

MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION

**Federal State Autonomous Educational Institution of Higher Education  
«National Research Lobachevsky State University of Nizhny Novgorod»**

Институт клинической медицины

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УТВЕРЖДЕНО

решением Ученого совета ННГУ

протокол № 10 от 02.12.2024 г.

**Working programme of the discipline**

Oncology, radiation therapy

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Higher education level

Specialist degree

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Area of study / speciality

31.05.01 - General Medicine

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Focus /specialization of the study programme

General Medicine

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Mode of study

full-time

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Nizhny Novgorod

Year of commencement of studies 2025

## 1. Место дисциплины в структуре ОПОП

Дисциплина Б1.В.1.06 Онкология, лучевая терапия относится к части, формируемой участниками образовательных отношений образовательной программы.

## 2. Планируемые результаты обучения по дисциплине, соотнесенные с планируемыми результатами освоения образовательной программы (компетенциями и индикаторами достижения компетенций)

Формируемые компетенции (код, содержание компетенции)	Планируемые результаты обучения по дисциплине (модулю), в соответствии с индикатором достижения компетенции		Наименование оценочного средства	
	Индикатор достижения компетенции (код, содержание индикатора)	Результаты обучения по дисциплине	Для текущего контроля успеваемости	Для промежуточной аттестации
ПК-5: Готовность к определению тактики ведения пациентов с учетом возраста, с различными нозологическими формами (разработка плана лечения, назначение медикаментозных и немедикаментозных средств согласно клиническим рекомендациям) в том числе оказание паллиативной медицинской помощи	<p>ПК-5.1: Знать алгоритмы постановки диагноза и тактику ведения пациентов с различными нозологическими формами</p> <p>ПК-5.2: Уметь определять необходимую тактику ведения пациентов с различными нозологическими формами</p> <p>ПК-5.3: Владеть алгоритмами постановки диагноза и лечения и навыком определения тактики ведения пациентов с различными нозологическими формами</p>	<p>ПК-5.1: He knows the algorithms of diagnosis and treatment and the tactics of managing patients with various nosological forms</p> <p>ПК-5.2: He is able to determine the necessary tactics for managing patients with various nosological forms.</p> <p>ПК-5.3: He knows the algorithms of diagnosis and treatment and the skill of determining the tactics of managing patients with various nosological forms.</p>	<p>Опрос</p> <p>Тест</p> <p>Контрольная работа</p>	<p>Зачёт:</p> <p>Контрольные вопросы</p>
ПК-7: Готовность к определению необходимости применения природных лечебных факторов, лекарственной, немедикаментозной терапии и других методов у пациентов, нуждающихся в медицинской реабилитации и санаторно-курортном лечении	<p>ПК-7.1: Знать основные природные лечебные факторы, лекарственную, немедикаментозную терапию и другие методы у пациентов, нуждающихся в медицинской реабилитации и санаторно-курортном лечении.</p> <p>ПК-7.2: Определять необходимость применения природных лечебных факторов, лекарственной, немедикаментозной терапии и других методов у пациентов, нуждающихся в</p>	<p>ПК-7.1: He is aware of the need to use natural healing factors, medicinal, non-medicinal therapy and other methods in patients in need of medical rehabilitation and sanatorium treatment</p> <p>ПК-7.2: He is able to determine indications and contraindications for the appointment of physical therapy, physiotherapy, reflexology, phytotherapy, rehabilitation</p>	<p>Опрос</p> <p>Тест</p> <p>Контрольная работа</p>	<p>Зачёт:</p> <p>Контрольные вопросы</p>

	<p>медицинской реабилитации и санаторно-курортном лечении</p> <p>ПК-7.3: Владеть навыками выбора алгоритма определения необходимости применения природных лечебных факторов, лекарственной, немедикаментозной терапии и других методов у пациентов, нуждающихся в медицинской реабилитации и санаторно-курортном лечении</p>	<p>measures and other non-drug therapies, is able to draw up medical documents when referring patients for sanatorium treatment.</p> <p>ПК-7.3: Knows the measures of medical rehabilitation of the patient in accordance with the current procedures for the provision of medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care treatment)</p>		
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### 3. Структура и содержание дисциплины

#### 3.1 Трудоемкость дисциплины

	<b>очная</b>
<b>Общая трудоемкость, з.е.</b>	<b>2</b>
<b>Часов по учебному плану</b>	<b>72</b>
в том числе	
<b>аудиторные занятия (контактная работа):</b>	
- занятия лекционного типа	<b>12</b>
- занятия семинарского типа (практические занятия / лабораторные работы)	<b>16</b>
- КСР	<b>1</b>
<b>самостоятельная работа</b>	<b>43</b>
<b>Промежуточная аттестация</b>	<b>0</b> <b>Зачёт</b>

#### 3.2. Содержание дисциплины

(структурированное по темам (разделам) с указанием отведенного на них количества академических часов и виды учебных занятий)

Наименование разделов и тем дисциплины	Всего (часы)	в том числе			Самостоятельная работа обучающегося, часы
		Контактная работа (работа во взаимодействии с преподавателем), часы из них			
		Занятия лекционного типа	Занятия семинарского типа (практические	Всего	

			занятия/лабораторные работы), часы		
	О Ф О	О Ф О	О Ф О	О Ф О	О Ф О
Section 1. General oncology	22	4	8	12	10
Section 2. Radiation therapy	20	4	1	5	15
Section 3. Private oncology	29	4	7	11	18
Аттестация	0				
КСР	1			1	
Итого	72	12	16	29	43

### Contents of sections and topics of the discipline

#### Section 1 General oncology

Topic 1.1. 1.1. The purpose, content and place of oncology in the doctor's training system.

