MINISTRY OF EDUCATION AND SCIENCE OF THE KYRGYZ REPUBLIC,

State educational institution of higher professional education
Kyrgyz-Russian Slavic University
Institute of Clinical Medicine and Biomedical Technologies

Endorsed by
the Director, Assoc. Prof. Abilova S.S.

04.11.26

Evidence Based Medicine

Work program of the discipline (Module)

Attached to the department: **Physics, Medical Informatics and Biology**
Syllabus 560001_21_1LDi.pli.xml
560001 - KR General Medicine

Qualification **Specialist**

Mode of Study **Intramural**
Total Credit Value 2 credit point

Course Hours 72 cope of Testing Semesters:
including: credit 11
in-class learning 32
individual work 39,7

Schedule of study hours (per semester)

Semester of the academic year	**11 (6.1)**		**Total**	
weeks	16			
Type of occupation	UP	RP	UP	RP
Lectures	16	16	16	16
Practical	16	16	16	16
Contact work during the period of theoretical training	0,3	0,3	0,3	0,3
including interactive	4	4	4	4
Total classroom	32	32	32	32
contact work	32,3	32,3	32,3	32,3
Independent work	27,7	27,7	27,7	27,7
Total	60	60	60	60

The program was developed:
Candidate of Biological Sciences, assistant professor, Sorokin AA _____

Reviewer:
Doctor of medical sciences, professor, Institute of Mountain Physiologt qnd Medicine of the Natiorsal Academy of sciences Kyrgtz Republic chief researcher Shanazarov A. S. _____

Reviewer:
Candidate of physical and mathematical sciences, associated professor of the department of Department of Physics, Medical Informatics and Biolog Kondrateva E.I. _____

Work program of the discipline:
Fundamentals of Critical Thinking: Evidence Based Medicine.

Developed in accordance with the State Educational Standard for Higher Professional Education of the Kyrgyz Republic, approved by the Order of the Ministry of Education and Science of the Kyrgyz Republic No. 1357/1 dated June 30, 2021.

Compiled on the basis of the curriculum:
Specialty General Medicine 560001_21_1LDi.pli.xml
approved by the scientific council of the university on _26.06.2026_ (protocol № _11_)

The work program was approved at the meeting of the department
Physics, medical informatics and biology

Protocol №_1_ by _28_ _08_ 202_6_,
Valid Duration of the program: 2026-2032 ac. y.
Head of Department, Ph.D. in Physics & Math., Docent E. I. Kondratieva. _____

Approved by the HEP: _____

1. COURSE OUTLINE OBJECTIVES	
1.1	Development of students' common vision of the structure, concepts, methods and techniques of evidence-based medicine.
1.2	The development of the thesaurus and operational capabilities to a level where their interaction will allow quite simply to formalize the tasks that arise in the process of practical work and solve them.
1.3	To show the simplicity and consistency of the main statistical criteria involved in evidence-based medicine in order to remove the often emerging potential barrier of fundamental unknowability for a particular individual, statistical means of solving medical problems.
1.4	Teaching student's knowledge, skills and practical skills in EBM, with the help of which it is possible to independently master the technology for assessing the quality of medical information and its applicability in clinical practice.
1.5	Development of the ability to draw up a solution plan and implement it using the selected methods.
1.6	Development of the ability to analyze and practically interpret the results obtained.
1.7	Developing the ability to use various kinds of reference materials and manuals necessary for solving practical problems.

2. THE PLACE OF DISCIPLINE IN THE STRUCTURE OF THE GENERAL EDUCATION PROGRAM	
Cycle (section) GEP:B1.O	
2.1	**Requirements for the preliminary preparation of the student:**
2.1.1	Medical Informatics
2.1.2	microbiology, virology
2.1.3	normal physiology
2.1.4	Pathophysiology, clinical pathophysiology
2.1.5	Traumatology, orthopedics
2.1.6	Ophthalmology
2.1.7	Pediatrics
2.1.8	Otorhinolaryngology
2.2	**Disciplines and practices for which the development of this discipline (module) is necessary as previous:**
2.2.1	Residence training
2.2.2	Internship training
2.2.3	Conducting clinical trials
2.2.4	Conducting clinical activities

3. STUDENT COMPETENCES FORMED AS A RESULT OF MASTERING THE DISCIPLINE (MODULE)	
OK-3 - is able and ready to collect, process and interpret, using modern information technologies, the data necessary to form judgments on relevant social, scientific and ethical problems	
know:	
Level 1	- methods for searching for evidence in existing databases (PubMed, Embase, Cochrane etc.);
Level 2	- accessible databases of evidence; - operators and criteria used in international databases; - differences and practical relevance of using original research, systematic reviews and literature reviews
Level 3	- primary and secondary sources of evidence;
Ability:	
Level 1	- use the structure of a well-formulated clinical question to search for evidence-based information
Level 2	- search international databases - form conclusions based on systematic reviews of the literature
Level 3	- evaluate the reliability of the results of the study; - interpret the results of scientific research - formulate the goals and objectives of an epidemiological study

Skills:	
Level 1	- planning an epidemiological study;
Level 2	- use of operators (OR, NOT, AND) in international databases;
Level 3	- searching for evidence-based information in existing databases (PubMed, Embase, Cochrane etc.);
OK-7: Capable of analyzing and evaluating the socio-economic and cultural consequences of new developments in science, engineering, technology, and the professional sphere, as well as organizing the activities of expert/professional groups or organizations and presenting the results of their work.	
know:	
Level 1	- To be familiar with the key trends in the development of science, engineering, and technology in medicine; the methodology for assessing the socio-economic and cultural impacts of innovations; and the principles for organizing the work of expert groups, as well as the procedures for presenting their findings.
Level 2	-
Level 3	-
Ability:	
Level 1	- Be able to analyze the impact of new developments in science and technology on the professional field; organize the work of small groups to address expert-level tasks; and present the results of analytical work in a well-reasoned manner.
Level 2	-
Level 3	-
Skills:	
Level 1	- Possess the skills for the systematic assessment of the consequences of scientific and technological progress within the context of healthcare; the methods for organizing and managing the work of expert groups; and the tools for professional communication and the presentation of analytical findings.
Level 2	-
Level 3	-
PC-20: Capable and prepared to analyze and publicly present medical information based on evidence-based medicine.	
know:	
Level 1	- Understand the fundamental principles of evidence-based medicine, methods for the statistical analysis of medical data, criteria for the validity of clinical studies, and the rules for the public presentation of scientific and medical information.
Level 2	-
Level 3	-
Ability:	
Level 1	- The ability to critically analyze medical publications and one's own research data; to interpret statistical indicators within a clinical context; and to prepare and publicly present reports, presentations, and accounts based on evidence-based data.
Level 2	-
Level 3	-
Skills:	
Level 1	- Possess a mastery of the methodology of evidence-based medicine for the comprehensive analysis of medical information; possess skills in professional public communication; and have the ability to present the results of scientific research and clinical data at a high expert level.
Level 2	-
Level 3	-

