

# Questions for Clinical Oncology Examination

## General oncology

- 1. Epidemiology of malignant tumors in the Czech Republic, organization and structure of oncological care; multidisciplinary team;**  
NOR (National Oncological Registry), the most common malignancies in men and women, incidence, mortality, complex oncology centers, regional oncology groups, ...
- 2. Cancer prevention and screening, screening programs in the Czech Republic**  
Primary, secondary, tertiary and quaternary oncological prevention, basic conditions for setting up and implementing a screening program, results of screening programs.
- 3. Causes of cancer**  
Physical, chemical and biological carcinogens, mechanisms of carcinogenesis. Oncogenes, tumor suppressors. Epigenetic changes during carcinogenesis. DNA repair mechanisms. An example of a sporadic and hereditary cancer oncogenesis.
- 4. Molecular biology of tumors reflected in the antitumor therapy**  
The basic features of a tumor cell, therapy options especially in relation to the cell cycle (growth factors, apoptosis disorder), angiogenesis, changes in metabolism and protein degradation, tumor invasiveness, metastasis formation and tumor escape from the immune system.
- 5. Hereditary cancer syndromes**  
Sporadic, familial and hereditary form of cancer development - differences. Examples of hereditary tumor syndromes in breast tumors, gynecological malignancies, colorectal carcinoma, sarcomas, tumors of skin and endocrine glands. Options of primary and secondary prevention. Preimplantation diagnostic testing.
- 6. Systemic and paraneoplastic manifestations of malignant diseases**  
Hematological, neurological, neuromusculoskeletal paraneoplastic manifestations, paraneoplastic endocrinopathies, cutaneous and cardiac paraneoplastic manifestations
- 7. Histopathology of malignant diseases**  
Sampling of tumor tissue for histopathological examination, representativeness of the collected material and possible errors occurring during sampling. Methods of histopathological diagnostics. Histological classification of tumors and its terminology (typing). Grading.
- 8. Tumor markers of malignant diseases**  
Types of tumor markers according to tumor origin, specificity, chemical structure and biological

character, Tumor marker assesment - indication-. Examples of tumor markers for colorectal, breast, prostate, bronchogenic and ovarian carcinoma, hematological malignancies.

9. **Basic principles of oncological treatment and evaluation of therapeutic response**  
Definitions of curative and non-curative treatment, adjuvant, neoadjuvant and palliative treatment, combined oncological treatment, sequential and concomitant procedures (examples). Interdisciplinary treatment concepts, follow-up after treatment. Evaluation of therapeutic response in antitumor treatment. Information that is essential for choosing a diagnostic and therapeutic approach and the principle of creating guidelines.
10. **Basic principles of tumor diagnosis, malignancy verification, assessment of the extent, staging and classification of cancer diseases, ICD, TNM system and other specific classifications, prognostic and predictive factors**  
Examples of staging of breast cancer, colorectal carcinoma and lung tumors.
11. **Principles of surgical treatment of malignant tumors**  
The role of surgery in the oncological care, characteristics of various types of operations (breast, colorectal and ovarian), resection R0, R1, R2, diagnostic surgical procedures, prophylactic surgery prior to cancer manifestation
12. **Clinical use of external radiotherapy and brachytherapy, combination with surgery and systemic therapy.**  
Biological properties of radiation, planning of classical teleradiotherapy and brachytherapy.
13. **Overview of anti-tumor cytostatics.**  
Mechanism of action of cytostatics, alkylation cytostatics, antimetabolites, anticancer antibiotics, plant alkaloids. Cytotoxic drugs not included in previous groups and other anticancer drugs.
14. **Adverse effects of cytostatic therapy**  
Myelosuppression, neurotoxicity, nephrotoxicity, mucosal toxicity, gonadal toxicity
15. **Hormonal anticancer treatment.**  
Mechanism of action and indications of antiestrogens, aromatase inhibitors, gestagens (progesterone), gonadoliberin agonists, antiandrogens, estrogens, androgens, glucocorticosteroids, adverse effects of hormonal therapy.
16. **Targeted anticancer treatment**  
Therapeutic use of monoclonal antibodies and low molecular weight inhibitors (small molecules) of extra and intracellular receptors and proteasome, immunotherapy, immunomodulatory cytokines. Examples of use.
17. **Nausea and vomiting after anticancer treatment and palliative treatment of tumor-induced vomiting.**  
Anticipatory, acute and delayed vomiting. Treatment of nausea and vomiting after anticancer therapy. Palliative treatment of nausea and vomiting in case of gastrointestinal obstruction.
18. **Psychological and psychiatric aspects of oncological care. Communication with oncological patient, principles of delivering bad news, oncological diagnosis and**