Morbidity and mortality from malignant neoplasms. The dynamics and structure of morbidity. Regional features of the spread of malignant neoplasms. Factors contributing to the development of tumors. The importance of the nature of nutrition, smoking, endocrine disorders, viruses, radioactive and ultraviolet radiation, heredity, secondary immunodeficiency conditions. The concept of primary and secondary prevention. Socio –hygienic and individual cancer prevention measures. The fight against smoking. Food hygiene. The most important scientific directions and modern technologies in oncology. Dynamics of cancer patients' cure rates.

Topic 1.2. Organization of oncological care.

Principles of oncological service in Russia. Clinical groups. The state registration system. Accounting documentation. Analysis of the causes of neglect of malignant tumors. Palliative care for patients with advanced forms of malignant neoplasms. The concept of the quality of life of cancer patients. Deontology in oncology. The tactics of a doctor in relation to an oncological patient. Rules of conduct for students in an oncological clinic. Patient care. Reports on rounds.

#### Section 2. Radiation therapy.

Topic 2.1. The physical basis of radiation therapy of malignant neoplasms.

Ionizing radiation. Types of ionizing radiation. The spectrum of electromagnetic radiation. The dependence of the quantum energy on the radiation frequency. Corpuscular radiation. The main effects in the interaction of ionizing radiation with matter (photoelectric effect, Compton effect, formation of electron-positron pairs). Rarely- and dense ionizing radiation. Linear energy loss. Linear ionization density. Radioactive decay. The law of radioactive decay. The main radioactive isotopes used for medical purposes. The activity of the radioactive isotope. Units of activity. Exposure dose, absorbed dose.

Topic 2.2. Technical support of radiation therapy.

Types of radiation used for therapeutic purposes in oncology, their characteristics. Sources of ionizing radiation used for medical purposes. The device of an X-ray tube, a linear accelerator, accelerators of heavy charged particles. The device of the gamma device. Remote and contact radiation therapy. Classification of contact irradiation methods. Irradiation according to the 'after-loading' principle. Pre-radiation topometry and clinical dosimetry. Stages of pre-radiation preparation. Planning systems. Preparation and verification of the radiation plan.

Topic 2.3. Radiation safety.

Principles and methods of dosimetry, methods of protection from exposure to ionizing radiation.

Topic 2.4. Biological effect of ionizing radiation: effects of ionizing radiation at the subcellular and cellular levels.

Stages of development of radiation damage in biological tissues. Direct and indirect effects of AI. The role of reactive oxygen species in the development of radiation damage. Changes at the molecular, subcellular and

cellular levels. The theory of the target. The radiobiological paradox. Effects of AI on DNA. Fatal and sublethal injuries. Dependence of the outcome of cell irradiation on the dose. The mutagenic effect of AI.

Topic 2.5. Biological effect of ionizing radiation: effects of ionizing radiation at the tissue level.

Effects of AI on the tissue level. The concept of radio sensitivity. Factors affecting radio sensitivity. The Bergonier-Tribondo law. Mechanisms of radiation damage development in rapid cell renewal systems (using the example of the hematopoiesis system). Acute radiation sickness. Classification, clinical forms. The clinic and pathogenesis of the bone marrow form of acute radiation sickness. Mechanisms of radiation damage development in late regenerating tissues (on the example of cerebral tissue).

Section 3. Private oncology.

Topic 3.1. Skin tumors. Cancer and melanoma. Morbidity. Risk factors. Facultative and obligate skin precancerous. Cancer prevention measures. Histological types (basal cell carcinoma, squamous cell carcinoma). Clinical variants of basal cell carcinoma and squamous cell carcinoma. Methods of examination of patients (examination, palpation, sampling of material for morphological examination). Stages. Skin cancer treatment (radiation, cryogenic, surgical, medicinal, etc.). Immediate and long-term results. Rehabilitation. Melanoma. Epidemiology of melanomas. Factors contributing to malignancy of pigmented nevi, clinical manifestations, preventive measures. Features of the growth and metastasis of melanomas. Clinical characteristics. Staging. Possibilities of cytological and histological studies. Methods of treatment. Results.

Topic 3.2. Tumors of bones and soft tissues.

Bone tumors. Classification. Morbidity. Pathoanatomic characteristics. The main types of malignant tumors are osteogenic sarcoma, Ewing's sarcoma, and chondrosarcoma. Metastases of malignant tumors in the bone. The clinical picture. Diagnostics. The main radiological symptoms. Radioisotope diagnostics. The significance of morphological research. Surgical treatment, combined and complex treatment. Saved operations. Long-term results. Medical examination of the cured. Rehabilitation. Soft tissue tumors. Morbidity. Pathoanatomic characteristics. Localization. The clinical picture. Differential diagnosis. Diagnostic methods: ultrasound, computed tomography and MR tomography. The importance of angiography and morphological examination. Treatment. Long-term results

Topic 3.3. Tumors of the head and neck.

Cancer of the lower lip. Morbidity. Risk factors. Obligatory and optional precancerous. Forms of growth and ways of metastasis. Stages. Histological structure of tumors. Principles of diagnosis. Treatment of primary tumors (radiation, surgical, cryogenic, complex) and regional metastases. Long-term results. Cancer of the tongue and oral mucosa. Morbidity. Risk factors (smoking, bad habits) precancerous diseases. Forms of growth and ways of cancer metastasis. Stages. Histological structure of tumors and features of their clinical course. Principles of diagnosis. Treatment. Results. Rehabilitation. Tumors of the salivary glands. Classification. Parotid salivary Gland Cancer Clinic. Principles of diagnosis and treatment of tumors of large and small salivary glands. Thyroid cancer. Morbidity. Risk factors. Therapeutic tactics for nodular formations of the thyroid gland. Cancer prevention. Clinical and morphological classification of thyroid tumors. Features of the clinical course. Ways of metastasis. Methods

diagnostics. The role of the cytological method. General principles and results of treatment. Medical examination of those cured of thyroid cancer.

Topic 3.4. Precancerous diseases and breast cancer.

