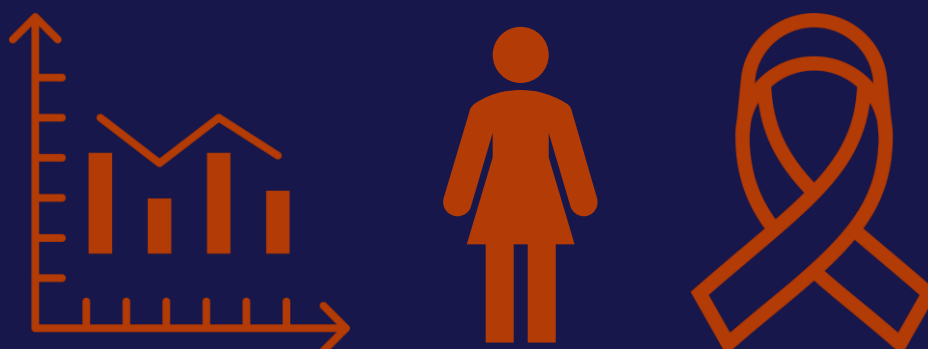


Cancer Dashboard for Lithuania - Women's cancers

Ida Haggren and Thomas Hofmarcher



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ihe.se

Purpose and content

This report is part of an international initiative aimed at facilitating the exchange of best practices in cancer care between European countries. The focus here is on women's cancers. The core of the report is a dashboard overview for Lithuania (see page 4) with an illustrative description of a selected set of key indicators. Although a multitude of metrics is needed to fully describe the cancer control status of women's cancers, the selected indicators relate to outcomes, resources, and process metrics in all areas of cancer control. These indicators benchmark the current status quo in Lithuania against target values set by the European Commission and other international organizations as well as provide comparisons with the EU average, Estonia, Latvia, and Poland.

The dashboard is intended to encourage the implementation of the National Cancer Prevention and Control Program and future updates as well as other ongoing initiatives to improve cancer care in Lithuania. The description seeks to support Lithuanian policymakers in the decision-making and prioritization of initiatives in cancer care, and more specifically for women's cancers.

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Foreword

A cancer diagnosis is a profound and life-altering moment—not only for the individual receiving it but also for their loved ones and the society they live in. In Lithuania, cancer remains the second leading cause of death, and women are diagnosed with this disease more frequently than men. The Lithuanian Cancer Patient Coalition (POLA) hears new stories daily and works hard to support patients and their families. These personal experiences highlight the urgent need for bold and meaningful actions to tackle this issue.

This dashboard provides a comprehensive overview of the situation concerning women’s cancers in Lithuania, offering a data-driven perspective that allows for an accurate assessment of the scale of the issue. Such insights are crucial for identifying the actions needed to expand preventive measures, improve access to diverse treatment options, and enhance overall care. This dashboard serves as a valuable starting point for setting priorities in the coming years and offers a robust foundation for policymakers and practitioners developing a new National Cancer Prevention and Control Program for Lithuania.

Despite positive progress in recent years, our country remains among the leaders in cervical cancer incidence and lags behind the European Union in survival rates. Over the past decade, the number of women diagnosed with cancer has continued to rise. Despite the fact there are safe and effective vaccines to prevent HPV-related disease, challenges remain. In 2023, HPV vaccination rates in Lithuania have been declining for the 4th year in a row, reaching only 56% of 11-year-old children who received the first dose of the HPV vaccine. 2024 marked the 20th anniversary of the start of the cervical cancer screening program, but Lithuanian women’s participation rates in breast and cervical cancer early detection and prevention programs remain suboptimal. We all pay immeasurable price for losing hundreds of our daughters, sisters, mothers, friends, and colleagues every year.

POLA is deeply committed to increasing cancer awareness through various campaigns, encouraging society, policymakers, and decision-makers to focus on the entire patient journey—from prevention (including vaccination) to life beyond the disease. We believe this dashboard highlights the most pressing issues in the realm of women’s cancers, providing valuable insights to inspire fresh health policy direction and palpable action. We encourage you to explore the data, apply its findings, and spread the message it conveys.

Step by step, we can work toward a future where fewer women face a cancer diagnosis, and the burden of this disease on patients, their families, and society is significantly reduced.

With hope and determination,

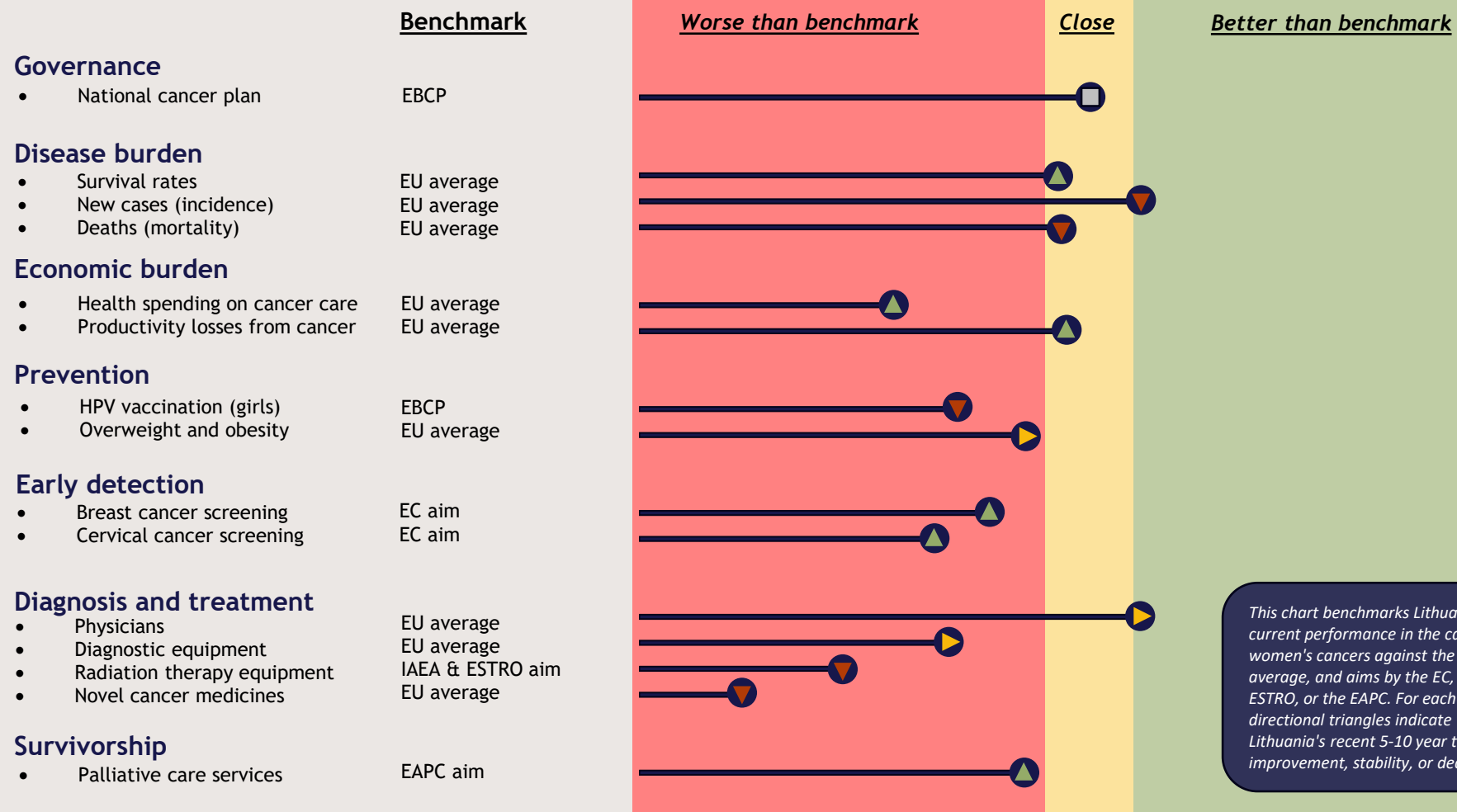
Neringa Čiakienė

Director, Lithuanian Cancer Patient Coalition



Dashboard overview Lithuania – Women’s cancers

Comparative Performance: Lithuania vs. Benchmark



This chart benchmarks Lithuania's current performance in the care of women's cancers against the EBCP, EU average, and aims by the EC, IAEA & ESTRO, or the EAPC. For each KPI, the directional triangles indicate whether Lithuania's recent 5-10 year trend shows improvement, stability, or decline.

Legend: ▲ Positive development, ▶ Stable development, ▼ Negative development, ■ No data or not applicable

Notes: EBCP = Europe’s Beating Cancer Plan, EC = European Commission, IAEA = International Atomic Energy Agency, ESTRO = European Society for Radiotherapy and Oncology, EAPC = European Association for Palliative Care, KPI = key performance indicator. Productivity losses refer to years of potential working life lost.

High-level recommendations

In Lithuania, cancer affects more women than men. Around one third of new cancer cases in women are caused by “women’s cancers”, including breast cancer, uterine cancer, ovarian cancer, and cervical cancer. Although public investment in cancer care has increased and survival rates have improved in Lithuania, both the spending level and the survival rates are still below the EU average.

Governance

- ✓ Complete the implementation of the National Cancer Prevention and Control Program for 2014-2025. Then, develop a new program which draws upon experience from the current program, Europe’s Beating Cancer Plan, and best practices from other countries.

Funding

- ✓ The current use of healthcare expenditure and resources in cancer care should be reviewed and optimized by the Ministry of Health and the National Health Insurance Fund (NHIF). In the mid-term, more public funding of cancer care (and health care in general) by the NHIF seems necessary to improve outcomes for cancer patients.

Prevention

- ✓ Establish an official HPV vaccination registry, launch a gender-neutral catch-up vaccination program, and enhance educational campaigns to raise awareness about HPV-related diseases and the advantages of the HPV vaccine.
- ✓ Launch nationwide campaigns on cancer risks linked to obesity/overweight and physical inactivity. Promote nutrition programs and physical activity in schools and workplaces and introduce an excise tax on sugar-sweetened beverages.

Early detection

- ✓ Ensure smooth implementation of the planned centrally organized screening registry and system for personal invitation to screening.
- ✓ Adjust the target age groups for breast cancer and cervical cancer screening to reflect the updated recommendations by the Council of the European Union.
- ✓ Explore the possibility of introducing HPV self-sampling kits to improve participation in cervical cancer screening for women in remote areas and of lower socioeconomic status.
- ✓ Consider targeted information campaigns about screening to women of lower socioeconomic status and in rural areas.

Diagnosis and treatment

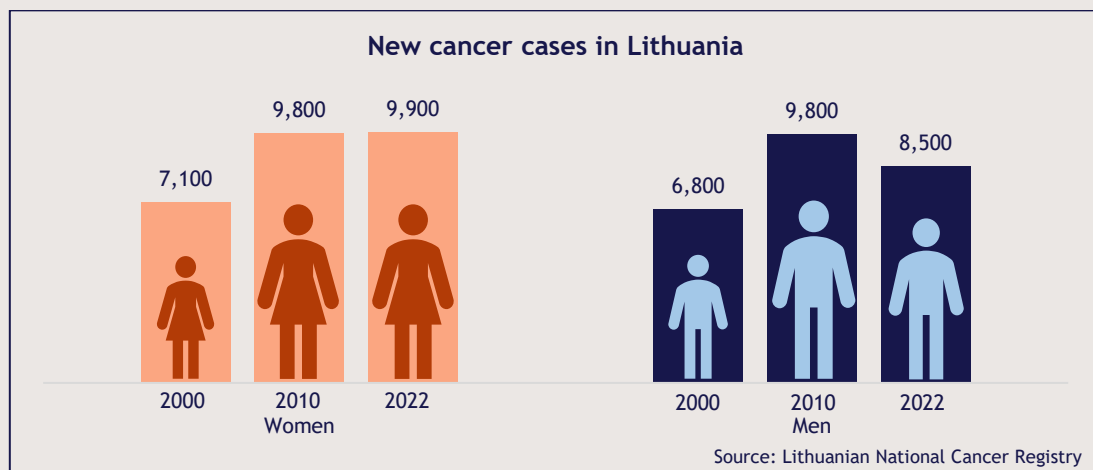
- ✓ Invest in training and recruitment of medical staff, particularly cancer specialists and nurses, to improve the quality of services and mitigate inequalities in access to services across the country.
- ✓ Increase the number of mammography machines and radiation therapy machines, as well as radiologists and other qualified specialists, to reduce waiting times and ensure equal access to diagnosis and treatment.
- ✓ Leverage the new EU HTA regulation as an opportunity to accelerate timelines of the pricing and reimbursement process for new cancer medicines and to review evidence requirements.

