

MINISTRY OF HEALTH OF UKRAINE  
Odesa National Medical University

# **PREPARATION FOR THE OSCE IN PEDIATRICS**

**A Textbook for Medical Educators and Students**

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of the National Academy of Medical Sciences of Ukraine,  
doctor of medical sciences, professor M. L. Aryayev

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The Textbook contains the main provisions of the state exam, the examination stations of the objective structured clinical exam for the educational component "Pediatrics", their structure and equipment, general requirements for tasks, practical skills and procedures and algorithms for their implementation. The Textbook is ideal for medical educators and trainees preparing for the OSCE in the educational component "Pediatrics" for second master's level higher education applicants, specialties: "Medicine".

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## ABBREVIATION

- AMS** – Academy of Medical Sciences  
**APTT** – activated partial thromboplastin time  
**BP** – blood pressure  
**CQMC** – Central Qualification Methodological Council  
**CR** – cardiopulmonary resuscitation  
**DP** – diastolic pressure  
**ECG** – electrocardiography  
**EPCITTI** – Educational and production complex of innovative technologies of training and informatization  
**FCC** – Final Certification Commission  
**HEA** – higher education applicant  
**HIV** – human immunodeficiency virus  
**HR** – heart rate  
**IINA** – Individual Identification Number of the Applicant  
**IMCI** – Integrated Management of Childhood Illness  
**INR** – international normalized ratio  
**i/m** – intramuscular  
**i/o** – intraosseous  
**i/v** – intravenous  
**IU** – international units  
**IU/L** – international units per liter  
**MES** – Ministry of Education and Science  
**MH** – Ministry of Health  
**mg/kg** – milligrams per kilogram of body weight  
**ng/mL** – nanogram per milliliter  
**ONMedU** – Odessa National Medical University  
**OSCE** – Objective Structured Clinical Examination  
**PCR** – polymerase chain reaction

**pg/mL** – picogram per milliliter

**PLO** – Program Learning Outcomes

**PR** – prothrombin ratio

**RR** – respiratory rate

**SC** – special competencies

**SP** – systolic pressure

**SpO<sub>2</sub>** – oxygen saturation

**UA** – upper airway

**U/L** – units per liter

**USQE** – Unified State Qualification Examination

# INTRODUCTION

This Textbook summarizes the results of the own experience of the Department of Pediatrics and employees of the center of the – Educational and production complex of innovative technologies of training and informatization (EPCITTI of ONMedU).

Objective Structured Clinical Examination (OSCE) is a modern type of assessment of knowledge and practical skills of applicants of higher education, designed to verify their acquisition of clinical skills and competencies that cannot be assessed by other traditional forms of examinations.

The exam is conducted on the basis of the EPCITTI of ONMedU, which, together with the departments, is the main educational, scientific and administrative structural unit of the ONMedU without the right of a legal entity that participates in educational activities, related to obtaining higher education in specialties licensed at the ONMedU, improving the qualifications of medical specialists, and has an appropriate level of personnel and material and technical support in order to create a unified information and educational space of the University, the introduction of the latest technologies and world experience at the ONMedU as well as carries the function of internal monitoring of the quality of education.

The selection of simulation mannequins for passing the exam in the educational component “Pediatrics” corresponds to the skills that the candidates acquired during practical classes and preparation for the state OSCE-2, which allows to obtain a number of moral and ethical advantages:

- gain clinical experience in a virtual environment without risk for the patient;
- to get an objective assessment of the achieved skill level;
- get the opportunity to repeat medical manipulations in an unlimited number of times to practice the necessary skills;

- to acquire the skills of practicing and demonstrating actions for rare diseases and emergency conditions in children;
- create a personal teacher as a virtual trainer for each applicant;
- to reduce the level of psycho-emotional stress during the first independent manipulations;
- acquire the opportunity to practice skills outside the clinic;
- to develop an important communicative quality;
- practice the possibilities of team interaction.

The collection of video material created by the staff of the Department of Pediatrics of ONMedU gives higher education applicants (HEA) at the stage of pre-examination preparation the opportunity to familiarize themselves with video recommendations on performing skills or manipulations that are checked at the stations "Pediatrics, hybrid patient" and "Emergencies in pediatrics, practical skills". The textbook is ideal for medical educators and trainees preparing for the OSCE-2 in the educational component "Pediatrics" for second master's level higher education applicants, fields of knowledge I "Health care and social protection", specialties: I2 "Medicine".

# **Section 1**

## **UNIFORM PROVISIONS FOR TAKING THE OBJECTIVE STRUCTURED CLINICAL EXAM (OSCE-2)**

### **1.1 GENERAL RULES FOR PASSING THE OSCE-2**

Regulations on the procedure for conducting OSCE-2 among HEA of Medical and International Faculties at ONMedU determines the methodology, procedure and regulations for conducting the OSCE-2 for graduates of medical and of international faculties of ONMedU, which is a modern type of assessment of knowledge and practical skills and is aimed at verifying their acquisition of clinical skills and professional competence, which cannot be assessed by other traditional forms of exams. OSCE-2 is a practical part of USQE (unified state qualification exam).