Morbidity. The role of hormonal disorders. Other risk factors: burdened medical history, poor nutrition. Mastopathy. Etiopathogenesis. Classification. Localized and diffuse forms. The clinical picture. Tactics for localized forms. Principles of conservative therapy of diffuse forms of mastopathy. Medical check-up. Breast cancer. Clinical and pathomorphological features, biological factors of prognosis. Ways of metastasis. Classification by stages. The clinic has a typical (nodular) form, a differential diagnosis with localized mastopathy and fibroadenoma. Special forms of cancer: edematous-infiltrative, mastitis-like, erysipelatos and carapace-like, Paget's cancer. Features of the current. Differential diagnosis. Examination of patients. The technique of palpation of mammary glands and lymph nodes. Methods of social research (mammography, ductography, ultrasound, MRI, puncture, trepanobiopsy, sectoral resection). Early detection. Self-examination methodology. Breast cancer screening. The role of examination rooms. Routine checkups. Principles of breast

cancer treatment. The choice of method depends on the stage and shape of the tumor. Types of radical surgery. Indications for combined and complex treatment. The importance of adjuvant and neoadjuvant chemotherapy. Long-term treatment results depending on the stage of the disease. The medical examination system. Rehabilitation.

#### **4. Учебно-методическое обеспечение самостоятельной работы обучающихся**

Самостоятельная работа обучающихся включает в себя подготовку к контрольным вопросам и заданиям для текущего контроля и промежуточной аттестации по итогам освоения дисциплины приведенным в п. 5.

Черенков В.Г., Онкология : учебник / В.Г. Черенков. - 4-е изд., испр. и доп. - М. : ГЭОТАР-Медиа, 2017. - 512 с.

Лучевая терапия : учебник / [Г. Е. Труфанов, М. А. Асатурян, Г. М. Жаринов, В. Н. Малаховский] ; под ред. Г. Е. Труфанова. — М. : ГЭОТАР-Медиа, 2013. — 208 с.

#### **5. Assessment tools for ongoing monitoring of learning progress and interim certification in the discipline (module)**

##### **5.1 Model assignments required for assessment of learning outcomes during the ongoing monitoring of learning progress with the criteria for their assessment:**

##### **5.1.1 Model assignments (assessment tool - Interview) to assess the development of the competency ПК-5:**

1. Terminology – definitions of the terms "tumor," "cancer," and "sarcoma." Properties of tumors.
2. Types and stages of metastasis.
3. TNM classification, main and special symbols, staging classification.
4. Etiological factors: determining and modifying.
5. Groups of carcinogens. Stages of carcinogenesis.
6. Cancer diagnosis. Types of biopsies, indications, and contraindications.
7. Diagnostic algorithm in oncology. Rules for formulating the diagnosis of cancer patients.
8. Types and methods of treatment for cancer patients.
9. Surgical method: principles. Types of surgical interventions in oncology.
10. Biological principles of radiation therapy for tumors. the Bergonie-Tribondeau rule. Stages of radiation therapy impact.
11. Sources of radiation. Types of radiation therapy. Methods of radiomodification.
12. Chemotherapy: groups of anti-tumor drugs, mechanism of action. Indications and contraindications for chemotherapy. Complications, correction methods.
13. Hormone therapy: principles, groups of hormonal drugs, mechanism of action.
14. Laser destruction of tumors, cryodestruction, photodynamic therapy.
15. Symptomatic therapy for patients in the IV clinical group.
16. Incidence of malignant neoplasms, mortality, disease structure, dynamics.
17. Organization of specialized medical care for cancer patients in the Republic of Belarus. Structure of oncological care for patients, specialized care institutions.
18. Dispensary observation of cancer patients. Clinical groups of cancer patients, principles of forming dispensary accounting groups.
19. Accounting documents for cancer patients, rules, and deadlines for documentation.
20. Principles of disability examination for cancer patients, procedure, and deadlines for issuing certificates of temporary incapacity, disability groups.

21. Principles of deontology when working with cancer patients.
22. Incidence of skin tumors. Classification of skin tumors. Risk factors and precancerous skin diseases (obligate and facultative).

### 5.1.2 Model assignments (assessment tool - Interview) to assess the development of the competency ПК-7:

1. Terminology – definitions of the terms "tumor," "cancer," and "sarcoma." Properties of tumors.
2. Types and stages of metastasis.
3. TNM classification, main and special symbols, staging classification.
4. Etiological factors: determining and modifying.
5. Groups of carcinogens. Stages of carcinogenesis.
6. Cancer diagnosis. Types of biopsies, indications, and contraindications.
7. Diagnostic algorithm in oncology. Rules for formulating the diagnosis of cancer patients.
8. Types and methods of treatment for cancer patients.
9. Surgical method: principles. Types of surgical interventions in oncology.
10. Biological principles of radiation therapy for tumors. the Bergonie-Tribondeau rule. Stages of radiation therapy impact.
11. Sources of radiation. Types of radiation therapy. Methods of radiomodification.
12. Chemotherapy: groups of anti-tumor drugs, mechanism of action. Indications and contraindications for chemotherapy. Complications, correction methods.
13. Hormone therapy: principles, groups of hormonal drugs, mechanism of action.
14. Laser destruction of tumors, cryodestruction, photodynamic therapy.
15. Symptomatic therapy for patients in the IV clinical group.
16. Incidence of malignant neoplasms, mortality, disease structure, dynamics.
17. Organization of specialized medical care for cancer patients in the Republic of Belarus. Structure of oncological care for patients, specialized care institutions.
18. Dispensary observation of cancer patients. Clinical groups of cancer patients, principles of forming dispensary accounting groups.
19. Accounting documents for cancer patients, rules, and deadlines for documentation.
20. Principles of disability examination for cancer patients, procedure, and deadlines for issuing certificates of temporary incapacity, disability groups.
21. Principles of deontology when working with cancer patients.
22. Incidence of skin tumors. Classification of skin tumors. Risk factors and precancerous skin diseases (obligate and facultative).