Survivorship

- ✓ Expand and improve accessible and integrated palliative care services, with a special focus on hospital support teams and inpatient palliative care services. Train and recruit more palliative care personnel.

Background

The disease burden of cancer in Lithuania is high. After cardiovascular diseases, cancer was the second leading cause of death among men and women in Lithuania, accounting for around 18% of deaths in 2022 (1, 2). Data from the National Cancer Registry show that almost 18,400 new cases of cancer were diagnosed in 2022, an increase of more than 4,000 cases since 2000 (2). Although the number of cases was very similar in men and women in 2000, since then it has increased at different rates so that the number of cancer diagnoses among women was 15% higher than among men in 2022 (2). In the same period, the population of Lithuania decreased (3), which implies that the increase in incidence per 100,000 inhabitants was much larger than the absolute increase in new cases. Women saw a 73% increase and men saw a 56% increase per 100,000 inhabitants (2, 3). During the same period, the cancer mortality per 100,000 inhabitants decreased by 13% for both men and women (4, 5). Despite some positive developments, there is a clear need for action to reduce the disease burden of cancer and guarantee every patient the best possible care. Various political initiatives - both in Lithuania and at EU level - have been initiated to this end in recent years.



Lithuania's National Cancer Prevention and Control Program

Lithuania has a National Cancer Prevention and Control Program (NCCP) for 2014-2025 in place (6). It outlines the current situation in Lithuania, strategic goals, and necessary measures.

The two main goals of the NCCP are:

1. To **reduce the cancer mortality** rate in the Lithuanian population.
2. To **reduce the inequalities** in health care and improve the health and quality of life of people in target areas.

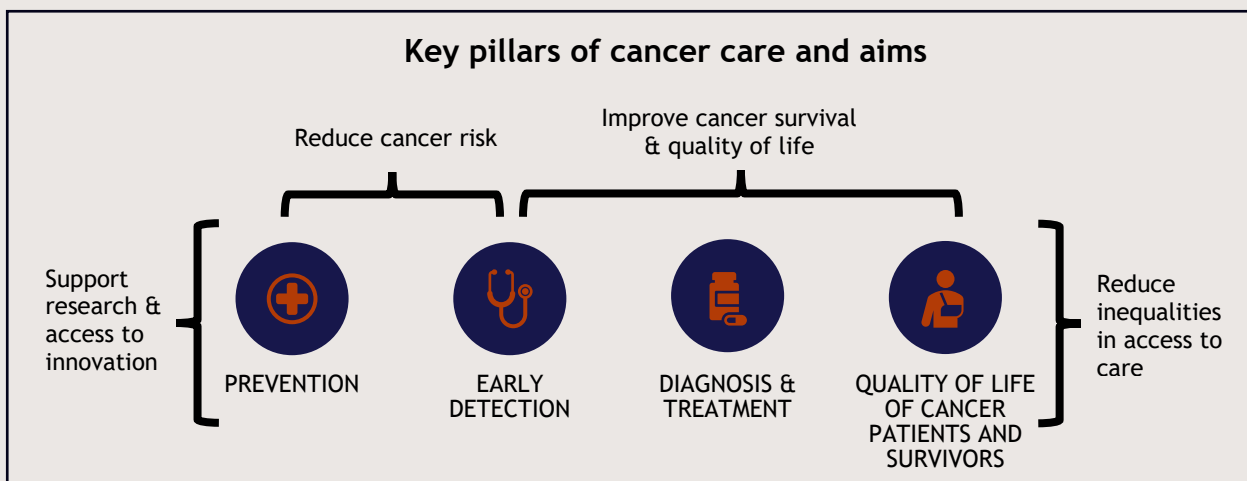
These overarching goals are to be achieved by the following more specific goals:

- I. To improve the **management and coordination of cancer care**.
- II. To develop **preventive health** services and improve the level of information and health in society.
- III. To improve the organization of **cancer screening programs**.
- IV. To ensure **timely, high-quality and equitable diagnosis and treatment** of cancer.
- V. To improve the **quality of life and end of life** of cancer patients.
- VI. To improve the quality of **education and research** in oncology.
- VII. To develop **cooperation with NGOs** in the field of oncology.
- VIII. To ensure comprehensive and high-quality cancer **data registration and publication**.

The contents of this dashboard relate especially to goals II-V and VIII.

Europe's Beating Cancer Plan (EBCP)

The European Commission published Europe's Beating Cancer Plan (EBCP) in February 2021 (7). The plan is intended as a political declaration of war on cancer and a further step towards a stronger European Health Union and a safer, better equipped and more resilient EU. The EBCP includes ten flagship initiatives that cut across four main areas of action - **prevention, early detection, diagnosis and treatment, and the quality of life of cancer patients and survivors** - and follow the entire disease trajectory (see figure below). There are also several simultaneous goals of cancer care. One goal is to prevent what can be prevented. Approximately 30-50% of cancer cases could theoretically be prevented because they are caused by modifiable risk factors (8). Another goal is to improve the quality of life of patients - through early detection (e.g. screening programs), diagnosis and treatment (e.g. through access to modern diagnostic tools and treatments), and follow-up care for survivors. Cross-cutting goals are to reduce inequalities in access to care (e.g. of different socioeconomic groups to screening) and to support research and access to innovations to advance cancer care from the current status quo. In total, the EBCP has been endowed with 4 billion euros to fund various research projects and activities in the member states.



There are various efforts to track the progress of the EBCP and motivate member states to improve cancer care in their respective countries. The OECD has prepared so-called country cancer profiles on behalf of the European Commission and published them for the first time in February 2023 (9). These profiles are 20-page summaries of the current care situation in each country and are partly based on data from the European Commission's European Cancer Inequalities Registry (ECIR). The next update of these profiles is planned for February 2025. The European Cancer Organisation, with scientific support from the IHE and financial support from EFPIA, published the "European Cancer Pulse" in 2022 (10). This is an interactive homepage in which a large number of key figures have been compiled and where users can get an interactive picture of the healthcare situation in the respective country. However, concrete recommendations for policy makers are scarce in the efforts of the OECD and the European Cancer Organisation.

Focus of the dashboard – Women's cancers

Cancer affected more women than men in Lithuania in 2022 (2). This report focuses on cancer types that are (almost) exclusive to women. These are called "women's cancers". They include breast cancer and gynecological cancers, which comprise cancers of the uterus, cervix, ovaries, vagina, and vulva. These cancer types account for 44% of new cancer cases and 29% of cancer deaths among women in Lithuania (11). The four biggest types are breast cancer, uterine cancer, ovarian cancer, and cervical cancer, whereas vaginal and vulvar cancers are less common. This report focuses on the four big women's cancers.

Structure of the dashboard and choice of indicators

The report is divided into the following areas:

- **Disease burden** (3 indicators): The goal of cancer prevention and care is to reduce the burden of disease. New cases, deaths, and survival rates are different measures to reflect the burden of disease.
- **Economic burden** (2 indicators): Health expenditures on cancer prevention and care represent the monetary resources invested with the aim of reducing the burden of disease. Productivity losses due to sickness absence, early retirement, and premature deaths also represent costs that could be reduced through better care. Informal care costs in the form of unpaid care of relatives could also be reduced through better care.
- **Prevention** (2 indicators): Human papillomavirus (HPV) which causes cervical cancer; overweight/obesity which is a major risk factor for breast cancer, uterine cancer, and ovarian cancer. Other less impactful risk

factors such as smoking (linked to breast cancer and cervical cancer), physical inactivity (linked to breast cancer and uterine cancer), and alcohol consumption (linked to breast cancer) were not considered.

- **Early detection** (2 indicators): Screening for breast cancer and cervical cancer.
- **Diagnosis and treatment** (4 indicators): Human resources, equipment for diagnosis, radiation therapy equipment, and cancer medicines.
- **Survivorship** (1 indicator): Palliative care services.

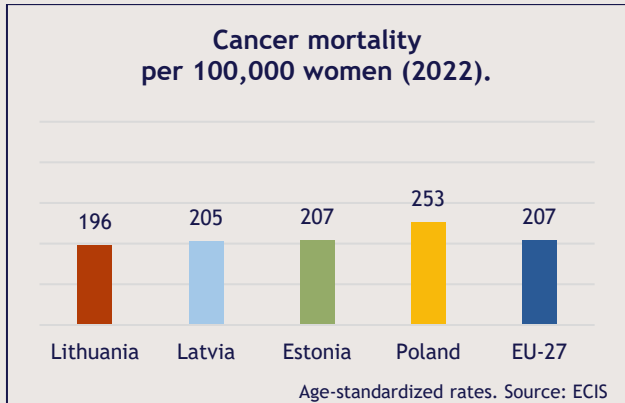
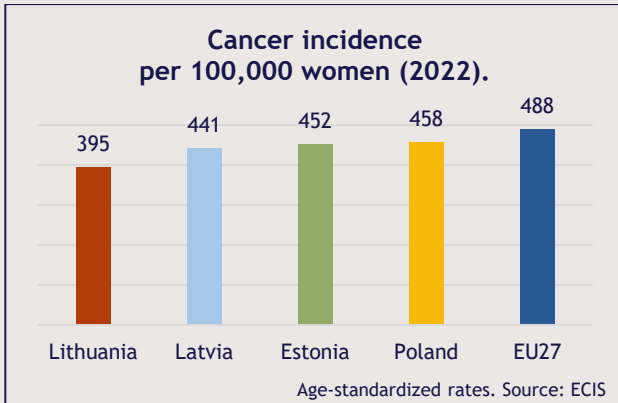
The last four areas cover the four pillars of the EBCP, as well as the specific goals II-V in the Lithuanian NCCP. For each pillar, several indicators were selected that are important in relation to women's cancers. The indicators were supposed to relate to the Lithuanian NCCP as well as the aims of the EBCP. For each indicator, this report provides:

- General description of why this indicator is important and how it relates to the NCCP and the EBCP.
- Description of the current status and recent developments in Lithuania and comparison with other countries.
- Recommendations for improvement.

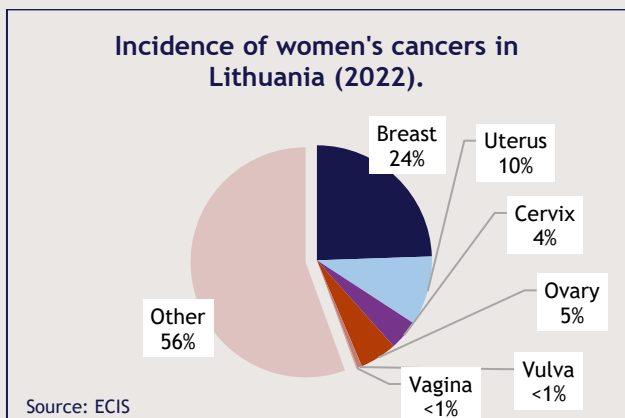
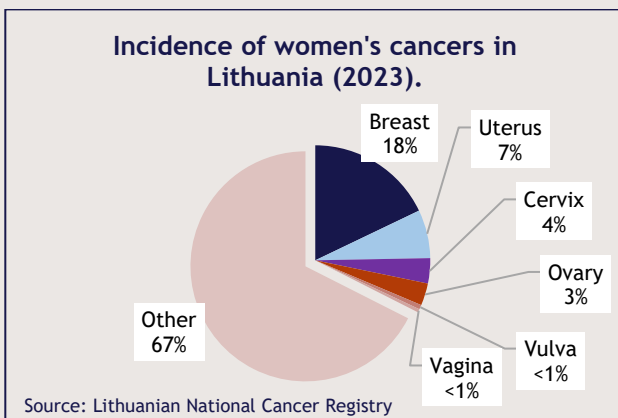
The sources of data and information used for the analysis are public and have been selected based on the original list of indicators assembled by IHE for the European Cancer Pulse. For the comparison with other countries, this report benchmarks Lithuania against Estonia, Latvia and Poland as well as the EU-27 average whenever data is available.