#### **The main principles of OSCE-2:**

- objective – all HEA perform tasks of the same complexity, which are evaluated using a standard tool (checklist);
- structured – applicants move to a certain number of stations along a certain route, where they perform tasks in the same conditions for the same period of time;
- clinical – creating situations as close as possible to clinical ones (cases), in which applicants apply acquired theoretical knowledge and practical skills;
- exam – assessment of students' competencies and skills based on the principles of objectivity, structure and approximation to the real clinical situation using a standardized checklist.

During OSCE-2, competencies and skills approved by the decision of the Central Qualification and Methodological Council (CQMC) of ONMedU

are assessed for conducting the final certification. OSCE-2 is taken by applicants of the 6-th year of medical and international faculties as the second stage of the Unified State Qualification Examination after full completion of the educational curriculum and successful completion of the STEP-2 pre-examination test control.

The OSCE-2 includes clinical disciplines: internal medicine, surgery, obstetrics and gynecology, pediatrics, pediatric emergencies. For the formation of examination stations, the share of therapeutic direction is 25–30%, surgical – 30–35%, including emergency care, obstetrics and gynecology – 15–20%, pediatric – 15–20%.

The OSCE-2 administrator at the medical and international faculties is an employee of the EPCITTI appointed by the internal order of the OSCE-2 coordinator. On the basis of the lists of competencies, communicative and cognitive skills, practical skills and manipulations that applicants of higher education have mastered during their studies provided by the relevant departments, the administrator of OSCE-2 forms a list of stations that is agreed with the heads of departments involved in the state exam and approved by the decision of the CQMC of ONMedU.

Each department that participates in OSCE-2 forms in the corresponding section on the ONMedU website a list of competencies, practical skills, manipulations that are presented for the final certification of the relevant discipline, with algorithms for their implementation no later than the second Monday of September each year.

Algorithms for performing the tasks of the department are based on current national or international standards for providing medical care. Applicants learn and practice these algorithms in practical classes while studying the discipline and during the cycle of simulation medicine. Based on algorithms, standardized checklists are developed, according to which examiners assess the level of preparation of the applicant during OSCE-2. Departments prepare methodological support for OSCE-2 (passports of stations, tasks, legends, briefings and scenarios for standardized and hybrid patients, algorithms and checklists). Scenarios are adapted to the technical capabilities of EPCITTI. Details of clinical scenarios and examination tasks are not disclosed to applicants. Each employee of ONMedU, who is involved in the preparation and conduct of OSCE-2, signs the Agreement on the non-disclosure of examination tasks.

Methodological support of stations (passport of the station) includes the following components:

- 1) general information: name of the station; the list of competencies that are evaluated at the station; the name of the discipline and the course in which it is studied; material and technical support of the station;
- 2) a task for the applicant with a description of the conditions of the clinical situation and other relevant information necessary for the performance of the task (results of laboratory and instrumental studies, photographs or video images of patients, noise simulators, etc.);
- 3) algorithms of actions of the applicant when performing a certain clinical situation (a list of communicative, manual actions and diagnostic and therapeutic tactics);
- 4) form for checking the quality of skill performance (checklist);
- 5) script and instructions for a standardized or hybrid patient (if needed);
- 6) additional instructions for examiners;
- 7) additional instructions for the technical worker who ensures the operation of the station;
- 8) list of normative documents, based on which the tasks were given to the applicants and the assigned algorithms for the execution of the tasks;
- 9) video recommendations for applicants to perform skills or manipulations that are tested at the station.

*Examination method.* OSCE-2 is conducted based on the EPCITTI ONMedU. During the exam, there is constant video and audio recording. Each station is placed in a separate room. The station number and its name are clearly indicated on the door of each room. Any changes in the number or duration of OSCE-2 stations are approved by a decision of the CQMC of ONMedU. Types of OSCE-2 stations: standardized/hybrid patient; practical skills and manipulations; written; recreation area.

The exam begins according to the schedule and in accordance with the graduation certification schedule. At the same time, the exam consists of one examination group, which is formed at the rate of 1 person per 1 station. The tasks performed by the applicants change after each group. The break between groups is 15 minutes. Applicants who have no academic debt, who have appeared for the exam on time, are dressed in medical uniform in the proper form and have a score

book with the seal of the dean's office, a photo ID, and a pen are allowed to take the exam.

An applicant who is late will not be allowed to take the exam. If the applicant is absent from the exam for a good reason, he is allowed to take it in a specified time, according to the exam schedule. During the exam, the applicant must pass all the stations that are included in the exam. The time of stay of the applicant at each station is 6 minutes; of them, 1 minute is for familiarization with the task, and 5 minutes are for completing the task. The break for the transition between stations is 1 minute. During the break, the applicant goes to the next station on an individual route. One examination group takes the exam according to the schedule.

*Requirements for the applicant.* Applicants must arrive no later than 15 minutes before the start of the exam for changing into medical clothing (medical gown or surgical suit, medical cap and medical shoes) and registration. They should change into medical clothes (medical gown or surgical suit, medical cap and medical shoes).

Registration takes 10 minutes. During registration, the applicant's identity is identified, an individual identification number is assigned, which will be indicated in the route sheet and in the examiners' electronic checklists, and an individual route sheet is issued, by which the candidate moves around the stations. Applicants sign a document on confidentiality and non-disclosure of tasks, as well as on awareness of the constant video and audio recording of all stages of the exam, in particular, being in the rest area.

