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Federal State Budget Educational Institution
of Higher Education
Pacific State Medical University
of the Ministry of Health of the Russian Federation

APPROVED BY

Director of the Institute of E-Learning (Digital Department)
_____ / Filatova D.S./
"14th" of April 2025

COLLECTION OF ASSESSMENT TOOLS
Б1.О.54 Digital health technologies
of the basic educational program
of Higher Education

Specialty	**31.05.01 General Medicine for international students (in English)** (code, name)
Degree	Specialist's degree
Profile	02 "Healthcare" (in the field of providing primary health care to the population in medical organizations: polyclinics, outpatient clinics, inpatient/outpatient facilities of the municipal health care system)
Mode of study	**Full-time**
Period of mastering the BEP	**6 years** (nominal length of study)
Institute	of E-Learning (Digital Department)

Vladivostok, 2025

1. INTRODUCTION

1.1. **Collection of Assessment Tools** is a document that regulates the format, content, and types of assessment tools for continuous assessment, interim examination and final (state final) examination, and graded criteria for each type of assessment tools.

1.2. Assessment tools allows to evaluate the development of universal, general professional, and professional competencies (UCs, GPCs and PCs respectively) outlined in Federal State Educational Standard of Higher Education and defined in the basic educational program of higher education for the specialty 31.05.01 General Medicine for international students (in English), profile 02 "Healthcare" (in the field of providing primary health care to the population in medical organizations: polyclinics, outpatient clinics, inpatient/outpatient facilities of the municipal health care system).

(BEP HE for the 31.05.01 General Medicine for international students (in English) specialty, section 3 Learning Outcomes Requirements of the Basic Educational Program of Higher Education)

2. DOCUMENT BODY

2.1. Types of Assessment, Formats of Assessment Tools

No.	Types of assessment	Assessment Tools Format
1	**Continuous assessment**	**Tests**
		Interview Questions
2	**Interim assessment**	**Tests**
		Interview Questions

3. The contents of assessment tools for continuous and interim examination are prepared by the teacher of the course

Tests for continuous and interim assessment

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.01	General Medicine for international students (in English)
C	GPC-10	Has a grasp of modern information technologies and is able to use them when working to achieve objectives of professional activity
I		**ANSWER LEVEL 1 TEST QUESTIONS (ONE CORRECT ANSWER)**
		1. The transformation of the traditional diagnostic and treatment process consists of *1. improving the quality of medical care through the use of modern medical digital technologies. 2. the use of modern medical digital technologies by medical personnel 3. rapid changes in the traditional way of life and the capabilities of the human body and the healthcare system 4. changing the role of medical personnel in this process **2. The national project "Healthcare"** *1. unambiguously determines the relevance of forming modern digital competencies among medical personnel 2. contains a list of modern medical digital technologies that medical personnel must master 3. is among the eight federal projects 4. contains two federal projects that specify modern medical digital technologies that medical personnel must master **3. Creation of a unified digital circuit based on the unified state health information system (USHIS)**

		*1. is among the federal projects of the national project "Healthcare" 2. is among the federal projects of the national project/program "Digital Economy" 3. does not affect the achievement of the goals of federal projects 4. forms the regulatory and legal basis for digital transformation in healthcare **4. The architecture of the unified digital circuit is formed by** *1. a set of information functional subsystems operating at the level of the Russian Federation 2. a set of personalized and depersonalized arrays of medical data suitable for various processing methods 3. an array of medical data accumulated in data centers for processing by artificial intelligence algorithms 4. a set of requirements from various users of the USHIS **5. The following are most actively being introduced into practical healthcare** *1. health monitoring (sensorics) and mobile telemedicine complexes 2. telemedicine consultations and distance learning 3. remote biomonitoring systems 4. telemedicine consultations and mobile telemedicine complexes **6. The transformation of the traditional diagnostic and treatment process consists of** *1. improving the quality of medical care through the use of modern medical digital technologies 2. the use of modern medical digital technologies by medical personnel 3. rapid changes in the traditional way of life and the capabilities of the human body and the healthcare system 4. changing the role of medical personnel in this process **7. The national project "Healthcare"** *1. unambiguously determines the relevance of forming modern digital competencies among medical personnel 2. contains a list of modern medical digital technologies that medical personnel must master 3. is among the eight federal projects 4. contains two federal projects that specify modern medical digital technologies that medical personnel must master **8. Creation of a unified digital circuit based on the unified state health information system (USHIS)** *1. is among the federal projects of the national project "Healthcare" 2. is among the federal projects of the national project/program "Digital Economy" 3. does not affect the achievement of the goals of federal projects 4. forms the regulatory and legal basis for digital transformation in healthcare **9. The architecture of the unified digital circuit is formed by** *1. a set of information functional subsystems operating at the level of the Russian Federation 2. a set of personalized and depersonalized arrays of medical data suitable for various processing methods 3. an array of medical data accumulated in data centers for processing by artificial intelligence algorithms 4. a set of requirements from various users of the USHIS **10. Among the expected results of the implementation of USHIS is** *1. informing the population on issues of maintaining a healthy lifestyle