Disease burden of cancer

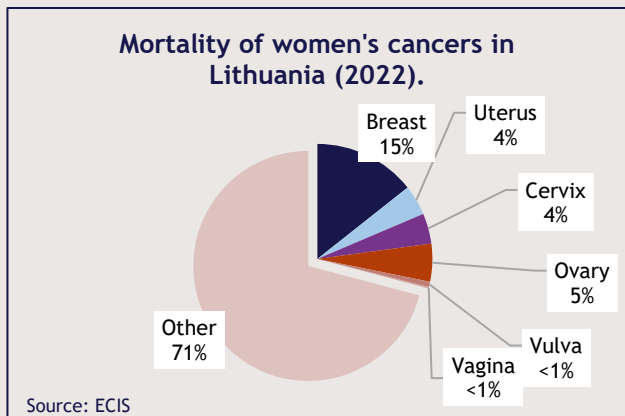
Incidence and mortality



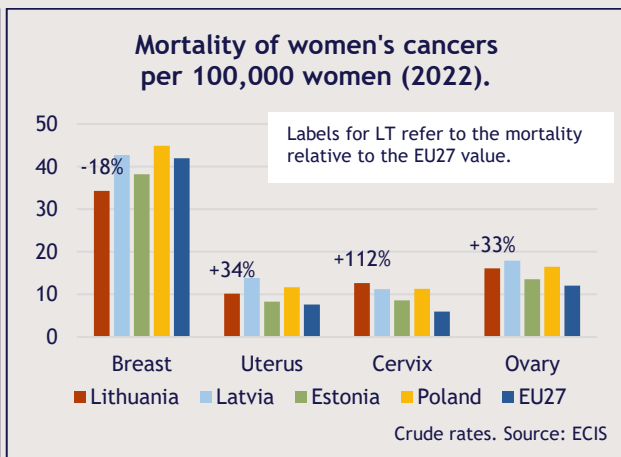
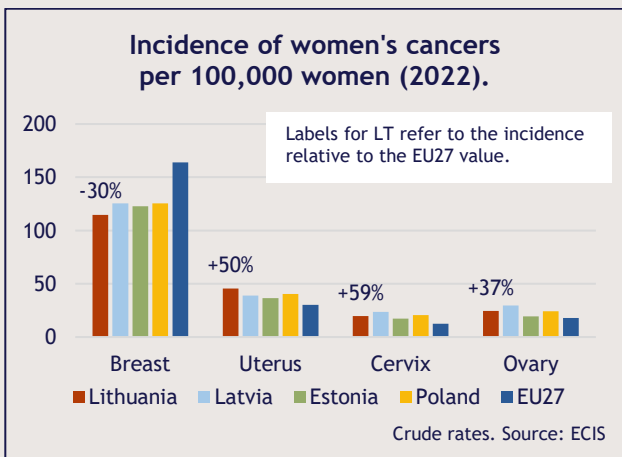
In Lithuania, the estimated cancer incidence rate among women was 395 new cases per 100,000 women in 2022 according to the European Cancer Information System (ECIS), which uses estimates from the World Health Organization's (WHO) Global Cancer Observatory (11). This is the lowest incidence rate among the Baltic countries and Poland and 20% below the EU average. Lithuania also saw the lowest estimated cancer mortality among the Baltic countries, Poland and the EU average, at 196 deaths per 100,000 women in 2022. However, the difference in mortality (5% below EU-average) was smaller than in incidence (20% below EU-average). This indicates that the average Lithuanian women diagnosed with cancer has a lower chance of survival than the average European woman.



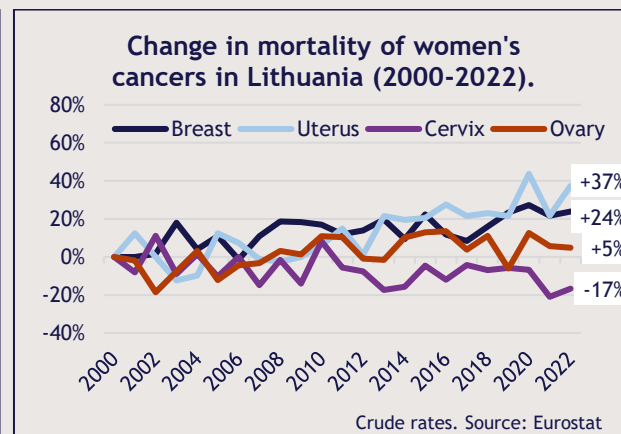
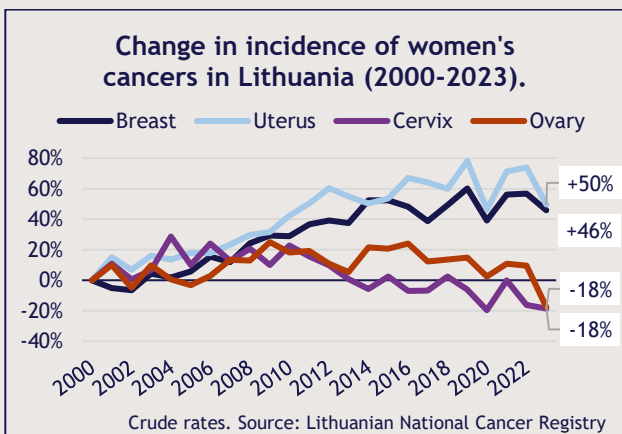
According to estimates from the ECIS, women's cancers account for 44% of new cancer cases and 29% of cancer deaths among women in Lithuania (11). Regardless of data source (Lithuanian National Cancer Registry (2), top left figure, or ECIS (11), top right figure), breast cancer is the cancer type Lithuanian women are most often diagnosed with. Of the six women's cancers, the second most common type is uterine cancer. In third and fourth place are cervical and ovarian cancer, although the internal ordering of the two depends on the data source. The least common women's cancer types are cancer of the vagina and vulva, each accounting for less than one percent of diagnoses. Looking at mortality, breast cancer and uterine cancer account for a smaller proportion of cancer deaths than they do for cancer diagnoses, implying the survival of these two cancer diagnoses is higher than the average for other cancer diagnoses in women.



Although the overall cancer incidence in women is lower in Lithuania than in the EU at large, this is not true for three out of the four main women’s cancers (left graph below). The three Baltic countries and Poland have lower incidence rates of breast cancer than the EU (per 100,000 inhabitants), but higher rates of uterine cancer, cervical cancer, and ovarian cancer. For Lithuania, the largest difference compared to the EU is for cervical cancer, where the incidence rate is 59% higher than the EU average. Also, uterine cancer (+50%) and ovarian cancer (+37%) see higher incidence rates in Lithuania than in the EU. Nevertheless, the sum of the incidence rates of the four women’s cancers in Lithuania is slightly lower (-9%) than the EU average (204 vs 225 cases per 100,000). In contrast, the sum of the mortality rates of the four women’s cancers in Lithuania is slightly higher (+8%) than the EU average (73 vs 68 deaths per 100,000). The mortality rate of cervical cancer in Lithuania is the higher than in the other Baltic countries and Poland as well as more than twice as high as the EU average (right graph below).

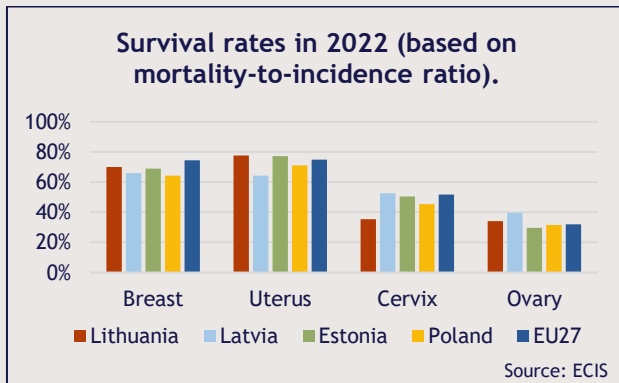
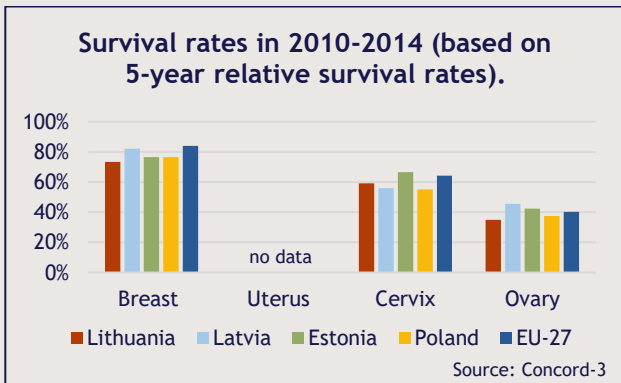


Since the year 2000, the incidences (crude rates per 100,000 inhabitants) of breast and uterine cancer have increased in Lithuania, while cervical cancer (since around 2010) and ovarian cancer (since 2022) have decreased (left figure below) (2). Simultaneously, the mortalities (crude rates per 100,000 inhabitants) associated with breast, uterine and cervical cancer have increased less or decreased more than the respective incidence rates (right figure below) (1, 4, 5). This is likely due to advancements in early detection and treatment. In contrast, the mortality of ovarian cancer has increased, while incidence has decreased.



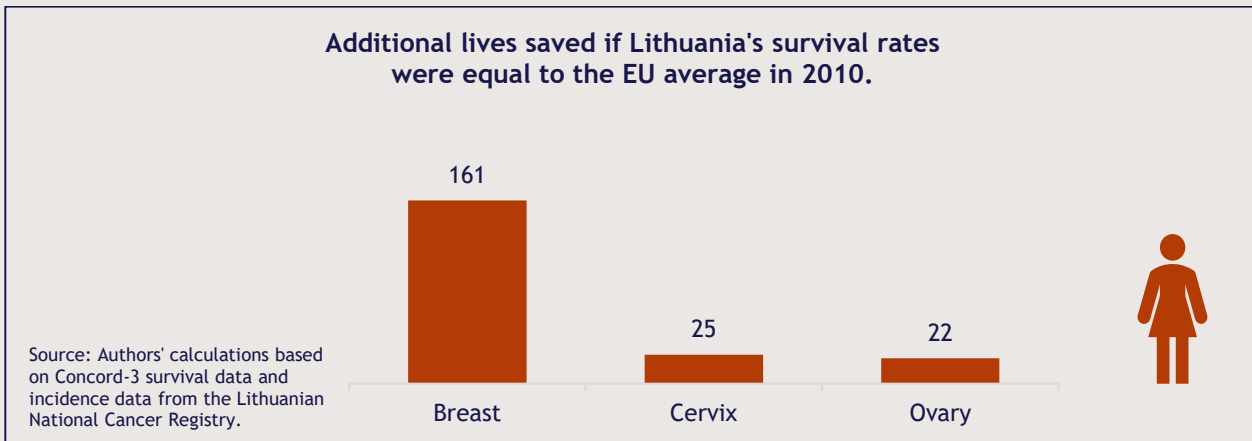
Survival

The Lithuanian National Cancer Registry does not regularly publish data on survival rates of cancer. According to the international Concord-3 study, which included data for Lithuania, the survival rates differ for different cancer types in Lithuania (12). The five-year survival rates are the highest for breast cancer and lowest for ovarian cancer (left figure below). The survival rates in Lithuania in the diagnosis period 2010-2014 were systematically lower than the EU average and most comparison countries. For instance, the five-year survival rate for breast cancer was 74% in Lithuania compared to the EU average of 84%. Nevertheless, the Concord-3 study shows that the survival rates for women’s cancers in Lithuania have improved between the diagnosis period 2000-2004 and 2010-2014, from 65% to 74% for breast cancer, from 54% to 59% for cervical cancer, and from 30% to 35% for ovarian cancer (12).



