

**MINISTRY OF HEALTH PROTECTION OF UKRAINE**

**ODESSA NATIONAL MEDICAL UNIVERSITY**

Department of general and clinical epidemiology and biosafety

**I APPROVE**

Vice-rector for scientific and pedagogical work

Edward BURIACHKIVSKYI

September 1, 2023



**WORKING PROGRAM OF EDUCATIONAL DISCIPLINE**

**"BASICS OF INFECTION CONTROL"**

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

**Branch of knowledge:** 22 "Health care"

**Specialty:** 222 "Medicine"

**Educational and professional program:** Medicine

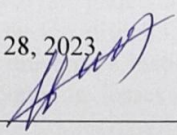
**2023**

The work program is compiled on the basis of the educational and professional program "Medicine" for the training of specialists of the second (master's) level of higher education in the specialty 222 "Medicine" of the field of knowledge 22 "Health care", approved by the Scientific Council of ONMedU (protocol No. 8 of June 29, 2023 ).

Developers:

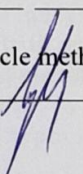
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The work program was approved at the meeting of the department of general and clinical epidemiology and biosafety  
Protocol No. 1 dated August 28, 2023.

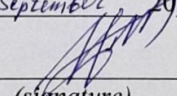
Head of the department  Mykola GOLUBYATNYKOV

Agreed with the guarantor of the OPP  Valery MARICHEREDA

Approved by the subject cycle commission for medical and biological disciplines of ONMedU  
Protocol No. \_\_\_ of "\_\_\_" 2023.

Head of the subject cycle methodical commission for medical and biological disciplines of ONMedU  Leonid GODLEVSKIY

Reviewed and approved at the meeting of the department of general and clinical epidemiology and biosafety with course of microbiology and virology  
Protocol No. 1 of "1" September, 2023

Head of the department  Mykola GOLUBYATNYKOV  
(signature) (First Name Surname)

Reviewed and approved at the meeting of the department \_\_\_\_\_

Protocol No. \_\_\_ of "\_\_\_" 20\_\_

Head of Department \_\_\_\_\_  
(signature) (First Name Surname)

### 1. Description of the academic discipline:

Name of indicators	Characteristics of the academic discipline	
	Full-time education	
The total number of: Credits - 3 Hours - 90 Content subdivisions - 1	Mandatory	
	A year of training	6
	Semester	XI-XII
	Lectures	0
	Practical training	30 hours
	Independent work	60 hours
	Including individual tasks	0
	Final control form	test

### 2. The purpose and tasks of the educational discipline

**The purpose of teaching educational discipline** There is the formation of modern thinking in future doctors and an understanding of the need to acquire special knowledge, abilities and skills from the basics, principles and rules of conducting and observing infection control (IC) in medical and preventive institutions (MI) of various profiles in order to reduce morbidity, mortality and economic losses due to the development of healthcare-associated infections (HCAI).

#### Task:

- formation of a system of knowledge, abilities and skills regarding the causes and etiology of HCAI, the purpose and components of IC, components of the epidemic process, laws of epidemiology according to L.V. Gromashevskiy, the basics of HCAI prevention, the rules of asepsis and antiseptics, the rules of disinfection and sterilization;
- the ability to apply professional and legal standards to everyday professional practice, in particular during the implementation of IR;
- acquiring the ability to recognize and interpret signs of health and its changes in patients and to determine clinical manifestations in the development of HCAI;
- acquiring the ability to meet the needs of the patient/client by planning, assisting and performing various types of care, taking into account the prevention of the development of HCAI;
- the ability to apply professional skills, medical devices, interventions and actions to ensure the patient/client decent treatment, privacy/intimacy/, confidentiality, protection of his rights, physical, psychological and spiritual needs on the basis of tolerant and judicial behavior to prevent the development of HCAI;
- acquiring the ability to effectively apply a set of medical skills (skills), medical devices, interventions and actions to provide care based on a holistic (holistic) approach, taking into account the risks of the development of HCAI in the conditions of inpatient treatment;
- acquiring the ability to effectively apply a set of professional skills (skills), medical devices, interventions and actions in assessing the functional state of patients/clients, preparing them for diagnostic studies and taking biological material for laboratory studies, taking into account measures to prevent the development of HCAI;
- preserve the specialist's own health when providing care, performing manipulations and procedures, when moving and transporting the patient/client;
- mastering the basics of preventive activities aimed at preserving and strengthening the health of a medical worker, preventing the development of HCAI among medical personnel;
- acquiring the ability to organize, implement and control the treatment process in palliative and hospice care, to prevent the development of HCAI;
- acquisition of the ability to identify clinical manifestations of diseases associated with the provision of medical assistance;

