

DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY
Department of Social Medicine, Economics and Organization of Health Care

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“ 05 ” 2023




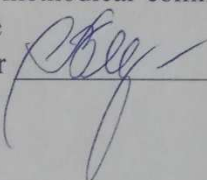
EDUCATIONAL DISCIPLINE PROGRAM

«DENTAL ASPECTS OF BIOSTATISTICS» VB 1.62

for the training of second-level (master's) higher education professionals
in the field of knowledge 22 "Healthcare" specialty 221 "Dentistry"



Discussed and approved
at the methodical meeting of the department
of Social medicine, economics and
organization of Health care
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(minute No 8 dated 13 June 2023)
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INTRODUCTION

The curriculum for the academic discipline "Dental aspects of biostatistics" is designed in accordance with Educational and Professional Program "Dentistry," Higher Education Standard of the second (master's) level field of knowledge 22 "Health Care," specifically in the specialization of 221 "Dentistry."

Description of the academic discipline (abstract):

The study discipline "Dental aspects of Biostatistics" is an optional course that provides for the acquisition of in-depth knowledge of the basics of biostatistics, which includes the definition and analysis of important biostatistical indicators and criteria based on the principles of evidence-based medicine and used in the assessment of dental health.

Structure of academic discipline	Credits, hours,				Year of study, Semester	Form of control
	Total	Auditory		Self-independent study		
		lectures (hours)	Practical classes (hours)			
" Dental aspects of Biostatistics "	2 credits / 60 hours	0	30	30	4-year (VII/VIII term)	credit

The subject of study is the study of the theoretical foundations of biostatistics; familiarization with methods of definition and analysis of basic biostatistical indicators and criteria; assimilation of patterns of formation and methods of assessment of population health indicators, including dental, the influence of medical and social, economic, environmental factors, conditions and lifestyle on it; mastering the methods of determining, analyzing and evaluating the main indicators of population health according to separate criteria and in relation to the factors affecting it.

Interdisciplinary connections. "Dental aspects of biostatistics" as an educational discipline:

- is based on the study by students of the academic disciplines: history of medicine, medical informatics and computer technologies, ethics, hygiene and ecology, epidemiology, sociology and medical sociology, the foundations of economic theories; lays the foundations for studying the organization of the medical and diagnostic process, as well as assessing its scope and quality in the study of clinical disciplines;

- contributes to the formation of the preventive direction of activities of future dentists, taking into account the possible impact on the health of the population of factors of various origins, risk assessment in the development of complex medical and social measures in interaction with the public health system;

- contributes to the formation of an economic worldview and basic competence characteristics regarding the methodology of economic analysis of the activity of dental institutions in modern conditions.

1 Purpose and tasks of the academic discipline

1.1 Goal: mastering the necessary knowledge, skills and acquiring competences in research, analysis and assessment of population health indicators, organization, resource provision and activity of the health care system, development from the standpoint of evidence-based medicine, recommendations for the prevention and elimination of the harmful effects of factors and improvement of the organization of dental care for the population.

1.2 The main tasks of the study discipline "Dental aspects of biostatistics" are:

- mastering the basic concepts and concepts of biostatistics;
- mastering modern principles of biostatistics;
- assimilation of patterns of formation and methods of assessment of population health indicators,

including dental;

- mastering the theoretical foundations and methods of evaluating the health care system, the organization of various types of medical care, including dental, ensuring its availability and quality;
- mastering the methods of determining, analyzing and evaluating the main indicators of dental health according to separate criteria and in relation to the factors affecting it.

1.3 Competencies and learning outcomes, the formation of which contributes to the discipline.

According to the requirements of the Higher Education Standard, the discipline ensures that students acquire the following competencies:

• **General Competencies:**

GC-1: Ability for abstract thinking, analysis, and synthesis.

GC-2: Knowledge and understanding of the subject area and awareness of professional activities.

GC-3: Ability to apply knowledge in practical activities.

GC-4: Ability to communicate in the state language both orally and in writing.

GC-5: Ability to communicate in English.

GC-6: Skills in using information and communication technologies.

GC-7: Ability to search, process, and analyze information from various sources.

GC-8: Ability to adapt and act in a new situation.

GC-9: Ability to identify, pose, and solve problems.

GC-10: Ability to be critical and self-critical.

GC-11: Ability to work in a team.

GC-12: Commitment to environmental preservation.