As a result of mastering the discipline, the student must

3.1	**Know:**
3.1.1	definition and basic concepts of evidence-based medicine
3.1.2	types of designs
3.1.3	hierarchy of evidence
3.1.4	basic statistical methods in evidence-based medicine;
3.1.5	the formulation of the clinical question
3.1.6	technology for assessing the quality of clinical guidelines
3.1.7	highlights of the analysis of scientific medical data and conclusions from studies
3.2	**Ability:**
3.2.1	present research results in the SPSS application

3.2.2	set the necessary medical tasks, according to the received medical data
3.2.3	analyze and substantiate conclusions based on the obtained medical data
3.2.4	use modern computers to process medical information
3.2.5	use various methods of analysis when working with scientific medical data
3.2.6	analyze new scientific and educational literature, the results of experiments
3.3	**Skills:**
3.3.1	methods of creating a scientific base in the SPSS application program
3.3.2	methods of setting the necessary medical tasks
3.3.3	theoretical and practical methods of analysis and obtaining reasonable conclusions on the received medical data
3.3.4	methods of practical use of modern computers for processing medical information
3.3.5	skills in using various methods of analysis when working with scientific medical data
3.3.6	methods of analysis of new scientific and educational literature, experimental results

4. STRUCTURE AND CONTENT OF THE DISCIPLINE (MODULE)

Activity code	Name of sections and topics / type of lesson /	Semester/ Course	Watch	Competencies	Literature	Interactive	pre preparation	Note
Section 1. Basic principles and clinical epidemiology								
1.1	Basic principles and concepts of clinical epidemiology and evidence-based medicine (history of DM, research designs, hierarchy of evidence, statistical methods in DM) /lecture/	11	16	OK-1 OK-3	L1.1- L1.4 L2.1-L2.4 E1-E5			
1.2	Survival analysis /practice/	11	5	OK-1 OK-3	L1.1- L1.4 L2.1-L2.4 E1-E5			
1.3	Cohort studies, hazard ratio	11	5	OK-1 OK-3	L1.1- L1.4 L2.1-L2.4 E1-E5	4		An interactive lesson in the form of a role-playing game, making calculations and interpreting the results on the example of a specific nosology
1.4	Case-control study. Odds ratio /practice/	11	5	OK-1 OK-3	L1.1- L1.4 L2.1-L2.4 E1-E5			
1.5	Comparison of proportions ($\chi 2$ test, Fisher's exact test, Z-test, Cochran, Mantel-Hanzel, McNemar tests). /practice/	11	6	OK-1 OK-3	L1.1- L1.4 L2.1-L2.4 E1-E5			
1.6	Studying the video lesson "Survival Analysis". Choice of nosology. Setting goals. Carrying out calculations. Interpretation of results. /independent work/	11	3	OK-1 OK-3 PC-2	L1.1- L1.4 L2.1-L2.4 E1-E5			
1.7	Studying the video lesson "Risk ratio". Choice of nosology. Setting goals. Carrying out calculations. Interpretation of results. /independent work/	11	3	OK-1 OK-3	L1.1- L1.4 L2.1-L2.4 E1-E5			
1.8	Studying the video lesson "Odds ratio". Choice of nosology. Setting goals. Carrying out calculations. Interpretation of results. /independent work/	11	3	OK-1 OK-3	L1.1- L1.4 L2.1-L2.4 E1-E5			

1.9	Studying the video lesson "Comparison of shares". Choice of nosology. Setting goals. Carrying out calculations. Interpretation of results. /independent work/	11	3	OK-1 OK-3	L1.1- L1.4 L2.1-L2.4 E1-E5			
Section 2. Medical information search strategy								
2.1	Anatomy of a well-formulated question. Formation of a search strategy. Formulation of a clinical question on therapy. Critical evaluation of the found publication. /practice/	11	5	OK-1 OK-3	L1.1- L1.4 L2.1-L2.4 E1-E5			
2.2	Clinical issues related to diagnosis and prognosis. Critical evaluation of the found publications. /Practice/	11	5	OK-1 OK-3, SLK-1	L1.1- L1.4 L2.1-L2.4 E1-E5			
2.3	Search for information on the Internet. Evidence-based medicine resources on the Internet. Cochrane Library and other information bases /independent work/	11	3	OK-1 OK-3 PK-26	L1.1- L1.4 L2.1-L2.4 E1-E5			
2.4	Search for clinical guidelines on nosologies. Critical assessment of the methodological quality of the AGREE tool manuals /individual work/	11	2.7	OK-1 OK-3 SLK-1 PK-26	L1.1- L1.4 L2.1-L2.4 E1-E5			
2.5	/KrTO/	11	0.3	OK-1 OK-3 SLK-1 PK-26				
	Credit / Credit SOts /	11		OK-1 OK-3 SLK-1 PK-26				

5. VALUATION FUND

5.1. Control questions and tasks

Questions to check the level of knowledge KNOW:
- definition of evidence-based medicine;
- the concept of evidence-based medicine;
- main provisions of clinical epidemiology;
- research designs;
- basic statistical methods of evidence-based medicine;
- the concept of surrogate endpoints;
- systematic review and meta-analysis;
- hierarchy of evidence;
- levels and classes of evidence;
- clinical trial phases;
- formulate a clinical question (PICO);
- clinical guidelines quality assessment points (AGREE);
- points of critical evaluation of medical publications, taking into account the control question;
- main medical resources on the Internet (MedLine, Cochrane, PubMed);
- medical information search strategy;
- key resources for evidence-based medicine;
- the anatomy of a well-formulated question;
- critical evaluation of publications depending on the clinical issue (results of a randomized controlled trial, diagnosis, prognosis);

