

**SYLLABUS OF THE EDUCATIONAL COMPONENT  
«EVIDENCE-BASED MEDICINE METHODOLOGY»**

Specialty: **221 «Dentistry»**

Educational and professional program: **«Dentistry»**

Component code in the educational program: **SC 46**

Level of higher education: **second (master's)**

Form of education: **full-time (full-time)**

Year of study: **4**

Semester(s): **8**

Type of educational component: **selective**

Academic year: **2027-2028**

Volume: **3 credits ECTS (90 hours)**

Classes: **lectures, practical classes, consultations**

Summary control: **credit**

Prerequisites: **Biostatistics and clinical epidemiology**

Department/division: Department of Public Health and Health Care Management, Nauky Ave., 4, Building A, 3rd floor

Head of the educational component:

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Educational component page in the KhNMU Distance Learning System (Moodle):  
<https://distance.knu.edu.ua/course/view.php?id=6182>

**DESCRIPTION OF THE EDUCATIONAL COMPONENT**

The educational component "Methodology of Evidence-Based Medicine" includes information on the basic concepts and terms of evidence-based medicine, the history of the formation and development of evidence-based medicine, the concept of randomization, the prerequisites for the emergence and foundation of evidence-based medicine, the goal, objectives of evidence-based medicine, the basic principles and significance of evidence-based medicine for medical practice; features of organizing and conducting epidemiological studies, studying the prevalence and natural course of certain diseases in population groups, identifying the scale of problems associated with these diseases; determining factors of the external and internal environment that contribute to or hinder the occurrence and spread of these diseases; identifying priority problems in the field of public health; developing measures to eliminate or minimize the effects of adverse factors, as well as studying the types of epidemiological studies: descriptive, analytical, experimental. Familiarization with the Convention for the Protection of Human Rights and Human Dignity in Connection with the Application of Achievements in Biology and Medicine and with such concepts as: errors in epidemiological studies, pseudo-randomization, positive effects of intervention.

Mastering the technology of evidence-based medicine will allow you to apply the methodological foundations of evidence-based medicine in practical activities: GCP standards - good clinical practice, GMP - good manufacturing practice, GLP - good laboratory practice, GDP - good distribution practice, as the foundations of modern evidence-based medicine, meta-analysis and systematic reviews.

Studying the academic discipline will allow you to summarize the results of epidemiological studies, critically evaluate the evidence found, its reliability and usefulness (clinical application), implement the results of evidence-based medicine in medical practice, develop clinical guidelines, standards, methodological recommendations and clinical protocols, evaluate the social, medical and economic effectiveness of the results of evidence-based medicine.

Studying this academic discipline is one of the integral components of training a highly qualified specialist in the field of public health, who has a systematic understanding of the basics of evidence-based medicine and is able to apply this knowledge to carry out professional activities in the field of public health.

**COURSE OBJECTIVE:** higher education students' mastery of modern knowledge on the basics of evidence-based medicine and, based on it, optimization of the quality of medical care

provided to the population in terms of safety, effectiveness, cost and other important factors, as well as mastering the skills of using this knowledge in carrying out professional activities in public health.

**LEARNING OUTCOMES:**

- Plan and implement measures to prevent dental diseases among the population to prevent the spread of dental diseases.
- Analyze the epidemiological situation and carry out measures of mass and individual, general and local drug and non-drug prevention of dental diseases.
- Analyze and evaluate state, social and medical information using standard approaches and computer information technologies.
- Assess the impact of the environment on the health of the population in a medical institution using standard methods.
- Form goals and determine the structure of personal activity based on the results of the analysis of certain social and personal needs.
- Adhere to a healthy lifestyle, use self-regulation and self-control techniques.

**CONTENT OF THE EDUCATIONAL COMPONENT**

**List of lecture topics (4 hours):**

- Introduction to evidence-based medicine. History of the formation and development of evidence-based medicine.
- Modern epidemiology and biostatistics as sciences and ideologies of evidence-based medicine.

**List of practical training topics (14 hours):**

- Design of epidemiological studies. Types of design and their characteristics. Purpose and objectives of epidemiological studies. Possibilities of epidemiological study designs.
- Empirical research methods of observation of epidemiological studies. Features of descriptive studies (descriptive study). Description of individual cases (case report) and description of a series of cases (case series).
- Analytical study methods of observation of epidemiological studies. Case control study, cohort study, and ecological studies.
- Experimental epidemiological study. Uncontrolled and controlled study. Randomized and non-randomized studies Pseudorandomization.
- Randomization and blinding in epidemiological studies (open study, single blinding, double blinding, triple blinding and complete blinding). Gold standard in epidemiology.
- Evidence-based medicine as a new style of activity in the patient's medical care system. The main goal and objectives of evidence-based medicine. Rule 4 "A" in evidence-based medicine.
- Identification of the best evidence to answer the questions posed.
- Medical databases. Sources of analytical information. Electronic versions of medical journals that occupy leading positions in the citation index.
- Critical assessment of the evidence found for its reliability and usefulness.
- Implementation of the results of evidence-based medicine in clinical practice. Development of clinical guidelines, standards, methodological recommendations, clinical protocols.
- Assessment of the social, medical and economic effectiveness of the results of the implementation of evidence-based medicine in clinical practice.
- Final control

**List of topics for student independent work (72 hours)**

- Introduction to evidence-based medicine. History of the formation and development of evidence-based medicine.
- Modern epidemiology and biostatistics as sciences and ideologies of evidence-based medicine.
  - Design of epidemiological studies. Types of design and their characteristics. Purpose and objectives of epidemiological studies. Possibilities of epidemiological study designs.
  - Empirical research methods. Features of descriptive studies. Description of individual cases (case report) and description of a series of cases (case series).