### Assessment criteria (assessment tool — Interview)

Grade	Assessment criteria
pass	The level of knowledge in the volume corresponding to the training program. Several minor mistakes were made.
fail	The level of knowledge is below the minimum requirements. There were gross mistakes.

### 5.1.3 Model assignments (assessment tool - Test) to assess the development of the competency ПК-5:

Difficulty level: Easy

1. What is the study of cancer called?
  - A) Ontology
  - B) Oncology (*Correct Answer*)
  - C) Hematology
  - D) Pathology
2. Which type of cancer is the leading cause of cancer death in men?
  - A) Prostate cancer
  - B) Lung cancer (*Correct Answer*)
  - C) Colorectal cancer
  - D) Pancreatic cancer
3. What is the primary purpose of chemotherapy?
  - A) To cure infections
  - B) To target cancer cells (*Correct Answer*)
  - C) To relieve pain
  - D) To enhance immunity
4. Which of the following is a common side effect of radiation therapy?
  - A) Hair loss
  - B) Nausea
  - C) Fatigue
  - D) All of the above (*Correct Answer*)
5. What does TNM staging refer to in cancer?
  - A) Tumor, Node, Metastasis (*Correct Answer*)
  - B) Tumor, Neoplasm, Malignancy
  - C) Treatment, Node, Metastasis
  - D) Tumor, Nucleus, Metabolism
6. Which of the following is NOT a risk factor for breast cancer?
  - A) Age
  - B) Family history
  - C) Male gender (*Correct Answer*)
  - D) Obesity
7. What is the most common type of skin cancer?
  - A) Melanoma
  - B) Basal cell carcinoma (*Correct Answer*)
  - C) Squamous cell carcinoma
  - D) Kaposi's sarcoma
8. What is the role of genetic counseling in oncology?
  - A) To provide treatment options
  - B) To assess hereditary cancer risk (*Correct Answer*)
  - C) To offer psychological support
  - D) To diagnose cancer
9. Which imaging technique is often used for breast cancer screening?
  - A) MRI
  - B) X-ray
  - C) Ultrasound
  - D) Mammography (*Correct Answer*)
10. What is angiogenesis in the context of cancer?
  - A) The formation of new blood vessels (*Correct Answer*)
  - B) The spread of cancer cells
  - C) The death of cancer cells
  - D) The removal of a tumor



Difficulty level: medium

1. Which of the following is a hallmark of cancer?
  - A) Uncontrolled cell growth (*Correct Answer*)
  - B) Normal apoptosis
  - C) Decreased metabolism
  - D) Enhanced sensitivity to growth signals
2. Who is considered the father of modern oncology?
  - A) Hippocrates
  - B) Paul Ehrlich
  - C) Sidney Farber (*Correct Answer*)
  - D) Richard Doll
3. In which organ does prostate cancer primarily occur?
  - A) Liver
  - B) Kidney
  - C) Lungs
  - D) Prostate gland (*Correct Answer*)
4. What is immunotherapy?
  - A) A treatment that uses the body's immune system to fight cancer (*Correct Answer*)
  - B) A surgical procedure
  - C) A form of hormone therapy
  - D) A method of radiation treatment
5. Which blood test is commonly used to check for prostate cancer?
  - A) PSA (Prostate-Specific Antigen) (*Correct Answer*)
  - B) CBC (Complete Blood Count)
  - C) ALT (Alanine Aminotransferase)
  - D) LDH (Lactate Dehydrogenase)
6. What is the main purpose of palliative care?
  - A) To cure the disease
  - B) To manage symptoms and improve quality of life (*Correct Answer*)
  - C) To provide chemotherapy
  - D) To enable surgery
7. Which type of cancer is often associated with smoking?
  - A) Breast cancer
  - B) Lung cancer (*Correct Answer*)
  - C) Ovarian cancer
  - D) Skin cancer
8. What does targeted therapy involve?
  - A) General treatment for all cancer
  - B) Specific drugs that target cancer cell characteristics (*Correct Answer*)
  - C) Radiation therapy only
  - D) Chemotherapy only
9. Which cancer is most commonly diagnosed in women worldwide?
  - A) Colorectal cancer
  - B) Lung cancer
  - C) Breast cancer (*Correct Answer*)
  - D) Uterine cancer

Difficulty level: high

1. What is the purpose of a biopsy?
  - A) To diagnose cancer by examining tissue (*Correct Answer*)

- B) To remove tumors
  - C) To relieve pain
  - D) To monitor growth
2. Which of the following can be a side effect of chemotherapy?
- A) Hair loss
  - B) Nausea
  - C) Fatigue
  - D) All of the above (*Correct Answer*)
3. What is the main treatment for leukemia?
- A) Radiation therapy
  - B) Chemotherapy (*Correct Answer*)
  - C) Surgery
  - D) Immunotherapy
4. Which cancer is characterized by the uncontrolled growth of abnormal lymphocytes?
- A) Melanoma
  - B) Lymphoma (*Correct Answer*)
  - C) Sarcoma
  - D) Carcinoma
5. What does remission mean in cancer treatment?
- A) Complete absence of cancer symptoms (*Correct Answer*)
  - B) Partial recovery
  - C) Cancer returning after treatment
  - D) Failure of treatment
6. What factor does the "M" in TNM staging represent?
- A) Metastasis (*Correct Answer*)
  - B) Malignancy
  - C) Morphology
  - D) Mutation