- core resources on clinical guidelines;
- AGREE tool;

Tasks for checking the level of training TO BE ABLE and OWN:
From the given list of nosologies, select one and perform the following actions:
- write a brief annotation on the selected nosology;
- write out and talk about the main laboratory parameters that characterize it;
- create a training file in SPSS based on the knowledge of the selected nosology;
- solve two tasks for the analysis of survival;
- solve two odds ratio problems;
- solve two tasks on the risk ratio (with the calculation of NNT);
- solve two tasks for comparing shares;
- to interpret all the results obtained;
- analyze an article that uses the RCT design;
- analyze an article that uses the design of cohort studies;
- analyze an article that uses the case-control design;

LIST OF NOSOLOGIES:
- brain abscess
- adenovirus infection
- Acromegaly
- Actinomycosis
- Albinism
- Alveococcosis
- Alveolitis
- Amyloidosis
- Anemia Fanconi
- aplastic anemia
- Acidosis
- babesiosis
- Bartonellosis
- Infertility
- Alzheimer's disease
- Bowen's disease
- Bourneville disease
- Itsenko-Cushing's disease
- Kawasaki disease
- Lyme disease
- Legionnaires' disease
- Fabry disease
- Hodgkin's disease
- Sjögren's disease
- Bronchial asthma
- Bronchitis

- Bronchiectasis
- Viral hepatitis
- Vitiligo
- gas gangrene
- Sinusitis
- Ganglion
- Hemorrhagic vasculitis
- Hemorrhagic stroke
- Gigantism
- Hydrocephalus
- Hypercalcemia
- Glomerulonephritis
- Gonorrhea
- Dermatitis
- iron deficiency
- Yellow fever
- Cholelithiasis
- Goiter

- Infectious mononucleosis
- Ischemic stroke
- Measles
- Hives
- Rubella
- Q fever
- Laryngitis
- Leukemia
- Leprosy
- Burkitt's lymphoma
- Lymphosarcoma
- Dengue fever
- Melanoma
- Meningitis
- myasthenia gravis
- multiple myeloma
- cystic fibrosis
- Osteoarthritis
- Acute pneumonia
- Papilloma
- pyodermatitis
- Gout
- Polio
- Porfiria
- bubble skid
- Cancer
- Rickets
- Rheumatism
- erysipelas
- Sarcoidosis
- seborrhea
- Sharp's syndrome
- Systemic lupus erythematosus
- Teratoblastoma
- Toxoplasmosis
- Tuberculosis
- nodular goiter
- Cirrhosis of the liver
- Cytomegalovirus infection
- Eczema
- Enteroviral infection
- Ulcer

5.2. Topics of term papers (projects)

The discipline does not provide for writing term papers and projects

5.3. Evaluation fund

SITUATIONAL PROBLEM. List of tasks:
- create and populate an SPSS file;
- calculate the parameters of survival analysis using the Kaplan-Meier procedure (5 types of tasks);
- evaluate the risk factor using the case-control design (odds ratio) (5 types of tasks);
- assess the risk factor using the design of cohort studies (risk ratio) (5 types of tasks);
- based on the results of the previous task, calculate NNT and 95% CI;
- compare shares (percentages) using various criteria (5 types of tasks);
- create a strategy for searching for information on therapy, diagnosis, prognosis;
- conduct a critical assessment of the found publication;
- select clinical guidelines from the list of approved clinical guidelines by the Ministry of Health of the Kyrgyz Republic;

- conduct a critical assessment of the methodological quality of the selected clinical guidelines for the AGREE instrument;

TEST. List of control tasks:
- to answer the question whether the presence of myeloid blasts in the blood really increases the life span of patients with myeloid leukemia;

- answer the question: does the new drug really lead to remission faster than the old one;
- answer the question: does the new method of treatment really lead to rehabilitation faster;
- answer the question: does the addition of adrenaline to the anesthetic really increase the duration of anesthesia in dentistry;
- to answer the question: does combination therapy really prolong life longer than monotherapy with chemotherapy through the hepatic artery after resection of metastases in liver cancer of the colon and rectum;

- answer the question: does treatment of periodontitis during pregnancy really increase the risk of preterm birth and stillbirth;

- estimate the survival time of AIDS patients depending on the prognostic stage;
- answer the question whether sickle cell anemia (HbAS) is a risk factor for intellectual retardation in children;
- whether the human papillomavirus is a risk factor for developing laryngeal cancer;
- whether radiotherapy for breast cancer is a risk factor for the development of coronary artery disease;
- whether asthma is a risk factor for pneumococcal disease;
- whether the use of aprotinin is a risk factor for bleeding during heart surgery in relation to aminocaproic acid;
- whether obesity in early pregnancy is a risk factor for preeclampsia;
- whether uterine fibroids are a risk factor for congenital malformations;
- whether earlier removal of uterine fibroids really reduces the risk of congenital malformations;
- whether HIV infection is a risk factor for developing tuberculosis;
- to form a strategy for searching for medical information on treatment, prevention, diagnosis, prognosis;
- evaluate the results of the found publications on therapy and prevention: were there enough patients included in the study, were they randomized, were the groups the same at the beginning, were the groups equal, did all patients reach the end of the study, were the patients analyzed in their groups;
- whether the study was blinded, whether the study was placebo-controlled, how long the study lasted, whether there was enough time;

- the results are confirmed and accepted, are they clinically significant, how great was the treatment effect, how accurate is the assessment of the treatment effect;

- how treatment outcomes will help clinicians;
- questions on the methodological quality of clinical guidelines: calculate scores for 6 sections of the AGREE instrument, final assessment of clinical guidelines;

List of test questions (Appendix 1)

5.4. List of types of evaluation tools

Situational task
Test
Test
Situational task assessment scale (current control)
Is obesity in early pregnancy a risk factor for preeclampsia?