An indirect measurement of the survival rate can be made by dividing mortality with incidence and taking its complement, which gives a crude but more recent estimate. Using this measurement and data from 2022 from the ECIS, the same pattern emerges: breast cancer along with uterine cancer see the highest survival rates, while ovarian cancer sees the lowest one (right figure above) (11). The pattern of Lithuania consistently having lower survival rates than the comparison countries is not as clear using this measurement (breast and cervical cancer have lower rates in Lithuania compared to the EU average, but uterine and ovarian cancer have higher rates), which could be due to the imperfect nature of this measurement itself or improvements over time since 2010-2014. A comparison of the 2022 data with older data from the WHO Global Cancer Observatory from 2012 indicates that the mortality-to-incidence ratio improved for breast, uterine, and ovarian cancer but not for cervical cancer (13).

The comparatively low survival rates in Lithuania should be an important priority to improve. Had the survival rates for women’s cancers been equal to the EU average in 2010-2014, a total of 208 female cancer patients could have been saved in Lithuania in the year 2010 alone. The potential to save the highest absolute number of lives is by improving breast cancer care, in part due to it accounting for more cancer cases and in part due to the large differences in survival rates.



Economic burden of cancer

In Lithuania, the economic burden of cancer was estimated to amount to €152 per capita in 2018 (14). Healthcare expenditure and costs of lost productivity constituted the two largest parts of the economic burden, each for 46%.

The economic burden of cancer consists of:



Healthcare expenditure (direct costs):

Resources of the healthcare system (medical equipment, staff, medicines, etc.) funded both by public and private sources.



Costs of lost productivity (indirect costs):

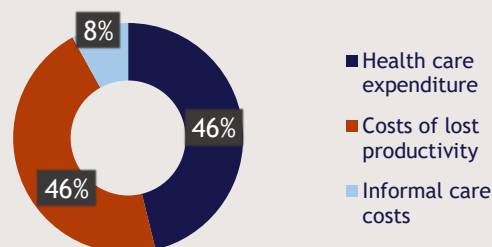
Productivity losses from sickness absence, permanent incapacity/ disability, and premature mortality of working-age patients.



Informal care costs:

Value of the time forgone by relatives and friends to provide unpaid care.

Composition of the economic burden of cancer in Lithuania (2018).



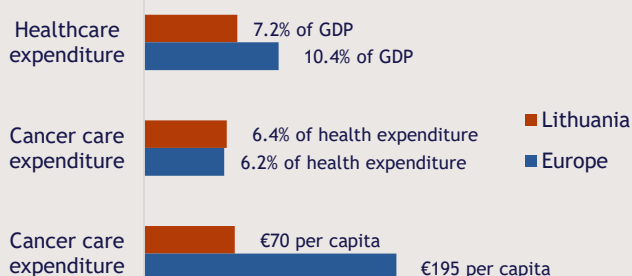
Source: Hofmarcher et al. (2020)

Lithuania is falling behind the rest of the EU in terms of healthcare spending, which spills over to cancer care spending. In relation to its GDP, Lithuania spends less on health care than the EU average (15), and in relation to its total health expenditure Lithuania is estimated to spend a similar proportion as the EU average (left figure below). In absolute numbers, spending on cancer care was estimated to be €70 per capita (€109 per capita with PPP adjustment) in Lithuania compared to €195 per capita in the EU.

The Lithuanian National Health Insurance Fund (NHIF) reported that in 2020, it spent €280 million on cancer care, which accounted for 7.6%¹ of total health expenditure (16, 17). This is a higher figure than the expenditure proportion of 6.4% estimated by Hofmarcher et al. for the year 2018 (14). Approximately half of the expenditure reported by NHIF went to medicine costs and the other half to inpatient and outpatient care (17). Looking at other countries in the region, the following spending data exist:

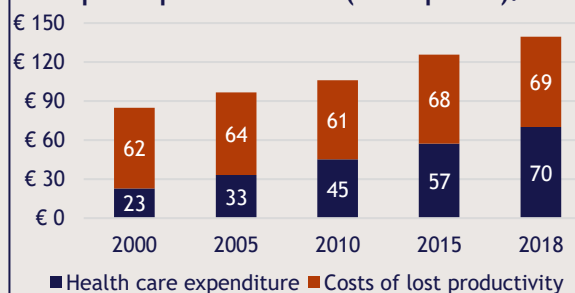
- Estonia: In 2023, Estonia spent €222 million on cancer care², which accounted for 7.8% of all healthcare expenditure that year (16, 18, 19).
- Latvia: No data could be identified.
- Poland: The most recent estimate of spending by the National Health Fund for 2023 was 8.2%, which was slightly higher than in the previous ten years with relative spending on cancer care of around 7% (20).
- EU-27 + UK + Norway + Iceland: The estimated proportion was 6.2% in 2018 (14).

Healthcare expenditure (2022) and cancer care expenditure (2018).



Source: Eurostat and Hofmarcher et al. (2020)

Economic burden of cancer in € per capita over time (2018 prices).



Source: Hofmarcher et al. (2020)

Overall, the economic burden of cancer (excluding informal care costs for which no trend data are available) in 2018 prices is estimated to have increased by 64% from €85 per capita in 2000, to €139 per capita in 2018 (right figure above). This increase underlines the need to tackle cancer urgently. Indeed, spending on cancer care per capita is estimated to have more than tripled during this period in line with the overall increase in healthcare spending.

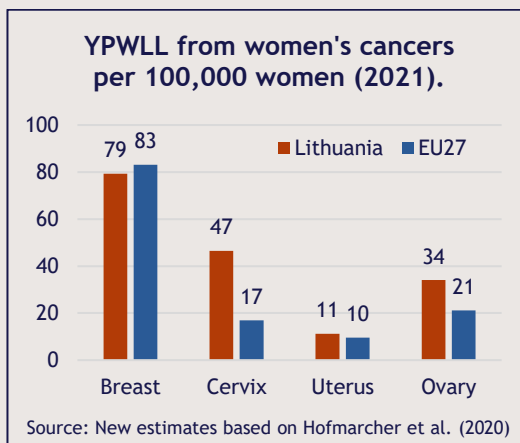
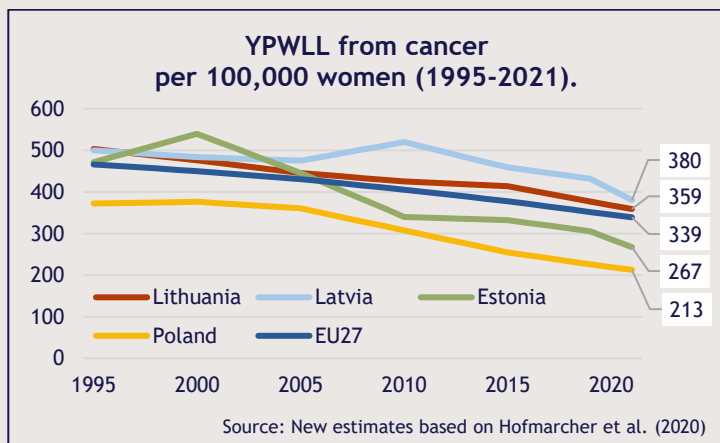
¹ Total health expenditure was €3.73 billion in 2020 (16).

² Includes healthcare services for tumors (ICD-10 C00-D48), relevant services related to cancer such as follow-ups after cancer treatment (ICD-10 Z00-99) (18), and cancer medicines expenditure including out-of-pocket costs borne by patients (19).

The estimated costs of lost productivity (indirect costs) have seen a small increase of 11% during the period 2000-2018 in Lithuania (right figure above). This result is mainly explained by increased costs of morbidity, i.e. costs of sickness absence and permanent disability. The increase in indirect costs stands in contrast with the overall picture in Europe, where costs of lost productivity decreased by 9% during the same period (14). The European decrease is primarily driven by reduced costs of mortality in working-age patients, whereas the same costs in Lithuania have remained stagnant in 2000-2018. The difference in cost stems in part from actual cancer mortality not diminishing as quickly in Lithuania as in Europe overall (21), and in part from the employment rates increasing more in Lithuania than the rest of Europe (22).

An important component of the costs of lost productivity is the years of potential working life lost (YPWLL) due to mortality in people of working age. The left figure below shows that cancer mortality of working age women in Lithuania resulted in 500 YPWLL per 100,000 women in 1995, but has seen a steady decline of 29% to 359 YPWLL per 100,000 in 2021. This positive decline is approximately on par with the EU average both in absolute terms (from 466 to 339 YPWLL per 100,000) and relative terms (-27%). By comparison, Estonia which had a similar level of YPWLL as Lithuania in 1995, has seen a larger decline than Lithuania. In fact, in 2021 Lithuania performs better than only Latvia.

Of the four main women’s cancers, the largest loss of productivity stems from breast cancer (right figure below). However, the largest differences between Lithuania and the EU average are in the YPWLL associated with cervical cancer and ovarian cancer. In both instances, the productivity loss is much higher in Lithuania than in the EU overall.



Other studies have also demonstrated the value of years of life lost due to premature mortality from cancer that is attributable to virus infections. More specifically, a study in Europe of several cancer types (oral cavity, oropharynx, larynx, cervical, and liver cancers) attributable to HPV and hepatitis B virus estimated a lost value of €101 million in Lithuania (23). Of this sum €70 million concerned women, of which the major part was related to HPV infection causing cervical cancer.

	Value of years of life lost from HPV- and HBV-attributable cancers in 2019		
	Men	Women	Total
Lithuania	€30.8 million	€70.4 million	€101.2 million
Latvia	€14.6 million	€36.3 million	€50.9 million
Estonia	€13.3 million	€35.1 million	€48.4 million
Poland	€205.0 million	€711.2 million	€916.2 million

Notes: HPV = human papillomavirus; HBV = hepatitis B virus. Source: Bencina et al. (2024) (23).

Pillar 1:

Prevention

KPI:

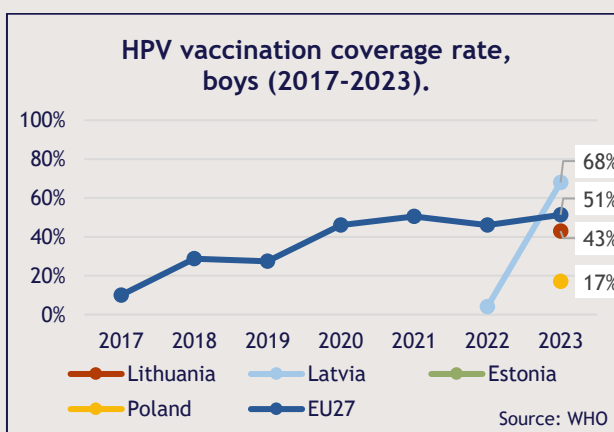
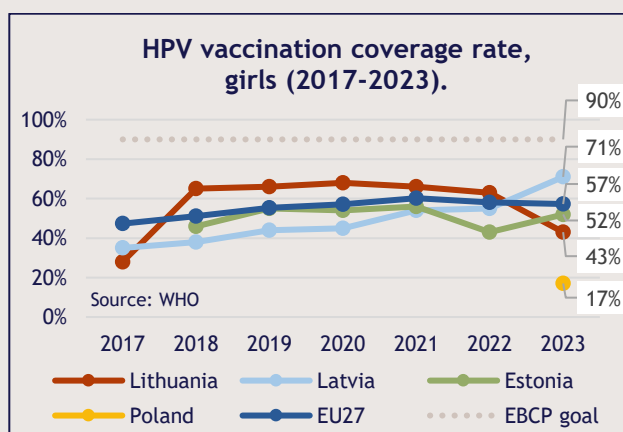
Vaccination against human papillomavirus (HPV)

Background

- HPV is a group of sexually transmitted viruses that causes around 2.5% of all cancers in women and men in Europe (24). Premature mortality due to HPV-related cancer was estimated to cost €14.6 billion in Europe in 2019, where cervical cancer accounted for 73% of the cost (23). Vaccination against HPV became initially available in 2006 in the EU. It has been found to be an effective and cost-effective way to prevent cervical cancer and other types of HPV-related cancers, including cancers of the vulva and vagina (24). According to the WHO, the best option is to vaccinate girls and boys around age 9-14, just before puberty and the start of sexual activity (25).
- Cervical cancer is the sixth most common cancer among women in Lithuania. Lithuania had the sixth highest incidence (18 per 100,000) and third highest mortality (11 per 100,000) rates of cervical cancer of the EU-27 countries in 2022, with both rates being around twice as high as the EU average (11). In the NCCP, an explicit goal is to reduce age-standardized cervical cancer mortality by 10% (6).
- In Lithuania, HPV vaccinations have been offered free of charge for girls aged 11 since 2016 (born on Sep 1, 2005 or later) (26). In the NCCP, it is stated that information campaigns targeting young girls and their parents are to be carried out to ensure trust in the vaccine and thus achieve a high vaccine coverage rate (VCR) (6).
- The EBCP includes the aim of a 90% HPV VCR of girls in the EU and to significantly increase the VCR in boys by 2030 (7).