**The process of studying the discipline is aimed at forming elements of the following competencies:**

**IR.** The ability to solve typical and complex problems, including those of a research and innovation nature in the field of medicine. Ability to continue learning with a high degree of autonomy.

**- General (GC):**

GC1. Ability to abstract thinking, analysis and synthesis

GC3. Ability to apply knowledge in practical situations

GC4. Knowledge and understanding of the subject area and understanding of professional activity

GC5. Ability to adapt and act in a new situation

GC6. Ability to make informed decisions

GC7. Ability to work in a team

GC8. Ability to interpersonal interaction

GC10. Ability to use information and communication technologies

GC11. Ability to search, process and analyze information from various sources

GC16. The ability to evaluate and ensure the quality of the work performed

**Special (SC):**

SC1. Ability to collect medical information about the patient and analyze clinical data

SC2. Ability to determine the necessary list of laboratory and instrumental studies and evaluate their results

SC3. Ability to establish a preliminary and clinical diagnosis of the disease

SC6. Ability to determine the principles and nature of treatment and prevention of diseases

SC11. Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility

SC14. Ability to plan and carry out preventive and anti-epidemic measures for infectious diseases

SC16. Ability to maintain medical documentation, including electronic forms

**Program learning outcomes (PLO):**

PLO1. Have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require updating and integration of knowledge. To be responsible for professional development, the ability for further professional training with a high level of autonomy.

PLO2. Understanding and knowledge of fundamental and clinical biomedical sciences, at a level sufficient for solving professional tasks in the field of health care.

PLO3. Specialized conceptual knowledge, which includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine and related interdisciplinary problems.

PLO19. Plan and implement a system of anti-epidemic and preventive measures regarding the occurrence and spread of diseases among the population.

PLO20. Analyze the epidemiological situation and carry out measures for mass and individual, general and local prevention of infectious diseases.

PLO21. Search for the necessary information in the professional literature and databases of other sources, analyze, evaluate and apply this information.

PLO24. To organize the necessary level of individual safety (own and the persons he cares for) in case of typical dangerous situations in the individual field of activity.

**Expected learning outcomes. As a result of studying the academic discipline, the applicant must:**

**Know:-**

essence of infection control;

- the main provisions on the prevention of infections related to the provision of medical care;
- organizational structure of infection control system management;
- basics of epidemiological surveillance for HCAI;
- the value of microbiological monitoring;;

**Be able:**

- to organize a complex of preventive and anti-epidemic measures regarding HCAI;
- to organize health protection measures to prevent the development of HCAI of medical workers;
- organize training of medical personnel on prevention of the development of HCAI;
- implement the principles of infection control.

**Master the skills:**

- Carrying out routine epidemiological surveillance of HCAI.

### 3. Content of the academic discipline

#### *Content module I. Basics of infection control*

**Topic 1. Nosocomial infection as a specific epidemic process.**

Definition of HAI. Actuality and statistics. Basics of classification of infections associated with the provision of medical care. Epidemiological characteristics of populations of HAI pathogens. Hospital strain. The mechanism of the development of the epidemic process of HAI. Characterization of sources of infection, mechanisms of transmission of HAI pathogens, susceptible organism. Manifestations of the epidemic process of HAI. The modern structure of HAI. Peculiarities of the distribution of HAI in health care institutions of various profiles. Normative - legal and methodical basis for HAI. Concept of SOP (standard operating procedures).

**Topic 2. Organization and implementation of epidemiological surveillance of infections associated with the provision of medical care.**

The infection control system in public health care institutions. Definition, structure, history of formation. The purpose and tasks of infection control. Organization of infection control. Accounting and registration of HAI. Microbiological support of infection control. Epidemiological diagnosis of HAI. Preventive and anti-epidemic measures in the infection control system. Introduction of isolation and restrictive measures. Working with contacts. Organization and implementation of emergency immunoprophylaxis.

