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

APPROVED BY

Head of the Department of
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"23rd" of June 2026

COLLECTION OF ASSESSMENT TOOLS

B1.C.16 Epidemiology of the basic educational program of Higher Education

Specialty	31.05.03 Dentistry for foreign students (English-language program) (code, name)
Degree	Specialist's degree
Profile	02 "Healthcare" (in the field of providing health care in patients with dental pathology)
Mode of study	Full-time
Period of mastering the BEP	5 years (nominal length of study)
Department	of Epidemiology and Military Epidemiology

Vladivostok, 2026

1. INTRODUCTION

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

1.2. Assessment tools allows to evaluate the development of universal, general professional, and professional competencies (UCs, GPCs and PCs respectively) outlined in Federal State Educational Standard of Higher Education and defined in the basic educational program of higher education for the specialty 31.05.03 Dentistry for foreign students (English-language program), profile 02 "Healthcare" (in the field of providing health care in patients with dental pathology).

([BEP HE for the 31.05.03 Dentistry for foreign students \(English-language program\)](#) specialty, section 3 Learning Outcomes Requirements of the Basic Educational Program of Higher Education)

2. DOCUMENT BODY

2.1. Types of Assessment, Formats of Assessment Tools

No.	Types of assessment	Assessment Tools Format
1	Continuous assessment	Tests
		Checklists
		Mini-Case Studies
2	Interim assessment	Tests
		Interview Questions

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

Tests for continuous and interim assessment

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-13	Able to solve professional tasks using information, bibliographic resources as well as medical and biological terminology, information and communication technologies complying with the information security requirements
I		ANSWER LEVEL 1 TEST QUESTIONS (ONE CORRECT ANSWER)
		- The main subject of epidemiology is A) individual patient +B) population and distribution of diseases in it C) healthcare system D) pathogen only - The main objective of epidemiology is A) treatment of individual patients B) laboratory identification of pathogens +C) study of patterns and causes of diseases and development of prevention measures

		D) recording of medical statistics 3. Which objectives apply to modern epidemiology? +A) Description of disease distribution in populations +B) Identification of risk factors +C) Development of public health interventions D) Individual choice of anesthetic drug 4. Epidemiological method contributes to evidence-based medicine primarily by A) providing pathophysiological mechanisms +B) generating quantitative evidence on associations between exposure and outcomes C) describing only rare diseases D) replacing clinical trials 5. Key components of the epidemiological method are +A) formulation of hypothesis +B) selection of study design +C) systematic data collection and analysis D) random choice of patients without criteria 6. In evidence-based dentistry, epidemiological studies are mainly used to A) decide reimbursement tariffs +B) estimate effectiveness and safety of preventive and treatment interventions C) replace clinical judgment completely D) determine only molecular mechanisms of diseases 7. A study in which groups with and without exposure are followed over time to compare incidence of disease is called a A) case-control study +B) cohort study C) cross-sectional study D) ecological study 8. A study that compares past exposures in diseased and non-diseased subjects is called a A) randomized clinical trial B) cross-sectional study +C) case-control study D) ecological study 9. Match the type of study and its main characteristic 1)Cross-sectional study 2)Randomized controlled trial 3)Ecological study A) Compares disease and exposure at one point in time in individuals B) Compares outcomes between groups randomly assigned to interventions
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	C) Uses aggregated population data (countries, regions) (Correct answer: 1–A, 2–B, 3–C) 10. Sensitivity of a diagnostic test is A) proportion of true negatives among all without disease +B) proportion of true positives among all with disease C) probability that a person with positive test really has disease D) incidence of disease in population 11. Evidence hierarchy in clinical epidemiology usually considers highest level as A) expert opinion B) case reports C) non-randomized trials +D) systematic reviews and meta-analyses of randomized trials 12. Which measures characterize accuracy of diagnostic tests? +A) Sensitivity +B) Specificity +C) Positive predictive value D) Patient satisfaction 13. The main purpose of a systematic review is to A) present personal clinical experience +B) summarize all high-quality evidence on a clearly formulated question C) publish results of one clinical trial D) describe pathogenesis of disease 14. Key stages of a systematic review are +A) formulation of clinical question (PICO) +B) systematic literature search +C) critical appraisal of included studies D) random choice of only one article 15. The main epidemiological indicator for dental caries in populations is A) case fatality rate B) attack rate +C) DMF index (Decayed, Missing, Filled) D) disability-adjusted life years 16. A risk factor for non-infectious dental pathology is A) acute viral infection +B) high consumption of fermentable carbohydrates C) short exposure to fluoride D) one-time use of local anesthetic
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		17. For non-infectious oral diseases, clinical epidemiology studies +A) prevalence and incidence +B) association with behavioral risk factors +C) effectiveness of preventive interventions (fluoridation, sealants) D) only genetic mutations 18. In emergency situations (natural disasters, military conflicts) for a dentist, key epidemiological tasks include A) only treatment of acute pain +B) prevention of outbreaks of infectious diseases in dental settings C) suspension of all dental care D) refusal to use PPE to save time 19. Which situations require strengthening epidemiological surveillance in dental practice? +A) Mass displacement of population +B) Breakdown of water and sanitation systems +C) High patient turnover in temporary dental clinics D) Shortage of gloves for 10 minutes 20. Meta-analysis in dentistry typically A) combines qualitative opinions of experts +B) statistically pools quantitative results from multiple studies C) is always free from bias D) is performed only for infectious diseases
I		ANSWER LEVEL 2 TEST QUESTIONS (MULTIPLE CORRECT ANSWERS)
		1. Relative risk (RR) compares +A) risk in exposed and unexposed groups B) observed and expected cases C) prevalence and incidence D) mortality and morbidity 2. If $RR = 1$ in a cohort study of sugary drinks and dental caries, this means A) exposure is protective B) exposure strongly increases risk +C) no association between exposure and disease D) study is invalid 3. In a case-control study of periodontal disease and smoking, the main effect measure is A) relative risk +B) odds ratio C) attributable risk D) hazard ratio 4. Confidence interval for RR that does not include 1 indicates