The examiners identify the applicant according to the individual identification number, which is indicated in the route sheet received during registration. The individual identification number consists of characters: the first 6 characters are the date of passing the exam in the format: *dd.mm.yy*; the seventh character is the number of the group in which the applicant takes the exam; the last characters are the number of the route by which the applicant takes the exam. The exam begins with a 10-minute briefing. During the briefing, applicants are familiarized with the rules of OSCE-2, the format of the exam, the number and order of stations. During the exam, applicants are prohibited from communicating with each other, using educational and supporting materials, and using any gadgets. In case of violation of the above norms, the results of the exam are canceled and the candidate is considered to have failed the exam.

*Examination method.* The signal for the start of the exam is a long call and the voice command "Start the exam. Please go to the stations!". After the signal, the applicants have 1 minute to move from the briefing room to the starting station. Abbreviated tasks are posted before entering the Station. The applicant can start familiarizing himself with them before getting to the station. The signal for entering the station premises is a single bell and the voice command "Enter the station!". After this signal, the applicant enters the premises of the station on duty, where he gives his route sheet to the examiner for identification and receives the task. The applicant's personal data is not disclosed to the examiner at the station. The examiner must check the applicant's individual identification number, which is indicated on his route sheet, and the number of the electronic check sheet, which was displayed on the computer monitor.

By coincidence, the numbers in the route sheet and the check sheet, the examiner allows the applicant to pass the station and evaluates his actions during the task. By coincidence, the identification numbers, the examiner puts his personal signature in the corresponding column of the route sheet. If the identification numbers in the electronic check sheet and in the route sheet do not match, the examiner must stop the applicant and call the administrator on duty. In the case of using paper check-lists, the examiner writes down the IINA in the corresponding column of the check-list. From the moment of entering the Station, the applicant has 1 minute to identify himself and familiarize himself with the task. This period ends with the voice command "Start the task". From the moment of the voice command "Start execution of the task", the applicant has 5 minutes to complete the task (certain actions according to the standard algorithm of the described clinical situation).

One minute before the deadline for completing the task, the voice command "One minute remains" is given. When the deadline for completing the task is over, a double call and the voice command "Go to the next station!" are given.

If the applicant did not manage to complete the task within the allotted time, the examiner should still interrupt his work after ringing a double bell, give him a signed route sheet and ask him to go to the next station.

If the applicant coped with the task before the allotted time, he remains in the room until the double bell rings.

The signal for the completion of the task at the station is a double bell and the voice command "Go to the next station!". The applicant must stop the task, pick up the route sheet signed in the appropriate column from the examiner and proceed to the next station. The signal for the end of the exam is a long double ring and the voice command "The exam is over. Please go to the debriefing room."

The examiner fills out a separate electronic check-list for each applicant. The check sheet is displayed on the examiner's computer automatically, in order according to the registered route sheets.

The examiner does not interfere in the process of completing the task, but only evaluates the applicant's actions by marking them in the checklist. This is a mandatory condition for ensuring the objectivity of the exam. If, for any reason, the electronic check-list system does not work, the examiner must evaluate the applicant using a paper copy of the check list, which indicates the applicant's individual identification number, which is indicated on the waybill. The examiner can contact the applicant if this is a condition of the assignment, or in case of violation of safety rules, rules of conduct or in other unforeseen situations. The applicant can contact the examiner if this is a condition of the task, as well as in case of deterioration of health or in case of other force majeure circumstances.

Immediately after completing all the stations, the applicants move to the debriefing room. If the evaluation takes place using paper evaluation sheets, the examiners hand over the completed check-lists to the responsible secretary of the certification commission, who calculates the points. If the assessment is conducted electronically, the information is sent to the responsible secretary of the attestation commission in on-line Real time mode automatically and printed on a printer in the form of individual and group information. After scoring, exam grades are announced to test takers during the debriefing. At the debriefing, applicants have the right to make comments on the conduct of the exam. If the applicant does not agree with the result of the exam, he can file an appeal and dispute this result according to the appeal procedure at ONMedU.

The main tasks and functions of examiners include:

- training on work at the station and with the OSCE-2 electronic system;

- providing Consent for the non-disclosure of examination tasks;
- identification of the applicant during the mock exam and graduation certification by matching the IINA on the route sheet and in the electronic check sheet, or entering his identification number in the paper checklist;
- evaluation of applicants during the mock exam and during the final certification;
- filling in during the trial exam and final certification of all accounting documentation: route sheet of the applicant, checklist (electronic or paper), assessment sheet of standardized / hybrid patient.

During OSCE-2, the ability of HEA to solve typical and complex specialized tasks and practical problems in professional activities in the field of health care, which involves conducting research and / or implementing innovations and is characterized by the complexity and uncertainty of conditions and requirements with discipline "Pediatrics".

## **1.2 OSCE-2 EXAMINATION STATIONS OF THE EDUCATIONAL COMPONENT "PEDIATRICS"**

The purpose of the stations under the educational component "Pediatrics" is to assess (determine) the level of formation of the components of special competencies, such as: the ability to interview and clinically examine a child, determine the necessary list of laboratory and instrumental studies, evaluate their results, establish a preliminary and clinical diagnosis, diagnose urgent conditions, determine the tactics of providing emergency medical care, determine the principles and nature of treatment in pediatrics, conduct consultations on breastfeeding support, demonstrate medical manipulations used in pediatrics and neonatology.