GC-13: Ability to act socially responsibly and consciously.

GC-14: Ability to exercise rights and fulfill duties as a member of society, understanding the values of a civil (free democratic) society, the necessity of its sustainable development, the supremacy of the law, and the rights and freedoms of individuals and citizens in Ukraine.

GC-15: Ability to preserve and enhance moral, cultural, scientific values and achievements of society based on an understanding of the history and regularities of the subject area, its place in the general system of knowledge about nature and society, and in the development of society, technology, and technologies, using various types and forms of physical activity for active recreation and maintaining a healthy lifestyle.

• **Specialized (professional, subject-specific) Competencies:**

SC-1: Ability to collect medical information about the patient and analyze clinical data.

SC-2: Ability to interpret the results of laboratory and instrumental studies.

SC-4: Ability to plan and conduct preventive measures for diseases of the oral cavity and maxillofacial area.

SC-5: Ability to design the process of providing medical care, determining approaches, plans, types, and principles of treating diseases of the oral cavity and maxillofacial area.

SC-10: Ability to organize and conduct therapeutic-evacuation measures.

SC-12: Ability to organize and conduct screening examinations in dentistry.

SC-13: Ability to assess the impact of the environment on the health of the population (individual, family, population).

SC-14: Ability to maintain normative medical documentation.

SC-15: Processing of state, social, and medical information.

SC-16: Ability to organize and conduct rehabilitation measures and care for patients with diseases of the oral cavity and maxillofacial area.

SC-17: Ability to provide legal support for one's own professional activities.

Detailed competencies according to the descriptors of the National Qualifications Framework in the form of a "Competency Matrix"

Competency Matrix

№	Competence	Knowledge	Skills	Communication	Autonomy and responsibility
		Kn1 – Specialized conceptual knowledge acquired	S 1 – Solving complex tasks and problems,	C 1 – Clear and unambiguous presentation of	AR 1 – Decision-making in complex and unpredictable

		during training and/or prof. activities at the level of the latest achievements, which are the basis for original thinking and innovative activities, in particular in the context of research work	which requires updating and integrating knowledge, often in conditions of incomplete/insufficient information and conflicting requirements	one's own conclusions, as well as the knowledge and explanations that justify them, to specialists and non-specialists, in particular to persons who are studying	conditions, which requires the application of new approaches and forecasting
		Kn 2 – Critical understanding of problems in education and/or professional activity and on the border of subject areas	S 2 – Conducting research and/or innovative activities	C 2 – Use of foreign languages in professional activities	AR 2– Responsibility for the development of professional knowledge and practices, assessment of the strategic development of the team
1	Ability to collect medical information about the patient and analyze clinical data.	Kn 2	S 1	C 1, C 2	
2	The ability to interpret the results of laboratory and instrumental research.	Kn 1	S 1		AR 1
3	The ability to plan and carry out measures for the prevention of diseases of the organs and tissues of the oral cavity and maxillofacial region.	Kn 2	S 1	C 1	AR 1
4	The ability to design the process of providing medical care: to determine the approaches, plan, types and principles of treatment of diseases of the organs and tissues of the oral cavity and maxillofacial area.	Kn 1	S 1		AR 1
5	Ability to organize and carry out medical evacuation measures.	Kn 1, Kn 2	S 1	C 1	AR 1, AR 2
6	Ability to organize and conduct a screening examination in dentistry.	Kn 1	S 2	C 1	AR 2
7	The ability to assess the impact of the environment on the state of health of the population (individual, family, population).	Kn 2	S 2		
8	Ability to maintain regulatory medical documentation.			C 1	AR 1
9	Processing of state, social and medical information.	Kn 2		C 1, C 2	AR 1, AR 2
10	Ability to organize and carry out rehabilitation measures and care for patients with diseases of the oral cavity and ASHL.	Kn 1	S 1	C 1	
11	The ability to legally secure one's own professional activity.	Kn 1		C 1	AR 2

Learning Outcomes:

Program Learning Outcomes influenced by the educational discipline:

PLO-6: Plan and implement measures for the prevention of dental diseases among the population to prevent the spread of dental diseases.

PLO-7: Analyze the epidemiological situation and implement measures for mass and individual, general and local pharmacological and non-pharmacological prevention of dental diseases.