Current status in Lithuania

- HPV vaccination programs are present in all considered countries, as summarized in the table below. In 2023, the Lithuanian program was extended from girls to also include boys aged 11 (born on Feb 1, 2012 or later) (27). Vaccinations in Lithuania are registered but not compiled in a detailed national registry.
- As shown in the figure below, the HPV program VCR among girls in the target demographic in Lithuania has long been the best among the comparison countries, and better than the EU average, with rates close to 70%. There is a large drop in 2023 to 43%, due to reporting of the figures for boys and girls not being done separately, and because it was the first year the vaccination was made available to boys. Irrespective of the 2023 number, the VCR is still below the EBCP goal of 90% and Lithuania has not been able to increase the VCR since 2018 in a way like Latvia has done.



	Year of introduction	Primary age group	Primary vaccination setting	Vaccination registry	Source: ECDC (26), EPF (28), Kojalo et al. (29), OECD (30), Vaktisineeri.ee (31).
Lithuania	2016 (girls), 2023 (boys)	11	Health centers	Yes	
Latvia	2012 (girls), 2022 (boys)	12	Health centers	Yes	
Estonia	2018 (girls), 2024 (boys)	12-14	Schools	Yes	
Poland	2023 (girls and boys)	12-13	Health centers	No	

Recommendations

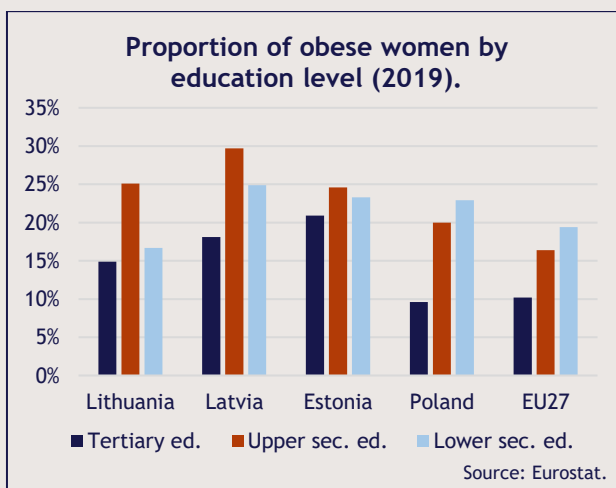
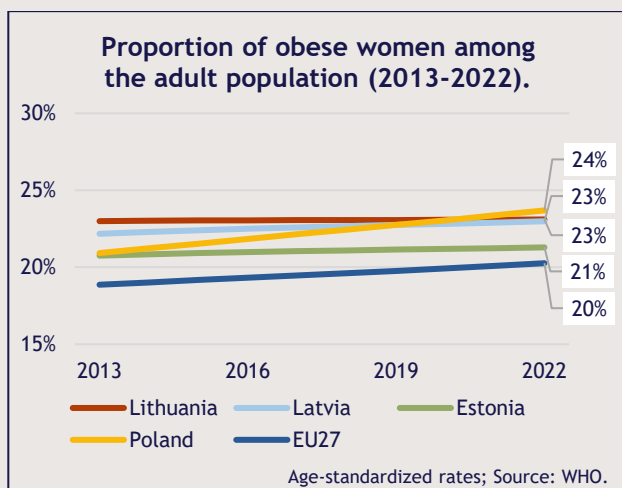
- Establish an official HPV vaccination registry with a continuous monitoring system of the VCR for girls and boys.
- Enhance educational campaigns targeting parents and children to raise awareness about HPV-related diseases and the safety and advantages of the HPV vaccine to bring the HPV VCR closer to the EBCP's objective of 90%.
- Prioritize vaccination of boys, e.g. by raising awareness of the positive benefits for boys to get HPV vaccination.
- Establish multi-cohort gender-neutral catch-up vaccination campaigns for teenagers and young adults for a faster decrease in the HPV-related morbidity burden in line with the EU Council recommendation from 2024 (32, 33).

Background

- Overweight (defined as a body mass index (BMI) of ≥ 25) and obesity (BMI of ≥ 30) is a medical condition that increases the risk of various health problems, including cardiovascular disease, diabetes, and certain cancers (34). Obesity and overweight have been linked to the development of 13 cancer types, including breast cancer (in post-menopausal women), uterine cancer, and ovarian cancer (35). Around 7-9% of all cancer cases in women are linked to obesity and overweight in Europe (36, 37).
- The Lithuanian NCCP emphasizes the role of obesity. It sets out the task to increase knowledge among health professionals and the population at large of the effects of improper nutrition and physical inactivity on the risk of cancer (6).
- The EBCP aims to evaluate the current EU action plan on obesity and propose a follow up (7). In relation to obesity, the European Code Against Cancer recommends to (i) maintain a healthy body weight, (ii) be physically active in everyday life and limit the time you spend sitting, and (iii) have a healthy diet, including eating plenty of whole grains, pulses, vegetables and fruits, and limiting high-calorie foods (foods high in sugar or fat) and avoiding sugary drinks (38). The WHO "Acceleration plan to stop obesity" emphasizes the role of fiscal policies (including excise taxes and subsidies to promote healthy diets) to fight obesity (39).

Current status in Lithuania

- The prevalence of obesity among adult Lithuanian women has remained stable at 23% during the last 10 years (left figure), according to estimates of the WHO (40). This contrasts with the trend in the EU-27 countries, including Latvia and Poland, which all have seen increasing levels of obesity. Despite this, the level of obesity in Lithuania is still higher than in Estonia (by two percentage points) and the EU average (by three percentage points).
- Poor knowledge of the health-related risks of obesity can reduce the incentives to live healthier. According to self-reported data from Eurostat (41), a lower level of education is associated with a higher risk of obesity in the EU (right figure). This pattern does not appear in Lithuania, where the obesity rate among women with the lowest education level is lower than that among women with upper secondary level education. However, differences in obesity rates among different education levels are large in comparison with, for example, Estonia.



Recommendations

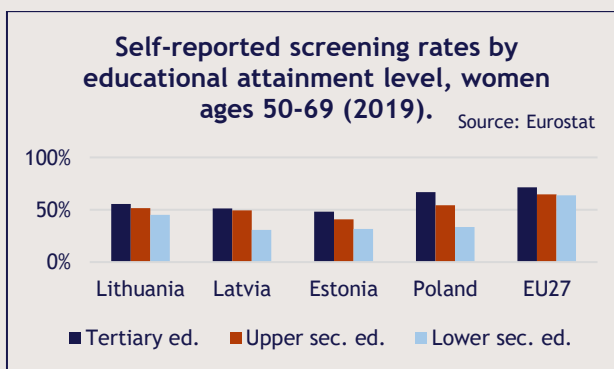
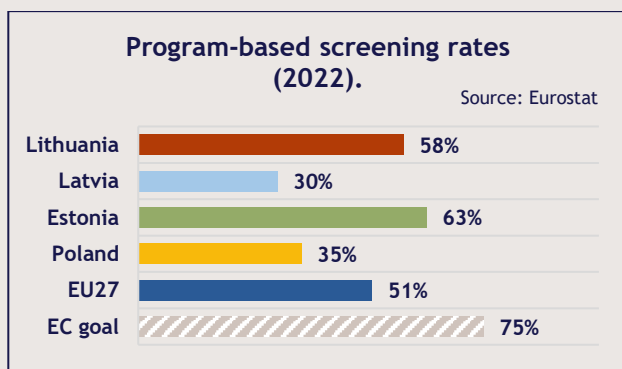
- Reinforce nationwide campaigns to raise awareness about the cancer-related risks of obesity and overweight and the importance of maintaining a healthy body weight to prevent cancer.
- Promote physical activity and nutrition programs in schools and at workplaces and provide physical activity counselling as part of routine primary healthcare services.
- Consider implementing an excise tax on sugar-sweetened beverages and introducing subsidies for fruits and vegetables in line with WHO recommendations.

Background

- The goal of breast cancer screening is to detect tumors early while they are still small and treatable (42). In early disease stages, survival rates are highest and treatment costs lowest (43).
- The EBCP aims for 90% of the target population in each country to be invited for breast cancer screening by 2025 (7). Quality guidelines by the European Commission state that the desirable participation rate in breast cancer screening is >75% (44). Moreover, the Council of the European Union's 2022 recommendation states that mammography should be done in women aged 45-74 years (previously 50-69 years) (45).
- Lithuania introduced breast cancer screening for women aged 50-69 years every two years in 2005 (46). Mortality in the target group decreased, though the reduction could have been greater with better organization (47).
- Breast cancer accounts for 24.5% of cancer cases and 14% of cancer deaths among Lithuanian women. Compared to other EU countries, Lithuania has the second-lowest incidence rate but only the fifth-lowest breast cancer mortality rate (11). The NCCP aims to reduce breast cancer mortality by 10% and improve screening programs to catch tumors earlier (6).

Current status in Lithuania

- In 2017, Lithuania was one of only three EU countries without a centrally organized screening invitation system and registry. Instead, breast cancer screening invitations are sent by individual general practitioners (48). However, a centralized invitation system and registry are currently being piloted.
- The program-based breast cancer screening rate was 58% in Lithuania in 2022 (left figure), which is an improvement by 8 percentage points (pp) since 2018 and 17 pp since 2014 (49). This is higher than the EU average and higher than Latvia and Poland, but lower than Estonia and the European goal of >75%.
- A woman's education level is related to participation in mammography screening. In Lithuania, 2019 self-reported data show about a 10-point difference in screening between women with primary and tertiary education (right figure) (50). However, these differences are smaller compared to Latvia, Estonia, and Poland. Additionally, living in a city, frequent physician visits, and healthy behaviors are significant predictors of screening attendance in Lithuania (51).



	Target age group	Screening method	Screening interval	Invitation method/organization	Source
Lithuania	50-69 years 45-69 years (as of 2025)	Mammography	2 years	Opportunistic, oral invitation in primary healthcare centers at unrelated visits	OECD (46, 52-54), NFZ (55) & Tervisekassa (56).
Latvia	50-69 years	Mammography	2 years	Printed letter	
Estonia	50-70, 74 years	Mammography	2 years	Printed and electronic letters	
Poland	45-74 years	Mammography	2 years	Opportunistic, general recommendations	

Recommendations

- Ensure smooth implementation of the centrally organized screening registry and system for personal invitation.
- Enhance awareness by emphasizing the importance of breast cancer screening in reducing mortality. Inform women, especially those with lower education and in rural areas, about early detection and available resources bring the breast cancer screening participation rate close to the European goal of 75%.
- Expand the target age group for screening from 50-69 to 45-74 years (instead of 45-69 years as of 2025), following the latest European recommendation. This would raise the eligible population by 42% or 180,000 women, likely requiring more mammography machines and radiologists.

