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Cancer Dashboard for Greece

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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 core of the report is a dashboard overview for Greece (see page 7) 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 in Greece, the selected indicators relate to outcomes, resources, and process metrics in all areas of cancer control. The indicators benchmark the current status quo in Greece against targets set by international organizations or the EU average.

The dashboard is intended to encourage the introduction of a National Cancer Control Program in Greece and other ongoing initiatives to improve cancer care in the country. The description seeks to support Greek policymakers in the decision-making and prioritization of initiatives in cancer care. The dashboard is supposed to be a living document. It can be updated when newer data become available. It can also be extended to additional areas and indicators that become relevant based on developments in Greece or the EU.

Contents

Prepared by IHE - The Swedish Institute for Health Economics
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Foreword by HeSMO

Dear Colleagues and Stakeholders,

It is my privilege to introduce the Cancer Dashboard for Greece, an important tool in assessing and improving cancer care across our country. As the President of the Hellenic Society of Medical Oncology (HeSMO), I recognize the value of this report in providing a comprehensive snapshot of key cancer control indicators and benchmarking Greece's progress against European and international standards.

The dashboard highlights crucial outcomes, resources, and process metrics in all areas of cancer control. By offering a comparison with EU targets and international benchmarks, it aims to support the ongoing efforts to implement a National Cancer Control Program in Greece. It identifies both areas where progress has been made and those that require urgent attention, offering valuable insights to policymakers and healthcare professionals in their decision-making and prioritization processes.

HeSMO has always played a central role in advancing oncology care in Greece, working closely with healthcare professionals, researchers, and policymakers. Through our efforts in education, research, and clinical care, we contribute to improving cancer outcomes and shaping national strategies. This dashboard complements our ongoing initiatives by providing the data and analysis necessary to make informed decisions that will directly impact cancer treatment and care in Greece.

We believe that this report will evolve as new data become available and as the landscape of cancer care in Greece continues to change. I am confident that this resource will play a significant role in supporting the ongoing work to enhance cancer treatment and care for all patients across the country.

On behalf of HeSMO, I invite you to use this dashboard as a valuable resource in guiding future actions and initiatives in cancer care, ensuring that we move closer to providing optimal care for every cancer patient in Greece.

Sincerely,

Zenia Saridaki, MD

President, Hellenic Society of Medical Oncology (HeSMO)

HeSMO's Profile

The Hellenic Society of Medical Oncology (HeSMO), founded in 1985, is a nonprofit organization dedicated to advancing cancer research, prevention, diagnosis, and treatment in Greece. With 383 members, medical oncologists from Greece and abroad, HeSMO fosters collaboration and knowledge-sharing in oncology.

Key initiatives include organizing national conferences, conducting non-interventional clinical studies, and supporting young oncologists through the Hellenic Group of Young Oncologists (HeGYO). HeSMO has offered scholarships since 1999, enabling young oncologists to gain specialized training and research experience abroad. Collaborations with Columbia University Irving Medical Center and The Christie NHS Foundation Trust offer opportunities in adolescent oncology research and lung cancer training, respectively.

HeSMO leads the Hellenic Academy of Oncology (EAKO), which has provided intensive, specialized training for young oncologists since 2007. Furthermore, HeSMO has been developing and updating the Oncology Treatment Protocols since 2011, ensuring that patients receive the best possible care based on the latest scientific standards.

In addition, since 2011, HeSMO has launched biomarker detection programs across various cancer types such as breast, ovarian, lung, gastric, urothelial, and colorectal cancer, supporting advanced diagnostics and personalized treatments for over 8,000 patients. HeSMO also produced a Consensus Statement on Biomarkers Implementation in Solid Tumors, setting guidelines for the use of biomarkers in oncology to facilitate and ensure equal personalized treatment approaches for all oncology patients.

HeSMO has also developed, with its own resources, a digital electronic health record system, the OncoEHR, and has offered it to all its members. More than 110 medical oncologists have been using OncoEHR, and data from more than 20,000 cancer patients have been uploaded, contributing to improved cancer care across Greece.

HeSMO is a dynamic and forward-thinking organization, committed to improving cancer prevention, diagnosis and outcomes as well as enhancing the quality of life for oncology patients. Through initiatives with nationwide awareness campaigns, like the one for World Cancer Day, and through its collaborations with global organizations like ASCO (American Society of Clinical Oncology), ESMO (European Society for Medical Oncology) and ECO (European Cancer Organisation) HeSMO plays a pivotal role in shaping the future of oncology care in Greece and globally.

