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Cancer Prevention in Primary Care Practice

5th year

Malignant cancers are among the most serious threats to the lives of Poles.

The incidence of malignant cancers in Poland is expected to systematically increase due to both the aging of the Polish population and the growing exposure to lifestyle-related risk factors (obesity, low physical activity, smoking, excessive alcohol consumption).

Additionally, epidemiological estimates indicate that the number of cases and deaths from malignant cancers, both in Poland and worldwide, will likely continue to rise in the coming decades, particularly in the age group over 65.

WHEN DO WE DIAGNOSE CANCERS?

- In population-based screening programs
- Through surveillance in selected risk groups

(e.g., monitoring in inflammatory bowel diseases, celiac disease, liver cirrhosis)

- Based on early or late symptoms (most cancers)

Health promotion and prevention are among the primary activities of a family physician, with some considering them more significant than diagnosis and treatment.

The emphasis on prevention is one of the six principles of family medicine.

Through health education, a family physician can influence their patients' lifestyles.

Health education aims to support independent actions toward positive changes in health-related behaviors and living conditions that impact health.

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According to WHO, health promotion:

It is a process that enables people to increase control over their health and improve it.

Prevention refers to actions aimed at reducing morbidity and mortality.

Prevention focuses on diseases. So far, it has been better organized than health promotion, for example:

- Vaccination schedules,
- Tuberculosis control,
- Prevention of sexually transmitted diseases.

PREVENTION

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Primary Prevention – Reducing the risk of illness across the entire population, e.g., school-based programs designed to discourage children from smoking.

Secondary Prevention – Targeting high-risk groups, e.g., preventive programs aimed at reducing the threat of AIDS in populations at elevated risk.

Tertiary Prevention – Aimed at shortening the duration of illness for those already affected, e.g., encouraging a post-heart attack patient to adopt a low-calorie, high-fiber diet and engage in physical activity.

PREVENTION

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Primary Prevention

(Phase I, primary) focuses on the entire population and healthy individuals.

Two types of actions:

- **Specific:** Preventing a specific disease, e.g., vaccination against cervical cancer.
- **Non-specific:** Preventing multiple disorders and diseases, e.g., promoting a healthy lifestyle and eliminating environmental hazards such as air pollution, radioactive waste, viral infections, poor diet, and excessive sun exposure.

Secondary Prevention

(Phase II, secondary) targets individuals with an increased risk factor for certain diseases.

Objectives:

- Identifying high-risk groups.
- Early detection of disease symptoms through mass screening.
- Initiating treatment and corrective measures to halt disease progression (e.g., breast cancer).

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Tertiary Prevention
(Phase III, rehabilitative, re-educational, and corrective actions) focuses on individuals with chronic illnesses or disabilities.

The goal is to prevent further negative consequences of the disease:

•Helping individuals cope with the disease and accept their condition (e.g., discussing end-of-life care).
•Assisting in maintaining good physical condition and well-being, as well as the ability to assess one's health (enabling independent functioning).
•Preventing social isolation (e.g., after neck and facial reconstruction surgery).
•Restoring function (physical rehabilitation) or providing prosthetics for damaged organs (e.g., after mastectomy).

SCREENING TEST

A test that enables the detection of a disease in its early stages of development.

It should be simple, inexpensive, repeatable, socially acceptable, highly sensitive, and specific.

SCREENING TESTS

- Screening tests are part of **secondary prevention**.
- They are organized activities aimed at the early detection of diseases or risk factors in individuals without disease symptoms.
- These tests are conducted using an appropriate tool known as a **screening test**.
- Unlike diagnostic tests, screening tests are performed independently of symptoms.
- It is carried out on healthy individuals who do not require any intervention at that moment.