## **prognosis.**

Psychological changes under the influence of illness, psychiatric symptoms and syndromes in oncology, appropriate psycho-active drugs and psychotherapy, pathological fatigue, psychological response of the patient and his family to the serious illness. Burnout syndrome.

## **19. Nutritional support in oncology**

Tumor malnutrition, nutritional support of oncological patients, pharmacological treatment of tumor cachexia, indication of nutritional enteral and parenteral support.

## **20. Acute conditions in oncology I.**

Tumor lysis syndrome, hypercalcemia, superior vena cava syndrome, upper airway obstruction, symptomatic pleural and pericardial effusion.

## **21. Acute conditions in oncology II.**

Acute gastrointestinal hemorrhage, massive hemoptysis, malignant spinal cord compression syndrome (incipient transverse spinal cord lesion), intracranial hypertension syndrome, status epilepticus.

## **22. Infectious complications in oncological patients, their causes and treatment options.**

Bacterial, viral and fungal infections, pneumocystis jirovecii, prevention and treatment options. Febrile neutropenia - prevention and treatment options.

## **23. Changes in coagulation parameters during malignant disease.**

Laboratory changes in coagulation during malignant disease, laboratory manifestations of hypercoagulation. Clinical manifestations of thrombotic diathesis in oncological patients, thrombembolism - prevention and treatment. Bleeding diathesis caused by thrombocytopenia or thrombocytopathy.

## **24. Basic information about blood products and blood derivatives and their indications.**

## **25. Venous access, complications of peripheral and central venous catheters and port catheters, treatment.**

## **26. Hematopoietic tissue transplantation**

## **27. Management of tumor pain, suitable opioid and non-opioid analgesics for the treatment of chronic tumor pain**

The basic characteristics of tumor pain (acute and chronic pain, somatic, visceral and neuropathic pain ...), causes of tumor pain, complex pain treatment (opioid and non-opioid analgesics and their side effects, dosage of morphine and two other drugs from the opioid group, co-analgesics, the possibility of non-analgesic treatment of pain. Suitable combinations of analgesic drugs. Symptomatic treatment of tumor-induced fever.

## **28. Basic principles of palliative treatment and care in oncology.**

Definition of palliative care, difference between palliative and symptomatic treatment, indication of palliative anticancer treatment, management of the most common symptoms of advanced oncological disease (dyspnea, malignant pleural effusion, ascites, anorexia/cachexia, depression), terminal cancer care, palliative / terminal sedation, hospice care.



# Special oncology

## 1. **CNS Tumors (Primary and Secondary)**

Clinical signs, diagnosis and treatment.

## 2. **Head and neck malignant tumors (ENT area).**

The most common types of tumors and general principles of diagnosis and treatment of tumors in the ENT area.

## 3. **Lung tumors**

Taxonomy of lung tumors, clinical symptoms, diagnosis and treatment of particular stages of small cell and non-small cell lung carcinoma.

## 4. **Mediastinal and pleural tumors, superior vena cava syndrome.**

The most common tumors of mediastinum, thymoma, mesothelioma and others - causes and clinical manifestation, diagnosis, biological behavior and treatment options.