Foreword by ELLOK

Dear all,

On behalf of the Hellenic Cancer Federation, the official representative of the Cancer Patient Associations, I would like to introduce the Greek Cancer Dashboard, prepared by the Swedish Institute for Health Economics.

This report, which aims to be a living document incorporating every adjustment, highlights the real challenges our country must manage at the dawn of a new era for cancer care after the recent announcement of the development of a national cancer control program and the creation of a national cancer registry.

Considering that focus on prevention and early detection, providing quality services, access to the best treatments, development of certified cancer care infrastructures, and reducing inequalities for cancer patients are among the main priorities of Europe's Beating Cancer Plan, this study realistically presents the current situation in Greece, identifies the sectors of excellence as well as the weaknesses, and serves as a very useful guide to our country's mission to tackle cancer.

With the certainty that data is fundamental for the success of every effort to transform healthcare, I invite you to read the Greek Cancer Dashboard, which, filling an existing gap, contributes decisively to our vision.

George Kapetanakis

President, Hellenic Cancer Federation (ELLOK)

ELLOK’s Profile

The Hellenic Cancer Federation (ELLOK) is a non-profit organization that advocates for cancer patients in Greece. Founded in 2016, it serves as a collective voice for over 49 cancer patient associations nationwide. ELLOK's mission is to enhance cancer care, support, and policy, working to raise awareness about cancer prevention and early detection, and to ensure that all patients have access to high-quality care, regardless of geographical location or socioeconomic status.

A central focus of ELLOK is advocating for patient rights, particularly in ensuring that the Greek healthcare system meets the unique needs of cancer patients. The organization collaborates with healthcare professionals, government bodies, and international organizations to influence cancer policies, especially in areas such as research funding, access to medicines, and innovative treatment options. It also champions psychosocial support for both patients and caregivers, emphasizing the importance of holistic cancer care.

ELLOK actively contributes to educational initiatives, organizes conferences, and promotes the inclusion of patients in healthcare decision-making processes. By representing the concerns of the cancer community, ELLOK plays a vital role in improving the quality of life for those affected by cancer in Greece.

Dashboard overview Greece

	Status quo (compared to European benchmark or EU average)	Unit of measure for status quo	Recent policy development (within the last 3-5 years)
Governance			
• National cancer plan		Implementation status: Not yet finalized and adopted	
• National cancer registry		Implementation status: Legislated; implementation pending	
Disease burden			
• 5-year Survival rates		5-year survival rates in %: No data	Registry data not yet available
• New cases (incidence)		New cases per 100,000 inhabitants: vs EU average	
• Deaths (mortality)		Deaths per 100,000 inhabitants: Below EU average	
Economic burden			
• Health spending on cancer care		Euro per capita: vs EU average	No up-to-date national data
• Productivity losses from cancer		Euro per capita: vs EU average	
Prevention			
• Tobacco smoking		Smoking rate in %: vs EU average	
• Obesity		Obesity rate in %: vs EU average	
• HPV vaccination		Vaccination rate in girls in %: vs EBCP aim	
Early detection			
• Breast cancer screening		Screening participation rate in %: vs EU average	
• Cervical cancer screening		Screening participation rate* in %: vs EU average	
Diagnosis and treatment			
• Comprehensive cancer centers		OECI-accredited centers per 1 million inh.: vs EU average	
• Human resources		GPs and nurses per 100,000 inhabitants: vs EU average	
• Radiation therapy equipment		Linacs per 450 new cancer cases: vs IAEA & ESTRO aim	
• Biomarker testing		Reimbursement of predictive biomarkers: vs EU average	
• Novel cancer medicines		Time to regular reimbursement in days: vs EU average	
• Clinical guidelines and referral pathways		Implementation status: HeSMO therapeutic guidelines in place; Referral pathways not yet implemented	
• Home care services		Workers per 100,000 inhabitants: vs EU average	
Survivorship			
• Palliative care services		Care services per 100,000 inhabitants: vs EU average	

Legend: Status quo: Above benchmark, Close to benchmark, Below benchmark, No data or not applicable

Policy development: Legislation in place, Active plan(s) or ongoing actions, No plan or legislation, No data or not applicable

Notes: This table benchmarks Greece's current performance in cancer care against European benchmarks (preferably) or the EU average. The last column signifies Greece's policy development within the last 3-5 years. * Opportunistic screening. EBCP = Europe's Beating Cancer Plan, IAEA = International Atomic Energy Agency, ESTRO = European Society for Radiotherapy and Oncology, EAPC = European Association for Palliative Care, OECI = Organisation of European Cancer Institutes, GPs = general practitioners, vs = versus.