		A) lack of significance +B) statistically significant association at chosen alpha level C) random error only D) measurement of prevalence 5. In clinical epidemiology, internal validity means A) ability to generalize results to other populations +B) absence of major bias and confounding in this study C) large sample size D) long duration of follow-up 6. Heterogeneity in meta-analysis reflects A) quality of randomization +B) differences in results between included studies C) sample size of the largest trial D) level of publication bias 7. In dentistry, an example of preventive intervention evaluated by meta-analysis is A) rare congenital anomalies only +B) effectiveness of fissure sealants in caries prevention C) only anesthetic complications D) only maxillofacial trauma surgery 8. During a flood, the most important reason to limit aerosol-generating dental procedures is A) high material costs +B) increased risk of airborne transmission of infections C) lack of lighting D) absence of anesthesia 9. In a cross-sectional study of 15-year-olds, prevalence of gingivitis is 40%. This means that A) 40% will develop gingivitis next year B) half are at risk +C) 40% have gingivitis at the time of examination D) 40% had gingivitis in the past 10. Attributable risk in exposed (AR) shows A) total risk in the population +B) part of risk in exposed group that can be attributed to exposure C) risk among unexposed D) accuracy of diagnostic test
I		ANSWER LEVEL 3 TEST QUESTIONS (MATCHING QUESTIONS)
		1. Match types of studies (column A) and their main characteristics (column B). Column A

- 1 - Descriptive study
- 2 - Cohort study
- 3 - Case-control study
- 4 - Randomized controlled trial

Column B

- A) Compares groups with and without exposure, prospectively assessing incidence
 - B) Allocates participants randomly to intervention and control groups
 - C) Compares past exposure in patients with disease and without disease
 - D) Describes distribution of disease by person, place and time
- Correct answer: 1–D, 2–A, 3–C, 4–B.

2. Match the incidence/prevalence indicator (column A) with its definition (column B).

Column A

- 1 - Incidence rate
- 2 - Prevalence
- 3 - Cumulative incidence
- 4 - Attack rate

Column B

- A) Proportion of new cases among all persons at risk during a defined period
 - B) Proportion of all existing cases (new and old) in a population at a given time
 - C) Number of new cases per person time of observation
 - D) Cumulative incidence used for acute outbreaks in a limited population
- Correct answer: 1–C, 2–B, 3–A, 4–D.

3. Match the term (column A) with the correct description (column B).

Column A

- 1 - Sensitivity
- 2 - Specificity
- 3 - Positive predictive value (PPV)
- 4 - Negative predictive value (NPV)

Column B

- A) Probability that a person with positive test result truly has the disease
 - B) Proportion of true positives among all with disease
 - C) Proportion of true negatives among all without disease
 - D) Probability that a person with negative test result truly does not have the disease
- Correct answer: 1–B, 2–C, 3–A, 4–D

4. Match the type of study (column A) with the example (column B).

Column A

- 1 - Cross-sectional study

	2 - Cohort study 3 - Case-control study 4 - Meta-analysis Column B A) Comparison of lifetime sugary drink consumption in adults with severe periodontitis and adults without periodontitis B) Combination of results from multiple trials evaluating effectiveness of fluoride varnish in caries prevention C) One-time oral examination of 12-year-olds to estimate prevalence of dental caries D) Follow-up of children with and without exposure to fluoridated water to compare caries incidence over 3 years Correct answer: 1 – 1–C, 2–D, 3–A, 4–B
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Assessment criteria