		2. information support for the development of software solutions based on the digital technology of the Internet of Things 3. formation of modern digital competencies among medical personnel 4. formation of databases of personalized information for the formation of clinical decision support systems **11. The main focus of the Concept of the relevance of digital transformation of healthcare is directed at** *1. quality of medical care 2. traditional diagnostic and treatment process 3. labor functions of medical personnel 4. regulatory and legal basis of digital transformation **12. The relevance of forming modern digital competencies in medical workers is due to** *1. direct and indirect instructions of relevant professional standards 2. The national project "Healthcare" 3. regulatory framework in the field of healthcare 4. local regulations of the medical organization **13. Digital transformation of healthcare implies** *1. achieving "digital maturity" of the industry 2. organization of management processes based on the results of processing medical data in electronic form and the transition to electronic document flow in healthcare 3. formation of modern digital competencies among medical personnel 4. the scale of tasks set by the national project "Healthcare" **14. The unified digital circuit represents** *1. a three-level integrated system for accumulating, transmitting and using medical and statistical information 2. medical information systems of medical organizations, which are the main source of information content for databases 3. a system for storing and processing information at the regional level 4. a state health information system that completes information processing and regulates its flows **15. Functional and technological requirements for MIS are regulated by** *1. Order of the Ministry of Health of Russia dated 12/24/2018 No. 911n "On approval of Requirements for state health information systems of the constituent entities of the Russian Federation, medical information systems of medical organizations and information systems of pharmaceutical organizations" 2. Federal Law No. 242-FZ dated 07/29/2017 "On Amendments to Certain Legislative Acts of the Russian Federation Regarding the Use of Information Technologies in the Field of Health Protection" 3. Federal Law No. 323-FZ dated 11/21/2011 "On the Fundamentals of Protecting the Health of Citizens in the Russian Federation" 4. a set of characteristics from various users of the USHIS **16. Generating a report in the MIS of the medical organization on the daily movement of patients in the hospital** *1. is among the requirements for the work of a ward nurse 2. constitutes information support for the work of the head of the medical organization 3. relates to the digital competencies of junior medical personnel 4. is among the requirements for the work of a reception desk nurse **17. Medical information system**