Desirable Characteristics of a Screening Test:

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- **Non-invasiveness**
- **Safety**
- **Ease of performance**
- **Low cost**
- **Acceptance by those being tested**
- **Repeatability of results**
- **High sensitivity** (ability to correctly identify those with the disease)
- **High specificity** (ability to correctly identify those without the disease)

Psychosocial Consequences of Prevention and Screening Tests (e.g., Mammography):

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1. **Anxiety and Stress**
   - The anticipation of test results can cause significant anxiety, especially if the test is perceived as a risk for detecting a serious condition, such as cancer.
2. **False Positives**
   - When a test indicates a potential problem, but further testing shows no disease, it can lead to unnecessary stress, emotional distress, and sometimes even unnecessary treatments or interventions.
3. **False Negatives**
   - A test result that falsely indicates the absence of disease may provide false reassurance, leading to a delayed diagnosis and potentially worse outcomes if the disease is later found in a more advanced stage.
4. **Feelings of Vulnerability**
   - Undergoing screening may highlight the vulnerability of individuals to certain diseases, leading to feelings of insecurity about their health or mortality.

Psychosocial Consequences of Prevention and Screening Tests (e.g., Mammography):

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5.Empowerment and Control

- On a positive note, prevention and screening can empower individuals by giving them the tools to take charge of their health, leading to greater control over potential health risks.

6.Stigmatization

- Those who test positive for a risk factor or a potential disease might experience social stigma, particularly if the condition is related to lifestyle choices or certain types of cancer (e.g., breast cancer).

7.Impact on Family and Social Relationships

- The stress of undergoing tests or receiving a diagnosis can affect family dynamics and relationships, leading to additional emotional strain.

8.Improved Awareness and Health Habits

- Participation in screening programs can raise awareness of the importance of health monitoring and prompt individuals to adopt healthier lifestyles, positively affecting long-term well-being.

Unfortunately, not all types of cancer are suitable targets for screening. Cancer screening should be conducted under the following conditions:

- The disease has significant morbidity and mortality.
- The onset of the cancer is typically asymptomatic – there is a preclinical phase.
- It is possible to detect the cancer during its asymptomatic phase.
- There is an opportunity for effective therapy.

The primary goal of cancer screening is to detect the disease in its asymptomatic or preclinical stage. Identifying a cancer that shows no symptoms (either subjective or objective) increases the likelihood of successful treatment.

The main benefit of screening in oncology is the reduction in mortality rates within the screened population. Screening tests and early detection of the disease can also decrease the incidence of malignant cancers. If precancerous changes or carcinoma in situ are detected during screening, their removal can prevent the development of malignant forms of the disease.

According to WHO recommendations, screening tests in Poland are advised for breast cancer, cervical cancer, and colorectal cancer. Other cancers, such as lung, prostatę, ovarian, and skin melanomas, have not met the necessary criteria to initiate screening programs. Such screenings require the development of specific programs tailored to each type of cancer, depending on the particular characteristics of the disease.

A **screening program** is a broader concept than a screening test and includes:

- Detection of a specific disease
- Post-screening procedures
- Medical interventions for individuals with detected disease

A screening program must define:

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- **Type of screening test**
- **Target population**
- **Diagnostic procedures for positive screening test results** – specifying the type and location of confirmatory tests to confirm or exclude the presence of disorders indicated by the screening test.
- **Treatment procedures for individuals with confirmed diagnoses**
- **Intervals between screening tests** for individuals with negative results.

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A screening program can only be implemented for selected diseases and using tests that meet specific criteria.

Types of screening tests:

a. **Mass screening** – directed at the entire population, e.g., cytology (Pap smear).
b. **Targeted screening** – aimed at individuals exposed to harmful factors, e.g., spirometry (for COPD).
c. **Opportunistic screening** – conducted on an incidental basis, e.g., measuring blood pressure (BP) in patients visiting a clinic for other reasons.

Mass screening programs, which target the entire population, are considered the most effective.

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The effectiveness of a screening program primarily depends on:

- Its impact on **overall mortality**
- Its effect on **preventing disability** through early disease detection
- Its influence on **improving quality of life**

Simply detecting a disease early is not sufficient justification for implementing screening tests, e.g., regular screening chest X-rays for smokers.