Competencies tested during the exam:

*Integral Competencies (IC):*

IC – Ability to solve typical and complex problems, including those of a research and innovation nature in the field of medicine. Ability to continue learning with a high degree of autonomy.

*General Competencies (GC):*

GC1 – Ability to abstract thinking, analysis and synthesis.

GC3 – Ability to apply knowledge in practical situations.

GC4 – Knowledge and understanding of the subject area and understanding of professional activity.

GC5 – Ability to adapt and act in a new situation.

GC6 – Ability to make informed decisions.

GC7 – Ability to work in a team.

GC8 – Ability to interpersonal interaction.

GC11 – Ability to search, process and analyze information from various sources.

GC12 – Determination and persistence in relation to assigned tasks and assumed responsibilities.

GC13 – Awareness of equal opportunities and gender issues.

GC17 – The desire to preserve the environment.

The correspondence of special competencies with program learning outcomes is shown in table 1.

Table 1

**The matrix of correspondence of special competences to program education outcomes**

<b>Special Competencies (SC)</b>	<b>Program Learning Outcomes (PLO)</b>
<p><b>SC1</b> Ability to collect medical information about the patient and analyze clinical data.</p>	<p><b>PLO 4</b> Highlight and identify leading clinical symptoms and syndromes (according to list 1); according to standard methods, using preliminary data of the patient's history, data of the patient's examination, knowledge about the person, his organs and systems, establish a preliminary clinical diagnosis of the disease (according to list 2).</p> <p><b>PLO 5</b> Collect complaints, life and disease history, assess the patient's psychomotor and physical development, the state of the organs and systems of the body, based on the results of laboratory and instrumental studies, evaluate information about the diagnosis (according to list 4), taking into account the patient's age.</p> <p><b>PLO 12</b> To assess the general condition of a newborn child by making a reasoned decision according to existing algorithms and standard schemes, observing the relevant ethical and legal norms.</p>

Section 1. Uniform provisions for passing an objective structured  
clinical examination (OSCE-2)

Continuation of table 1

<b>Special Competencies (SC)</b>	<b>Program Learning Outcomes (PLO)</b>
<b>SC2</b> Ability to determine the necessary list of laboratory and instrumental studies and evaluate their results.	<b>PLO 7</b> Prescribe and analyze additional (mandatory and optional) examination methods (laboratory, functional and/or instrumental) (according to list 4) of patients with diseases of organs and body systems for differential diagnosis of diseases (according to list 2).
<b>SC3</b> Ability to establish a preliminary and clinical diagnosis of the disease.	<b>PLO 6</b> To establish a final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of clinical, additional examination, carrying out differential diagnosis, observing the relevant ethical and legal norms, under the control of the head physician in the conditions of a health care institution (according to list 2). <b>PLO 8</b> Determine the main clinical syndrome or symptom that determines the severity of the condition of the victim/injured (according to list 3) by making a reasoned decision about the person's condition under any circumstances (in the conditions of a health care institution, outside its borders), including in the conditions of an emergency and hostilities, in field conditions, in conditions of lack of information and limited time.
<b>SC5</b> Ability to determine the nature of nutrition in the treatment and prevention of diseases.	<b>PLO 10</b> Determine the necessary mode of work, rest and nutrition on the basis of the final clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes. <b>PLO 13</b> Assess and monitor the child's physical and psychomotor development, provide recommendations on feeding and nutritional features depending on age, organize preventive vaccinations according to the calendar.
<b>SC6</b> Ability to determine the principles and nature of treatment and prevention of diseases.	<b>PLO9</b> Determine the nature and principles of treatment (conservative, operative) of patients with diseases (according to list 2), taking into account the age of the patient, in the conditions of a health care institution, outside its borders and at the stages of medical evacuation, including in field conditions, on the basis of a preliminary clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes, in case of the need to expand the standard scheme, be able to justify personalized recommendations under the control of the head physician in the conditions of a medical institution.

<b>Special Competencies (SC)</b>	<b>Program Learning Outcomes (PLO)</b>
<b>SC7</b> Ability to diagnose emergency conditions.	<b>PLO 14</b> Determine tactics and provide emergency medical care in emergency situations (according to list 3) in limited time conditions according to existing clinical protocols and treatment standards.
<b>SC8</b> Ability to determine tactics and provide emergency medical care.	<b>PLO 14</b> Determine tactics and provide emergency medical care in emergency situations (according to list 3) in limited time conditions according to existing clinical protocols and treatment standards.
<b>SC10</b> Ability to perform medical manipulations.	<b>PLO 17</b> Perform medical manipulations (according to list 5) in the conditions of a medical institution, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, observing the relevant ethical and legal norms.
<b>SC11</b> Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility.	<b>PLO 18</b> Determine the state of functioning and limitations of a person's life activity and the duration of incapacity for work with the preparation of relevant documents, in the conditions of a health care institution, based on data about the disease and its course, peculiarities of a person's professional activity, etc. Maintain medical documentation regarding the patient and the contingent of the population on the basis of regulatory documents.
<b>SC13</b> Ability to carry out sanitary and hygienic and preventive measures.	<b>PLO 29</b> Plan, organize and carry out measures for the specific prevention of infectious diseases, including in accordance with the National calendar of preventive vaccinations, both mandatory and recommended. Manage vaccine residues, organize additional vaccination campaigns, including immunoprophylaxis measures.
<b>SC16</b> Ability to maintain medical documentation, including electronic forms.	<b>PLO 18</b> Determine the state of functioning and limitations of a person's life activity and the duration of incapacity for work with the preparation of relevant documents, in the conditions of a health care institution, based on data about the disease and its course, peculiarities of a person's professional activity, etc. Maintain medical documentation regarding the patient and the contingent of the population on the basis of regulatory documents.