**Topic 3. Development of standard operating procedures (SOP) for the prevention of major UTIs.**

**Topic 4. Support of sanitary-hygienic and anti-epidemic regime in medical and preventive institutions.**

Basics of ensuring a safe environment for patients and staff in medical institutions. Safe algorithms for performing medical procedures. Separation of flows with different degrees of epidemic safety at the stages of treatment of patients. Principles of individual isolation. Protection of the patient from secondary endogenous infection. Safety rules for the performance of professional duties by medical personnel. A complex of emergency measures in the event of emergency situations. Personal protective equipment. Immunization of personnel. Medical examination of personnel

**Topic 5. Hand hygiene of medical personnel and prevention of HCAI.**

Hand hygiene of medical personnel. Medical waste. Classification of medical waste. Management of medical waste. Disposal of medical waste. Modern problems. Principles of professional cleaning of healthcare facilities.

**Topic 6. Infections in the area of surgical intervention and their prevention.**

Etiology, classification, mechanism of development and manifestations of the epidemic

process, risk factors for the occurrence of this pathology. Prevention.

**Topic 7. Catheter-associated (vascular and urinary) infections and their prevention.** Etiology, classification, mechanism of development and manifestations of the epidemic process, risk factors for the occurrence of this pathology. Prevention.

**Topic 8. Ventilator-associated pneumonia and their prevention.**

Etiology, classification, mechanism of development and manifestations of the epidemic process, risk factors for the occurrence of this pathology. Prevention.

#### 4. THE STRUCTURE OF THE ACADEMIC DISCIPLINE:

No	Topic name	Number of hours		
		In total	software	ISW
1	Nosocomial infection as a specific epidemic process.	6	2	4
2	Organization and implementation of epidemiological surveillance of infections associated with the provision of medical care.	12	4	8
3	Development of standard operating procedures (SOP) for the prevention of major HCAI.	12	4	8
4	Support of sanitary-hygienic and anti-epidemic regime in medical and preventive institutions.	12	4	8
5	Hand hygiene of medical personnel and prevention of HCAI.	12	4	8
6	Surgical site infections and their prevention.	12	4	8
7	Catheter-associated (vascular and urinary) infections and their prevention.	12	4	8
8	Ventilator-associated pneumonia and their prevention	12	4	8
<b>Total hours</b>		<b>90</b>	<b>30</b>	<b>60</b>

#### 5. Topics of lectures / seminars / practical / laboratory classes

##### 5.1. Topics of lectures

Lectures are not provided.

##### 5.2. Topics of seminar classes

Seminar classes are not provided.

##### 5.3. Topics of practical classes

No	Topic	Number hours
1.	Nosocomial infection as a specific epidemic process.	2
2.	Organization and implementation of epidemiological surveillance of infections associated with the provision of medical care.	4
3.	Development of standard operating procedures (SOP) for the prevention of major HCAI.	4
4.	Support of sanitary-hygienic and anti-epidemic regime in medical and preventive institutions.	4
5.	Hand hygiene of medical personnel and prevention of HCAI.	4

6.	Surgical site infections and their prevention.	4
7.	Catheter-associated (vascular and urinary) infections and their prevention.	4
8.	Ventilator-associated pneumonia and their prevention	4
<b>In total</b>		<b>30</b>

#### 5.4. Topics of laboratory classes

Laboratory classes are not provided.

#### 6. Independent work of a student of higher education

No	Topic	Number hours
1.	Nosocomial infection as a specific epidemic process.	4
2.	Organization and implementation of epidemiological surveillance of infections associated with the provision of medical care.	8
3.	Development of standard operating procedures (SOP) for the prevention of major HCAI.	8
4.	Support of sanitary-hygienic and anti-epidemic regime in medical and preventive institutions.	8
5.	Hand hygiene of medical personnel and prevention of HCAI.	8
6.	Surgical site infections and their prevention.	8
7.	Catheter-associated (vascular and urinary) infections and their prevention.	8
8.	Ventilator-associated pneumonia and their prevention	8
<b>In total</b>		<b>60</b>

#### 7. Teaching methods

**Practical training:** conversation, solving situational problems, practicing skills for working with medical documentation.

