

CONTENT

ABBREVIATION	5
INTRODUCTION	7
Section 1	
UNIFORM PROVISIONS FOR TAKING THE OBJECTIVE STRUCTURED CLINICAL EXAM (OSCE-2)	9
1.1 General rules for passing the OSCE-2	9
1.2 OSCE-2 examination stations of the educational component "Pediatrics"	15
1.3 General requirements for OSCE-2 tasks at the station "Pediatrics, hybrid patient"	26
1.4 General requirements for OSCE-2 tasks at the station "Emergency pediatric, practical skills"	27
Section 2	
PRACTICAL SKILLS PERFORMANCE PROCEDURES	29
2.1 Procedures for performing practical skills of OSCE-2 at the station "Pediatrics, hybrid patient"	29
2.2 Procedures for performing practical skills of OSCE-2 at the station "Emergency pediatrics, practical skills"	30
Section 3	
ALGORITHMS FOR PERFORMING PROCEDURES	32
3.1 Algorithms for performing procedures at the station "Pediatrics, hybrid patient"	32
3.2 Algorithms for performing procedures during the OSCE-2 examination on the station "Emergency pediatric, practical skills". Practical skills (written assignments)	56

Section 4

METHODS FOR ASSESSING THE ACQUISITION OF PRACTICAL SKILLS AND PROCEDURES

BY HIGHER EDUCATION APPLICANTS 78

LIST OF INFORMATION SOURCES USED 83

Literature 83

APPENDICES 89

Appendix 1. *Fenton preterm growth chart: boys and girls* 90

Appendix 2. *Z-scores and Percentile nomograms for assessment
of physical development of children from birth
to 2 years' old* 92

Appendix 3. *Z-scores and Percentile nomograms for assessment
of physical development of children from birth
to 5 years' old* 108

Appendix 4. *Z-scores and Percentile nomograms for assessment
of physical development of children from 2 to 5 years' old* ... 122

Appendix 5. *Z-scores and Percentile nomograms for assessment
of physical development of children from 5 to 19 years' old* ... 138

Appendix 6. *Percentile nomograms for assessment of physical
development of children from 2 to 20 years' old* 151

Appendix 7. *Blood pressure centile tables for children aged
2 to 20 years (boys and girls) depending on the height
centile estimate* 153

Appendix 8. *Cramer scale* 156

Appendix 9. *Chest X-rays in direct projection* 157

Appendix 10. *Tanner's Scale for Boys and Girls* 160

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

SpO₂ – 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.