High-level recommendations

Governance and funding

- ✓ Intensify efforts towards the finalization and adoption of the National Cancer Plan based on multi-stakeholder involvement and inspiration from Europe's Beating Cancer Plan.
- ✓ Establishment of a National Cancer Institute or Council to design, oversee, coordinate, and monitor all activities in cancer care.
- ✓ Ensure successful implementation of the recently legislated national population-based cancer registry.
- ✓ Strengthen the funding of health care in general and of cancer care in particular to improve equal access to high-quality cancer care for all patients across the country.

Prevention

- ✓ Ensure that all actions defined in the national tobacco control plan are implemented.
- ✓ Ensure implementation of the targeted interventions in the National Action Plan against Childhood Obesity.
- ✓ Support efforts to increase HPV vaccination rates through targeted educational campaigns aimed at HCPs, parents, adolescents, and schools as well as considering SMS-reminder services to parents to get their children vaccinated and ensure strengthening of the vaccine registry's implementation.

Early detection

- ✓ Establish a systematic record of the implementation of the national breast cancer screening program and its participation rate.
- ✓ Ensure smooth implementation of the cervical cancer screening program for all eligible women. Explore the possibility of introducing HPV self-sampling kits to improve participation.
- ✓ Ensure long-term and sustainable financing of the national population-based screening programs.

Diagnosis and treatment

- ✓ Improve integration of care between health care levels, establish clear referral pathways, and assess required actions in order for existing hospitals to become comprehensive cancer centers.
- ✓ Incentivize newly graduated physicians and nurses to take up a long-term employment in Greece.
- ✓ Continue investing in improving the availability of radiation therapy infrastructure and ensure the availability and adequate training of qualified specialists.
- ✓ Ensure reimbursement of appropriate biomarker testing for all cancer patients, including NGS testing capabilities.
- ✓ Ensure patients' access to novel cancer medicines, monitor and publish data on usage of cancer medicines.
- ✓ Ensure that national referral pathways are established and applied across the healthcare system.
- ✓ Optimize home-care service delivery across Greece.

Survivorship

- ✓ Expand palliative care services, increase and train more palliative care personnel to cater for the increasing number of cancer patients.

Background

Cancer is the second-leading cause of death after cardiovascular diseases in men and women in Greece and in the EU (1). The high burden of cancer has triggered policy initiatives both at the European level and in Greece. Overarching aims formulated by various actors at the European level to tackle cancer include the following:

- **European Commission** – Europe's Beating Cancer Plan (EBCP) published in February 2021: The plan is a key public health initiative that sets out actions to support Member States' efforts at every stage of the disease, from prevention, early detection, diagnosis and treatment, to improve the quality of life for patients and survivors. The plan includes 10 flagship initiatives and 32 supporting actions to be implemented over the coming years (2).
- **European Commission** – EU Cancer Mission as part of the Horizon Europe research and innovation program 2021–2027: The aim is to "improve the lives of more than 3 million people by 2030 through prevention, cure and for those affected by cancer including their families, to live longer and better" (3).
- **Lancet Oncology Commission** – European Groundshot: 70:35 target – 70% average 10-year survival for all European cancer patients by 2035 (4).

Governance of cancer care in Greece

The Greek Ministry of Health (MoH) oversees the health care system and with that also cancer care. In the past (2008-2012, 2011-2015) there were some efforts towards the implementation of National Cancer Plans in Greece, which did not effectively improve cancer care management. According to announcements, the MoH aims to implement a National Cancer Plan, establishing a National Cancer Council as responsible governance body for cancer care management, along with a National Cancer Registry (5). The latter was legislated earlier this year (FEK B' 950/ 09.02.2024) and constitutes an effort of the working group of the MoH, which was led by the Hellenic Society of Medical Oncology (HeSMO) and supported by other stakeholders, including the Hellenic Cancer Federation (ELLOK). The need for a National Cancer Plan in Greece has been strongly advocated by HeSMO and ELLOK, which participated in different platforms, such as the All.Can and SFEE initiatives, among other stakeholders. HeSMO has also supported and prepared a draft National Lung Cancer Plan, while promoting the value of prevention through awareness campaigns (6).

The Greek government has also issued the 2021-2025 National Action Plan for Public Health titled "Spyros Doxiadis", which includes cancer care initiatives regarding prevention and early detection through national population-based screening programs. The focus on cancer and the willingness to establish a National Cancer Plan was also included in the 2024 Action Plan of the Greek MoH (7).

A number of cancer-related actions have been already undertaken, as seen below.