**Independent work:** independent work with the textbook, independent work with the bank of test tasks Step-2, independent solution of situational tasks.

#### 8. Forms of control and assessment methods (including criteria for evaluating learning outcomes)

**Current control:** oral survey, testing, assessment of performance of practical skills, solution of situational tasks, assessment of activity in class.

**Final control:** balance

**Evaluation of the current educational activity in a practical session:**

- Evaluation of theoretical knowledge on the subject of the lesson:
  - methods: survey, solving a situational problem;
  - the maximum score is 5, the minimum score is 3, the unsatisfactory score is 2.
- Evaluation of practical skills and manipulations on the subject of the lesson:
  - methods: assessment of the correctness of the performance of practical skills
  - the maximum score is 5, the minimum score is 3, the unsatisfactory score is 2.

The grade for one seminar session is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

### Current assessment criteria for practical training:

Rating	Evaluation criteria
Perfectly "5"	It is presented to the applicant when he shows deep, solid and systematic knowledge in the scope of the curriculum, answers all questions without mistakes, reasonably formulates conclusions, using the materials presented for the independent work of the applicant, competently and consistently, with knowledge of the methodology, completed practical work ; using scientific terms and concepts correctly.
Fine "4"	The acquirer reveals the main content of the educational material; gives incomplete definitions of concepts; admits inaccuracies in the use of scientific terms, vaguely formulates conclusions, performed practical work, but made minor mistakes during the research.
Satisfactorily "3"	The applicant reproduces the basic educational material, but makes significant mistakes when presenting it, gives simple examples, definitions of concepts are insufficient, characterizes general issues of social medicine.
Unsatisfactorily "2"	The applicant discloses the content of the educational material fragmentarily, makes gross mistakes in the definition of concepts and when using terminology, did not complete the practical work.

Credit is given to the applicant who completed all tasks of the work program of the academic discipline, took an active part in practical classes, completed and defended an individual assignment and has an average current grade of at least 3.0 and has no academic debt.

Assessment is carried out in the last lesson before the beginning of the examination session (with the tape system of learning. The grade for the assessment is the arithmetic average of all components on a traditional four-point scale and has a value that is rounded up to 2 (two) decimal places according to the statistical method.

#### 9. Distribution of points received by students of higher education

The obtained average score for the academic discipline for applicants who have successfully mastered the work program of the academic discipline is converted from a traditional four-point scale to points on a 200-point scale, as shown in the table:

#### Conversion table of a traditional assessment into a multi-point scale

Traditional four-point scale	Multipoint 200-point scale
Excellent ("5")	185 - 200
Good ("4")	151 - 184
Satisfactory ("3")	120-150
Unsatisfactory ("2")	Below 120

A multi-point scale (200-point scale) characterizes the actual success of each applicant in learning the educational component. The conversion of the traditional grade (average score for the academic discipline) into a 200-point grade is performed by the information and technical department of the University.

According to the obtained points on a 200-point scale, the achievements of the applicants are evaluated according to the ECTS rating scale. Further ranking according to the ECTS rating scale allows you to evaluate the achievements of students from the educational component who are studying in the same course of the same specialty, according to the points they received.

The ECTS scale is a relative-comparative rating, which establishes the applicant's belonging to the group of better or worse among the reference group of fellow students (faculty, specialty). An "A" grade on the ECTS scale cannot be equal to an "excellent" grade, a "B" grade



to a "good" grade, etc. When converting from a multi-point scale, the limits of grades "A", "B", "C", "D", "E" according to the ECTS scale do not coincide with the limits of grades "5", "4", "3" according to the traditional scale. Acquirers who have received grades of "FX" and "F" ("2") are not included in the list of ranked acquirers. The grade "FX" is awarded to students who have obtained the minimum number of points for the current learning activity, but who have not passed the final examination. A grade of "F" is assigned to students who have attended all classes in the discipline, but have not achieved a grade point average (3.00) for the current academic activity and are not admitted to the final examination.