Background

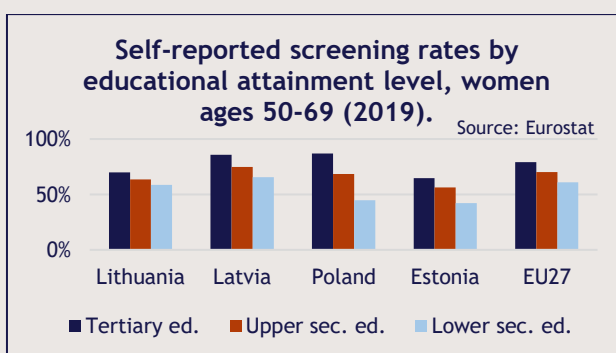
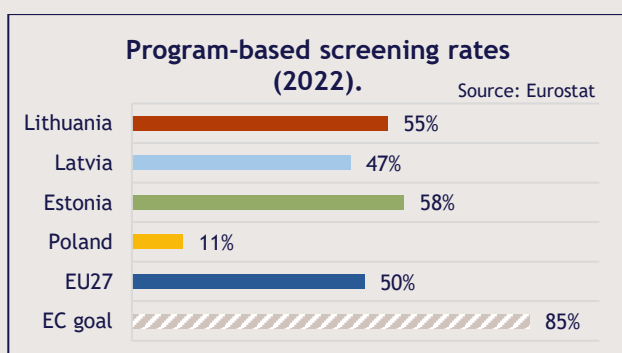
- The aim of cervical cancer screening is to detect a tumor before symptoms or in its pre-stages. In early stages, survival rates are highest and treatment costs lowest (57, 58). Screening used to be done with a Pap test every three years, but the discovery of HPV causing cervical cancer has led to HPV tests as a screening method (25).
- The EBCP aims for 90% of the target population in each country to be invited for cervical cancer screening by 2025 (7). Quality guidelines by the European Commission state that the desirable participation rate in cervical cancer screening is >85% (59). Moreover, the Council of the European Union's 2022 recommendation advises using HPV tests and screening women aged 30-65 at five-year intervals or more (45).
- Lithuania introduced a national cervical cancer screening program in 2004 (46). The NCCP aims to reduce cervical cancer mortality by 10% and improve screening programs and participation (6).

Current status in Lithuania

- In the current program in Lithuania, women aged 25-34 are eligible for Pap tests every three years, while women aged 35-59 can get a high-risk human papillomavirus (HR HPV) test and a liquid-based cervical cytological smear (if the HR HPV test is positive) every five years (46).
- Screening invitations are sent by primary healthcare centers, typically communicated during other appointments rather than by mail. Two recent studies suggest that Lithuanian screening rates could improve if invitations were systematically sent to all women in the target group (60, 61), similar to the systems in Estonia and Latvia (29). However, a centralized invitation system and registry are currently in the process of implementation.

	Target age group	Screening method	Screening interval	Invitation method/organization	Source
Lithuania	25-34 years	Pap test	3 years	Opportunistic, invitation in GP's office at unrelated visits	OECD (46, 52-54) & NFZ (55)
	35-59 years	HPV test	5 years		
Latvia	25-29 years	Pap test (liquid-based)	3 years	Printed letter	
	30-69 years	HPV test			
Estonia	30-65 years	HPV test	5 years	Printed and electronic letters	
Poland	25-64 years	Pap test	3 years	Opportunistic, general recommendations	

- As seen in the figure to the left, Lithuania's program-based screening rate of 55% was higher than the one in Poland, Latvia, and the EU average. Yet it was 3 pp lower than Estonia's and, importantly, far below the European goal of >85%. The screening rate has improved by 4 pp since 2018 and by 8 pp since 2014 (49).
- As with breast cancer screening, cervical cancer screening rates are lower among women with less education. In Lithuania, there is an 11-point gap between women with lower secondary and tertiary education (62). However, the differences are smaller than in the comparison countries and in the EU overall. Low education, old age, unhealthy behaviors, being single, and infrequent physician visits have been linked to lower screening rates (63).



Recommendations

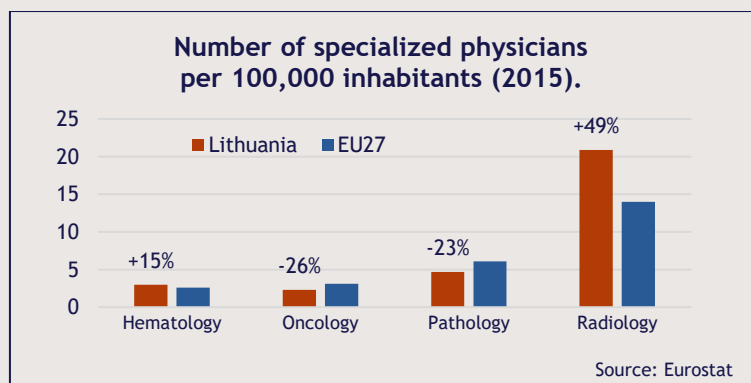
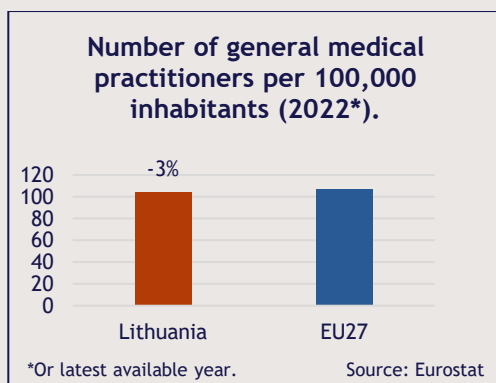
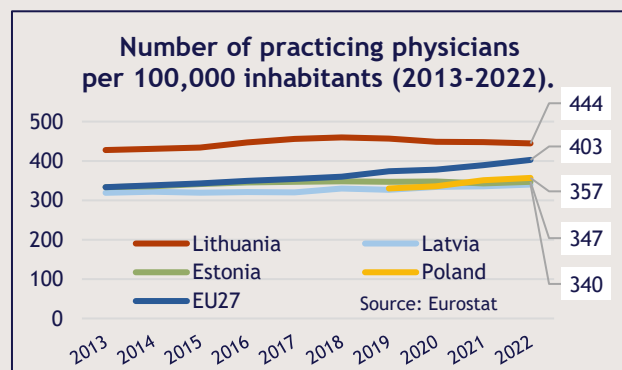
- Ensure smooth implementation of the centrally organized screening registry and system for personal invitation.
- Explore the possibility of introducing HPV self-sampling kits to improve participation for women in remote areas and of lower socioeconomic status.
- Improve the general knowledge of the benefits of getting screened among groups with a lower education level.
- Adjust the screening program's target age from 25-59 to 30-65 years, following the latest European recommendation. Consider tailoring ages and screening intervals based on a woman's HPV vaccination history.

Background

- Modern cancer care is highly specialized and requires competence from different medical fields. This includes pathologists and diagnostic radiologists for the diagnosis of cancer, and surgeons, radiotherapists, medical oncologists, and hematologists for the treatment. General practitioners (GPs) play a key role in facilitating early diagnosis in primary care as they refer patients with signs and symptoms to the appropriate specialist.
- The Lithuanian NCCP recognizes the importance of physicians with proper knowledge and experience in cancer care and describes the problem of brain drain that Lithuania faces. That is, Lithuanian cancer care loses the most talented physicians to other EU countries, which causes a shortage of expert staff. While the NCCP does not include targets of a certain number of physicians, it does have the goal that a patient suspected of having cancer should not have to wait longer than 14 days to see an oncologist (6).

Current status in Lithuania

- Lithuania has a high density of practicing physicians (of any specialty), as evidenced by the top figure. In 2022, the density was 10% higher than the EU average and approximately 25-30% higher than the density in Latvia, Estonia, and Poland. This has been a consistent pattern for the last 10 years.
- While the number of physicians is high, the number of nurses remains low. A goal of the NCCP is to increase the nurse-to-physician ratio, but the latest available data from 2019 show no improvement (6, 46).
- For general medical practitioners, the Lithuanian rate is approximately on par with the EU average (left figure). Considering the importance of GPs in primary care for easy accessibility for patients with signs and symptoms of cancer, which facilitates early diagnosis, this is good news. However, general practitioners are among the specialties who receive the shortest training in oncology during their medical residency (64).
- The Lithuanian density of various oncology-related specialties differs (right figure). Physicians specialized in hematology and radiology are more common in Lithuania than in the EU overall. In contrast, both oncologists and pathologists are about 25% less common than the EU average.

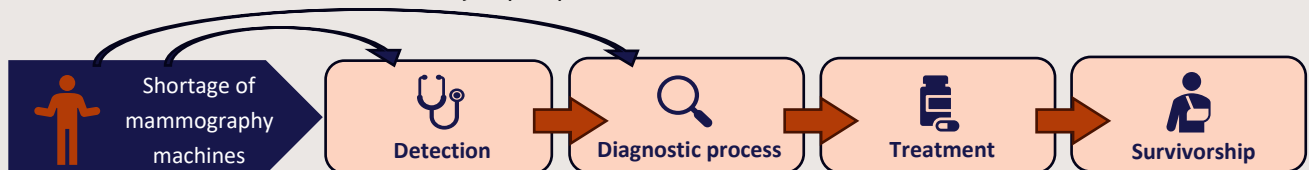


Recommendations

- Develop retention strategies, with a focus on higher salaries and better working conditions, to motivate physicians to stay in Lithuania rather than to emigrate to other EU countries.
- Implement strategies to incentivize more medical students to choose careers as oncologists to ensure accessibility to oncology specialist care in line with the NCCP targets. This will help to improve the quality of services and mitigate inequalities in patient access to services.
- Recruit and retain more nurses involved in the diagnosis and treatment of cancer.

Background

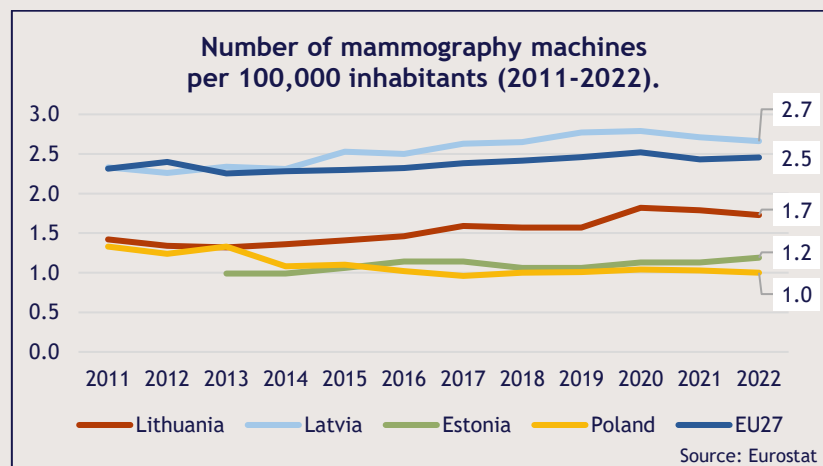
- An essential part between the diagnosis of cancer and the start of treatment is the diagnostic process. Diagnostic imaging is one part of this process, with the purpose of locating the tumor and determining its spread in the body. This helps to inform the most adequate treatment approach.
- The diagnostic process for women's cancers differs between cancer types. For breast cancer, mammography machines are essential for diagnosis (and for screening). Keeping the time between diagnosis and treatment start as short as possible has been shown to increase the chances of survival in many cancer types (65). For instance, breast cancer patients with a long delay of ≥ 61 days between diagnosis and start of neoadjuvant systemic therapy have a 28% increased risk of subsequent mortality compared to patients with a short delay of 0-30 days (66). A shortage of mammography machines may lead to access problems in terms of geographic proximity and/or waiting times for breast cancer diagnosis and screening. This will slow down the referral pathways, delay timely initiation of treatment, and ultimately impair patient outcomes.



- The Lithuanian NCCP does not contain any aims related to mammography machines (6).

Current status in Lithuania

- The number of mammography machines in Lithuania has increased from 1.5 per 100,000 inhabitants in 2011 to 1.7 per 100,000 inhabitants in 2022, with a stable trend in 2020-2022 (67). These are more machines than in Poland and Estonia (1.0 and 1.2 per 100,000 inhabitants, respectively), but substantially fewer machines than in the EU overall and in Latvia (2.5 and 2.7 per 100,000 inhabitants, respectively).