Exercise:
Select the design of the study, simulate the conduct of the study, select the calculation method appropriate to the design, perform the calculation and interpret the results.
Sample answer to a situational problem:
- When solving this problem, the design of cohort studies is the most optimal. In total, 2278 pregnant women were under observation, who were observed during the entire period of pregnancy. In the early stages of pregnancy, obesity was observed in 209 women, of which the state of preeclampsia was recorded

y 105. In women without obesity, the state of preeclampsia was recorded in 383 cases. Since the design of a cohort study is a method for calculating the hazard ratio. The SPSS file consists of two variables. The first variable captures the presence or absence of obesity, and the second, the presence or absence of preeclampsia. Since the relative risk is 2.7, and the 95% CI of the relative risk does not contain 1, it can be assumed that the presence of severe obesity increasesthe frequency of preeclampsia by 2.7 times compared with the group where obesity was not observed. The NNT calculation gives a result of 3.15, which suggests that out of every three obese pregnant women, at least one will have a complication such as preeclampsia.

GRADING INSTRUCTIONS / Scoring:
- The solution is correct and complete, including all the above elements - 5 points;
- An incomplete solution includes two of the above elements - 4 points;
- The solution is incomplete, includes one of the above elements - 2 points;
- All elements are written incorrectly - 0 points;

SCALE OF EVALUATION OF CONTROL WORK (current control)
1. Set a task for applying the survival analysis method. Create a file, carry out calculations and interpret the results.

2. Set a task for applying the odds ratio method. Create a file, carry out calculations and interpret the results.

3. Set a task for applying the risk ratio method. Create a file, carry out calculations and interpret the results.

TASKS:

1. Explain the main ideas of the survival analysis method. Describe the calculation scheme. Indicate the main elements in the calculation results and their interpretation.

2. Explain the basic ideas of the odds ratio method. Describe the calculation scheme. Indicate the main elements in the calculation results and their interpretation.

3. Explain the basic ideas of the hazard ratio method. Describe the calculation scheme. Indicate the main elements in the calculation results and their interpretation.

STANDARDS of answers to the situational task:

1. To conduct a survival analysis, it is first necessary to define what constitutes an event. Further, three variables are introduced into consideration: the time before the event, the variable fixing whether the event occurred for a given patient, and the variable fixing the patient's attitude to a particular group. Next, a file is created and the study is simulated. Particular attention is paid to censored data. After the calculations, the mean time to the event, the median and confidence intervals for them are interpreted. The group comparison results are interpreted using the log rank test.

2. When using case-control design and odds ratio, first of all, the definition of chance and odds ratio is given. In the process of answering, the student should cover the following questions: to determine the population from which cases and controls were selected, how comparison groups were formed, how the effect of the studied risk factor was evaluated. The following is about creating a file, performing calculations and interpreting the results.

3. When using the design of cohort studies and the risk ratio, the student should cover the following issues: define the population from which the cohort was formed, how the fact of exposure to the risk factor was revealed, how the observation period was determined. The next step is to create a file, perform calculations, and interpret the results.

GRADING INSTRUCTIONS / Scoring:

- The solution is correct and complete, including all the above elements - 15 points;
- The solution is incomplete, does not include two of the above elements - 10 points;
- The solution is incomplete, includes one of the above elements - 5 points;
- All elements are written incorrectly - 0 points;

TEST EVALUATION SCALE: (interim control)

- "Excellent" - 90-100% correct answers;
- "Good" - 80-89% correct answers;
- "Satisfactory" - 60-79% of correct answers;
- "Unsatisfactory" - less than 60% of correct answers;

SCALE OF EVALUATION OF ORAL SURVEY (intermediate control - "KNOW")

The following criteria are taken into account when evaluating oral responses to the KNOW proficiency test:
definition and basic concepts of evidence-based medicine;
rules for using the "AGREE" and "PICO" algorithms;
defining the main study designs
evidence classes
randomization and blinding
RCT rules
rules for conducting cohort studies
rules for conducting case-control studies
surrogate endpoints
basic principles of statistical information processing;
the main methods of using one or another qualitative statistical processing of medical data; highlights of the analysis of scientific medical data and conclusions from studies;
A mark (8-10 points) evaluates the answer, which shows a solid knowledge of the terminology of evidence-based medicine; excellent knowledge of algorithms, deeply distinguishing longitudinal from cross-sectional studies; confidently distinguishes between types of random variables; fluent in the basic principles and methods of statistical processing of medical data; shows a sound knowledge of the interpretation of the results obtained.

A mark (4-7 points) evaluates the answer, which shows a solid knowledge of the terminology of evidence-based medicine; insufficiently deep knowledge of the structure of medical research, superficially distinguishing between longitudinal and cross-sectional studies; not confidently distinguishes between types of random variables; Poor

knowledge of the basic principles and methods of statistical processing of medical data; shows uncertain knowledge on the interpretation of the results obtained.

A mark (1-3 points) evaluates the answer, which shows an average knowledge of the terminology of evidence-based medicine; not deep knowledge of the structure of medical research; does not own the basic principles and methods of statistical processing of medical data; shows poor knowledge of the interpretation of the results.
A mark (0 points) marks the answer, which shows very poor knowledge of the terminology of evidence-based medicine; does not own the basic principles and methods of statistical processing of medical data; does not know the interpretation of the results obtained.

SCALE FOR ASSESSMENT OF ANALYTICAL AND PRACTICAL TASKS intermediate control - "BE able and OWN")
When evaluating answers to the test of the level of knowledge TO BE ABLE and TO OWN, the following criteria are taken into account:
- methods for creating a scientific base in the SPSS$ application program
- methods of setting the necessary medical tasks, according to the received medical data;
- theoretical and practical methods of analysis and reasonable conclusions on the received medical data;
- methods of practical use of modern computers for processing medical information;
- skills in using various methods of analysis when working with scientific medical data;
- methods of analysis of new scientific and educational literature, experimental results;

A mark (15-20 points) evaluates the answer, in which the student independently sets a medical problem; evaluates the necessary methods used in solving this problem; solves the task, showing deep skills in the methods of statistical processing of medical data; professionally expresses and substantiates his position on the interpretation of the results, thereby demonstrating the ability to think and analyze. Demonstrates complete understanding. All requirements for the assignment have been met.

