnosis?

*Key answer:*

1. There is no pathology, absence of hygienic skills only.

**Task № 4.**

The clinical urine test of a 10 year old boy: specific gravity 1001, transparence - full, glucose and protein –are absent, leucocytes - 1-3 in field of view, erythrocytes 2-3 in field of view, single epithelial cells.

1. What is abnormal?
2. Which additional test is recommended for more accurate diagnosis?

*Key answer:*

1. Specific gravity of urine is too low.
2. Zimnitsky test should be done.

**Task № 5.**

Haematuria (15-18 in field of view), proteinuria 0,71g/l, bacteriuria were found in clinical urine test of a 7 year old boy.

1. What kind of additional test will you prescribe?
2. What is possible diagnosis?

*Key answer:*

1. Nechiporenko test should be done.
2. Pyelonephritis may be suspected.

**Task № 6.**

There is cloudy urine and acute developed enuresis in a 10 year old child.

For which disease these symptoms are typical?

*Key answer:*

Cystitis is possible to be.

**Task № 7.**

Frequency of urination in a 2 month life baby is up to 14 per day. Is this norm or pathology?

*Key answer:*

This is physiological norm.

**Task № 8.**

A child of 10 years has abdominal pain, 2 times vomiting, thirst and the smell of acetone breathe. Clinical urine test indicated cloudy urine, specific gravity 1042, acid pH, traces of protein, glucose 11,73mmol/l, leukocytes 4-6 in field of view, RBC – 2-3 in field of view, acetone ++++.

1. Please. Interpret this urine test.
2. What additional test should be prescribed?
3. Is it possible to treat the child at the polyclinic?

*Key answer:*

1. Proteinuria, glucosuria, hypersthenuria. ketoacidosis.
2. Glucose blood test.
3. It is better to hospitalize this child immediately

**Task № 9.**

A child of 4 years admitted to the hospital with complaints on the weakness, oedema of the lower extremities, headache. ABP 130/80 mm.Hg. Two weeks ago he was ill with acute tonsillitis. Clinical urine test indicated dark red coloration of the urine, cloudy urine, specific gravity 1026, acid pH, protein 1.2 g/l, kidney epithelium 2-3 in field of view, glucose no, leukocytes 5-10 in field of view, RBC – up to 20 in field of view, cylinders – hyaline and erythrocyte.

1. Please, interpret this urine test.
2. For which diseases it is typical?

*Key answer:*

1. Macrohaematuria, proteinuria, cylinderuria.
2. It is typical for affection of glomerular apparatus of kidneys. There is hypertension. So there is nephritic syndrome, which is typical for glomerulonephritis.

**Task № 10.**

A child of 8 years old admitted to the hospital. Three weeks ago he was ill with scarlet fever. Clinical urine test indicated cloudy urine, specific gravity 1024, acid pH, protein 2.17 g/l, kidney epithelium 2-3 in field of view, glucose no, leukocytes 5-8 in field of view, RBC –40-60 in field of view, cylinders – hyaline and granular. Zymnitsky test: variation of the specific gravity from 1002 to 1020, night diuresis prevails.

1. Please, interpret this urine test.
2. For which diseases it is typical?

*Key answer:*

1. Macrohaematuria, proteinuria, cylinderuria, nocturia, hypostenuria.
2. It is typical for affection of glomerular apparatus of kidneys – glomerulonephritis or kidney insufficiency with filtration and concentration functions disorder.

The **maximum number of points** which may be consequently obtained by students is 200 points; this includes 120 points for current educational activity and 80 points for the final lesson.

**Current educational activity of students** is controlled during practical classes according to specific goals in the course of each practical class as well as during self-training in the hospital department. It is recommended to apply the following means of diagnostics of the students' level of readiness: control of practical skills, solving cases and test control of theoretical knowledge.

The current assessment of students on respective topics is conducted in the traditional 4-point grade scale ("excellent", "good", "satisfactory" and "unsatisfactory") with further conversion into a multiscore scale.

**The grade "Excellent"** is given when the student knows the program in toto, illustrating the answers with various examples; gives clear and comprehensive answers without any hints; delivers the material without any inaccuracies or errors; performs practical tasks of a different degree of complexity.

**The grade "Good"** is given when the student knows the whole program and understands it well, gives correct, consistent and structured but not completely comprehensive answers to questions, although he is able to answer additional questions without mistakes; solves all cases and performs practical tasks experiencing difficulties only in the most complex situations.

**The grade "Satisfactory"** is given to the student based on his satisfactory level of knowledge and understanding of the entire subject. The student is able to solve modified tasks with the help of hints; solves cases and applies practical skills experiencing difficulties in simple cases; is unable to deliver a consistent answer, but answers direct questions correctly.

**The mark "Unsatisfactory"** is given when the student's knowledge and skills do not meet the requirements of the grade "satisfactory".

Given the number of practical classes the grades are converted into the multiscore scale as follows:

**The mark "Excellent" – 72-80 scores**

**The mark "Good" – 60-71 scores**

**The mark "Satisfactory" – 50-59 scores**

**The mark "Unsatisfactory" – 0 scores**



*Навчальне видання*

**Анатомо-фізіологічні особливості, методи обстеження та семіотика захворювань  
сечовидільної системи у дітей**

Упорядники: Клименко Вікторія Анатоліївна  
Сіренко Тетяна Вадимівна  
Карпушенко Юлія Валентинівна

Відповідальний за випуск: Клименко В.А.

Комп'ютерна верстка

Ум. друк. арк. \_\_\_\_ . Тираж \_\_\_\_ прим. Зам. № \_\_\_\_ .

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