Preventive tests should be chosen based on demonstrated effectiveness, in line with **Evidence-Based Medicine (EBM)**.

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Conducting screening activities for a specific disease requires meeting the following criteria:

1.The disease must significantly impact the length or quality of life.

2.Acceptable treatment methods must be available.

3.The disease must have an **asymptomatic phase**, and detection and treatment during this phase should significantly reduce morbidity and mortality.

4.Treatment during the asymptomatic phase must provide a better outcome than delaying treatment until symptoms appear.

5.Screening tests to detect the disease in the asymptomatic phase should be **acceptable to patients** and reasonably priced.

6.The **incidence of the disease** must be high enough to justify the costs of screening.

Difficulties in Implementing Preventive Programs:

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- **Psychological Barriers**
  - Fear of a positive diagnosis, lack of motivation, or denial of health risks can prevent individuals from participating in screenings or preventive measures.
- **Social Barriers**
  - Social factors such as cultural norms, socioeconomic status, and access to healthcare can limit participation in preventive programs.
- **Difficulty in Assessing Results**
  - The effects of preventive programs are often visible after many years. In contrast, the immediate consequences of treatment are more apparent and often more dramatic, making it harder to evaluate long-term benefits.
- **Lack of Knowledge and Controversies**
  - There are numerous gaps in knowledge and disagreements regarding the effectiveness of certain preventive measures, leading to confusion and differing opinions within the medical community.
- **Only True Positive Cases Benefit**
  - The actual beneficiaries of screening programs are the individuals who test positive and are diagnosed with a disease early, allowing for treatment. False positives or negatives can lead to unnecessary stress, treatments, or missed diagnoses.

Difficulties in Implementing Preventive Programs:

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Advantages of Prevention:

- **Lower Costs Compared to Treatment**
  - Prevention often costs less than treating diseases, especially since some conditions cannot be treated effectively due to the early death of individuals who never underwent screening.

BREAST CANCER

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The only effective method for the early detection of breast cancer is **mammography**. It is performed in two planes: oblique and craniocaudal (top-down).
Mammography has a sensitivity of approximately **85%**.

However, widespread use of mammography is associated with the risk of **overdiagnosis** of breast cancer. The cumulative relative risk of a **false positive** result ranges from **8-21%**. On the other hand, even a correctly performed and interpreted mammogram may miss up to **20%** of breast cancer cases.

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In younger women, mammography has a lower sensitivity due to the dominance of glandular tissue, with a sensitivity of **up to 80%**.
It has been shown that screening using mammography in women aged 20-30 reduces the relative risk of death by only **10%**.

Although **ultrasound (USG)** is a method tailored for younger women, it is not used in screening due to its main drawbacks: subjectivity, lack of standardization in imaging documentation, and difficulties in evaluating large breasts.

Breast self-examination increases awareness in society, but it does not affect mortality from breast cancer.

The **highest sensitivity (98%) and specificity (90-95%)** is seen in **MRI**, but it is only used as a screening method for women at **high risk** of breast cancer.

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In Poland, there is a breast cancer prevention program that includes **mammography** for women aged **45-74** every **2 years**, or annually for those in high-risk groups, if they have not had a mammogram in the past two years.

In Poland, the average **participation rate** in preventive mammography screening is around **50%**, and breast cancer is detected in approximately **5 women per 1000 screenings**.

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In the **ACR (American College of Radiology)** scale, breast tissue density is classified into four types:

- **Type A**: Fatty structure (the breast is almost entirely composed of fatty tissue).
- **Type B**: Scattered areas of fibroglandular tissue density.
- **Type C**: Breasts with areas of dense tissue, which can obscure small focal changes.
- **Type D**: Very dense breasts, where the sensitivity of mammography is limited due to the high density of tissue.

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The result of an imaging examination should include information about the **breast tissue structure** based on the **ACR scale**, as well as the **risk of malignancy** of any detected lesion, categorized using the **BI-RADS scale**.