A mark (8-14 points) evaluates the answer, in which the student independently sets a medical problem; does not evaluate the necessary methods used in solving this problem; solves the problem without showing deep skills in the methods of statistical processing of medical data; weakly expresses and substantiates his position on the interpretation of the results obtained, thereby showing a weak ability to think and analyze. Demonstrates limited understanding. Not all job requirements have been met.
A mark (1-7 points) evaluates the answer, in which the student cannot independently set a medical problem; does not evaluate the necessary methods used in solving this problem; incorrectly solves the task, showing poor skills in the methods of statistical processing of medical data; weakly expresses, but cannot substantiate his position on the interpretation of the results, thereby showing a weak ability to think

и analyze. Demonstrates partial understanding. Many requirements for the assignment were not met. A mark (0 points) marks the answer, in which the student demonstrates a lack of understanding of the problem or no answer, and there was not even an attempt to solve the problem.

EDUCATIONAL-METHODOLOGICAL AND INFORMATION SUPPORT OF THE DISCIPLINE (MODULE)

6.1 Recommended reading

6.1.1 Main literature

	Authors, compilers	**Title**	**Publisher, year**
L.1	Kameshwar Prasad	Fundamentals of Evidence-Based Medicine. Second Edition. Springer India Heidelberg.	New York. 2013.
L.2	K.Park's	Textbook of Preventive and Social Medicine.	Bhanot. 2015.
L.3	Robert H. Fletcher, Suzanne W. Fletcher.	Clinical epidemiology. The essential, 4th ed.	Lippincott Williams and Wilkins. 2005.
L.4	Andrew Stevens, Keith Abrams, John Brazier and etc.	The Advanced Handbook of Methods in Evidence Based Healthcare.	SAGE Publications. London. 2001.

6.1.2. Additional literature

L2.1	Guyatt G, Rennie D, Meade M, Cook D.	Users' guides to the medical literature: a manual for evidence-based clinical practice, 2nd ed. (JAMA & Archives Journals).	New York: McGraw-Hill Medical; 2008.

L2.2	Fletcher RH, Fletcher SW, Wagner EH.	Clinical epidemiology: the essentials. 3rd ed.	Baltimore: Lippincott Wilkins & Company; 1996.
L2.3	Lang T. A. & Secic M.	How to report statistics in medicine.	Philadelphia: American College of Physicians, 1997.
L2.4	Gordon Guyatt and Drummond Rennie.	Users' Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice.	Chicago, IL: American Medical Association, 2002.
6.2. List of resources of the information and telecommunication network "Internet"			
E1	The Cochrane Collaboration		http://www.cochrane.org
E2	Best Evidence		http://www.bestevidence.com
E3	UpToDate		www.uptodate.com
E4	The Lancet		http://thelancet.com
E5	PubMed		http://www.ncbi.nlm.nih.gov/PubMed
6.3. List of information and educational technologies			
6.3.1 Competence-based educational technologies			
6.3.1.1	To organize the study of the discipline, traditional educational technologies are used, focused on the communication of knowledge and methods of action, transferred to students in finished form. Lecture material is provided to students using multimedia equipment. Traditional educational technologies include: explanatory and illustrative lectures; explanatory and explanatory practical exercises.		
6.3.1.2	Innovative educational technologies, interactive classes that form systemic thinking and the ability to generate ideas when solving various situational problems. Innovative educational technologies include a role-playing game, the control of which is carried out in the form of performing independent work in class.		
6.3.1.3	Information educational technologies - independent use of computer equipment and Internet resources by a student to perform practical tasks and independent work.		
6.3.2 List of information reference systems and software			
6.3.2.1	Medical statistics for students, graduate students and teachers - http://medstatistic.ru/index.php		
6.3.2.2	Scientific electronic library - http://elibrary.ru/defaultx.asp		
6.3.2.3	Ministry of Health of the Kyrgyz Republic - www.med.kg		
6.3.2.4	Knowledge base containing more than 300 articles from the best medical journals (located at the department).		
7. LOGISTICS AND TECHNICAL SUPPORT OF THE DISCIPLINE (MODULE)			
7.1	Lecture hall for 150 seats.		
7.2	Five computer labs for 55 seats for practical training and students to perform independent work with an Internet connection.		
7.3	Multimedia complex (laptop, projector).		
7.4	Marker and multimedia boards.		

METHODOLOGICAL INSTRUCTIONS FOR STUDENTS ON MASTERING THE DISCIPLINE (MODULE)

Technological map of the discipline in APPENDIX 2
Virtual textbook for independent extracurricular work of students on the study of the theoretical foundations of the discipline "Evidence-Based Medicine".
The study of the theoretical part of the discipline is intended not only to deepen and consolidate the knowledge gained in the classroom, but also to contribute to the development of students' creative skills, initiative and organization of their free time.

Independent work of the student in the study of the discipline includes:
- reading the recommended literature and mastering the theoretical material of the discipline;
- familiarity with Internet sources;
- preparation for various forms of control (situational task, control work, test);
- work on creating files, solving the set statistical problems and analyzing the results.

Planning the time required to study the discipline, it is better for students to carry out the entire course, while providing for regular repetition of the material.
The material outlined in the lectures must be regularly worked out and supplemented with information from other sources of literature, presented not only in the program of the discipline, but also in periodicals.

When studying the discipline, it is necessary to read the recommended literature for each topic and draw up a brief summary of the main provisions, terms, information that requires memorization and is fundamental in this topic, for the development of subsequent topics of the course. To expand knowledge of the discipline, it is recommended to use Internet resources; conduct searches in various systems and use materials from sites recommended by the teacher.
CREATING A TRAINING FILE
In preparation for creating a training file, you must:
- use lecture notes or short notes from practical material or watch video lesson No. 1;

- set a task;
- choose the design and method of statistical processing;
- solve situational problems;

SITUATIONAL PROBLEM

When solving medical situational problems, on an already prepared file, it is necessary:

- use the lecture notes or short notes from the practical material or watch the corresponding video tutorials;

- set, solve a situational problem on the topic "case design - control" and give an interpretation of the results obtained (video lesson No. 9);

- set, solve a situational problem on the topic "design cohort studies" and give an interpretation of the results obtained (video lesson No. 10);

- set, solve a situational problem on the topic "survival analysis" and give an interpretation of the results obtained (video lesson No. 11);

- each task must be defended by the teacher.