		*1. provides complete and comprehensive information interaction and support for the medical worker and patient during the provision of medical care on the principle of "24/7/365", regardless of the geographical location of the subjects of the medical service 2. is a three-level integrated system for accumulating, transmitting and using medical and statistical information 3. is a system for storing and processing information at the regional level 4. is a state health information system that completes information processing and regulates its flows **18. Access to personalized medical documentation and patient information is obtained by** *1. medical workers as part of their work in the unified digital circuit 2. researchers when forming databases to study the course and outcome of diseases, clinical and economic effectiveness of prevention methods 3. relatives of patients in the Patient's Personal Cabinet "My Health" on the Unified Portal of State and Municipal Services 4. researchers when creating algorithms and machine learning methods for the formation of clinical decision support systems **19. Second generation medical information systems** *1. have the ability to form, store and provide on request a "digital snapshot of the patient" 2. are a set of computer reference books and standard forms/forms 3. are able to generate "probabilistic hints" for medical workers and combine into a single digital stream not only data entered by staff, but also data coming directly from medical and laboratory equipment 4. are strong artificial intelligence technologies, combining subjects of medical care into a single intelligent circuit **20. Monitoring and management of patient flows** *1. relate to the functionalities that the medical organization's MIS must provide 2. do not provide for the direct involvement of medical personnel 3. are not included in the set of key functionalities of the medical organization's MIS 4. include integration with the medical image archive **21. Electronic medical document flow includes** *1. creation, signing and storage of electronic medical documents, their registration in the USHIS, providing access to medical documentation kept in electronic format 2. creation and provision of access to medical documentation kept in electronic format 3. document flow of all documentation of the medical organization 4. exchange of electronic documents with external organizations and health authorities **22. An electronic medical document can be issued to the patient** *1. in electronic or paper form (at the patient's request) 2. only in electronic form 3. in both electronic and paper form 4. only in paper form **23. Retention periods for electronic medical documents** *1. coincide with the retention periods for paper documents 2. are limited by the validity period of the electronic signature 3. are determined by the medical organization 4. are determined by federal executive authorities in the field of healthcare

24. Corrections to an electronic medical document
*1. are not made. A new version of the electronic medical document is created
2. are made within 10 days from the date of creation of the electronic medical document
3. are made at the patient's request
4. are made at the request of federal executive authorities in the field of healthcare

25. An electronic medical document is signed with enhanced qualified signatures by two medical specialists
*1. when several medical workers participate in the creation of the medical document
2. when using medical records obtained as a result of using medical devices approved for use
3. when using records contained in logs
4. when creating a document transmitted to the REMD

26. Telemedicine complex
*1. is a set of mobile and wearable software and hardware tools for use in home telemedicine, extreme medicine, disaster medicine, military medicine, as well as emergency and outpatient care and patient rehabilitation
2. is intended for use without the participation of a medical worker
3. is used in hospitals to provide primary medical and sanitary care by medical personnel
4. is a set of stationary software and hardware tools for use in home telemedicine, extreme medicine, disaster medicine, military medicine, as well as emergency and outpatient care and patient rehabilitation

27. Telemedicine technologies
*1. represent a method of providing medical services in which it is impossible to ensure physical contact of a medical worker or a team of doctors and nurses with the patient within a specified period of time, sufficient to provide medical care of adequate quality and possessing the necessary resource equipment
2. are information and communication technologies for exchanging information for the diagnosis, treatment and prevention of diseases and injuries
3. are a computer program formalized at the level of algorithmic instructions
4. are a remote contact of a medical worker or a team of doctors and nurses with the patient

28. The legal basis for the introduction of telemedicine technologies into the sphere of medical care for patients in the Russian Federation is established by
*1. Federal Law No. 242-FZ dated 07/29/2017 "On Amendments to Certain Legislative Acts of the Russian Federation Regarding the Use of Information Technologies in the Field of Health Protection"
2. Order of the Ministry of Health of Russia dated 11/30/2017 No. 965n "On approval of the procedure for organizing and providing medical care using telemedicine technologies"
3. Order of the Ministry of Labor of Russia dated 07/31/2020 No. 470n "On approval of the professional standard 'Paramedic'"
4. Order of the Ministry of Labor of Russia dated 07/31/2020 No. 475n "On approval of the professional standard 'Nurse / Male Nurse'"

29. The fundamental difference of medical sensorics
*1. lies in the possibility of using specialized telemedicine medical devices without the participation of a medical worker