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Approximately 5-10% of breast cancers have a genetic basis, and mutations in the **BRCA1** and **BRCA2** genes are among the highest-risk mutations for developing breast cancer (BRCA1: 56-84%, BRCA2: 45-85%).

The key features associated with an increased risk of carrying a **BRCA mutation** include:

- Diagnosis of breast cancer before the age of 40.
- Multiple cases of breast cancer and/or ovarian cancer in the family.
- Occurrence of other cancers in the same individual, especially if one of them is ovarian cancer.
- Bilateral breast cancer.
- Breast cancer in men.
- Triple-negative breast cancer in premenopausal women.
- Medullary breast cancer.
- Ashkenazi Jewish ancestry.
- Confirmed BRCA mutation in the family.

These features may indicate a higher likelihood of inheriting a BRCA mutation, which significantly increases the risk of developing breast and other cancers. Genetic testing is recommended for individuals with these risk factors.

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As part of the National Cancer Control Program by the Ministry of Health, women at high risk of breast cancer are screened for 5 mutations in 3 genes: **BRCA1**, **CHEK2**, and **PALB2**.
Women are eligible for testing under the following conditions:

1.For BRCA1 mutations:

- All patients diagnosed with breast cancer, ovarian cancer, fallopian tube cancer, or peritoneal cancer.
- If a first- or second-degree relative has been diagnosed with breast or ovarian cancer, and there is no possibility of performing diagnostic testing on the affected individual.

2.For CHEK2 and PALB2 mutations:

- All patients diagnosed with breast cancer.
- If a first-degree relative has breast cancer and belongs to a family with a high or very high risk of breast cancer.

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In the case of not detecting the screening mutations in the aforementioned genes in a patient with a family history of breast cancer, next-generation sequencing (NGS) of the **BRCA1** and **BRCA2** genes can be performed.

LUNG CANCER

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Lung cancer is one of the most common malignant cancers in Poland and the leading cause of death from cancer. Active or passive smoking is responsible for 85-90% of cases. Other risk factors include exposure to chemical and environmental substances (radon, nickel, chromium, asbestos, dust), as well as genetic predispositions.

The use of preventive chest X-rays and sputum tests has not reduced lung cancer mortality by 20-40%.

These tests became the basis for the introduction of screening programs. However, in about half of the imaging tests, changes other than cancer were detected, leading to unnecessary diagnostics and thoracotomies, of which 20% confirmed that the changes were non-cancerous.

Lung Cancer – Low-Dose Computed Tomography (LDCT)

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Studies conducted over the past several years suggest that the greatest hope in lung cancer diagnostics lies in the use of low-dose computed tomography (CT) performed in specific high-risk groups for lung cancer development.

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In Poland, for the years 2021-2024, a preventive program for the early detection of lung cancer has been planned. The screening was aimed at individuals aged 55-74 who were at high risk, including those with a tobacco consumption of more than 20 pack-years, active smokers, or those who quit smoking no more than 15 years ago, as well as individuals with other risk factors.

The prevention program involved low-dose computed tomography (LDCT). According to the resolution of the Council of Ministers regarding the adoption of the long-term National Oncology Strategy for the years 2020-2030, the screening program is to be continued.

The European Society for Medical Oncology (ESMO) does not provide explicit guidelines regarding the implementation and frequency of low-dose CT chest scans. However, it can be proposed for patients aged 55-74 years with a long history of smoking.

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According to the recommendations of the National Comprehensive Cancer Network (NCCN), screening with low-dose CT should be implemented for patients over 50 years of age with a history of more than 20 pack-years. The frequency of imaging studies depends on the type of changes detected in the CT scan.

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PRIMARY PREVENTION:

•Interventions to facilitate smoking cessation in Primary Healthcare (PHC) - AAR (Ask, Assist, Refer):

- **Ask**: Inquire if the patient smokes.
- **Assist**: Advise them to quit smoking, identify those willing to quit, and support the process with a plan. This includes medications to reduce nicotine cravings and regular follow-up.
- **Refer**: Direct patients to specialized smoking cessation clinics.