## 5. **Esophageal and gastric carcinoma.**

Clinical signs, diagnosis and treatment algorithm depending on the extent of the disease, follow-up after treatment.

## 6. **Colorectal carcinoma and anal cancer.**

Precancerous conditions, clinical signs, diagnosis and treatment algorithm of particular stages of colorectal cancer, follow-up after treatment.

## 7. **Pancreatic cancer and other pancreatic tumors.**

Clinical signs, diagnosis and treatment depending on the extent of the disease, follow-up after treatment.

## 8. **Hepatocellular carcinoma, gallbladder and biliary tract carcinoma.**

Clinical signs, diagnosis and treatment, follow-up after treatment.

## 9. **Tumors of skin, malignant melanoma.**

Clinical signs, diagnosis and treatment, follow-up after treatment.

## 10. **Renal cell carcinoma, other kidney tumors**

Clinical and laboratory manifestations, diagnosis and treatment, follow-up after treatment.

## 11. **Prostate carcinoma.**

Clinical and laboratory symptoms, diagnosis and treatment, follow-up after treatment.

## 12. **Testicular and penile tumors.**

Epidemiology, clinical symptoms, diagnosis and treatment, follow-up after treatment.

**13. Bladder carcinoma.**

Clinical and laboratory symptoms, diagnosis and treatment, follow-up after treatment.

**14. Breast cancer.**

Clinical signs, diagnosis, treatment algorithm of particular stages, follow-up after treatment.

**15. Malignant ovarian tumors.**

Clinical signs, diagnostic options, treatment algorithm of epithelial ovarian carcinoma.

**16. Malignant tumors of the body and the cervix of the uterus**

Precancerous conditions, prevention, clinical symptoms, diagnosis and treatment, follow-up after treatment.

**17. Thyroid carcinoma.**

Types, clinical and laboratory manifestation, diagnosis, therapeutic algorithm.

**18. Sarcomas of bones and soft tissue, bone metastases**

Ewing sarcoma. Kaposi sarcoma. Treatment of bone metastases - principles of pain treatment and management of pathological fractures of long bones and spine.

**19. Tumors of unknown primary site**

Clinical signs, diagnosis and treatment

**20. Local and systemic treatment of tumor metastases**

Treatment of bone, lung, liver, brain metastases

**21. Most common pediatric cancers.**

Hematologic malignancies, neuroblastoma, brain tumors, germinal tumors, soft tissue and bone sarcomas, nephroblastoma

**22. Hereditary cancer syndromes**

Tumor diseases with BRCA 1 and 2 mutations, HNPCC, FAP, Li-Fraumeni syndrome, MEN 1 and 2 and others

**23. Myelodysplastic syndrome.**

Clinical signs, diagnosis, treatment options, disease prognosis.

**24. Acute myeloid and lymphocytic leukaemia.**

Clinical manifestations, diagnosis and treatment options, prognosis.

**25. Chronic myeloid leukaemia and other myeloproliferative diseases.**

Clinical signs of chronic myeloid leukaemia, polycythemia vera, essential thrombocythemia, primary myelofibrosis and hypereosinophilic syndrome. Diagnosis and treatment options.

**26. Malignant low-grade non-Hodgkin lymphoma.**

Clinical signs, diagnostic and therapeutic approaches, and post-treatment follow-up. Follicular lymphoma, chronic lymphocytic leukaemia, hairy cell leukaemia.

**27. Malignant intermediate or high-grade non-Hodgkin lymphoma.**

Clinical signs, diagnostic and therapeutic approaches, post-treatment follow up - diffuse large B-cell lymphoma and othera

**28. Hodgkin disease.**

Clinical signs, diagnosis and treatment, follow-up after treatment.

**29. Multiple myeloma and monoclonal gammopathy of undetermined significance (MGUS) and other diseases associated with monoclonal immunoglobulin (Waldenström macroglobulinemia, AL amyloidosis)**

Clinical manifestations, diagnosis, comprehensive treatment (antitumor and supportive) and follow-up