1) **Prevention:** the tobacco control strategy and the 2023-2025 Action plan to tackle childhood obesity (8)
2) **Early detection:** the recent population-based screening programs for Breast Cancer ("Fofi Gennimata") which has produced results since its implementation in 2022, as well as the recently initiated Cervical Cancer screening program and the Colorectal Cancer program, for which a Ministerial Decision was published in June 2024 (9-11).
3) **Diagnosis & treatment:** legislation on a National Cancer Registry (5), hospitals' digital upgrading (12)
4) **Enhancement of patients' & survivors' quality of life:** telemedicine services (13), legislation on palliative care services (14), home care services (NOSPI) (15-17).

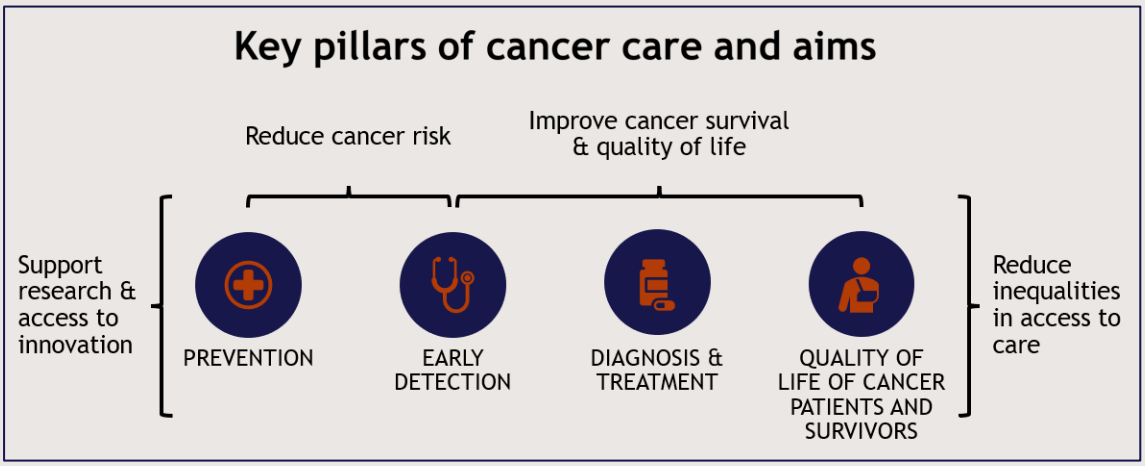
These actions cover gaps in the patient pathway and are in full alignment with the 2021 EBCP pillars (prevention, early detection, diagnosis & treatment, enhancement of patients' & survivors' quality of life).

As identified in the 2024 Action Plan of the Greek MoH, there is still a need for a comprehensive National Cancer Plan, that will provide a consistent, robust and holistic (from earlier to later stages and survivorship) strategic framework for the improvement of cancer care management in Greece. The (continuity of) implementation of the aforementioned actions will also remain crucial, in order to ensure a healthcare system that will be in the position to address challenges, meet cancer patients' needs, and provide tools that will support better decision-making regarding strategies that could reduce cancer burden in Greece.

Structure of the dashboard

The report starts with a comprehensive description of the disease burden and the economic burden of cancer. It emphasizes the role of investment in cancer care to achieve reductions in the disease burden, which will have a positive impact on both patients and the economy.

The structure of the remaining report is based on the aims and pillars of the EBCP. The EBCP defines four key pillars of cancer care – **prevention, early detection, diagnosis & treatment, survivorship** – as shown in the figure below. They follow the entire disease pathway. Major aims include reducing the risk of getting cancer and improving survival and the quality of life of patients. Cross-cutting aims include reducing inequalities in access to care (e.g., of different socio-economic groups to screening) and supporting research and access to innovation to be able to advance cancer care from the status quo.



Choice of indicators

For each pillar of the EBCP, several key indicators were selected. The indicators were supposed to relate to strategic areas in cancer care as well as aims of the EBCP and other ongoing Greek policy priorities.

- **Prevention** (3 indicators): Tobacco smoking, obesity, human papillomavirus (HPV).
- **Early detection** (2 indicators): Screening for breast and cervical cancer.
- **Diagnosis and treatment** (7 indicators): Comprehensive cancer centers, human resources, radiation therapy equipment, biomarker testing, cancer medicines, clinical guidelines and referral pathways, home care services.
- **Survivorship** (1 indicator): Palliative care services.

For each indicator, this report provides:

- General description of why this indicator is important and how it relates to national aims and the EBCP
- Description of the current status in Greece 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 Greece against the EU average as well as some other Southern European countries.