1	B
2	C
3	A
4	D
5	B
6	C
7	D
8	A
9	C

1	
0	B
1	D
2	A
3	C
4	B
5	A
6	D
7	B
8	C
9	A
1	D
2	B
3	A
4	D
5	C
6	B

#### 5.1.4 Model assignments (assessment tool - Test) to assess the development of the competency ΠΚ-7:

Difficulty level: Easy

- Which of the following viruses is linked to cervical cancer?
  - HPV (Human Papillomavirus) (*Correct Answer*)
  - HIV
  - Herpes simplex
  - HCV (Hepatitis C Virus)
- What is the purpose of adjuvant therapy?
  - To provide treatment after the primary therapy (*Correct Answer*)
  - To treat advanced cancer

- C) To prevent cancer recurrence
  - D) Both A and C (*Correct Answer*)
3. What is the most common site of metastasis for breast cancer?
- A) Bones (*Correct Answer*)
  - B) Lungs
  - C) Liver
  - D) Brain
4. Which type of cancer is most likely to arise in people with Barrett's esophagus?
- A) Squamous cell carcinoma
  - B) Adenocarcinoma (*Correct Answer*)
  - C) Melanoma
  - D) Sarcoma
5. What is the role of a tumor board in cancer treatment?
- A) To provide legal advice
  - B) To review and discuss treatment plans (*Correct Answer*)
  - C) To conduct clinical trials
  - D) To diagnose cancer
6. What lifestyle change can significantly reduce cancer risk?
- A) Smoking cessation (*Correct Answer*)
  - B) Increasing caffeine intake
  - C) Skipping exercise
  - D) Eating more processed foods
7. What is a common screening method for colorectal cancer?
- A) Colonoscopy (*Correct Answer*)
  - B) Mammography
  - C) PSA test
  - D) CT scan
8. Which of the following is a characteristic of benign tumors?
- A) They invade surrounding tissues
  - B) They can metastasize
  - C) They do not spread to other parts of the body (*Correct Answer*)
  - D) They are always cancerous
9. What is the primary factor that differentiates cancer from normal cell growth?
- A) Speed of division
  - B) Control of division (*Correct Answer*)
  - C) Type of cells
  - D) Size of tumors
10. What is the 5-year survival rate typically used to denote?
- A) Length of treatment
  - B) Time to cure
  - C) Chances of surviving for five years post-diagnosis (*Correct Answer*)
  - D) Quality of life

Difficulty level: medium

1. Which type of doctor specializes in the treatment of cancer?
- A) Radiologist
  - B) Oncologist (*Correct Answer*)

- C) Hematologist
- D) Pathologist
- 2. What role do oncogenes play in cancer?
  - A) They suppress tumors
  - B) They promote cell growth and division (*Correct Answer*)
  - C) They protect DNA
  - D) None of the above
- 3. Which therapy uses high-energy rays to target cancer cells?
  - A) Chemotherapy
  - B) Immunotherapy
  - C) Radiation therapy (*Correct Answer*)
  - D) Hormonal therapy
- 4. How does hormone therapy manage certain cancers?
  - A) By blocking hormone receptors (*Correct Answer*)
  - B) By increasing blood flow
  - C) By delivering chemotherapy
  - D) By using radiation
- 5. What is the significance of tumor markers in cancer diagnosis?
  - A) They provide a definitive diagnosis
  - B) They help monitor treatment response (*Correct Answer*)
  - C) They are only used in surgery
  - D) They guarantee cure
- 6. Which symptom is commonly associated with advanced cancer?
  - A) Weight gain
  - B) Persistent cough (*Correct Answer*)
  - C) Increased energy
  - D) Hair growth
- 7. What does a complete response to cancer treatment indicate?
  - A) No evidence of the disease (*Correct Answer*)
  - B) Partial recovery
  - C) Disease progression
  - D) Side effects from treatment
- 8. Which is a genetic predisposition for breast and ovarian cancer?
  - A) BRCA1 and BRCA2 mutations (*Correct Answer*)
  - B) HEF1 mutations
  - C) K-RAS mutations
  - D) p53 mutations
- 9. What does cytotoxic mean in the context of chemotherapy?
  - A) Causing toxicity to the body
  - B) Killing cancer cells (*Correct Answer*)
  - C) Promoting healthy cell growth
  - D) None of the above

Difficulty level: high

- 1. What type of cancer is often treated with bone marrow transplants?
  - A) Lung cancer
  - B) Leukemia (*Correct Answer*)

- C) Skin cancer  
D) Liver cancer
2. Which demographic group is at higher risk for developing melanoma?  
A) Older adults  
B) Individuals with fair skin (*Correct Answer*)  
C) People with dark skin  
D) Diabetic patients
3. What is a common treatment approach for pancreatic cancer?  
A) Surgery only  
B) Chemotherapy and/or radiation (*Correct Answer*)  
C) Hormonal therapy only  
D) Immunotherapy only
4. In cancer research, what are clinical trials primarily used for?  
A) Testing new treatments (*Correct Answer*)  
B) Diagnosing diseases  
C) Treating patients  
D) Educating the public
5. What is the main goal of cancer screening?  
A) To provide definitive treatment  
B) To identify cancer at an early stage (*Correct Answer*)  
C) To investigate cancer causes  
D) To promote cancer awareness
6. What lifestyle factor is linked to an increased risk of colorectal cancer?  
A) High fiber diet  
B) Regular exercise  
C) Low fruit and vegetable intake (*Correct Answer*)  
D) Maintaining a healthy weight

1	A
2	D
3	B
4	C
5	A
6	D
7	C
8	B
9	A

1	
0	D
1	C
2	B
3	A
4	D
5	C
6	B
7	A
8	D
9	C
1	
0	B
1	B
2	B
3	A
4	B
5	C

#### Assessment criteria (assessment tool — Test)

Grade	Assessment criteria
pass	The level of knowledge in the volume corresponding to the training program. Several minor mistakes were made.
fail	The level of knowledge is below the minimum requirements. There were gross mistakes.