		2. is implemented using virtual and augmented reality technologies 3. lies in attracting a minimum number of medical personnel during the work process 4. lies in the impossibility of attracting medical personnel when using telemedicine technologies **30. AR and VR technologies have received the greatest development in medical practice** *1. in surgery and medical rehabilitation 2. in medical psychology 3. in conducting virtual consultations 4. in medical and pharmaceutical education **31. The use of virtual and augmented reality technologies** *1. allows to increase the motivation and involvement of patients in the process of medical rehabilitation 2. reduces the quality of exercise performance during medical rehabilitation by up to 30% 3. practically does not change the quality of exercise performance during medical rehabilitation 4. is based on the use of invasive devices **32. VR and AR technologies** *1. represent such a human interaction with the digital world, in which visual and sound images directly affect the senses 2. represent a number of tasks that a person solves relatively successfully at a subconscious level 3. are a computer program formalized at the level of algorithmic instructions 4. are modeled so that a person can distinguish the digital world from the real one **33. Advanced medical solutions in surgery** *1. are based on virtual and augmented reality technologies 2. use only virtual reality technologies 3. are based only on augmented reality technologies 4. do not require the use of modern digital technologies **34. Recording the results of a medical rehabilitation procedure in the patient's electronic medical record** *1. is among the digital competencies of medical personnel 2. is implemented using virtual and augmented reality technologies 3. does not relate to the digital competencies of nursing and junior medical personnel 4. does not relate to the competencies of nursing and junior medical personnel **35. Artificial intelligence** *1. is defined as a property of computer systems to perform creative functions 2. represents a number of tasks that a person solves relatively successfully at a subconscious level 3. is a computer program formalized at the level of algorithmic instructions 4. represents a number of tasks that a person solves relatively successfully at the level of acquired skills **36. Artificial intelligence technologies in medicine include** *1. systems for analyzing medical images for the presence or absence of various pathological conditions; 2. wearable medical devices that transmit information via 5G networks

		3. smartphone applications through which the owner can quickly receive laboratory diagnostic results 4. big data: biological parameters, laboratory test results, medical images, symptoms recorded during the appointment, collected over several years **37. Artificial intelligence technologies in medicine** 1. provide support to the doctor in making a diagnosis, increasing the reliability of the decision made 2. form an information panel with operational data for the head of the medical organization 3. allow replacing medical personnel at any level 4. do not provide for the direct involvement of medical personnel **38. The principle of operation of a neural network** *1. is to simulate the operation of a network of neurons similar to the operation of biological neurons of the brain 2. allows solving only one highly specialized problem 3. is based only on one layer of neurons 4. is an artificial intelligence technology that combines subjects of medical care into a single intelligent circuit **39. The most effective tool for implementing telemedicine systems, CDSS, telemedicine or other technologies is** *1. project management 2. strategic management 3. medical information system 4. USHIS
I		**ANSWER LEVEL 2 TEST QUESTIONS (MULTIPLE CORRECT ANSWERS)**
		1. Areas of application of CDSS 1. maintaining electronic medical records *2. choice of treatment tactics *3. disease identification 4. medical statistics **2. "Transparency" of CDSS for the user is determined by** *1. the ability to receive responses from the CDSS during problem solving 2. dialogue with the CDSS in natural language 3. information about the content of the entire system knowledge base *4. receiving an explanation of the proposed final hypothesis **3. Proposing and substantiating a hypothesis by the CDSS involves** *1. auto-checking of put forward hypotheses based on additional information *2. the possibility of sending an additional survey to the doctor about certain symptoms in the patient 3. the mandatory presence of all necessary information about the patient's condition at the initial data entry *4. indication of criteria for the diagnostic effectiveness of additional studies and their feasibility given the patient's condition **4. Dynamic intelligent systems promptly warn about** *1. the possibility of rapid development of complications of the pathological process *2. the occurrence of threatening deviations in the patient's condition 3. the risk of patient death 4. errors in treatment **5. CDSS use to confirm a decision**