SECONDARY PREVENTION:

•**Identification of patients at high risk** - candidates for screening:

- Age 55-74 years, with a history of ≥20 pack-years, current smokers, or those who quit within the last 15 years.
- Age 50-74 years, with a history of ≥20 pack-years, current smokers, or those who quit within the last 15 years, plus additional risk factors such as environmental carcinogen exposure, a family history of cancer, or inflammatory lung disease.

•**Referral to screening programs** for early detection.

Optimization of Management for Patients Suspected of Having Cancer:

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1.Awareness:

- In a population of 2,500 patients, approximately 3 new lung cancer cases will be diagnosed annually.

2.Proper Guidance for the Patient:

- When possible, refer the patient to a specialized lung cancer treatment center.

3.Optimal Preparatory and Supportive Care:

- **Documentation:**
  - Set up a **DILO (Document of First Oncology Visit)**.
  - Advise the patient to prepare copies of their medical history, arrange documents chronologically, and include a list of medications, allergies, past surgeries, and any implants.
- **Testing:**
  - Nearly every patient will need a biopsy/sample and a contrast-enhanced CT scan. Provide the basic tests necessary for qualification.

4.Oncological Treatment is Challenging for the Patient:

- **Chronic Disease Management:**
  - Optimize the management of existing chronic diseases (e.g., hypertension, diabetes).
- **Cardiovascular Risk Reduction:**
  - Implement interventions to reduce cardiovascular risks (e.g., smoking cessation, controlling cholesterol, and blood pressure).
- **Recommended Vaccinations:**
  - Ensure vaccinations are up-to-date, particularly against infections that can complicate cancer treatment (e.g., pneumococcus, influenza).
- **Sanitation of Infection Sites:**
  - Address any focal infections, particularly dental ones, to prevent treatment complications.

By addressing these aspects, healthcare providers can ensure better outcomes for patients suspected of having cancer, preparing them adequately for treatment while managing potential risks.

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In the primary care setting, it is advisable (if the patient's clinical condition permits) to perform a chest radiograph to confirm the suspicion of lung cancer visually.

It is important to remember that not every tumor within the chest will be visible on a basic radiological exam. Therefore, if there are indications of a lung tumor based on the patient's history and clinical examination, the patient should be referred to a pulmonologist who can extend the diagnostic process.

If this situation does not occur, the healthcare provider should issue a **DILO (Document of First Oncology Visit)** and refer the patient to a center specializing in lung cancer diagnosis and treatment. Referring such a patient to a Pulmonary Disease Clinic not specializing in lung cancer diagnosis may significantly delay the diagnostic process.

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It is important to remember not to limit the inquiry to whether the patient smokes cigarettes, but also to ask about passive smoking and the use of e-cigarettes.

The exact impact of e-cigarette consumption (vaping) on the development of lung cancer is not fully known due to the relatively short observation period, but it should be assumed that some substances contained in e-cigarettes, similar to traditional cigarettes, may cause similar health effects.

Another often overlooked factor in determining disease risk is the impact of air pollution. Studies have shown that people living within 100 meters of busy roadways have about a 10% increased risk of developing lung cancer, and every 5 $\mu g/m^3$ increase in fine particulate matter (PM 2.5) in the air raises this risk by approximately 20%.

Basic diagnostics for the cause of a cough should be carried out in primary care. At least an initial exclusion of the most common causes of chronic cough (chronic sinusitis, asthma, gastroesophageal reflux disease) can be done at this level.

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The presence of a cough combined with other symptoms suggesting lung cancer must lead to referral to a pulmonologist or oncologist.

As mentioned, such a referral should be preceded by a chest radiograph and the issuance of a DILO card.

At this stage of lung cancer diagnosis, the role of the primary care physician essentially ends. The POZ doctor is also not involved in the treatment phase of lung cancer.