Disease burden of cancer

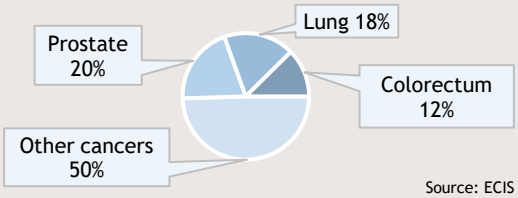
In 2022, over 63,000 new cancer cases were estimated to have been diagnosed in Greece, and over 32,000 people died from cancer (18). The three most commonly diagnosed cancer types in men in Greece are prostate cancer, lung cancer, and colorectal cancer, and in women breast cancer is followed by colorectal cancer and lung cancer (14).

Year 2022	Greece	EU-27
Life expectancy at birth (years) (Source: Eurostat)	80.7	80.7
New cancer cases (Source: ECIS)	63,176	2,742,447
New cancer cases per 100,000 (crude rate) (Source: ECIS)	604	614
Cancer deaths (Source: ECIS)	32,223	1,292,600
Cancer deaths per 100,000 (crude rate) (Source: ECIS)	308	289

The estimated number of new cancer cases per 100,000 inhabitants in Greece in 2022 was slightly below the EU average, a number which is expected to increase by 23% by 2040. Compared to the 2022 EU average, cancer mortality per 100,000 inhabitants in Greece was 13% higher for men and 2% lower for women (18).

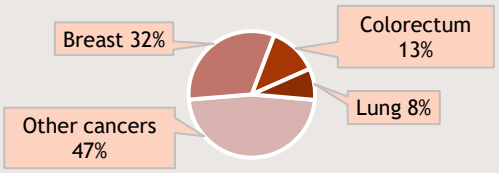
National data on 5-year survival rates for cancer patients are not officially available in Greece. The mortality-to-incidence ratio (MIR) can be used to approximate survival rates (19). Based on the MIR for the five most common cancer types in Greece, the survival rates in Greece seem to be mostly just below the EU average (expect for bladder cancer). A study in Crete used registry data for breast cancer and found that the 5-year survival in 2015-2019 was 85% as compared with 86% in 2011-2014 (20). This is slightly higher than the EU average of 83% for breast cancer in the years 2010-2014 according to the international CONCORD-3 study (21).

Cancer incidence among men in Greece in 2022
Number of new cases: 35,194



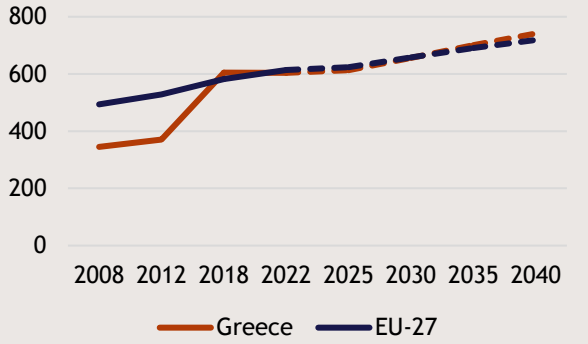
Source: ECIS

Cancer incidence among women in Greece in 2022
New number of cases: 27,982



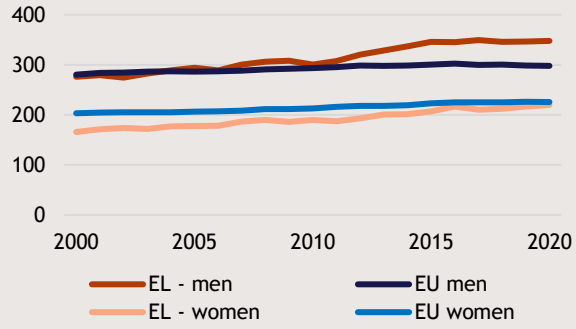
Source: ECIS

New annual cases per 100,000 inhabitants



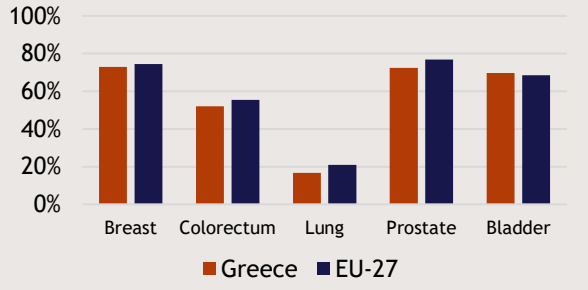
Source: ECIS and IARC

Cancer deaths per 100,000 inhabitants



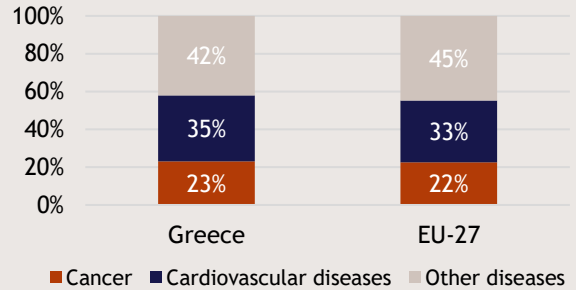
Source: Eurostat

Survival rates of common cancers in 2022
(based on mortality-to-incidence ratio)