TEST

In preparation for the decision of the control work, it is necessary:

- work through the relevant pages of textbooks and relevant sections of the learning environment;
- use lecture notes or short notes from practical material;
- view video tutorials on relevant topics;
- solve problems at home on relevant topics;

TEST

When preparing for tests, it is necessary to work through the lecture material and the corresponding pages of the main textbook (it is also desirable to read additional literature); solve all the necessary situational problems; view video tutorials.

For the period of the pandemic, it is planned to temporarily hold lectures, practical classes, CSR online using Internet platforms: Class-room, Zoom, Skype, Whatsapp, e-mail. All classes are held in real time in full, with a detailed explanation of the theoretical and practical material.

To do this, students need to install the appropriate programs on their gadgets and communicate with the teacher clearly on schedule. Students, if necessary, send their notes, homework, tests, essays, and so on to the Class-room, Whatsapp and e-mail of the teacher. Teachers of the department are obliged to provide students with all the necessary material for learning.

1. The "gold standard" of medical research is called:
a) cross studies
b) single blind study
c) randomized controlled trials
d) paired comparisons
Correct answer in

2. The method in which neither the patient nor the doctor observing him knows which of the methods of treatment was used is called:
a) double blind
b) triple blind
c) single blind
d) placebo controlled
Correct answer a

3. A harmless inactive substance offered under the guise of a drug, which does not differ from it in appearance, smell, texture, is called:
a) bioadditive
b) analogue of the study drug
c) homeopathic remedy
d) placebo
The correct answer is g

4. Controlled trial, this study:
a) retrospective
b) prospective
c) transverse
d) perpendicular
Correct answer b

5. A study in which the patient does not know, but the doctor knows what treatment the patient is receiving, is called:
a) placebo controlled
b) double blind
c) triple blind
d) simple blind
The correct answer is g

6. It can be argued that in a randomized controlled trial (RCT), patients receiving placebo are not deceived (do not receive proper treatment), due to the fact that:
a) the attending physician receives the patient's oral consent to conduct the experiment
b) the patient signs the "Informed Consent of the Patient" (where his consent to the use of placebo is provided)
c) the placebo does not have a harmful effect on the body, so its use does not require the consent of the patient
d) the patient signs the consent to hospitalization
Correct answer b

7. A study with a randomly selected control group and the presence of intervention by the researcher is called:
a) randomized controlled clinical trial

b) non-randomized study
c) observational study
d) retrospective study
Correct answer a

8. The concept of the "gold standard" includes:
a) double-blind, placebo-controlled, randomized trials
b) simple non-randomized studies
c) triple blind studies
d) double-blind non-randomized studies
Correct answer a

9. A study in which patients are randomly assigned to groups is called:
a) simple blind
b) non-randomized
c) placebo-controlled
d) randomized
The correct answer is g

10. Conscious, clear and impartial use of the best available evidence in making decisions about care for specific patients, this is one of the definitions of the concept:
a) biometrics
b) evidence-based medicine
c) clinical epidemiology
d) medical statistics
Correct answer b

11. According to the method of selecting patients, studies distinguish between:
a) random and complex
b) equally probable and impossible
c) randomized and non-randomized
d) primary and tertiary
Correct answer in

12. Random selection of observations is called:
a) randomization
b) median
c) fashion
d) probability
Correct answer a

13. According to the degree of data openness, the study can be:
a) open or blind
b) closed or blind
c) open or randomized
d) randomized or multicenter
Correct answer a

14. A clinical trial in which all participants (doctors, patients, organizers) know which drug is used in a particular patient is called:a) non-randomized
b) randomized
c) simple blind

d) open
The correct answer is g

15. The testing of the pharmaceutical preparation was carried out on the basis of medical institutions of various cities of the Republic, this study is:
a) general
b) plural
c) polycentric
d) multicenter
The correct answer is g

16. Medical and biological mathematical statistics, is called:
a) biometrics
b) medical cybernetics
c) probability theory
d) biostatics
Correct answer a

17. The groups of methods of medical statistics include:
a) comparative statistics
b) evidence-based statistics
c) health statistics
d) mathematical statistics
Correct answer a

18. Descriptive statistics deals with:
a) comparison of the received data
b) a set of material
c) description and presentation of data
d) substantiation of the obtained results
Correct answer in

19. Data collection may be:
a) optimization
b) static and dynamic
c) constructive and deconstructive
d) passive and active
The correct answer is g

20. Comparative statistics allows:
a) formulate conclusions in the form of hypotheses or forecasts
b) conduct a comparative analysis of data in the study groups
c) conduct data collection in accordance with the principles of randomization
d) present the results to an audience
Correct answer b

21. The science that develops clinical research methods is called:
a) clinical epidemiology
b) pharmaceuticals
c) cybernetics
d) medical statistics
Correct answer a

22. The goal of clinical epidemiology is:
a) development of methods for statistical evaluation of clinical observations
b) study of infectious diseases
c) development and application of effective methods of clinical research
d) prevention of epidemics and contagious diseases
Correct answer in

23. From the standpoint of evidence-based medicine, the doctor should make a decision on the choice of treatment method, based on
a) information from the Internet
b) experience of colleagues
c) articles from a peer-reviewed journal with a high citation index
d) articles from an unknown source
Correct answer in

24. An indicator characterizing the reliability of information given in a scientific journal is:
a) reliability index
b) confidence index
c) significance index
d) citation index
The correct answer is g

25. One of the prerequisites for the emergence of evidence-based medicine was:
a) limited financial resources allocated to health care
b) the emergence of new medical specialties
c) improvement of scientific research methods
d) development of mathematical statistics
Correct answer a

26. Mathematical science that establishes the laws of random phenomena is:
a) medical statistics
b) probability theory
c) medical demographics
d) higher mathematics
Correct answer b

27. The possibility of realizing any event is:
a) experiment
b) scheme of cases
c) regularity
d) probability
The correct answer is g

28. Probability of occurrence of a random event:
a) greater than zero and less than one
b) more than one
c) less than zero
d) represented by whole numbers
Correct answer a