#### 5.1.5 Model assignments (assessment tool - Control work) to assess the development of the competency ИК-5:

1. What are the main types of cancer?

2. How is cancer classified based on its origin?
3. What is the role of genetics in the development of cancer?
4. Explain the concept of metastasis.
5. What are the common risk factors associated with breast cancer?
6. How do oncogenes contribute to cancer progression?
7. What is tumor suppressor gene, and how does it function?
8. Describe the process of angiogenesis in tumors.
9. What are the different stages of cancer, and how are they determined?
10. How is a biopsy performed, and why is it important in cancer diagnosis?
11. What imaging techniques are commonly used in oncology?
12. What is the significance of the TNM staging system?
13. How do immune checkpoints work in cancer therapy?
14. Explain the concept of personalized medicine in oncology.
15. What are the common side effects of chemotherapy?
16. How does radiation therapy work to kill cancer cells?
17. What is the role of palliative care in oncology?
18. Discuss the significance of early detection in cancer treatment outcomes.
19. What lifestyle changes can reduce the risk of cancer?
20. How does smoking influence the risk of lung cancer?
21. What are targeted therapies, and how do they differ from traditional chemotherapy?
22. Describe the role of clinical trials in cancer research.
23. What is the importance of genetic testing in cancer management?
24. How does the immune system recognize and attack cancer cells?
25. What are the challenges in treating metastatic cancer?

#### **5.1.6 Model assignments (assessment tool - Control work) to assess the development of the competency IIK-7:**

1. Explain the different types of cancer screenings available.
2. What is the significance of tumor markers in cancer diagnosis?
3. How do cancer cells evade apoptosis?
4. Discuss the psychosocial aspects of cancer diagnosis and treatment.
5. What are the current trends in cancer immunotherapy?
6. How does diet influence cancer risk and treatment outcomes?
7. What is the relationship between obesity and cancer?
8. Explain the process of tumor grading.
9. Discuss the role of hormones in hormone-sensitive cancers.
10. What are the potential benefits of using CRISPR technology in oncology?
11. How can patients manage the side effects of cancer treatment?
12. What role does stress play in cancer progression?
13. Describe the mechanisms of drug resistance in cancer therapy.
14. How does radiation therapy affect healthy tissues?
15. What is the significance of the BRCA1 and BRCA2 genes in breast and ovarian cancer?
16. Discuss the role of advocacy in improving cancer care and research.
17. What is the difference between benign and malignant tumors?
18. Explain the process of cancer metastasis to distant organs.
19. How is leukemia different from other types of cancer?
20. What are the common signs and symptoms of skin cancer?
21. How does HPV contribute to the development of cervical cancer?
22. Discuss the importance of multidisciplinary teams in cancer treatment.
23. How can technology improve cancer screening and diagnosis?



24.What is the role of nutritionists in cancer care?

25.How do socioeconomic factors affect cancer treatment and outcomes?

### Assessment criteria (assessment tool — Control work)

Grade	Assessment criteria
pass	The level of knowledge in the volume corresponding to the training program. Several minor mistakes were made.
fail	The level of knowledge is below the minimum requirements. There were gross mistakes.

### 5.2. Description of scales for assessing learning outcomes in the discipline during interim certification

#### Шкала оценивания сформированности компетенций

Уровень сформированности компетенций (индикатора достижения компетенций)	плохо	неудовлетворительно	удовлетворительно	хорошо	очень хорошо	отлично	превосходно
	не зачтено		зачтено				
<u>Знания</u>	Отсутствие знаний теоретического материала. Невозможность оценить полноту знаний вследствие отказа обучающегося от ответа	Уровень знаний ниже минимальных требований. Имели место грубые ошибки	Минимально допустимый уровень знаний. Допущено много негрубых ошибок	Уровень знаний в объеме, соответствующем программе подготовки. Допущено несколько негрубых ошибок	Уровень знаний в объеме, соответствующем программе подготовки. Допущено несколько несущественных ошибок	Уровень знаний в объеме, соответствующем программе подготовки. Ошибок нет.	Уровень знаний в объеме, превышающем программу подготовки.
<u>Умения</u>	Отсутствие минимальных умений. Невозможность оценить наличие умений вследствие отказа обучающегося от ответа	При решении стандартных задач не продемонстрированы основные умения. Имели место грубые ошибки	Продemonстрированы основные умения. Решены типовые задачи с негрубыми ошибками. Выполнены все задания, но не в полном объеме	Продemonстрированы все основные умения. Решены все основные задачи с негрубыми ошибками. Выполнены все задания в полном объеме, но некоторые с недочетами	Продemonстрированы все основные умения. Решены все основные задачи. Выполнены все задания в полном объеме, но некоторые с недочетами.	Продemonстрированы все основные умения. Решены все основные задачи с отдельным и несущественными недочетами, выполнены все задания в полном объеме	Продemonстрированы все основные умения. Решены все основные задачи. Выполнены все задания, в полном объеме без недочетов
<u>Навыки</u>	Отсутствие базовых	При решении стандартных	Имеется минимальн	Продemonстрированы	Продemonстрированы	Продemonстрированы	Продemonстрированы

	навыков. Невозможность оценить наличие навыков вследствие отказа обучающегося от ответа	задач не продемонстриро ваны базовые навыки. Имели место грубые ошибки	ый набор навыков для решения стандартны х задач с некоторым и недочетами	базовые навыки при решении стандартны х задач с некоторым и недочетами	базовые навыки при решении стандартны х задач без ошибок и недочетов	навыки при решении нестандарт ных задач без ошибок и недочетов	творческий подход к решению нестандартны х задач
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### Scale of assessment for interim certification

Grade		Assessment criteria
pass	outstanding	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "outstanding", the knowledge and skills for the relevant competencies have been demonstrated at a level higher than the one set out in the programme.
	excellent	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "excellent",
	very good	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "very good",
	good	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "good",
	satisfactory	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "satisfactory", with at least one competency developed at the "satisfactory" level.
fail	unsatisfactory	At least one competency has been developed at the "unsatisfactory" level.
	poor	At least one competency has been developed at the "poor" level.