Source: ECIS

Leading causes of death in 2020



Source: Eurostat

Economic burden of cancer

In Greece, the overall economic burden of cancer amounted to €188 per capita in 2018 (22). Most of the burden is caused by health care expenditure (47%) and by lost productivity among working-age patients (38%). The collection of such data should be prioritized in order to guide future investment in cancer care.

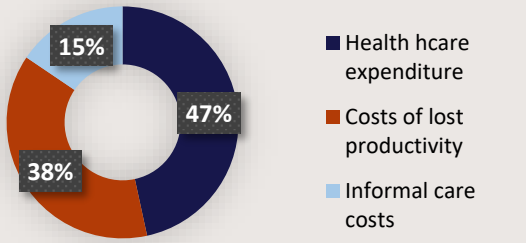
The economic burden of cancer consists of:

Health care expenditure (direct costs):
Resources of the health care 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.

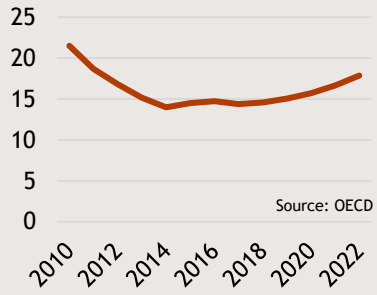
Composition of the economic burden of cancer in Greece in 2018



Source: Hofmarcher et al. (2020)

Unlike in most other EU countries, the economic burden of cancer (excluding informal costs) in Greece is estimated to have decreased from €167 to €159 per capita from 2000 to 2018 (at 2018 prices) (23), which could be significantly attributed to the financial crisis that started in late 2009 in Greece. After the onset of the financial crisis, reforms were implemented to mitigate public spending on pharmaceuticals in terms of rebates and clawback payments from pharmaceutical companies to the state budget. In 2022, these paybacks corresponded to 46.4% of the total spending of the public pharmaceutical expenditure, while the remainder came from public/ government funds (42.8%) and patients' contribution (10.8%) (24). Regarding the public hospital drug expenditure, the industry's contribution amounted to €728 million, €553 million from the public hospital budgets in 2021 (24). Out-of-pocket payments for health care are significant in Greece, accounting for 33% of total health expenditure in 2021 (only Bulgaria had a higher share of 34% that year and the EU average was 18%) (25). However, cancer care services are free (if reimbursed) in the public sector.

Overall health care expenditure in Greece (€ billion)

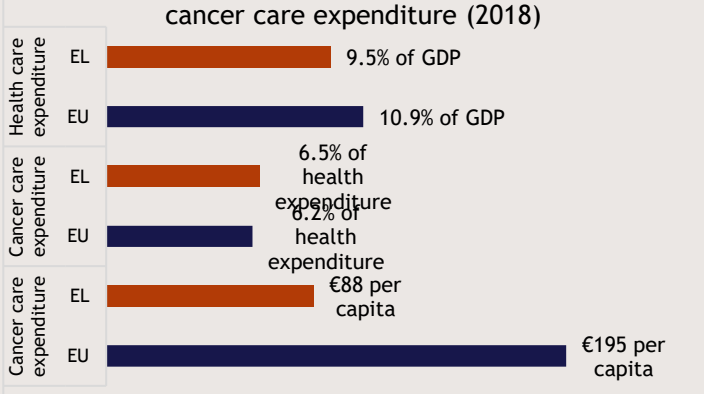


Source: OECD

Out of Greece's €30.5 billion Recovery and Resilience Plan, the country intends to dedicate €1.5 billion (4.8%) to health care investments in the coming years (26). These investments are intended to address some of the long-term challenges of the healthcare system, with key priorities of improving resilience, accessibility and sustainability of health care (8).