29. A value that, under the implementation of certain conditions, can take on different values, is called:
a) random
b) equally possible
c) selective
d) total
Correct answer a

30. The statistical population is:
a) a group of specific features
b) a group of objects that have similarities and differences
c) a group of relatively homogeneous elements (observation units) taken within the same boundaries of time and space
d) a group of phenomena combined in accordance with the purpose of the study
Correct answer in

31. Qualitative features include:
a) growth
b) gender
c) body weight
d) lung capacity
Correct answer b

32. Quantitative features include:
a) growth
b) gender
c) the outcome of the disease
d) type of disease
Correct answer a

33. Sample population is:
a) a group consisting of relatively homogeneous elements taken within the same boundaries of time and space
b) a set consisting of all units of observation that can be attributed to it in accordance with the purpose of the study
c) part of the general population, selected by special methods and intended to characterize it
d) all units of observation that can be attributed to it in accordance with the purpose of the study
Correct answer in

34. Representativeness is:
a) a sufficient volume of the general population
b) sufficient sample size
c) the dissimilarity of the sample population to the general population
d) the ability of the sample to most fully represent the general
The correct answer is g

35. The representativeness of the sample population in relation to the general population ensures:
a) obligatory observance of time limits
b) a sufficient amount of observations
c) assessment of indicators in dynamics
d) obligatory observance of spatial boundaries
Correct answer b

36. The advantages of the average value are that it:
a) allows you to analyze a large number of observations
b) allows you to identify patterns with a small number of observations and a large scatter of indicators
c) allows using one number to get ideas about the totality of mass phenomena
d) allows using one number to get ideas about the prevalence of mass phenomena
Correct answer in

37. Variation series is:
a) a series of numerical measurements of a trait, arranged in rank order and characterized by a certain frequency
b) a number of digital values of various features
c) general population
d) a series of numbers reflecting the frequency (repeatability) of the digital values of the trait under study
Correct answer a

38. The arithmetic mean is:
a) the variant with the highest frequency
b) the difference between the largest and smallest value
c) a generalizing value that characterizes the size of the variable feature of the population
d) an option located in the middle of the row
Correct answer in

39. Median is:
a) the variant with the highest frequency
b) the difference between the largest and smallest value
c) a generalizing value that characterizes the size of the variable feature of the population
d) an option located in the middle of the row
The correct answer is g

40. Fashion is:
a) the variant with the highest frequency
b) the difference between the largest and smallest value
c) a generalizing value that characterizes the size of the variable feature of the population
d) an option located in the middle of the row
Correct answer a

41. The process of random selection of data is called:
a) randomization
b) sample
c) representativeness
d) explication
Correct answer a

42. Sign: "presence or absence of disease" is:
a) quantitative
b) continuous
c) discrete
d) dichotomous
The correct answer is g

43. What scale displays the severity of the disease:
a) nominal

b) interval
c) ordinal
d) logarithmic
Correct answer in

44. The general population consists of:
a) individual units of observation taken within known boundaries of time and space
b) all units of observation that can be attributed to it in accordance with the purpose of the study
c) all units of observation that can be attributed to it, regardless of the purpose of the study
d) all units of observation that have a certain attribute
Correct answer b

45. One of the average values is:
a) ratio indicator
b) median
c) standard deviation
d) intensive indicator
Correct answer b

46. Quantities that divide the variation series into separate (if possible equal) parts:
a) quantiles
b) options
c) errors of averages
d) series levels
Correct answer a

47. The variation series divides into four equal parts:
a) median
b) tercili
c) quartiles
d) percentiles
Correct answer in

48. Qualitative data that can only be assigned to two opposite categories, taking one of two values, are called:
a) discrete
b) dichotomous
c) quantitative
d) continuous
Correct answer b

49. Quantitative signs that take values only from a certain list of certain numbers, usually integers, are called:
a) continuous
b) dichotomous
c) random
d) discrete
The correct answer is g

50. Quantitative signs that take any value on a continuous scale,are called:
a) discrete
b) random

c) continuous
d) ordinal
Correct answer in

51. The average square of deviations of individual values of a trait from its average value is:
a) oscillation coefficient
b) median
c) dispersion
d) fashion
Correct answer in

52. In medical research, when establishing confidence limits for any indicator, the probability of an error-free forecast is accepted:
a) 80%
b) 68%
c) 95% or more
d) 50%
Correct answer in

53. The limits of average or relative values, the exit beyond which due to random fluctuations has an insignificant probability - this is:
a) confidence interval
b) confidence criterion
c) standard error
d) standard deviation
Correct answer a

54. The choice of an appropriate method for comparing sample populations is determined by:
a) differences in the characteristics of the compared rows
b) sample lengths and maximum scatter option
c) the number of compared groups, the dependence or independence of samples, the type of distribution of the trait
d) mean values and variances
Correct answer in

55. An example of independent samples is:
a) a group of patients and a group of their relatives
b) a group of patients before and after surgery
c) blood sugar indicators of a group of patients at different points in time
d) results of two surveys of a group of patients
Correct answer a

56. Dependent samples are:
a) a set of men and a set of women
b) blood sugar indicators of a group of patients at different points in time
c) people with diabetes and people with the flu
d) a group of patients and a group of their relatives
Correct answer b

57. Parametric criteria are based on:
a) estimation of distribution parameters
b) type of distribution

c) put forward hypotheses
d) required accuracy
Correct answer a

58. Parametric criteria are applicable if:
a) the distribution is not normal
b) rather rough estimates are required
c) sampling options are different
d) numerical data obey a normal distribution
The correct answer is g

59. When analyzing the data, the following hypotheses are put forward:
a) null hypothesis and homogeneity hypothesis
b) null and alternative hypotheses
c) null hypothesis and hypothesis of equality of means
d) the hypothesis of homogeneity and the hypothesis of the absence of errors of representativeness
Correct answer b

60. A set consisting of relatively homogeneous elements, united by the onset of a certain sign, is called:
a) a group
b) a cohort
c) class
d) sample
Correct answer b

61. The difficulty of introducing the principles of evidence-based medicine into the practice of Russian doctors is associated with:
a) + Poor knowledge of foreign languages by Kyrgyz doctors
b) + A small number of Russian-language reports on randomized clinical trials.
c) + The high cost of modern sources of professional information for doctors e) + The high commitment of Kyrgyz doctors to the Kyrgyz medical tradition, which rejects “everything Western”.
f) With a discrepancy between Russian and international clinical guidelines.