PLO-12: Organize the conduct of therapeutic and evacuation measures among the population, military personnel, in emergency situations, including wartime, during the deployed stages of medical evacuation, taking

into account the existing system of medical evacuation support.

PLO-14: Analyze and evaluate state, social, and medical information using standard approaches and computer information technologies.

PLO-15: Evaluate the impact of the environment on the health of the population in medical institutions using standard methodologies.

PLO-16: Formulate goals and determine the structure of personal activities based on the analysis of specific social and personal needs.

PLO-17: Adhere to a healthy lifestyle, use self-regulation and self-control techniques.

PLO-18: Be aware of and operate within one's civic rights, freedoms, and obligations, enhancing the general educational and cultural level.

PLO-19: Adhere to the requirements of ethics, bioethics, and deontology in professional activities.

PLO-20: Organize the necessary level of individual safety (own and for those under care) in case of typical hazardous situations in the individual field of activity.

2 Information volume of the academic discipline

60 hours of 2 ECTS credits are allocated to the study of the academic discipline.

Topic 1. The concept and role of biostatistics in dentistry. The history of its development and significance for practical health care

Concept of biostatistics. Prerequisites for the emergence of biostatistics. Principles of scientific and evidence-based practice. History of the development of biostatistics. World development experience.

Topic 2. Analysis of the general theoretical and methodological foundations of the formation and development of biostatistics as an independent science

Biostatistics in dental practice in Ukraine and the world. International experience of biostatistics application. Areas of dental science formed in the process of developing evidence-based medicine technologies.

Topic 3. Clinical epidemiology - as a science and the subject of its teaching. Implications for health care practice

Formulation of a clinical question. Systematic search for evidentiary data. Evaluation of the reliability of evidence data, their clinical significance. Application of results in practice. Assessment of work done.

Topic 4. Processing of medical information. Use of standard procedures, including modern computer information technologies, for processing medical information.

Grouping of statistical data, methods, values. Concept of multidimensional classifications. Encoding and encryption of data. Program for the development and compilation of statistical material.

Topic 5. Dynamic series and fundamentals of forecasting

Characteristics of dynamic series. Criteria for constructing a dynamic series. Types of dynamic series. Dynamic series alignment methods. Interpretation of the received data.

Topic 6. Sources of statistical information in the work of a dentist.

Methods of collecting statistical information. Types of sources of statistical information.

Topic 7. Methods of statistical research by time and degree of coverage.

Types of statistical research. Methods and stages of statistical research.

Topic 8. Survival analysis. Lethality

Survival analysis. Censored data. uncensored data. Data censoring mechanism. The main types of survival analysis. Methodology for constructing survival tables and graphs.

Topic 9. Methods of conducting sociological research in dental practice

Types of sociological research. Design of sociological research. Types of questionnaires. Questionnaire SF-36. Sociological questionnaire.

Topic 10. Average values in the activity of a dentist, their types, practical significance, methods of calculation

Types of variation series. Rules for constructing variational series. Types of average values. Mean square deviation. Coefficient of variation

Topic 11. Method of standardization. The essence, meaning and application of the method in dental practice

Use of the standardization method in practical health care. Types of standardization methods. Direct method of standardization. Stages of the direct method of standardization.

Topic 12. Effectiveness of diagnostic tests

Concept and purpose of diagnostic tests. The main stages of testing a diagnostic test. Errors arising as a result of using tests with low validity. Test selection criteria.

Topic 13. Grouping values in a table. Graphic representation of statistical data

Types of statistical tables. Rules for constructing statistical tables. Types of graphic images. Elements of a graphic image. Selection of the type of graphic image. Application of graphic images in practical health care.

Topic 14. Basic methods of processing a dynamic series in order to determine the trend of dental morbidity

Types of dynamic series. Methods of constructing dynamic series. Methods of calculating dynamic series indicators. Dynamic series alignment methods. The method of least squares. Forecasting methods. Interpolation and extrapolation.

Topic 15. Power analysis

Practical significance of the power analysis method, null and alternative hypotheses. Principles of statistical research planning. Types of errors in the interpretation of statistical hypotheses. Clinical significance of effect size.

Topic 16. Types of errors in clinical research

Concept of systematic error. Ways to avoid systematic errors when planning scientific research. Prediction and determination of systematic errors. Methods of minimizing the risk of systematic errors.