Section 1. Uniform provisions for passing an objective structured  
clinical examination (OSCE-2)

Continuation of table 1

Special Competencies (SC)	Program Learning Outcomes (PLO)
<b>SC24</b> Compliance with ethical principles when working with patients and laboratory animals.	<b>PLO 17</b> Perform medical manipulations (according to list 5) in the conditions of a medical institution, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, observing the relevant ethical and legal norms.
<b>SC26</b> The ability to determine the management tactics of persons subject to dispensary supervision.	<b>PLO 30</b> Determine the management tactics of persons subject to dispensary supervision (children, pregnant women, workers whose professions require mandatory dispensary examination).

**SYNDROMES AND SYMPTOMS CHECKED DURING THE EXAMINATION  
IN THE SPECIALTY "PEDIATRICS"**

**(List 1 of the Educational Professional Program)**

- abdominal pain;
- anemic syndrome;
- anuria and oliguria;
- arterial hypertension;
- arterial hypotension;
- articular syndrome;
- asphyxia;
- broncho-obstructive syndrome;
- cardiomegaly;
- chest pain;
- child growth retardation;
- coma;
- constipation;
- convulsions;
- cough;
- cyanosis;
- dehydration syndrome;
- disorders of consciousness;
- dizziness;
- dysuria;
- edematous syndrome;
- exhaustion;
- fever;
- headache;
- heart rhythm and conduction disturbances;
- hemorrhagic syndrome;
- hepatomegaly and hepatolienal syndrome;
- hyperglycemia;
- hypoglycemia;
- indigestion syndrome;
- internal bleeding;
- itching of the skin;
- jaundice;
- lymphadenopathy;

- malabsorption syndrome;
- nephritic syndrome;
- nephrotic syndrome;
- obesity (excess body weight);
- pain in the limbs and back;
- polyuria;
- premature sexual development;
- shortness of breath;
- sore throat paleness;
- stridor;
- sudden cardiac arrest;
- systemic inflammatory response syndrome;
- thirst;
- urinary syndrome;
- vomiting;
- weight loss;

**DISEASES ASSESSED DURING THE EXAM  
OF THE EDUCATIONAL COMPONENT “PEDIATRICS “  
(List 2 of the Educational Professional Program)**

I. Diseases of the blood and blood-forming organs, disorders involving the immune mechanism: anemia; hemolytic disease of newborns; hemophilia; leukemia; lymphomas; neonatal sepsis; thrombocytopenia; idiopathic thrombocytopenic purpura.

III. Diseases of the nervous system and sense organs:

Diseases of the nervous system: meningitis, encephalitis; migraine and other types of headache; perinatal encephalopathy.

Eye diseases: conjunctivitis.

Diseases of the throat, ears, nose: laryngitis; otitis; tonsillitis.

IV. Diseases of the cardiovascular system: arterial hypertension (primary and secondary); congenital heart defects; endocarditis; carditis (endocarditis, myocarditis, pericarditis) cardiomyopathy; acquired heart defects; heart rhythm and conduction disorders; heart failure.

V. Diseases of respiratory organs and mediastinum: asphyxia; bronchial asthma; bronchitis, bronchiolitis; bronchiectatic disease; bronchopulmonary dysplasia; congenital malformations of respiratory organs; cystic fibrosis; neoplasm of lungs and mediastinum; pleurisy; pneumonia; pneumothorax; respiratory distress syndrome and pneumonia of newborns; foreign body in the respiratory tract.

VI. Diseases of the digestive organs: congenital malformations of the digestive organs; ulcer disease; gastroesophageal reflux disease, esophagitis; gastritis, duodenitis; peptic ulcers of the stomach

and duodenum; liver failure; cholecystitis, cholangitis, gallstone disease, choledocholithiasis; celiac disease.

VII. Diseases of the genitourinary system: congenital malformations of the urinary system; glomerulonephritis; dysmetabolic nephropathy; nephrotic syndrome; pyelonephritis; urolithiasis; tubulointerstitial nephritis; urethritis; chronic kidney disease; cystitis.

VIII. Diseases of the skin and subcutaneous tissue: allergic dermatoses (dermatitis, toxidermia, eczema); purulent-inflammatory diseases in children and newborns; burns and frostbite; bullous dermatoses.

IX. Diseases of the musculoskeletal system and connective tissue: congenital and acquired malformations of the musculoskeletal system; acute rheumatic fever; dermatomyositis and polymyositis; reactive arthritis; systemic scleroderma; systemic lupus erythematosus; systemic vasculitis (nodular polyarteritis, hemorrhagic vasculitis, hypersensitivity vasculitis); chronic rheumatic disease; juvenile rheumatoid arthritis.