- Analytical study methods. Case-control studies, cohort studies, and ecological studies.
- Experimental epidemiological studies. Uncontrolled and controlled studies. Randomized and non-randomized studies Pseudorandomization.
- Randomization and blinding in epidemiological studies (open study, single blinding, double blinding, triple blinding and full blinding). The gold standard in epidemiology.
- Evidence-based medicine as a new style of activity in the patient's medical care system. The main goal and objectives of evidence-based medicine. Rule 4 "A" in evidence-based medicine.
- The significance of the largest world organization - the International Cochrane Collaboration in the formation and assessment of the effectiveness of medical and social interventions.
- Information needs of the health care system. Statement of the problem for which it is necessary to find a reliably proven solution. PICO formula.
- Identification of the best evidence to answer the questions posed.
- Medical databases. Sources of analytical information. Electronic versions of medical journals that occupy leading positions in the citation index.
- Screening - a source of information about the health status of the population in epidemiological studies.
- Critical assessment of the evidence found for its reliability and usefulness.
- Systematic review and review with meta-analysis, features of preparation and use.
- Implementation of the results of evidence-based medicine in clinical practice. Development of clinical guidelines, standards, methodological recommendations, clinical protocols.
- Assessment of the social, medical and economic effectiveness of the results of the implementation of evidence-based medicine in clinical practice.
- Final control

**IW** is aimed at deepening and consolidating theoretical knowledge obtained during classroom training and contributes to the formation of professional competencies. The results of **IW** are subject to control and are included in the final knowledge control.

**Consultations:** online, with prior registration on the course page in the Distance Learning System.

**Teaching methods:** Oral, written survey, presentations, test control, conversation, individual tasks, situational tasks.

## EVALUATION

**Current educational activity (CEA).** Assessment of the success of education seekers is carried out in accordance with the Instructions for assessing the educational activity of higher education seekers at KhNMU (<https://knmu.edu.ua/documents/normatyvni-dokumenty-navchalnogo-proczesu/>). The grade for a practical or final lesson is from 2 to 5 points. Submitting assignments late for unwarranted reasons entails a reduction in the grade according to the percentage of delay in time from the time of completing the assignment. Assignments are checked within 24 hours. Grades are posted in the electronic journal. Unsatisfactory grades are worked out in accordance with the Regulations on the procedure for working out academic classes by KhNMU students ([https://knmu.edu.ua/wp-content/uploads/2021/05/polog\\_vidprac\\_zaniat.pdf](https://knmu.edu.ua/wp-content/uploads/2021/05/polog_vidprac_zaniat.pdf)).

At the end of the semester, the semester average grade is converted into a multiple-point grade (70–120 points) in accordance with Table 1 of the Assessment Instructions (see above). The arithmetic average of the CEA for both semesters constitutes the total learning activity (GEA).

**Individual tasks (IT)** are graded out of 10 points.

**The grade for the educational component** is given only to higher education applicants who have passed all final classes and the credit. The credit score ranges from 120 to 200 points.

**Appealing the results of the final control** is carried out in accordance with the procedure established at the KhNMU ([https://knmu.edu.ua/wp-content/uploads/2021/05/polog\\_apel\\_kontrol.pdf](https://knmu.edu.ua/wp-content/uploads/2021/05/polog_apel_kontrol.pdf)).

### EDUCATION COMPONENT POLICIES

Recommendations for course work: actively participate in all forms of work in classes, devote 1-2 hours daily to independent work and preparation for classes, ask questions during classes, attend consultations, submit assignments on time and complete all forms of control.

Attendance at classes. Attendance at lectures and practical classes is mandatory. The dress code for offline classes is a white medical gown. If the student is more than 5 minutes late for a lecture or practical class, he/she may not be admitted to the class. Missed classes are made up in accordance with the Regulations on the procedure for students of KhNMU to complete academic classes ([chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://knmu.edu.ua/wp-content/uploads/2021/05/pol\\_por-vidprac-zaniat.pdf](https://knmu.edu.ua/wp-content/uploads/2021/05/pol_por-vidprac-zaniat.pdf)).

Academic integrity. KNMU has a zero tolerance policy towards academic dishonesty. Any violation of the principles of academic integrity entails liability in accordance with the procedure established by KNMU ([https://knmu.edu.ua/wp-content/uploads/2021/05/polog\\_ad-1.pdf](https://knmu.edu.ua/wp-content/uploads/2021/05/polog_ad-1.pdf)).

The use of electronic gadgets and artificial intelligence tools is allowed only with the permission of the teacher.

Policy on individuals with special educational needs. Applicants with special educational needs should contact the teacher to develop an individual educational trajectory.

Teacher response time: 24 hours.

#### **Technical requirements for working on the course:**

- access to a computer, laptop, tablet or smartphone
- a corporate Google account with your own photo
- skills in working with Google Workspace (Google Meet, Docs, Sheets, Slides, Forms) and Moodle

**Technical support:** AMS (ev.shevtsov@knmu.edu.ua), Google (tehotdelknmu@gmail.com), Moodle (al.korol@knmu.edu.ua)

### RECOMMENDED SOURCES

1. Principles of Biostatistics/Marcello Pagano, Kimberlee Gauvreau–CRC Press, 2018. 584 p.
2. Statistical Methodologies with Medical Applications/Poduri S.R.S. Rao–John Wiley & Sons, 2016. 288 p.
3. Lecture course of the department.

Acting Head of the Department of Public Health and Health Care Management

Kateryna Pomohaibo