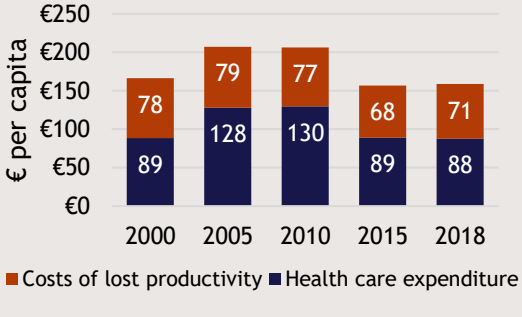
There is limited availability of publicly available national data on cancer care spending in Greece, which is estimated to be 6.5% of the total health care expenditure of the country (23, 27).

Health care expenditure (2020) and cancer care expenditure (2018)



Source: Eurostat and Hofmarcher et al. (2020)

Economic burden of cancer in Greece (in € per capita)



Source: Hofmarcher et al. (2020)

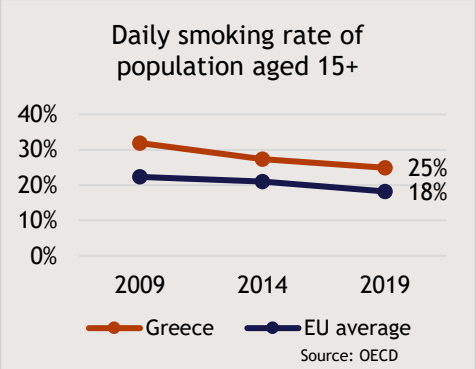
Prevention
Tobacco smoking

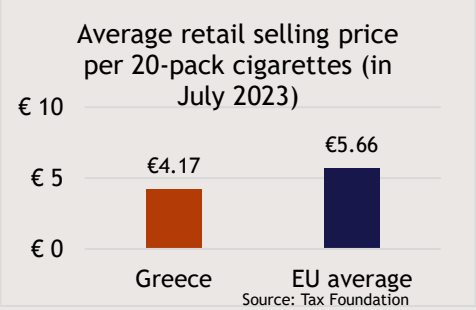
Background

- Tobacco smoking is a major risk factor for developing various cancer types (28). Evidence has shown that smoking has been linked to developing several cancer types (e.g., blood, bladder, cervix, colon and rectum, esophagus, kidney and renal pelvis, larynx, liver, lungs, mouth and throat, pancreas, and stomach) (29). Around 80% of all lung cancer cases are linked to cigarette smoking (30). In Greece, lung cancer was the second most common diagnosed cancer with an estimated 8,583 new cases in 2022 (18), and it was the leading cause of cancer-related deaths with 22% of deaths (18).
- The WHO suggests that implementing tobacco control measures could reduce prevalence and exposure to tobacco smoking, consequently decreasing the burden and mortality attributed to cancer (31). To assist countries implement effective intervention to reduce tobacco demand, WHO introduced the MPOWER framework (32). In 2022, more than 5.6 billion people -71% of the world's population- were covered by at least one MPOWER measure implemented, showing the major impact of this framework on global tobacco control (33).
- Within Europe, EBCP aims in creating a 'Tobacco-Free Generation' where less than 5% of the population uses tobacco by 2040, compared to around 25% today (2). In addition, an interim goal in the plan is to reach a 30% relative reduction in tobacco use by 2025 which corresponds to a smoking prevalence of around 20% in the EU.
- In Greece, an updated national tobacco control plan was released in 2019, which is integrated in the National Action Plan for Public Health 2021-2025 (34). The tobacco control plan is centered around four key pillars to (i) promote health and creating a nonsmoking culture that emphasizes prevention, especially in young people aged 15 and over, (ii) protect nonsmokers from second-hand smoke exposure, (iii) support smoking cessation and (iv) assess and regulate novel tobacco products under a harm-reduction strategic approach. (34). The national strategy of Public Health aims in reducing the number of smokers to 17% (close to EU average) till 2025 (29).

Current status in Greece

- According to the latest available OECD data from 2019, 25% of the population aged 15+ were daily smokers in Greece, which is above the EU average of 18% (35). As in most EU countries, smoking is more common among men (31% were daily or occasional smoker) than among women (19%) in Greece, based on 2019 data from Eurostat (36).
- In 2022, around 17% of 15-year olds in Greece reported that they had smoked in the past month which is comparable with the EU average (26).
- Social inequalities are also substantial, with the proportion of smokers on low incomes being 10% higher than among those in high incomes (37). There were no clear differences in smoking rates based on education level or urbanization status in Greece in 2019 (38, 39).
- The average retail selling price, including taxes, for a pack of 20 cigarettes was €4.17 in Greece in 2023 (40). This price is lower than the EU average (€5.66) and is the 6th lowest prices in the EU overall (40).
- Measures of the Greek tobacco control plan, have faced implementation challenges since the re-opening of businesses after the Covid-19 pandemic (26), as well as due to their retroactive rather than preventative focus The National Action Plan for Public Health 2021-2025 adopts an approach that is putting prevention forward with key actions including health literacy and awareness campaigns regarding the impact of tobacco on health (34, 37).