X. Diseases of the endocrine system, nutritional disorders and metabolic disorders: acromegaly and pituitary gigantism; congenital dysfunction of the cortex of the adrenal glands; nodular goiter, tumors of the thyroid gland; hyperparathyroidism; hypoparathyroidism; hypogonadism; hypothyroidism; protein-energy deficiency; hypopituitarism; pituitary dwarfism; genetic syndromes with endocrine complications (Turner syndrome, Russell-Silver, Prader-Willi, Laron syndrome, etc.); diffuse toxic goiter; endemic goiter; iodine deficiency diseases of the thyroid gland; dwarfism in a child born SGA; diabetes insipidus; organic (including congenital) hyperinsulinism; obesity; premature sexual development; violation of gender differentiation; violation of calcium-phosphorus metabolism, vitamin D metabolism; tumors of the pituitary gland; tumors of the adrenal glands; Klinefelter's syndrome; hereditary chromosomal disorders; thyroiditis; thyrotoxicosis; Itsenko-Cushing's disease and syndrome; chronic adrenal insufficiency; diabetes.

**EMERGENCIES THAT ARE ASSESSED DURING THE EXAM  
OF THE EDUCATIONAL COMPONENT "PEDIATRICS"  
(List 3 of the Educational Professional Program)**

Asphyxia (including neonatal); hypertensive crisis; hypoglycemia (coma); acute respiratory failure; acute retention of urine; acute adrenal insufficiency; acute

kidney damage; acute liver failure; acute heart failure; acute poisoning, including combat poisonous substances; acute anaphylactic reactions; acute heart rhythm disturbances; diabetic coma, including ketoacidotic, hyperosmolar, lacticidemic; collapse; sudden stoppage of blood circulation, sudden cardiac death; loss of consciousness and comatose states; convulsive syndrome; drowning; bites of snakes, insects, animals; shocks; burns, including in field conditions; foreign bodies of the respiratory tract, gastrointestinal tract, ENT organs and the eye.

**LABORATORY AND INSTRUMENTAL STUDIES THAT ARE ASSESSED DURING  
THE EXAMINATION OF THE EDUCATIONAL COMPONENT “PEDIATRICS”  
(List 4 of the Educational Professional Program)**

Analysis of ascitic fluid; pleural fluid analysis; analysis of synovial fluid; urine analysis according to Zimnytskyi; urine analysis according to Nechiporenko; alpha-amylase activity in blood and urine; total protein and its fractions; pulse oximetry, indicators of acid-base status and blood gases; C-reactive protein; blood glucose, glycated hemoglobin; oral glucose tolerance test; lipidogram, brain natriuretic peptide (BNP); blood hormones; ferritin, iron and copper of blood serum; creatinine, blood and urine urea, glomerular filtration rate; blood electrolytes; blood aminotransferases; total blood bilirubin and its fractions; Coagulogram; blood uric acid; lactic acid of the blood; blood alkaline phosphatase; histomorphological examination of lymph node biopsy; histomorphological examination of a biopsy of parenchymal organs; histomorphological examination of biopsy of mucous membranes; histomorphological examination of muscle and skin biopsy; study of the function of external breathing; endoscopic examination of the bronchi; standard ECG (in 12 leads); endoscopic examination of the bronchi; endoscopic examination of the digestive tract; echocardiography and dopplerography; general analysis of feces; pancreatic elastase of feces; fecal calprotectin; general blood test; general analysis of urine; glucose and acetone in urine; general analysis of cerebrospinal fluid; general analysis of sternal puncture; general analysis of sputum; breath test for *Helicobacter pylori*; general immunological blood profile; serological reactions in infectious diseases; express tests for viral diseases; amplification methods for infectious diseases, polymerase chain reaction (PCR); serological reactions in autoimmune diseases; microbiological research of biological fluids and secretions; methods of instrumental visualization

of the thyroid gland; X-ray contrast angiography; methods of instrumental visualization of abdominal organs; methods of instrumental visualization of chest cavity organs; methods of instrumental visualization of the genitourinary system; methods of instrumental visualization of the skull, spine, spinal cord, bones and joints; tuberculin diagnostics; multi-moment fractional study of bile and pH-metry of the stomach and esophagus; assessment of children's physical development according to sigma and centile nomograms; assessment of blood pressure in children according to percentile nomograms taking into account height; biomarkers of necrosis (creatine phosphokinase, MV-fraction, treponins).

**MEDICAL MANIPULATIONS THAT ARE ASSESSED DURING THE EXAM,  
OF THE EDUCATIONAL COMPONENT "PEDIATRICS"  
(List 5 of the Educational Professional Program)**

Take care of ears, ear cavity and eyes; perform indirect heart massage; to restore the patency of the respiratory tract; to carry out basic cardiopulmonary resuscitation; perform defibrillation using a manual automatic cardioverter defibrillator; register a standard 12-lead ECG; install a nasogastric and orogastric tube; carry out administration of medicinal substances (intravenous jet and drip, intraosseous), including in field conditions; provide peripheral venous access; measure blood pressure; perform bladder catheterization with a soft probe; transfuse blood components and blood substitutes; palpate the thyroid gland; perform Heimlich techniques; perform pulse oximetry; assess the state of sexual development of children; evaluate the patient's anthropometric parameters (body weight, height, waist circumference); to evaluate the pulse on the peripheral arteries; perform auscultation of the heart and blood vessels; perform percussion and auscultation of the lungs; palpate the abdomen; conduct a physical examination of the patient; conduct palpation of lymphatic nodes.