		1. computational methods *2. differentiating features as necessary conditions for an effective solution 3. mandatory presence of all diagnostic or prognostic most important features *4. plausibility assessments of hypotheses **6. CDSS allow clarifying the symptomatic picture in a patient as follows** 1. identify errors in the results of conducted studies 2. detect inconsistency of complaints *3. identify unrecorded symptoms *4. compare the manifestation of symptoms in the patient with those traditional for this pathology **7. CDSS make decisions using** *1. requesting additional information from the doctor about signs in the patient 2. studying the frequency of various diseases 3. suggesting a description of the disease in books *4. checking possible hypotheses in the knowledge base **8. Intelligent clinical systems are based** *1. on large amounts of data from medical records 2. on data on treatment methods over many decades 3. on statistical data *4. on data from medical literature **9. The effectiveness of CDSS lies** 1. in the transition to a new stage of healthcare digitalization *2. in obtaining optimal solutions with insufficiently complete information about the patient 3. in expanding access to electronic resources *4. in saving time on diagnosis, prognosis and treatment selection **10. Interaction of the electronic medical record (EMR) and CDSS** *1. automatic recording of the CDSS solution in the EMR and explanation at the doctor's request 2. automatic data exchange without explanations *3. automatic search for necessary data in the EMR after the doctor's request to the CDSS 4. in dialogue mode **11. The diagnostic process in CDSS includes** 1. analysis of acute diseases in the medical history 2. analysis of the patient's social status *3. putting forward a preliminary diagnostic hypothesis *4. substantiation of the final diagnosis hypothesis **12. CDSS includes** 1. patient database *2. knowledge base to support clinical decision-making *3. explanation block for proposed decision-making hypotheses 4. statistical data processing block **13. CDSS provides** 1. automation of the diagnostic and treatment process *2. diagnosis of atypical variants and stages of diseases 3. doctor's work in the medical information system *4. accounting for relationships of features

		14. CDSS helps in identifying *1. atypical forms of diseases 2. patient complaints 3. errors in conclusions during research *4. rare diseases **15. An intelligent system to support doctor's decisions is** *1. an assistant in decision-making *2. a program based on medical knowledge 3. an electronic notebook *4. an electronic consultant **16. The "mask" method in CDSS allows** *1. to identify signs in a patient that are not related to the diagnosed disease 2. to detect diseases hiding behind other masks *3. to identify signs of the disease not noted by the doctor or absent in the patient 4. to suggest the presence of other diseases in the medical history

Assessment criteria
"Very good" – 80-100% correct answers of questions of every level
"Good" - 70-79% correct answers of questions of every level
"Satisfactory" - 55-69% correct answers of questions of every level
"Unsatisfactory" - less than 55% correct answers of questions of every level

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.01	General Medicine for international students (in English)
C	GPC-10	Has a grasp of modern information technologies and is able to use them when working to achieve objectives of professional activity
I		**ANSWER THE QUESTIONS**
		1. Modern terminology, the concept of virtualization, classifications of VR/AR technologies. 2. Modern effective practices for using digital technologies and telemedicine in medicine. 3. Modern terminology, the concept of implementing robotic systems in modern healthcare. 4. History of the implementation of robotic systems in medical education and healthcare. 5. Modern innovative effective practices for implementing robotic systems in pharmaceuticals (robotic pharmacy). 6. Modern innovative effective practices for implementing robotic systems in healthcare (Smart Hospital). 7. Modern terminology, relevance, concept of digital transformation of healthcare in the Russian Federation. 8. Problems of implementing digital technologies in healthcare (human factor). 9. The modern paradigm of the project method for implementing digital technologies in healthcare. 10. Effective implementation of software and hardware solutions for digital transformation in healthcare.

Assessment criteria

"Pass":

1. The answer to the question is presented sequentially, the main positions and conclusions on the problem are logically connected and justified. The information is presented in the context of the question.

2. The answer reveals the essence and content of key concepts, and reveals the classification of technology types.

3. The answer is reasoned, with references to sources and necessary examples.

"Fail":

1. A personal point of view on the problem is presented at a basic level without argumentation, lacking logical sequence and conclusions on the question.

2. The answer does not present and/or reveal key questions and terms. The classification is presented incompletely.

3. The problem is not disclosed or the information is provided out of the context of the question.

4. Assessment criteria for learning outcomes

"Pass" is given to a student who has shown a sufficiently strong knowledge of the basic concepts of the subject; is able to complete specific practical tasks outlined in the program with no outside help, use recommended reference material, and correctly evaluate the results.

"Fail" is given to a student who has significant gaps in knowledge of the basic concepts of the subject, is not able reach the correct solution to a specific practical task outlined in the curriculum even with outside help.