Topic 17. Estimation of the probability of difference

The essence of the concept of "reliability of research results". Methodology for assessing the reliability of results. Probability of the difference in results for average and relative values.

Topic 18. Student's criterion, calculation method, its evaluation, typical errors of use

Methods of determining the Student's criterion. Determination of the average error. Interpretation of Student's criteria.

Topic 19. Correlation-regression analysis of the relationships of factors and effective signs in dental research.

Using the method of correlation-regression analysis in practical health care. Types of correlation. Methods of determining the correlation relationship. Pearson's linear correlation coefficient. Spearman's rank correlation coefficient. Regression coefficient.

Topic 20. Design of statistical research

Planning a statistical study. The purpose and objectives of the research. Sources of statistical information. Object of research, unit of observation. Types of research by volume

3 Structure of the Educational Discipline

№	Topic name	Lectures	Practical lesson	independent work	individual work
1	Concept and role of biostatistics in dentistry. The history of its development and significance for practical health care	-	3	-	-
2	Analysis of the general theoretical and methodological foundations of the formation and development of biostatistics as an independent science	-	-	3	-
3	Clinical epidemiology as a science and a subject of its teaching. Implications for health care practice	-	3	-	-
4	Processing of medical information. Use of standard procedures, including modern computer information technologies, for processing medical information.	-	-	3	-
5	Dynamic series and fundamentals of forecasting	-	3	-	-
6	Sources of statistical information in the work of a dentist.	-	-	3	-

7	Methods of statistical research by time and degree of coverage.	–	-	3	–
8	Survival analysis. Lethality	–	3	-	–
9	Methods of conducting sociological research in dental practice	–	3	-	–
10	Average values in the activity of a dentist, their types, practical significance, calculation methods	–	-	3	–
11	Method of standardization. The essence, meaning and application of the method in dental practice	–	-	3	–
12	Effectiveness of diagnostic tests	–	3	-	–
13	Grouping values in the table. Graphic representation of statistical data	–	3	-	–
14	The main methods of processing a dynamic series in order to determine the trend of dental morbidity	-	-	3	–
15	Power analysis	–	3	-	–
16	Types of errors in clinical research	-	3	-	–
17	Estimation of the probability of difference.	-	-	3	–
18	Student's criterion, calculation method, its evaluation, typical errors of use	–	-	3	–
19	Correlation-regression analysis of the relationships of factors and effective signs in dental research		-	3	
20	Statistical research design. Test		3	-	
Total hours 60 / 2.0 ECTS credits		0	30	30	0
Final control		Credit			

4 Lecture hours in the discipline "Methodology of evidence-based medicine" are not provided

5 Thematic plan of practical (seminar) classes

№	Topic name	Number of hours
1	Concept and role of biostatistics in dentistry. The history of its development and significance for practical health care	3
2	Clinical epidemiology as a science and a subject of its teaching. Implications for health care practice	3
3	Dynamic series and fundamentals of forecasting	3
4	Survival analysis. Lethality	3
5	Methods of conducting sociological research in dental practice	3
6	Effectiveness of diagnostic tests	3
7	Grouping values in the table. Graphic representation of statistical data	3
8	Power analysis	3
9	Types of errors in clinical research	3
10	Statistical research design.	3
Total		30

6 Thematic plan of students' independent work

№ з/п	Topic name	Number of hours	Kind of control
1	Analysis of the general theoretical and methodological foundations of the formation and development of biostatistics as an independent science	3	Current control in practical classes
2	Processing of medical information. Use of standard procedures, including modern computer information technologies, for processing medical information.	3	Current control in practical classes
3	Sources of statistical information in the work of a dentist.	3	Current control in practical classes

4	Methods of statistical research by time and degree of coverage.	3	Current control in practical classes
5	Average values in the activity of a dentist, their types, practical significance, calculation methods	3	Current control in practical classes
6	Method of standardization. The essence, meaning and application of the method in dental practice	3	Current control in practical classes
7	The main methods of processing a dynamic series in order to determine the trend of dental morbidity	3	Current control in practical classes
8	Estimation of the probability of difference.	3	Current control in practical classes
9	Student's criterion, calculation method, its evaluation, typical errors of use	3	Current control in practical classes
10	Correlation-regression analysis of the relationships of factors and effective signs in dental research	3	Current control in practical classes
Total		30	

7. Individual tasks are not included in the working curriculum for the academic year.

8. Teaching methods

- Verbal methods: lecture, conversation, narration, explanation, literature review;
- Visual methods: illustration, demonstration, observation;
- Practical methods: situational tasks, independent work, research-based work;
- Interactive methods: discussion, small group work, brainstorming, case method, role-playing.