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Symptoms from the chest:

- **Chronic cough**
- **Hemoptysis** (coughing up blood)
- **Chest pain**
- **Dyspnea** (shortness of breath)
- **Pleural effusion**
- **Compression syndromes** (superior vena cava syndrome, Pancoast syndrome, recurrent laryngeal nerve paralysis)

Systemic symptoms:

- **"B" symptoms**: fever, night sweats, weight loss
- **Consequences of hypercoagulability** (pulmonary embolism, recurrent peripheral thrombosis)
- **Chronic changes in blood counts**: anemia, leukocytosis, or thrombocytosis

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Interpreting a cough, especially in a patient with Chronic Obstructive Pulmonary Disease (COPD), can be challenging.

In such cases, it is crucial to focus on factors like changes in the intensity of the cough, its character, and timing of occurrence and relate these observations to the patient's previous history.

A thorough knowledge of the patient’s chronic lung disease and a careful analysis of symptoms (such as cough and sputum production) may help guide further diagnostic steps toward lung cancer.

Of course, a change like the cough and/or sputum production is often indicative of an exacerbation (usually infectious) of the chronic disease, which complicates the differential diagnosis of lung cancer.

However, the appearance of symptoms such as **hemoptysis**, **chest pain** on one side, **pleural effusion** (especially unilateral), or **pneumothorax** during physical examination, coupled with relevant clinical history, must immediately trigger diagnostic actions aimed at ruling out or confirming respiratory system malignancy.

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Due to the high prevalence (over 2 million patients in Poland) and the commonest etiological factor (tobacco smoking) for both diseases, particular attention should be given to patients with Chronic Obstructive Pulmonary Disease (COPD).

The mere fact of being diagnosed with COPD increases the risk of developing lung cancer by five times.

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CHEST X-RAY:

•In case of suspicion, always perform PA and lateral views.
•A normal result does not exclude lung cancer.
•Positive findings on chest X-ray are not limited to visible tumors; possible indirect signs include: lobar atelectasis, pleural effusion, and widened mediastinum.

BASIC TESTS:

•**Blood count**: Leukocytosis, anemia, thrombocytosis – often associated with cancers.
•**Electrolytes**: Low sodium levels, elevated calcium levels – frequently associated with cancers.
•**Inflammatory markers**: Often elevated in cancers, including CRP, LDH, ESR.
•**Albumin**: Often decreased in cancer cases.

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PULMONARY EMBOLISM:

- Symptoms: shortness of breath, tachycardia, cough, hemoptysis.
- **Wells Score** helps in decision-making.
- **Immediate actions**: Call an ambulance, provide oxygen, IV access, semi-recumbent position, continuous monitoring.

HEMORRHAGE FROM THE RESPIRATORY TRACT:

- Symptoms: Severe hemoptysis (evaluate intensity, progression over time).
- Considerations: Anticoagulant therapy, exposure to inhaled irritants, history of tuberculosis.
- **Immediate actions**: Call an ambulance, provide oxygen, IV access, position the patient on their side (with the suspected side of bleeding lower), continuous monitoring, and administer hemostatic agents if available.

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SUPERIOR VENA CAVAL SYNDROME:

•Symptoms: Swelling and/or redness of the head, neck, sometimes the upper limbs; shortness of breath, distended jugular veins, collateral circulation (dilated veins on the chest wall).

•Considerations: Time progression, presence of a catheter or electrode in the superior vena cava (e.g., dialysis patients, pacemakers), be cautious of potential brain and/or respiratory tract edema.

•**Immediate actions**: Call an ambulance, provide oxygen, IV access, semi-recumbent position, continuous monitoring, and if available, administer dexamethasone 8 mg IV.

INTRACRANIAL HYPERTENSION:

•Lung cancer frequently metastasizes to the CNS.

•Symptoms: Morning headaches and nausea, focal neurological deficits, altered consciousness.

•**Immediate actions**: Call an ambulance, provide oxygen, IV access, continuous monitoring, and if available, administer dexamethasone 8 mg IV.

COLORECTAL CANCER

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Colorectal cancer is one of the few diseases where screening has proven to be effective.