***Workplace of a higher education applicant in the station "Pediatrics, hybrid patient"***

1. Simulation mannequin of a child of the first year of life to assess lung auscultation skills – 1 pc.
2. Simulation mannequin of a child up to 5 years of age to assess lung auscultation skills – 1 pc.

3. Phonendoscope – 1 pc.
4. Spacer – 1 pc.
5. Inhaler with bronchodilator – 1 pc.
6. Inhaler with topical glucocorticoid – 1 pc.
7. A set of medicines according to the scenarios of tasks with a hybrid patient.
8. A set of radiographs according to the task scenarios with a hybrid patient.
9. patient.
10. A set of laboratory test results according to the task scenarios with a hybrid patient.
11. A set of photographs according to the task scenarios with a hybrid patient.
12. Mother or father of the hybrid patient (department employee).

***Workplace of the higher education applicant at the station “Emergency pediatrics, practical skills”***

1. A table for practicing practical skills.
2. Computer (if necessary).
3. A chair.
4. Couch for placing the simulator with the main end, which can be raised, a blanket and a pillow.
5. Simulation mannequins of children of different ages according to the clinical task.
6. The table is covered with a diaper (imitation of a resuscitation table with heating)
7. Simulation of a medical console with an imaginary oxygen source, pressure gauge, oxygen humidifier, oxygen tube.
8. Connex integrated wall system.
9. Diapers – 5 pcs.
10. A stand with a system for intravenous administration of drugs – 2 units.
11. Wall clock with a second hand.
12. Portable aerosol inhaler (spacer).
13. Ambu bag and face mask (size S, M, L), tube conditionally connected to an oxygen source.
14. Rubber pear with a soft tip (volume 30 ml).
15. Imitator of a pulse oximeter in the form of a photocell, fixed on Velcro.

16. Sink, means for treating hands, devices for drying hands (if it is impossible to equip the workplace with a sink, an imitation of a means for hygienic treatment of the hands of medical personnel is offered).

17. Container for collecting household and medical waste (fixed package class A, fixed package class B).

18. Electronic thermometer.

19. Glucometer.

20. Electronic tonometer with children's cuff.

21. Thermal blanket.

22. Tray for collecting used masks.

23. Stethoscope

24. Calculator.

25. Systems for intravenous infusions, intravenous catheter.

26. Imitators of medicines: 0.9% sodium chloride solution in soft packaging (vial/bag) 200 ml, Ringer's lactate solution in soft packaging (vial/bag) 200 ml, glucose solution 10%, 20%, Paracetamol (vial), syringes with drug labeling: Adrenaline, Ceftriaxone, Hydrocortisone, Prednisolone, Dexamethasone, Diazepam 0.5%, Chloropyramine hydrochloride, Diphenhydramine, Ampicillin, Gentamicin, Insulin, Propranolol and others.

27. Medicines for inhalation therapy: Salbutamol.

28. Spacer – 1 pc.

29. Examination gloves of various sizes (1 pair for each attempt of the accredited).

30. Alcohol wipes for treating the injection site.

***Workplace of a higher education applicant station "Emergency pediatrics, practical skills" (written tasks)***

1. Table for practicing practical skills – 1.

2. Chair – 1.

3. A computer for updating scripts, z-scores and percentile nomograms and tables, radiographs, patient photos, laboratory research data, etc.

4. Z-scores for assessing indicators of physical development of children up to 2 years old (boys and girls).

5. Z-scores for assessing indicators of physical development of children from 2 to 5 years old (boys and girls).

6. Z-scores for assessing physical development indicators of children from 5 to 10 years old (boys and girls).
7. Z-scores for assessing indicators of physical development of children from 5 to 19 years old (boys and girls).
8. Percentile nomograms for assessing the physical development of children from 2 to 20 years old (boys and girls).
9. Blood pressure percentile tables for children aged from 2 to 20 years old (boys and girls) depending on the height centile estimate.
10. Kramer's scale for assessing the level of bilirubin in the blood serum of newborns and young children.
11. Checklist of the corresponding task.
12. Transparent rulers – 2 pcs.
13. Electronic calculator – 1 pc.

The duration of work of an applicant of higher education at the station takes 6 minutes, of which 1 minute is for familiarization with the task and 5 minutes for completing the task.

### **1.3 GENERAL REQUIREMENTS FOR OSCE-2 TASKS AT THE STATION “PEDIATRICS, HYBRID PATIENT”**

The general requirements for OSCE-2 tasks attestation “Pdiatrics, hybrid patient” are based on a professional standard that provides for the ability to solve typical and complex specialized tasks and practical problems in professional activities in the field of health care, or in the learning process, which involves conducting research and/or implementing innovations and is characterized by the complexity and uncertainty of the conditions and requirements of the discipline “Pediatrics”.

The tasks in this station are aimed at assessing communication skills, collecting complaints and anamnesis from the parents of a hybrid patient, conducting an objective examination of the child, diagnosing and treating the child, determining subsequent management strategies, and performing medical procedures according to the task conditions.