Recommendations

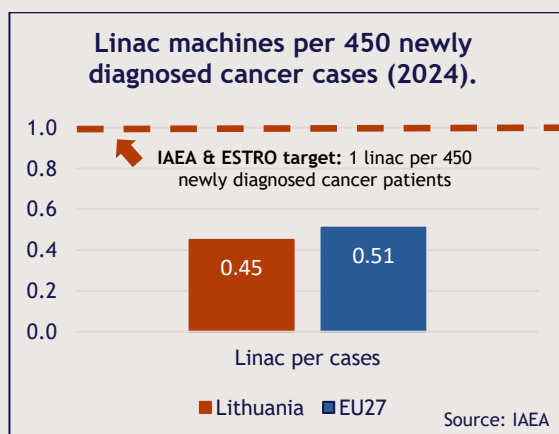
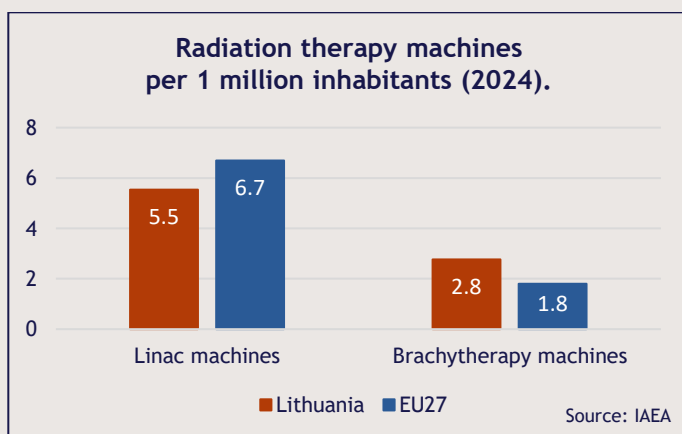
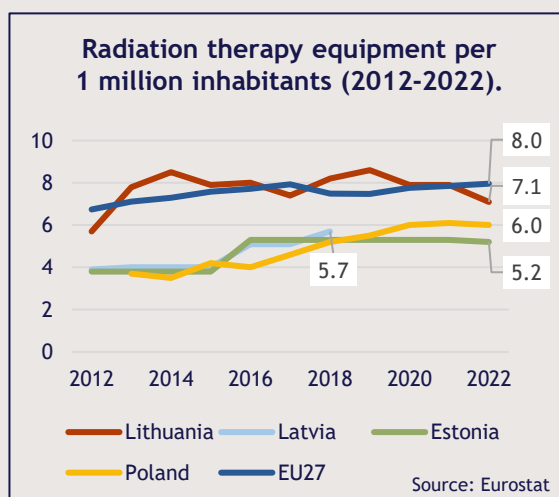
- Increase the number of mammography machines in view of the increasing number of breast cancer patients.
- Review the location of existing mammography machines and the local demand for mammograms to place additional machines in areas in most need to reduce waiting times and improve geographical accessibility.
- Ensure that there is enough medical staff (radiologists, technicians, and nurses) who can operate the machines and perform and interpret the mammograms.
- Explore the use of AI-supported radiology in routine practice.

Background

- Radiation therapy plays a crucial role in the treatment of common cancer types. Approximately 50% of all cancer patients require radiation therapy at some point during their treatment (68). The effectiveness of radiation therapy in targeting and eliminating tumors significantly influences patients' survival rates and quality of life (69-71).
- Improving access to radiation therapy is not just a question of access to equipment but also a question of available trained personnel to operate the equipment. It is essential to ensure an adequate, trained healthcare workforce, along with new radiotherapy equipment to address patients' needs (72).
- The NCCP sees the provision of radiation therapy as a part of ensuring a timely, high-quality and equitable cancer treatment, and sets out the task to analyze and improve the access to radiation therapy (6).
- A recommendation from the International Atomic Energy Agency (IAEA) and European Society for Radiotherapy and Oncology (ESTRO) is to have one medical linear accelerator (linac) available for every 450 newly diagnosed cancer cases per year (73, 74).

Current status in Lithuania

- The number of radiation therapy machines per 1 million inhabitants in Lithuania has been fairly close to the EU average in 2012-2022 but has declined since 2019 (right figure) (67). It is now at 7.1 per 1 million inhabitants, which is lower than the EU average of 8.0, but higher than Latvia, Estonia, and Poland.
- In terms of specific equipment, Lithuania had fewer linac machines in relation to the population than the EU overall, but more brachytherapy machines in 2024 (left figure below) (75). A 2015 estimate indicated that 51% of all new cancer cases should be treated with radiation therapy (the optimal utilization rate), while only approximately 35% of all cancer cases were actually treated with radiation therapy in Lithuania (76). To achieve the optimal rate of radiation therapy utilization by 2025, a 2016 study found that 21 linac machines would be needed (77). This target is currently not met, as there were only 16 linacs in operation in 2024 (75).
- Lithuania has slightly fewer linac machines per 450 newly diagnosed cancer cases than the EU overall (0.45 and 0.51, respectively) (right figure below), which in both cases is far off the goal set by IAEA/ESTRO of one linac machine per 450 cases.



Recommendations

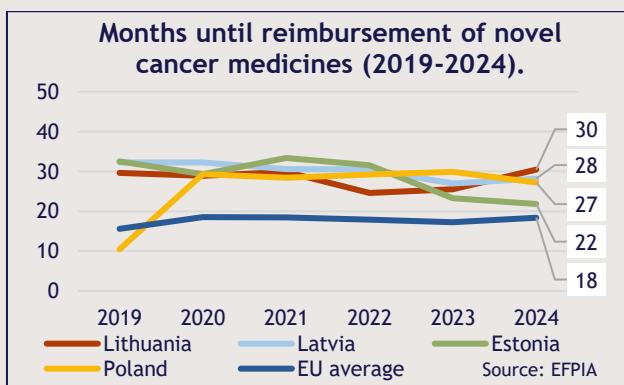
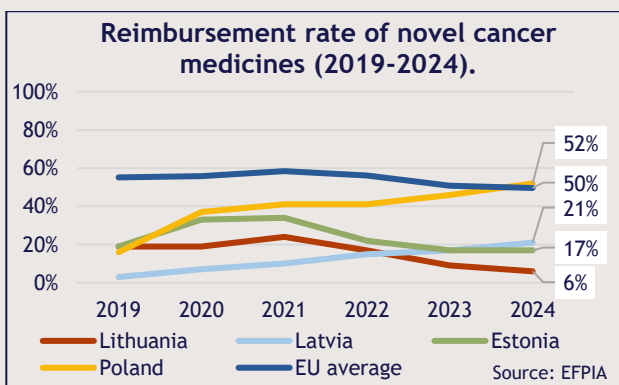
- Increase the number of radiation therapy machines and ensure a sufficient number of qualified specialists who can operate the machines to help improve the access and utilization of radiation therapy.
- Adopt hypofractionated radiation therapy in all patient groups with robust scientific evidence to reduce the number of treatment sessions and consequently the need for machines and medical staff.

Background

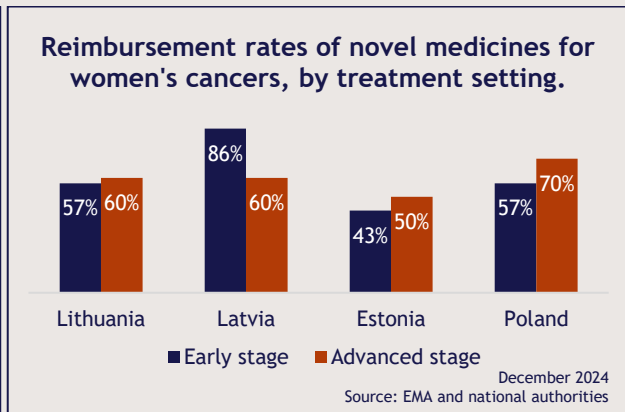
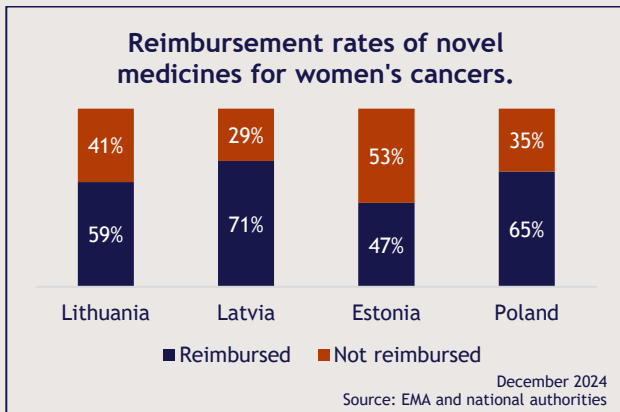
- Cancer medicines are one of three treatment modalities, besides surgery and radiation therapy, used in the treatment of women’s cancers. The last decade has seen the approval of around 100 new cancer medicines by the European Medicines Agency (EMA) (78).
- The availability (i.e., local reimbursement in a country) of novel cancer medicines with approval by the EMA differs considerably between EU countries (79). Many common reasons for the unavailability and delays in the time until local reimbursement of novel medicines at the country level have been identified across the EU (80), such as (i) limited public budgets for medicines, (ii) late company submission or late start of the national pricing & reimbursement process, (iii) lack of clearly defined timelines for pricing & reimbursement, (iv) the complexity of the health technology assessment (HTA) process.
- At the EU level, a revision of the EU pharmaceutical legislation is underway, where one main objective is to reduce country differences in the availability of new medicines and to shorten the time from EMA approval until patient access (81). In addition, the new EU HTA regulation will apply for cancer medicines from 12th January 2025 (82). This will entail a joint (cross-country) clinical assessment of the effectiveness of new medicines.
- The Lithuanian NCCP does not contain any aims related to novel cancer medicines (6).

Current status in Lithuania

- According to the latest EFPIA Patients W.A.I.T. Indicator Survey, the reimbursement rate for novel medicines targeting all cancer types (approved by the EMA in 2019-2022) in Lithuania was only 6% as of January 2024 (left figure below). This is the second lowest figure of all EU countries, only ahead of Malta (79). Estonia and Latvia had a reimbursement rate of close to 20%, and Poland is similar to the EU average at around 50%.
- The most recent trend in the reimbursement rate in Lithuania has been negative, since its peak at 24% in 2021 (79). Estonia has also seen a decline, while Latvia and Poland have gradually improved upon initially low reimbursement rates in 2019 until 2024.
- The reimbursement rate pattern is mirrored in the data of the time from EMA approval until the medicine is reimbursed in the respective country (right figure below). In Lithuania, this time was on average 30 months for the few medicines with EMA approval in 2019-2022 that had received reimbursement until the start of 2024. This is the longest waiting time recorded among all EU countries except Malta in the EFPIA W.A.I.T. Indicator Survey, and almost twice as long as the EU average of 18 months (79).
- The time until reimbursement in Lithuania has essentially remained unchanged between 2019 and 2024, similar to the situation in Latvia and Poland (disregarding the year 2019). In contrast, Estonia has managed to shorten its average time until reimbursement from above 30 months to 22 months.



- From January 1995 to October 2024, the EMA approved a total of 85 indications of cancer medicines for breast, cervical, ovarian, and uterine cancer. The figures and table below describe the reimbursement status of 17 indications that have been EMA-approved since 2015 and that are characterized by a substantial clinical benefit according to the ESMO-MCBS rating (see the Appendix for exact inclusion criteria). Lithuania has the second lowest proportion of reimbursed indications at 59% (left figure below) ahead of Estonia, but behind the leader Latvia (71%). A closer look at the numbers shows that Estonia has the lowest reimbursement rates both for early-stage and advanced-stage indications (right figure below), whereas Lithuania has the joint second highest rates for early-stage (57%) and advanced-stage (60%) indications.



- The table below shows indications by cancer type. Lithuania is the only country that does not reimburse the single medicine for advanced-stage cervical cancer included in the sample. All countries reimburse the single ovarian cancer medicine, but none reimburses the three uterine cancer medicines. For breast cancer, all countries reimburse at least one HER2-targeted therapy in the early stage and the advanced stage. For hormone-receptor positive breast cancer, only Latvia reimburses one CDK4/6 inhibitor in the early-stage setting but all countries reimburse at least two CDK4/6 inhibitors in the advanced-stage setting. For triple-negative breast cancer in the early-stage setting, all countries reimburse immunotherapy, but Lithuania and Estonia are the only countries not reimbursing a PARP inhibitor.