The main screening methods include:

- Fecal occult blood test (FOBT) (reduces mortality by 20-30%)
- Sigmoidoscopy (reduces mortality by 50%)
- Colonoscopy (reduces mortality by 60-70%)

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It is recommended to perform a colonoscopy once every 10 years or more frequently if changes are detected during the examination.

Alternative screening methods include conducting a fecal occult blood test every 1-2 years or a sigmoidoscopy every 5 years. Screening should be conducted for individuals aged 50 to 75, and more broadly for those with risk factors.

In Poland, advanced polyps or cancers are detected in 5.6% of individuals undergoing screening. Villous adenomas have the highest tendency to become malignant. The risk of colorectal cancer development depends on the size of the lesion, its histopathological type, and the degree of dysplasia.

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Lesion	Management
-1-4 adenomas smaller than 10 mm with low-grade dysplasia -Saw-toothed polyp smaller than 10 mm without features of dysplasia	No need for special surveillance (return to the population-based screening program).
≥1 adenoma larger than or equal to 10 mm or with high-grade dysplasia ≥5 adenomas Saw-toothed polyp ≥10 mm or with dysplasia	First follow-up colonoscopy after 3 years, the next one after 5 years.

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In Poland, screening colonoscopy is performed every 10 years for patients aged 50-65 or for those aged 40-49 if a first-degree relative has been diagnosed with colorectal cancer.

The first preventive colonoscopy can be performed in Poland at the following ages:
•25-49 years for individuals with a family history of Lynch syndrome.
•20-49 years for individuals with a family history of familial adenomatous polyposis (FAP).

Colorectal Cancer Prevention:

•Over 50% of colorectal cancer screenings are conducted in the USA.

•Colonoscopy is recommended between the ages of 50-64.

•According to ASGE (American Society for Gastrointestinal Endoscopy) guidelines from 2018, screening is recommended starting at age 45 and continuing through age 75 for all individuals.

Most Common Indication for Colonoscopy:

•Screening for colorectal cancer, particularly in individuals with risk factors such as family history or other predisposing conditions.

End of Screening or Surveillance:

•In Poland, there are no formal age-related recommendations to end screening or surveillance.

•In the USA/European Union (and globally):

- **Screening** should continue up to age 75. After age 75, routine screenings are generally discontinued.
- **Surveillance** can be recommended up to ages 75-80, sometimes extending to 84. After age 80-85, surveillance is typically ceased.

This reflects current practices in colorectal cancer prevention, although guidelines may vary by country or health system.

In the invitation-based system, screening for colorectal cancer is recommended for individuals aged **55–64 years**, regardless of the presence or absence of clinical symptoms suggesting colorectal cancer.
This approach ensures that people within this age range, even if asymptomatic, are still screened for early signs of colorectal cancer, aiming to detect potential issues before they develop into more serious conditions.

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Since 2010, a decrease in mortality from colorectal cancer has been observed, which is attributed in part to the **early colorectal cancer screening program** that has been operational in Poland since 2000. Colonoscopies are performed by qualified doctors with appropriate training, and the procedures can also be carried out under general anesthesia, ensuring greater comfort and accessibility for patients..

CERVICAL CANCER

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The collection of material for the screening cytology test is carried out within:

1. **Ambulatory specialist care in obstetrics and gynecology** as part of the consultation services listed in the catalogue of separate specialist services.
2. **Primary healthcare** by a midwife.

The test is performed by a specialist doctor in obstetrics and gynecology or a midwife who is authorized to collect material for cytology as part of the Cervical Cancer Prevention Program.

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For the test, you should not attend during your menstrual period.
At least 4 days should have passed since the last day of your period.
You should attend the test no later than 4 days before the start of your next menstrual period.
At least 4 days before the test, you should not use any vaginal medications/substances/preparations.
At least 1 week should have passed since your last gynecological examination or transvaginal ultrasound.