Each correct answer – 1 point (for multi answer tasks only completely correct variant is scored)

For continuous assessment (max. = 20 points):

“Very good” – 18–20 points

“Good” - 14–17 points

“Satisfactory” - 10–13 points

“Unsatisfactory” - 0–9 points

For interim assessment (max. = 30 points):

“Very good” – 27–30 points

“Good” - 21–26 points

“Satisfactory” - 15–20 points

“Unsatisfactory” - 0–14 points

Interview questions

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-13	Able to solve professional tasks using information, bibliographic resources as well as medical and biological terminology, information and communication technologies complying with the information security requirements
I		ANSWER THE QUESTIONS
		1. Define the subject and main objectives of epidemiology. 2. Explain the role of epidemiology in modern dentistry and public oral health. 3. Describe the main stages of the epidemiological method and give an example from dental practice. 4. Classify epidemiological studies (descriptive, analytical, experimental) and give dental examples for each type. 5. Compare cohort, case control and cross sectional studies: design, advantages, limitations. 6. Define incidence and prevalence and explain their importance for dental caries and periodontal diseases. 7. Explain the concepts of sensitivity, specificity, predictive

	values and likelihood ratios of diagnostic tests in dentistry. 8. Describe the hierarchy of evidence in clinical epidemiology and place systematic reviews and meta analyses within it. 9. List the main steps of conducting a systematic review and meta-analysis in dentistry. 10. Discuss major non-infectious dental diseases (caries, periodontal disease, erosion) and their key epidemiological indicators in populations. 11. Describe risk factors for non-infectious oral pathology and principles of population based prevention (fluoride, sealants, sugar reduction). 12. Explain epidemiological aspects of dentist's work in extreme and emergency situations, including infection control measures in temporary clinics.
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Assessment criteria

"Very good" grade is given to a student who possesses knowledge of the subject in full scope outlined in the curriculum, has a sufficiently deep insight into the subject; is able to answer all questions clearly, exhaustively, and with no outside help; structures their answers logically, with emphasis on the most important information; is able to analyze, compare, classify, summarize, refine, and structure the course content, giving particular attention to cause-and-effect relationships.

"Good" is given to a student whose knowledge of the subject is almost in full scope outlined in the curriculum (gaps are only present in the knowledge of some especially complex aspects); is able to answer questions exhaustively with little to no outside help; does not always put emphasis on the most important information, but does not make significant mistakes.

"Satisfactory" is given to a student who possesses the bulk of knowledge on the subject; has difficulties answering questions with no outside help, uses imprecise wording; makes mistakes in substantial number of their answers.

"Unsatisfactory" is given to a student who does not have the mandatory minimum of knowledge on the subject, is not able to give an answer even with additional guiding questions.

Standardized case studies and checklists for **B1.C.16 Epidemiology** course

Case Study No. 1

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-13	Able to solve professional tasks using information, bibliographic resources as well as medical and biological terminology, information and communication technologies complying with the information security requirements
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS A cross sectional survey was conducted among 320 adolescents aged 12–15 years in a city. Overall DMF index was 5.4. Prevalence of caries was 82%. Seventy percent of adolescents reported daily consumption of sugary drinks; only 35% used fluoride toothpaste regularly, and 20% visited the dentist for preventive checkups. Community water is not fluoridated
Q	1	Question: What type of epidemiological study is used in this situation?
Q	2	Question:

		Interpret the obtained DMF value and caries prevalence for this population.
Q	3	Question: Identify at least three modifiable risk factors for high caries level in this group.
Q	4	Question: Propose at least three population level preventive measures for caries reduction in this city.
Q	5	Question: Which epidemiological indicators should be monitored over time to evaluate effectiveness of your interventions?

Case Study No.1 Checklist

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-13	Able to solve professional tasks using information, bibliographic resources as well as medical and biological terminology, information and communication technologies complying with the information security requirements
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS A cross sectional survey was conducted among 320 adolescents aged 12–15 years in a city. Overall DMF index was 5.4. Prevalence of caries was 82%. Seventy percent of adolescents reported daily consumption of sugary drinks; only 35% used fluoride toothpaste regularly, and 20% visited the dentist for preventive checkups. Community water is not fluoridated
Q	1	Question: What type of epidemiological study is used in this situation?
A		Correct answer: Cross sectional
Q	2	Question: Interpret the obtained DMF value and caries prevalence for this population.
A		Correct answer: DMF signifies high caries rate; 82% signifies high prevalence
Q	3	Question: Identify at least three modifiable risk factors for high caries level in this group.
A		Correct answer: Sugary drinks, poor fluoride exposure, low preventive visits, poor oral hygiene
Q	4	Question: Propose at least three population level preventive measures for caries reduction in this city.
A		Correct answer: Fluoride programs, health education, regulation of sugary drinks in schools, sealants, organized check ups
Q	5	Question:

		Which epidemiological indicators should be monitored over time to evaluate effectiveness of your interventions?
A		Correct answer: Prevalence, DMF, coverage with preventive measures
R2	Very good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, and knows and uses professional terminology correctly
R1	Good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, and knows and uses professional terminology correctly
	Satisfactory	given to a student who gives a full correct answer, demonstrates sufficient knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, knows and uses professional terminology, but whose answer was slightly inaccurate without being incorrect
R0	Fail	given to a student who provides no answer or only fragments of an answer, demonstrates the lack of knowledge, and cannot provide an answer even with external help

Case Study No. 2

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-13	Able to solve professional tasks using information, bibliographic resources as well as medical and biological terminology, information and communication technologies complying with the information security requirements
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS A dental clinic wants to evaluate the effectiveness of a new fluoride varnish in preventing root caries in elderly patients. Two comparable groups of patients aged 60+ with similar baseline status are formed. One group receives standard care; the other group receives standard care plus quarterly application of fluoride varnish. After 2 years, incidence of new root caries lesions is compared between the groups.
Q	1	Question: Which type of epidemiological study is this? Justify your answer
Q	2	Question: Formulate the main hypothesis of this study
Q	3	Question: Which outcome measure would you choose to evaluate effectiveness of the varnish
Q	4	Question:

		How would you calculate relative risk (RR) and interpret it if $RR = 0.6$?
	5	Question: Which sources of bias and confounding should be controlled in this study

Case Study No.2 Checklist

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	GPC-13	Able to solve professional tasks using information, bibliographic resources as well as medical and biological terminology, information and communication technologies complying with the information security requirements
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS A dental clinic wants to evaluate the effectiveness of a new fluoride varnish in preventing root caries in elderly patients. Two comparable groups of patients aged 60+ with similar baseline status are formed. One group receives standard care; the other group receives standard care plus quarterly application of fluoride varnish. After 2 years, incidence of new root caries lesions is compared between the groups.
Q	1	Question: Which type of epidemiological study is this? Justify your answer
A		Correct answer: Randomized (or controlled) clinical trial / experimental cohort
Q	2	Question: Formulate the main hypothesis of this study
A		Correct answer: Reduction of root caries incidence in varnish group
Q	3	Question: Which outcome measure would you choose to evaluate effectiveness of the varnish
A		Correct answer: Incidence of new root caries lesions per person or per surface
Q	4	Question: How would you calculate relative risk (RR) and interpret it if $RR = 0.6$?
A		Correct answer: $RR = 0.6$ signifies 40% risk reduction in varnish group vs control
Q	5	Question: Which sources of bias and confounding should be controlled in this study
A		Correct answer: Differences in oral hygiene, diet, baseline caries status, adherence, randomization problems
R2	Very good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills

		necessary to achieve objectives during professional activity, and knows and uses professional terminology correctly
R1	Good	given to a student who gives a full correct answer, demonstrates deep, systemic knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, and knows and uses professional terminology correctly
	Satisfactory	given to a student who gives a full correct answer, demonstrates sufficient knowledge of the subject, shows mastery of skills necessary to achieve objectives during professional activity, knows and uses professional terminology, but whose answer was slightly inaccurate without being incorrect
R0	Fail	given to a student who provides no answer or only fragments of an answer, demonstrates the lack of knowledge, and cannot provide an answer even with external help

4. Assessment criteria for learning outcomes

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

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

Practical Skills Assessment Checklist

C	GPC-13	Able to solve professional tasks using information, bibliographic resources as well as medical and biological terminology, information and communication technologies complying with the information security requirements	
F	A/06.7	Organizational and administrative activities	
	Action	Performed	Not Performed
1.	Formulate a clear clinical epidemiological question in PICO format relevant to dentistry	1 point	-1 point
2.	Perform a structured search in recognized databases (e.g. PubMed, Cochrane Library or national e library) using correct keywords and filters	1 point	-1 point
3.	Select and records bibliographic data of relevant sources using accepted citation style	1 point	-1 point
4.	Briefly evaluate the level of evidence and relevance of the found sources (study design, sample, outcome)	1 point	-1 point
5.	Work with electronic resources in accordance with information security rules (personal log in, no transfer of passwords, correct use of university network, no disclosure of patients' personal data)	1 point	-1 point
	Total	5 points	

Final grade:

"Pass" - at least 75% of required actions performed

"Fail" - 74% of required actions or less performed