Reimbursement status of novel EMA-approved cancer medicines for women's cancers (December 2024)						
Treatment setting	ESMO-MCBS	Medicine	Lithuania	Latvia	Estonia	Poland
Cervical cancer						
Early stage	A	Pembrolizumab				
Advanced stage	4	Pembrolizumab	*			
Ovarian cancer						
Advanced stage	4	Olaparib				
Uterine cancer						
Advanced stage	4	Dostarlimab				
Advanced stage	4	Durvalumab				
Advanced stage	4	Pembrolizumab				
Breast cancer						
Early stage	A	Trastuzumab				
Early stage	A	Pertuzumab				
Early stage	A	Trastuzumab emtansine				
Early stage	A	Abemaciclib	*			
Early stage	A	Pembrolizumab				
Early stage	A	Olaparib				
Advanced stage	4	Pertuzumab				
Advanced stage	3 / 4	Palbociclib				
Advanced stage	4 / 5	Ribociclib				
Advanced stage	3 / 4	Abemaciclib				
Advanced stage	4	Pembrolizumab				

Color key: ■ not reimbursed, ■ reimbursed.

Notes: The list contains EMA approved indications until October 31, 2024 and shows the reimbursement status as of December 1, 2024. Early stage refers to the curative setting. In the metastatic setting (advanced stage), only first-line indications are included. ESMO-MCBS = European Society for Medical Oncology - Magnitude of Clinical Benefit Scale. * These indications were on the reserve list in Dec 2024.

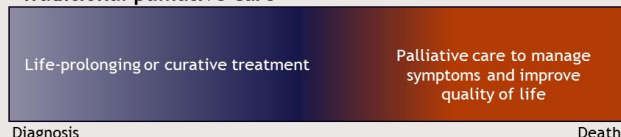
Recommendations

- Leverage the introduction of the EU HTA regulation in January 2025 as an opportunity to streamline the national HTA process and to review the evidence requirements for cancer medicines. One aim should be to accelerate the timelines of the pricing and reimbursement process to get closer to the EU average.
- In the drafting of a new NCCP after the current expires in 2025, outline what role novel cancer medicines have in cancer treatment and set out targets to improve patient access.

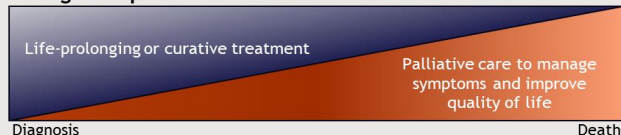
Background

- In Lithuania, the share of the population aged 65 and older has risen steadily during the last three decades, currently standing at 21% (83). This results in an increasing demand for palliative care (PC) services.
- Cancer is the most frequent cause of need for PC among life threatening or life-limiting health conditions (84). Within oncology, PC has traditionally had a strong focus on the end-of-life-stage but more recent definitions emphasize its relevance earlier in the disease pathway (85).
- The availability of PC services in a country is one metric to assess the capacity and potential access to PC. Another metric is the degree to which PC is integrated with the overall healthcare system (86). The European Association for Palliative Care (EAPC) recommends 2 specialized PC services for every 100,000 inhabitants (84).
- One of the main goals of the Lithuanian NCCP is to improve palliative care services, which it sets out to do by, among other things, improving psychotherapy as well as increase the accessibility to ambulatory palliative care services (6).

Traditional palliative care

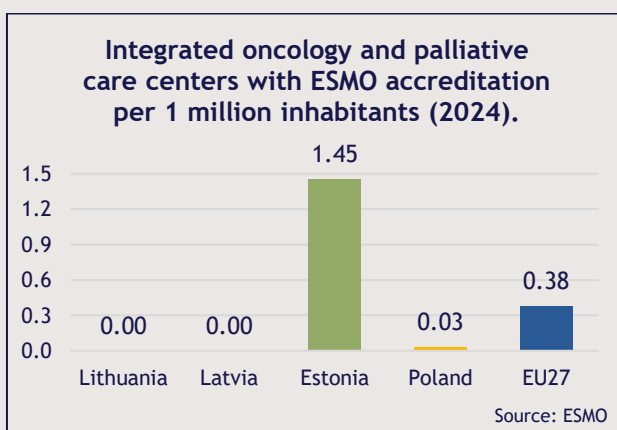
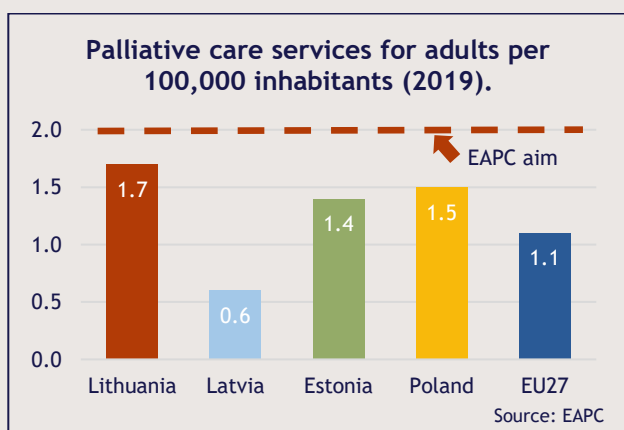


Integrated palliative care



Current status in Lithuania

- Lithuania has a higher number of palliative care services (non-cancer specific) than any of the comparison countries as well as the EU average (left figure). However, with 1.7 palliative care services per 100,000 inhabitants, Lithuania is below the EAPC goal of 2 services per 100,000 (84), but it has considerably improved the availability from a rate of 0.8 services per 100,000 in 2012 (87).
- Looking at the different types of palliative care services, it turns out Lithuania performs especially well regarding home care as a palliative service with 1.38 home care teams per 100,000 inhabitants in 2019 (87). As such, it is one of six European countries which meet and exceed the EAPC goal of one home care team per 100,000 inhabitants. In contrast, it lags behind on hospital support teams and inpatient palliative care services (87).
- In terms of combining cancer care and palliative care, Lithuania possesses no ESMO-accredited integrated oncology and palliative care centers (right figure). This is the same situation as in Latvia, whereas Estonia has two such centers and Poland has one center. To be on par with the EU average, Lithuania would need to establish one integrated oncology and palliative care center.



Recommendations

- Expand and improve PC services in response to the growing elderly population, with a focus on accessible and integrated care with treatment services to provide comprehensive support for cancer patients.
- Focus on expanding hospital support teams and inpatient palliative care services to help reach the EAPC recommendation of two specialized PC services per 100,000 inhabitants.

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Appendix: Methodology and sources for indicators

Prevention	
HPV vaccination rate	WHO immunization database: Indicator - HPV vaccination coverage by age 15 (88). Unweighted EU-average with data not available for Croatia, Greece, Poland, Romania, and Slovakia. Data shown for Poland were taken from a recent publication based on estimates of vaccine doses administered by the Ministry of Health (89).
Obesity level	<u>1st graph</u> : WHO European Health Information Gateway (40). Indicator: Age-standardized prevalence of obese (defined as BMI ≥ 30 kg/m ²) in females aged 18 years and over (WHO estimates) (%). Weighted EU-average. <u>2nd graph</u> : Eurostat (41). Body mass index (BMI) by sex, age and educational attainment level.
Early detection	
Breast cancer screening	<u>1st graph</u> : Eurostat (49). Specification: Preventive cancer screenings - programme data; Females; Malignant neoplasm of breast (year 2022). Unweighted EU-average, with data not available for Bulgaria, Denmark, Greece, Hungary, and Romania. National goals for Poland sourced from the National Oncology Strategy. <u>2nd graph</u> : Eurostat (50). Specification: Self-reported last breast examination by X-ray among women; age 50-69 years; X-ray within "less than 2 years" (year 2019) split by education level ISCED 2011.
Cervical cancer screening	<u>1st graph</u> : Eurostat (49). Specification: Preventive cancer screenings - programme data; Females; Malignant neoplasm of cervix uteri (year 2022). Unweighted EU-average, with data not available for Bulgaria, Denmark, Greece, France, Croatia, Cyprus, Hungary and Austria. <u>2nd graph</u> : Eurostat (62). Self-reported last cervical smear test among women; age 20-69 years; cervical smear test within "less than 3 years" (year 2019) split by education level according to ISCED 2011.
Diagnosis and treatment	
Number of physicians	<u>1st graph</u> : Eurostat (90). Specification: Physicians by category. Number of generalist medical practitioners and specialist medical practitioners per 100,000 inhabitants. Data not available for Slovakia. Data not available for Czechia 2014-2017, for Denmark 2022, for Cyprus 2013, for Finland 2019-2022, for Luxembourg 2018-2022, for Hungary 2013-2016, for Austria 2018, for Sweden 2022. Unweighted EU-average. <u>2nd graph</u> : Eurostat (90). Specification: Physicians by category. Number of generalist medical practitioners per 100,000 inhabitants. See 1 st graph for data availability. Unweighted EU-average. <u>3rd graph</u> : Eurostat (91). Specification: Physicians by medical specialty - historical data (1985-2016). Number of "Hematology", "Oncology", "Pathology", "Radiology" per 100,000 inhabitants (year 2015). Data not available for all EU countries. Unweighted EU-average.
Availability of mammography machines	Eurostat (67). Specification: Devices for medical imaging (years 2011-2022). Mammographs. Hospitals and providers of ambulatory care. Data not available for France, Germany, Netherlands and Portugal. Data not available for Austria 2011-2012, for Belgium 2021-2022, Croatia 2011, Denmark 2012, Estonia 2011-2012, Hungary 2018-2022, Ireland 2019-2022, and Sweden 2011-2014.
Availability of radiation therapy equipment	<u>1st graph</u> : Eurostat (67). Specification: Devices for medical imaging (years 2012-2022). Radiation therapy equipment. Hospitals and providers of ambulatory care. Data not available for France, Germany, the Netherlands and Portugal. Data not available for Belgium and 2018-2022, for Denmark 2012, for Hungary 2018-2022, for Latvia 2019-2022, for Poland 2012, and for Sweden 2012-2014. Unweighted EU average. <u>2nd and 3rd graphs</u> : Data sourced from DIRAC (Directory of Radiotherapy Centers) (75). Specification: category "linac machines" refers to "MV therapies; He Photon And Electron Beam Rt" in the dataset. Brachytherapy refers to "Brachy Therapy Inc El" in the dataset. Data available for all EU member states for year 2020-2024 apart from Luxembourg and Ireland (year 2017). Numbers of newly diagnosed cancer cases were sourced from ECIS - European Cancer Information System. Specification: estimated incidence by country; both sexes, all cancer types apart from non-melanoma skin. Population estimates were sourced from Eurostat.
Availability of novel cancer medicines	<u>1st and 2nd graph</u> : EFPIA W.A.I.T. Patients Indicator Surveys 2018-2023 (79, 92-96). Data refers to rate of availability and estimates of time to availability of new cancer medicines. For most countries, availability is the point at which products gain access to the reimbursement list. Data in 2022 not available for Malta, data in 2019-2021 not available for Malta, Cyprus, Luxembourg. Unweighted EU-average. The year 2019 refers to EMA medicine approvals in 2014-2017. The year 2020 refers to EMA medicine approvals in 2015-2018. The year 2021 refers to EMA medicine approvals in 2016-2019. The year 2022 refers to EMA medicine approvals in 2017-2020. The year 2023 refers to EMA medicine approvals in 2018-2021. The year 2024 refers to EMA medicine approvals in 2019-2022.

	<p>The EFPIA data only refer to new medicines and not new indications of already approved medicines.</p> <p><u>3rd and 4th graphs, table</u>: EMA approval dates of novel cancer medicines were sourced from the EMA website. National reimbursement dates were sourced from national HTA authorities' websites by MSD. Inclusion criteria were: (i) EMA approval between January 1, 2015 and October 31, 2024, (ii) ESMO-MCBS rating of A, 4 or 5, and (iii) for advanced stage, only first-line therapy.</p>
Survivorship	
Availability of palliative care services	<p><u>1st graph</u>: Report by the European Association for Palliative Care (EAPC) (84). Unweighted EU-average.</p> <p><u>2nd graph</u>: Data sourced from ESMO's website (97). Unweighted EU-average.</p>