Abnormalities of cervical epithelial cells refer to squamous and glandular epithelial cells according to the **TBS System** (The Bethesda System):

Abnormal squamous epithelial cells:

- **ASC-US** (Atypical Squamous Cells of Undetermined Significance)
- **ASC-H** (Atypical Squamous Cells - Cannot Exclude High-Grade Squamous Intraepithelial Lesion)
- **LSIL** (Low-Grade Squamous Intraepithelial Lesion) – includes koilocytosis (HPV) and possible CIN I (low-grade dysplasia)
- **HSIL** (High-Grade Squamous Intraepithelial Lesion) – may correspond to CIN II, CIN III/CIS (moderate and high-grade dysplasia)
- **Squamous Cell Carcinoma**
- **AGC** (Atypical Glandular Cells) – abnormal glandular epithelial cells
- **Adenocarcinoma** – glandular cancer

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Starting from September 1, every primary healthcare clinic offers free HPV vaccination for children who have turned 9 but are not yet 14 years old.

The 2-valent Cervarix vaccine against HPV remains free for all children aged 9 to 18. Children older than those covered by the program can still receive the vaccine free of charge if a doctor issues an e-prescription. In that case, the parent can fill the e-prescription at a pharmacy, schedule the vaccination directly at the POZ clinic, and bring the vaccine with them.

Screening Tests in Oncology

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Prostate-specific antigen (PSA) is a glycoprotein with serine protease activity, produced by the epithelial cells of the prostate gland. It plays a role in the liquefaction of semen. PSA is considered a marker for prostate tissue and a nonspecific marker for prostate cancer.

The results of the largest ERSPC study indicate a 21% reduction in prostate cancer mortality among individuals undergoing regular PSA testing. However, due to the increased detection of clinically insignificant cancers and unnecessary diagnoses, routine population screening using PSA is no longer recommended.

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Some organizations, however, recommend PSA testing for men over 50 years old, along with a digital rectal exam (DRE). The positive predictive value of the DRE in patients with low PSA levels ranges from 5-30%. Due to the limited value of DRE in distinguishing prostate cancer from benign prostatic hyperplasia, there is an increasing reliance on risk calculators and tests that combine clinical and biochemical data.

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Measurement of PSA levels is recommended for anyone with a family history of prostate cancer or symptoms related to the urinary system. PSA levels can also increase in non-cancerous prostate conditions, cancers of other organs, and naturally rise with age.

Reference values: <4.0 ng/ml.

OBESITY

According to the American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention, obese individuals and those with overweight have an increased risk of developing certain types of cancers (such as gallbladder cancer, endometrial cancer, colorectal cancer, and breast cancer). Cancer prevention, in this context, focuses on weight reduction in overweight and obese individuals by limiting the intake of fats and carbohydrates in favor of vegetables and fruits. It is estimated that 300 minutes of moderate physical activity and exercise per week should help prevent weight gain and maintain weight loss in obese individuals.

The mechanism by which physical activity reduces the risk of cancer is likely related to the reduction of cytokine levels and other proteins associated with inflammation in the body.

Experts believe that high levels of physical activity throughout life are associated with a nearly 25% reduction in the incidence of certain cancers compared to individuals with low levels of activity.

Preventive programs are an area where noble intentions, economic interests, and gaps in knowledge overlap.

"Primum non nocere" — every medical intervention, even one with proven high effectiveness according to Evidence-Based Medicine (EBM), has its drawbacks.

Harms caused by, among others, false-positive results (stress, anxiety, unnecessary procedures), **false-negative results** (ignoring symptoms), unnecessary treatments, side effects of tests and therapies, and prolonged periods of feeling unwell.

The value of potential benefits and risks is a matter of individual choice. The patient decides how much weight to give to the benefits and the risks.

Moral aspect — we base decisions on empirical evidence, not belief.

"Better less but better" — the cost-effectiveness threshold for preventive programs, according to the WHO and AOTM (Agency for Health Technology Assessment), is obtaining one Quality-Adjusted Life Year (QALY) for less than three times the GDP per capita.