9. Control methods

Types of control:
current and final.

Competences acquired by the student in the process of learning from each subject of the academic discipline are tentatively evaluated according to the following criteria:

- 5 / "excellent" - the student perfectly mastered the theoretical material of the topic of the lesson, demonstrates deep and comprehensive knowledge of the relevant topic, the main provisions of scientific primary sources and recommended literature, thinks logically and constructs an answer, freely uses the acquired theoretical knowledge when analyzing practical material, expresses his attitude to certain problems, demonstrates a high level of assimilation of practical skills;

- 4/"good" - the student has mastered the theoretical material of the lesson well, has the main aspects from primary sources and recommended literature, explains it in a reasoned way; possesses practical skills, expresses his thoughts on certain problems, but certain inaccuracies and errors are assumed in the logic of the presentation of theoretical content or in the performance of practical skills;

- 3/"satisfactory" - the student has basically mastered the theoretical knowledge of the educational topic, orients himself in primary sources and recommended literature, but answers unconvincingly, confuses concepts, additional questions cause the student uncertainty or lack of stable knowledge; when answering questions of a practical nature, reveals inaccuracies in knowledge, does not know how to evaluate facts and phenomena, connect them with future activities, makes mistakes when performing practical skills;

- 2/"unsatisfactory" - the student has not mastered the educational material of the topic, does not know scientific facts, definitions, hardly orients himself in primary sources and recommended literature, lacks scientific thinking, practical skills are not formed

10 Current control, aimed at checking students' learning of educational material, is carried out by means of an oral survey, written testing and solving situational tasks.

10.1. *Assessment of current educational activities.* During the evaluation of the mastery of each topic for the current educational activity, the student is assigned a 4-point (national) grade. At the same time, all types of work provided for by the discipline program are taken into account. The student receives a grade for each topic for further conversion of grades into points on a multi-point (200-point)

scale.

Independent work of students is evaluated during the current control of the topic in the corresponding lesson.

11 The form of the final control of study success - credit.

It is conducted on the basis of the results of the enrollment of all works in practical classes. The semester credit for the discipline is carried out after the end of its study, before the beginning of the examination session

12 Scheme of accrual and distribution of points received by students:

The maximum number of points that a student can score for the current educational activity while studying the discipline is 200 points.

The minimum number of points that a student must score for the current educational activity to enroll in the discipline is 120 points.

The calculation of the number of points is carried out on the basis of the grades received by the student on a traditional scale during the study of the discipline during the semester, by calculating the arithmetic average (AA), rounded to two decimal places. The obtained value is converted into points on a multi-point scale as follows:

$$x = \frac{AA \times 200}{5}$$

For convenience, a calculation table is given on a 200-point scale:

Recalculation of the average grade for the current activity into a multi-point scale for disciplines ending with credit

4-grade scale	200-grade scale	4-grade scale	200-grade scale	4-grade scale	200-grade scale	4- grade scale	200- grade scale
5	200	4.45	178	3.92	157	3.37	135
4.97	199	4.42	177	3.89	156	3.35	134
4.95	198	4.4	176	3.87	155	3.32	133
4.92	197	4.37	175	3.84	154	3.3	132
4.9	196	4.35	174	3.82	153	3.27	131
4.87	195	4.32	173	3.79	152	3.25	130
4.85	194	4.3	172	3.77	151	3.22	129
4.82	193	4.27	171	3.74	150	3.2	128
4.8	192	4.24	170	3.72	149	3.17	127
4.77	191	4.22	169	3.7	148	3.15	126
4.75	190	4.19	168	3.67	147	3.12	125
4.72	189	4.17	167	3.65	146	3.1	124
4.7	188	4.14	166	3.62	145	3.07	123
4.67	187	4.12	165	3.57	143	3.02	121
4.65	186	4.09	164	3.55	142	3	120
4.62	185	4.07	163	3.52	141	Less than 3	Not enough
4.6	184	4.04	162	3.5	140		
4.57	183	4.02	161	3.47	139		
4.52	181	3.99	160	3.45	138		
4.5	180	3.97	159	3.42	137		
4.47	179	3.94	158	3.4	136		

Points from the discipline are independently converted both to the ECTS scale and to the 4-point (national) scale. Points from the ECTS scale are not converted into a 4-point scale and vice versa.