## 5.3 Model control assignments or other materials required to assess learning outcomes during the interim certification with the criteria for their assessment:

### 5.3.1 Model assignments (assessment tool - Control questions) to assess the development of the competency ПК-5

1. Explain the principles of tumor immunology.
2. What are the current challenges in finding effective cancer vaccines?
3. How does cancer affect fertility in patients?
4. What are the ethical considerations in cancer treatment and research?
5. Discuss the role of pain management in cancer care.
6. How do environmental factors contribute to cancer development?
7. What is the significance of patient-reported outcomes in oncology?
8. How can exercise benefit cancer patients during treatment?
9. Explain how cancer stem cells contribute to tumor growth.
10. What are the potential future directions in cancer therapy?
11. How do trends in cancer incidence vary by region or country?
12. What is the role of telemedicine in oncology?

- 13.How can mindfulness and mental health support improve cancer care?
- 14.Discuss the importance of survivorship care plans for cancer patients.
- 15.What are the implications of cancer survivorship on public health?
- 16.How does inflammation contribute to cancer development?
- 17.What challenges do pediatric oncologists face in treating childhood cancers?
- 18.Discuss the importance of maintaining a healthy lifestyle post-cancer treatment.
- 19.How do pain and symptom management differ in cancer care?
- 20.What are the common types of brain tumors?
- 21.How does the body respond to cancer treatments at the cellular level?
- 22.What are the current standards for managing advanced prostate cancer?
- 23.Explain the significance of organ-specific therapies in oncology.
- 24.How does cancer affect the immune system?
- 25.Discuss the role of financial toxicity in cancer treatment.

### 5.3.2 Model assignments (assessment tool - Control questions) to assess the development of the competency ПК-7

1. What research is being done on cancer microbiome interactions?
2. How does molecular profiling influence treatment decisions?
3. Discuss the importance of cultural competence in cancer care.
4. What recent advancements have been made in targeted cancer therapies?
5. How can community engagement improve cancer awareness and resources?
6. Describe the role of radiation oncologists in cancer management.
7. How can genome sequencing aid in the development of cancer treatments?
8. What are the implications of dual therapies in cancer treatment?
9. Explain how lifestyle and behavioral interventions can improve cancer outcomes.
- 10.How do ethical considerations guide research on experimental cancer treatments?
- 11.What is the impact of social support on cancer patient outcomes?
- 12.Discuss the importance of funding in cancer research.
- 13.How can advocacy organizations influence cancer policy?
- 14.What are the most challenging aspects of end-of-life care in oncology?
- 15.How does the role of oncologists evolve in light of new technologies?
- 16.What perspectives do survivors offer in cancer rehabilitation?
- 17.How do public health initiatives contribute to cancer prevention?
- 18.Discuss the impact of genetic counseling in cancer risk assessment.
- 19.What is the role of the lymphatic system in cancer dissemination?
- 20.How does each stage of cancer affect treatment options?
- 21.Discuss the psychosocial effects of a cancer diagnosis on families.
- 22.What innovations are being explored for early detection of cancer?
- 23.How can healthcare providers improve communication regarding cancer treatment options?
- 24.What is the significance of collaboration between public and private sectors in oncology?
- 25.How do disparities in healthcare access impact cancer outcomes?

### Assessment criteria (assessment tool — Control questions)

Grade	Assessment criteria
pass	The level of knowledge in the volume corresponding to the training program. Several minor mistakes were made.
fail	The level of knowledge is below the minimum requirements. There were gross mistakes.

Grade	Assessment criteria

## 6. Учебно-методическое и информационное обеспечение дисциплины (модуля)

Основная литература:

1. Онкология / Давыдов М.И., Ганцев Ш.Х. - Москва : ГЭОТАР-Медиа, 2020., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=665167&idb=0>.
2. Онкология / Петерсон С.Б. - Москва : ГЭОТАР-Медиа, 2018., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=663864&idb=0>.
3. Чиссов В.И. Онкология. Национальное руководство. Краткое издание : практическое руководство / Чиссов В.И.; Давыдов М.И. - Москва : ГЭОТАР-Медиа, 2017. - 576 с. - ISBN 978-5-9704-3982-1., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=734295&idb=0>.
4. Соловьев А.Е. Клиническая онкология детского возраста : учебник / Соловьев А.Е. - Москва : ГЭОТАР-Медиа, 2023. - 264 с. - ISBN 978-5-9704-7425-9., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=809612&idb=0>.
5. М. Ю. Онкология : учебник / М. Ю. Рыков. - Москва : ГЭОТАР-Медиа, 2022. - 656 с. - ISBN 978-5-9704-6844-9., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=838602&idb=0>.
6. Ламоткин И.А. Клиническая дерматоонкология / Ламоткин И.А. - Москва : Лаборатория знаний, 2020. - 502 с. - ISBN 978-5-00101-693-9., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=736471&idb=0>.
7. Рак молочной железы: клиника, диагностика, лечение : учебное пособие для студентов, обучающихся по специальности 31.05.01 «лечебное дело», 32.05.01 «медико-профилактическое дело» по дисциплине «онкология, лучевая терапия» / Сеньчукова М. А., Коновалов Д. Ю., Шевцова В. Я., Макарова Е. В., Зубарева Е. Ю. - Оренбург : ОрГМУ, 2022. - 57 с. - Книга из коллекции ОрГМУ - Медицина., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=866959&idb=0>.
8. Рыков М.Ю. Детская онкология. Тестовые задания для студентов медицинских вузов : учебное пособие / Рыков М.Ю. - Москва : ГЭОТАР-Медиа, 2022. - 200 с. - ISBN 978-5-9704-6769-5., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=808573&idb=0>.
9. Кармаз Г.Г. Лучевая диагностика и терапия в гастроэнтерологии : практическое руководство / Кармаз Г.Г.; Терновой С.К. - Москва : ГЭОТАР-Медиа, 2014. - 920 с. - ISBN 978-5-9704-3053-8., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=734176&idb=0>.
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Дополнительная литература:

1. Утин К. Г. Ранняя диагностика и лечение опухолей женской репродуктивной системы : учебное пособие для студентов, обучающихся по специальностям 14.00.01 — «акушерство и гинекология» 14.00.14 — «онкология» / Утин К. Г. - Челябинск : ЮУГМУ, 2015. - 135 с. - Книга из коллекции

- ЮУГМУ - Медицина., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=797551&idb=0>.
2. Олисова О.Ю. Дерматоонкология и онкогематология. Атлас : учебное пособие / Олисова О.Ю. - Москва : ГЭОТАР-Медиа, 2020. - 144 с. - ISBN 978-5-9704-5413-8., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=735000&idb=0>.
3. Перенков Алексей Дмитриевич. Пособие к семинарским занятиям по курсу «Молекулярная онкология» : учебно-методическое пособие. Ч. 1. Сигнальные пути опухолевых клеток / А. Д. Перенков ; ННГУ им. Н. И. Лобачевского. - Нижний Новгород : Изд-во ННГУ, 2022. - 62 с. - Текст : электронный., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=793743&idb=0>.
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7. Парамонова Н. С. Детская онкология (в т.ч. онкогематология) : пособие для студентов учреждений высшего образования, обучающихся по специальности 1-79 01 02 «педиатрия» / Парамонова Н. С., Бердовская А. Н. - Гродно : ГрГМУ, 2021. - 200 с. - Рекомендовано учебно-методическим объединением по высшему медицинскому, фармацевтическому образованию в качестве пособия для студентов учреждений высшего образования, обучающихся по специальности 1-79 01 02 «Педиатрия». - Книга из коллекции ГрГМУ - Медицина. - ISBN 978-985-595-679-3., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=826844&idb=0>.
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9. Климанов В. А. Лучевая терапия пучками протонов, ионов, нейтронов и пучками с модулированной интенсивностью, стереотаксис, брахитерапия, радионуклидная терапия, оптимизация, гарантии. Ч. 2. Лучевая терапия пучками протонов, ионов, нейтронов и пучками с модулированной интенсивностью, стереотаксис, брахитерапия, радионуклидная терапия, оптимизация, гарантии / Климанов В. А. - Москва : НИЯУ МИФИ, 2011. - 604 с. - Рекомендовано УМО «Ядерные физика и технологии» в качестве учебного пособия для студентов высших учебных заведений. - Библиогр.: доступна в карточке книги, на сайте ЭБС Лань. - Книга из коллекции НИЯУ МИФИ - Медицина. - ISBN 978-5-7262-1491-7., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=716369&idb=0>.
10. Кармаз Г.Г. Лучевая диагностика и терапия в гастроэнтерологии : практическое руководство / Кармаз Г.Г.; Терновой С.К. - Москва : ГЭОТАР-Медиа, 2014. - 920 с. - ISBN ISBN 978-5-9704-3053-8., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=734176&idb=0>.
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ГЭОТАР-Медиа, 2011., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=633813&idb=0>.

13. Сотников Владимир Михайлович. Лучевая терапия лимфом кожи электронным излучением медицинского ускорителя : Статья. - Москва : Федеральное государственное бюджетное учреждение "Российский научный центр рентгенорадиологии" Министерства здравоохранения Российской Федерации, 2013. - 15 с. - Аспирантура., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=598429&idb=0>.

14. Лучевая диагностика и терапия в акушерстве и гинекологии : практическое руководство / Адамян Л.В.; Демидов В.Н.; Гус А.И.; Обельчак И.С. - Москва : ГЭОТАР-Медиа, 2012. - 656 с. - ISBN ISBN 978-5-9704-2117-8., <https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=734110&idb=0>.

Программное обеспечение и Интернет-ресурсы (в соответствии с содержанием дисциплины):

Федеральная электронная медицинская библиотека (ФЭМБ) <http://нэб.рф/>.

Научная электронная библиотека eLIBRARY.RU <https://elibrary.ru/>.

Научная электронная библиотека открытого доступа КиберЛенинка <https://cyberleninka.ru/>.

Российская государственная библиотека (РГБ) <http://www.rsl.ru/>.

Справочно-правовая система «Консультант Плюс» [www.consultant.ru/](http://www.consultant.ru/).

Официальный сайт Министерства здравоохранения Российской Федерации Национальные клинические рекомендации [sg.rosminzdrav.ru](http://sg.rosminzdrav.ru) - Клинические рекомендации.

Официальный сайт Российского респираторного общества : [www.spulmo.ru](http://www.spulmo.ru).

Официальный сайт Российского научного общества терапевтов [www.rnmot.ru](http://www.rnmot.ru).

Официальные сайты общественных и научных организаций: <http://www.oncology.ru>

<http://oncology-association.ru> <http://www.pror.ru> <http://www.russian-radiology.ru>

## **7. Материально-техническое обеспечение дисциплины (модуля)**

Учебные аудитории для проведения учебных занятий, предусмотренных образовательной программой, оснащены мультимедийным оборудованием (проектор, экран), техническими средствами обучения, компьютерами, специализированным оборудованием: Негатоскоп, наборы рентгенограмм

Помещения для самостоятельной работы обучающихся оснащены компьютерной техникой с возможностью подключения к сети "Интернет" и обеспечены доступом в электронную информационно-образовательную среду.

Программа составлена в соответствии с требованиями ФГОС ВО по направлению подготовки/специальности 31.05.01 - General Medicine.

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Программа одобрена на заседании методической комиссии от 28 ноября 2024, протокол № №9.