62. A systematic error is due to:
a) distortion of values due to force majeure equipment failure
b) deviations of one or more values due to an oversight by the performer of the methodology
c) inadvertently entering an incorrect indicator in the protocol
d) + wrong choice of research methodology
f) + violation of technology throughout the study

63. With a normal distribution of a feature, the data are processed by the following methods:
1. + parametric statistics
2. nonparametric statistics

64. Correct application of statistical processing of research material can eliminate:
a) + Random error
b) Systematic error
c) Both random and systematic error
d) Neither error

65 Based on the level of evidence, randomized clinical trials include:

a) to category A
b) to category B
c) to category C
d) + to categories A, B
e) to categories A, C

66. Non-randomized clinical trials according to the level of evidence include:
a) to category A
b), to category C
c) + to category C
d) to categories A, B
e). to categories A, C

67. To increase the reliability of the results of the study of the drug and avoid systematic errors, you need to:
a) create large research centers with a large number of patients
b) in one of the study groups to use a placebo
c) + create many small research centers, each of which involves a small number of patients in the study
d) + apply a double-blind research method
e) + process information about the study in an independent center of South Ossetia.

68. When examining issues related to treatment and prevention, the most evidence-based data may come from:
1. RCT
2. case-control studies
3. cohort studies
4. case series studies
5. systematic reviews

69. Specify the main characteristics of a well-formulated clinical question:
1. focused
2. with well-defined parameters
3. scientifically and clinically relevant
4. describing in detail the pathogenesis of the disease

70. Specify the main types of clinical questions:
1. therapy
2. forecast
3. economic efficiency
4. diagnostics

71. Specify the main aspects when formulating a clinical question:
1. formulate a clinical question for PICO, question type, study type
2. establish the type of patient's nervous system
3. clarify the number and series of the patient's passport
4. clarify the diagnosis

72. When formulating questions on therapy, the most evidence-based results are presented in studies:
1. cohort
2. RCT
3 "case-control"
4. descriptive

5. meta-analyses of cohort studies

73. When formulating questions on diagnostics, the most evidence-based results are presented in studies:
1. cohort
2. RCT
3 . "case-control"
4. independent comparison with a reference test
5. descriptive

74. When formulating questions about risk, the most evidence-based data can be provided by the results of:
1. RCT
2. case-control studies
3. cohort studies
4. case series studies
5. "in vitro" studies

75. When formulating prognosis questions, the most conclusive evidence can be provided by the results of:
1. RCT
2. case-control studies
3. cohort studies
4. case series studies
5. systematic reviews

76. When formulating questions concerning etiology/harm, the most evidence-based results are provided in studies:
1. cohort
2. RCT
3. "case-control"
4. description of a single case
5. description of the case series

77. Prospective cohort studies are the gold standard for the following types of clinical questions:
1. treatment
2. forecast
3. diagnostics
4. etiology / harm

78. Randomized controlled trials are the gold standard for the following types of clinical questions:
1. treatment
2. forecast
3. diagnostics
4. etiology / harm

79. Case-control studies are the gold standard for the following types of clinical questions:
1. treatment
2. forecast
3. diagnostics
4. etiology / harm

80. The best databases for answering a clinical question about therapy are:
1. Cochrane Library, Best Evidence, Up To Date, Medline
2. Google, Alta Vista, Rambler, Yandex, Lycos
3 Yahoo Health
4. electronic versions of journals based on the principles of evidence-based medicine

81. The best databases for answering a clinical diagnostic question are:
1. Google
2.Medline
3 Yahoo
4 Alta Vista

82. The key term for determining the type of study when looking for an answer to a clinical question about therapy is:
1. Meta-analysis.pt, Clinical trial.pt
2. explode cohort studies
3. Risk.tw
4. Sensitivity.tw

83. The key term for determining the type of study when looking for an answer to a clinical question about prognosis is:
1. Meta-analysis.pt, Clinical trial.pt
2. explode cohort studies
3. Risk.tw
4. Sensitivity.tw

84. The key term for determining the type of study when looking for an answer to a clinical question on diagnostics is:
1. Meta-analysis.pt, Clinical trial.pt
2. explode cohort studies
3. Risk.tw
4. Sensitivity.tw

85. The key term for determining the type of study when looking for an answer to a clinical question on risk assessment is:
1. Meta-analysis.pt, Clinical trial.pt
2. explode cohort studies
3. Risk.tw
4. Sensitivity.tw

86. Clinical guidelines can be found on the Internet at:
1.www.odnoklasniki.ru
2.www.facebook.com
3.www.guidelines.gov
4.www.nzgg.org.nz

87. Main users of clinical guidelines:
1. practitioners, polyclinic managers
2. graduates of humanitarian universities
3. health economics specialists
4. banking specialists

APPENDIX 2

Course Flow Chart

"Evidence-Based Medicine"

6th-Year General Medicine

Name of the course modules according to the RPD (based on the number of CEs in the semester minus the CR (KP))	Control	Form of control	Minimum credit score	Maximum credit score	Monitoring schedule (week of semester)
Module 1					
1. Basic concepts of evidence-based medicine. Basic statistical methods.	Current control	Activity; attendance; participation in research projects; solving situational problems on survival analysis, case-control designs, and cohort studies.	7	15	8
	Border control	Test #1 on the topic "Basic Statistical Methods"	13	20	
Module 2					
2. Medical information search strategy	Current control	Activity; attendance; participation in research; solving situational problems on the strategy of searching for medical information on issues of therapy, prevention, diagnosis and prognosis, its critical evaluation; searching for clinical guidelines, critically evaluating the methodological quality of guidelines using the AGREE tool.	7	15	13
	Border control	Test No. 2 on critical assessment of the methodological quality of guidelines for the AGREE instrument.	13	20	
TOTAL for the semester			40	70	
Intermediate control (test with assessment) - test			20	30	14
Semester ranking by discipline			60	100	