Points of students studying in one specialty, taking into account the number of points scored in the discipline, are ranked on the ECTS scale as follows:

ECTS assessment	Statistical indicator
A	The best 10% of students
B	The next 25% of students
C	The next 30% of students
D	The next 25% of students
E	The last 10% of students

Ranking with the assignment of grades "A", "B", "C", "D", "E" is carried out for students of this course who are studying in one specialty and have successfully completed the study of the discipline. Students who receive grades of FX, F ("2") are not listed as ranked students. Students with an FX grade automatically receive an "E" grade after retaking.

Discipline points for students who have successfully completed the program are converted to a traditional 4-point scale according to the absolute criteria shown in the table below:

Discipline points	Evaluation on a 4-point scale
From 170 to 200 points	5
From 140 to 169 points	4
From 139 points to the minimum number of points that the student must score	3
Below the minimum number of points that the student must score	2

The ECTS grade is not converted to the traditional scale, as the ECTS scale and the four-point scale are independent.

The objectivity of the evaluation of students' educational activity is checked by statistical methods (correlation coefficient between the ECTS grade and the grade on the national scale).

13 Methodological support

- Test questions on the topics of practical classes
- Test questions of the final module control
- List of theoretical questions for the final modular control
- Tasks for current control of knowledge
 - List of tasks for independent work
 - Lecture notes
 - Study guide for practical classes
 - Study guide for students' independent work

14 Recommended reading

The main one

1. Gruzheva T.S., Lekhan V.M., Ognev V.A., Galienco L.I., Kryachkova L.V., Palamar B.I., Grechishkina N.V., Litvynova L.O., Gutor T.G. [etc.]. Biostatistics: assistant. for the training of specialists of the second (master's) level of higher education / edited by Prof. T.S. Gruzheva. Vinnytsia: New book, 2020. 384 p.
2. Workshop for preparation for practical classes in the academic discipline "Public Health". Lviv, 2020.
3. Public health: textbook for students. higher med. education institutions Vinnytsia: "New book", ed. 3. 2013. 560 p.
4. Jekel's Epidemiology, Biostatistics, Preventive Medicine, and Public Health: With Student Consult. Joann G. Elmore, Dorothea Wild, Heidi D. Nelson, David L. Katz. Elsevier; 5th edition. 2020. 464 p.
5. Oxford Textbook of Global Public Health, 6th edition. / Edited by Rogers Detels, Martin Gulliford, Quarraisha Abdool Karim and Chorh Chuan Tan. Oxford University Press, 2018. 1728 p

Auxiliary

1. Brigitte Baldi, David S. Moore Practice of Statistics in the Life Sciences Fourth Edition. W. H. Freeman; Fourth edition. 2018. 768

2. Board Review in Preventive Medicine and Public Health. Gregory Schwaid. Elsevier, 2017. 450 p.
3. Liam J. Donaldson, Paul Rutter. Donaldson's Essential Public Health, Fourth Edition. CRC Press, Taylor&Francis Group, 2017. 374 p.

15. Information resources

- Legislation of Ukraine. Electronic resource: zakon.rada.gov.ua/
- Medical legislation of Ukraine. Electronic resource: <http://mozdocs.kiev.ua/>
- Statistical data of Ukraine. Electronic resource: <http://www.ukrstat.gov.ua/>
- Statistical data of the Lviv region. Electronic resource: <https://www.lv.ukrstat.gov.ua/>
- Public Health Center of the Ministry of Health of Ukraine <https://phc.org.ua/>
- Ukrainian database of medical and statistical information "Health for all":
<http://medstat.gov.ua/ukr/news.html?id=203>
- World Health Organization www.who.int
- WHO European Regional Office www.euro.who.int/ru/home
- Cochrane Center for Evidence-Based Medicine www.cebm.net
- Cochrane Library www.cochrane.org
- US National Library of Medicine - MEDLINE PubMed www.ncbi.nlm.nih.gov/PubMed
- Canadian Center for Evidence in Health www.cche.net
- Center for Disease Control and Prevention www.cdc.gov
- British Medical Journal www.bmj.com
- Journal of Evidence-Based Medicine www.evidence-basedmedicine.com