Applicants who study in one course (one specialty), based on the number of points scored in the discipline, are ranked on the ECTS scale as follows:

**Conversion of the traditional grade from the discipline and the sum of points on the ECTS scale**

Evaluation on the ECTS scale	Statistical indicator
A	Top 10% achievers
B	The next 25% of earners
C	The next 30% of earners
D	The next 25% of earners
E	The next 10% of earners

**10. Methodological support:**

- Working program of the academic discipline
- Syllabus of the academic discipline
- Multimedia presentations
- Methodical developments for practical classes

**11. Questions for final control:**

1. Definition of HAI
2. Relevance of HAI.
3. Classification of infections associated with the provision of medical care.
4. Pathogens of HAI.
5. What is a hospital strain, the mechanisms of formation of a hospital strain of the pathogen.
6. What is microbiological monitoring.
7. What is an antibioticogram?
8. Sources of HAI infection.
9. Mechanism, ways and factors of transmission of HAI pathogens.
10. Endogenous and exogenous infection by pathogens of HAI.
11. The role of medical personnel in the transmission of HAI pathogens.
12. Manifestations of the epidemic process of HAI. The modern structure of HAI.
13. Infections in the area of surgical intervention, epidemiological features.
14. Ventilator-associated infections, epidemiological features.
15. Catheter-associated urinary tract infections, epidemiological features.
16. Blood stream infections, epidemiological features.
17. Blood infections (viral hepatitis B and C, HIV infection), epidemiological features.
18. The infection control system in public health care institutions.
19. Definition of infection control, structure, history of development.
20. The purpose and tasks of infection control.
21. Organization of infection control.
22. Accounting and registration of HAI.

23. Microbiological support of infection control.
24. Epidemiological diagnosis of HAI.
25. Preventive and anti-epidemic measures in the infection control system.
26. Organization of control over compliance with the sanitary and anti-epidemic regime in health care institutions.
27. Hand hygiene of medical personnel.
28. Medical waste. Classification of medical waste. Management of medical waste. Disposal of medical waste. Modern problems.
29. Principles of professional cleaning of healthcare facilities.
30. Basics of ensuring a safe environment for patients and staff in medical institutions. Safe algorithms for performing medical procedures.
31. Separation of flows with different degrees of epidemic safety at the stages of treatment of patients.
32. Protection of the patient from secondary endogenous infection.
33. Safety rules in the performance of professional duties by medical personnel. A complex of emergency measures in the event of emergency situations.
34. Personal protective equipment for medical personnel.
35. Immunization of personnel. Medical examination of personnel.

## **12. Recommended literature**

### **Main:**

1. Order of the Ministry of Health No. 1614 dated August 3, 2021 "On the organization of infection prevention and infection control in health care institutions and institutions/institutions providing social services/social protection of the population".

### **Additional:**

1. Special epidemiology. N. Vinograd, Z.P. Vasylyshyn, L.P. Cossack./ education manual. Medicine. 2018. 368 p.
2. Infectious diseases: textbook / O.A. Golubovska, M.A. Andreychyn, A.V. Shkurba and others; under the editorship O.A. Golubovska 3rd edition. All-Ukrainian special publishing house: Medicine. 2020. 688 p.
3. General epidemiology. N. Vinograd, Z.P. Vasylyshyn, L.P. Cossack./ education manual. Medicine. 2014. 200 p.

## **13. Electronic information resources**

1. World Health Organization and the United Nations Children's Fund, WASH in health care facilities: Global Baseline Report 2019, WHO and UNICEF, Geneva, 2019.
2. National Guidelines for Infection Prevention and Control in Healthcare Facilities Ministry of Health and Family Welfare, Government of India 2020  
<https://www.mohfw.gov.in/pdf/National%20Guidelines%20for%20IPC%20in%20HCF%20-%20final%281%29.pdf>
3. Order of the Ministry of Health No. 1614 dated August 3, 2021 "On the organization of infection prevention and infection control in health care institutions and institutions/institutions providing social services/social protection of the population".  
[https://zakononline.com.ua/documents/show/502234\\_684240](https://zakononline.com.ua/documents/show/502234_684240)
4. World Health Organization and the United Nations Children's Fund, WASH in health care facilities: Global Baseline Report 2019, WHO and UNICEF, Geneva, 2019.  
<http://apps.who.int/iris>
5. National Guidelines for Infection Prevention and Control in Healthcare Facilities Ministry of Health and Family Welfare, Government of India 2020  
<https://www.mohfw.gov.in/pdf/National%20Guidelines%20for%20IPC%20in%20HCF%20-%20final%281%29.pdf>