The first part of the task consists of a summary of the pediatric patient's clinical situation, posted on the station doors for review. The second part of the task is presented as a “Scenario” for the task, containing a more

detailed description of the clinical situation. The candidate has 1 minute to review the “Scenario”.

While completing the task, the HEA verbally rehearses all actions and may request additional necessary materials from the examiner. When demonstrating interviewing skills and communicating with parents of a hybrid patient, the HEA applies international standards such as: “Algorithm for the Integrated Management of Childhood Illnesses”, “Algorithm for communication and additional examination for differential diagnosis of the causes of protracted (lasting more than 2 weeks) or chronic cough (lasting more than 8 weeks) and selection of management tactics”, “Algorithm for the differential diagnosis of hemorrhagic diseases in children”, “Communication algorithm for assessing the risk of bronchial asthma in children in the first 5 years of life and selection of management tactics”, and “Algorithm for the assessment, differential diagnosis, and medical management of rickets in children under 3 years of age”.

When examining a hybrid patient, the HEA may auscultate the hybrid patient before and after providing care, request the examiner to provide the results of certain clinical (heart rate, respiratory rate, blood pressure) and laboratory tests, a chest or abdominal X-ray, an ECG, and photographs of the patient to assess their appearance and condition.

When providing care to a hybrid patient, the examiner may report to the applicant changes in the child’s condition in response to therapy.

#### **1.4 GENERAL REQUIREMENTS FOR OSCE-2 TASKS AT THE STATION “EMERGENCY PEDIATRIC, PRACTICAL SKILLS”**

The general requirements for the third group tasks of OSCE-2 “Emergency pediatric, practical skills” are based on a professional standard that provides for the ability to solve typical and complex specialized tasks and practical problems in professional activities in the field of health care, or in the learning process, which involves providing emergency care to a pediatric patient and is characterized by the complexity and uncertainty of conditions and requirements from the discipline “Pediatrics”.

OSCE-2 tasks at the “Emergency pediatric, practical skills” station involve the demonstration of first aid skills using a mannequin and special

medical equipment, which allows you to recreate a specific clinical situation and carry out the necessary medical manipulations. During the exam, the ability to provide emergency care in the most common emergency conditions in pediatrics is evaluated.

The first part of the task consists of brief information about the clinical situation of the pediatric patient, which is posted on the door of the station for familiarization. The second part of the task is represented by the "Scenario" of the task itself. The scenario contains a more thorough description of the clinical situation. The applicant has 1 minute to familiarize himself with the script. During the performance of the task, the applicant speaks aloud all his actions and can ask the examiner for additional necessary materials. During the performance of the task using the mannequin, the algorithms for providing emergency care are worked out: "Anaphylactic shock", "Severe pneumonia", "Severe pneumonia with stridor", "Bronchial asthma, paroxysmal period", "Full-term newborn, born inactive with clear amniotic fluid", "Cardiac arrest in a child at an outpatient clinic", "Febrile convulsions", "Convulsive syndrome", "Diabetic ketoacidosis", "Hypoglycemic coma", "Removal of a foreign body from the respiratory tract", "Late umbilical sepsis", "Adrenogenital syndrome, hypovolemic shock".

During emergency care for a hybrid patient, the examiner may inform the applicant about changes in the child's condition in response to therapy.

Practical skills (written tasks) are tested:

- assessment of the physical development of children of different ages;
- assessment of the degree of arterial hypertension taking into account the centile assessment of the height of children of different ages;
- assessment of the sexual development of boys and girls.

When performing a written task, the HEA must request from the examiner signal or centile nomograms for assessing physical development for children of different ages, centile tables to evaluate blood pressure, taking into account the centile assessment of the child's height, Tanner's scales for assessing the sexual development of boys and girls, according to the "Scenario" of the task.

The answer to the task is completed with the following formulation of the preliminary diagnosis according to the "Scenario" of the task.

## **Section 2**

### **PRACTICAL SKILLS**

### **PERFORMANCE PROCEDURES**

#### **2.1 PROCEDURES FOR PERFORMING PRACTICAL SKILLS OF OSCE-2 AT THE STATION “PEDIATRICS, HYBRID PATIENT”**

1. Communication between a general practitioner and a hybrid newborn patient with a feeding problem (position of the mother and infant during feeding), according to the IMCI (Integrated Management of Childhood Illness) algorithm.
2. Communication of a general practitioner with a hybrid newborn patient with a feeding problem (applying the baby to the breast during feeding) according to the algorithm of IMCI.
3. Communication with the mother of a hybrid patient, a newborn child with jaundice, according to the algorithm of IMCI (Appendix 8).
4. Communication with the mother of a hybrid patient, a young child, suffering from pneumonia, according to the algorithm of IMCI.
5. Communication with the mother of a hybrid patient, a young child, suffering from probable pneumonia, according to the algorithm of IMCI, administration of drugs through a spacer.
6. Communication with the mother of a hybrid patient, a child suffering from a cough or an acute respiratory disease, according to the algorithm of IMCI, administration of drugs through a spacer.
7. Communication with the mother of the hybrid patient. Examination, examination and treatment of a child with an acute ear infection, according to the Algorithm of IMCI.
8. Communication with the mother of a hybrid patient with an acute throat infection, according to the Algorithm of IMCI.