Recommendations

- Ensure implementation of tobacco control measures
- Increase the excise tax on tobacco to discourage smoking, considering the relatively low cigarette prices in Greece compared to most other EU countries.
- Offer access to smoking cessation clinics and conduct epidemiology studies on determinants of smoking.

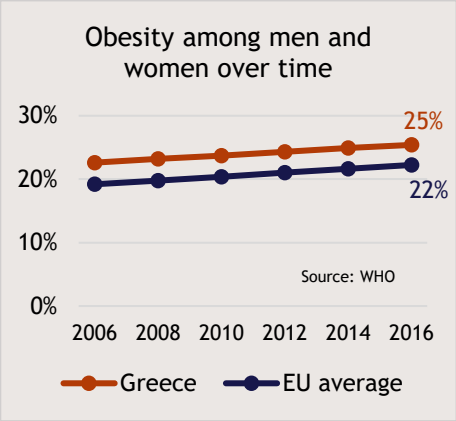
Prevention
Obesity

Background

- Obesity, defined as having a body mass index (BMI) of 30 or higher, is a medical condition that increases the risk of various health problems, including cardiovascular disease, diabetes, and certain cancers (41). Obesity and overweight have been linked to the development of 13 cancer types, including breast cancer and colorectal cancer which are among the most common cancer types in Greece (42). Epidemiological studies have also shown a strong association with childhood obesity and the risk of developing cancer later in life (43). Around 14% of all cancer cases are linked to obesity and overweight in Central & Eastern Europe (44).
- Measures related to address obesity are included in the EBCP, including among others, revision of relevant EU action plans and schemes, launch of awareness campaigns and digital apps (2). 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 spent sitting, and (iii) have a healthy diet, consuming whole grains, pulses, vegetables and fruits, and limiting high-calorie foods) and sugary drinks (45). The WHO "Acceleration plan to stop obesity" endorses approaches relating to prevention, health literacy and implementation of fiscal policies (including taxes and subsidies to promote healthy diets) to fight obesity (46).
- In 2023, the Greek MoH and the United Nations Children's Fund (UNICEF) signed the National Action Plan against Childhood Obesity 2023-2025. Its implementation started in November 2023 and includes targeted interventions for children 0-17 years with a multi-level approach (schools, health services and wider community) (47).

Current status in Greece

- Overweight and obesity among 15-year-olds is on an increasing trend in Greece, rising from 22% in 2019 to 28% in 2022 (26), with boys being more likely to be overweight or obese compared to girls (8). 2019 data show that 58% of adults were classified as overweight or obese in Greece, making this the 3rd major risk factor for adults after smoking and exposure to air pollution (37).
- According to the WHO's 2022 European Obesity Report, 37.5% of children aged 5-9 years and 35% of children and adolescents aged 10-19 years are overweight or obese, which ranks Greece second and first among the European countries respectively (48).
- Poor nutrition is one of the major contributors to the increasing trend in obesity in Greece, with the lack of consumption of fruit and vegetables having increased among adolescents from 38% in 2014 to 44% in 2019 (49). This is in line with a recent study in Greece that used a more sophisticated measure on nutrition quality (the Diet Quality Index) among obese adolescents (50).



- For adults the consumption of fruit and vegetables seems to vary considerably by educational and income level as well as area of living. Lower consumption was observed among individuals with an education status below secondary level, (21% in 2014 vs 40% in 2019) (49). The consumption of fruit and vegetables also declined between 2014 and 2019, among individuals with a lower income and individuals living in rural areas (51, 52). Daily consumption of soft drinks in Greece in 2019was lower than the EU average (4% in comparison with 9%) (53).
- The initiation of the 2023-2025 National Action Plan against Childhood Obesity aims in reducing socioeconomic inequalities responsible for the occurrence of obesity among children and adolescents, along with promoting physical activity and healthy diet (54). The main target is to reduce obesity among children 2 to 14-years of age, from 37.5% recorded in 2019, to 24.5% in 2025.

Recommendations

- Ensure smooth implementation and evaluation of interventions included in the National Action Plan against Childhood Obesity.
- Initiate nationwide campaigns to raise awareness about the cancer-related risks of obesity, overweight and the importance of maintaining a healthy body weight to prevent cancer.
- Consider introducing subsidies for fruits and vegetables as well as introducing an excise tax on sugar-sweetened beverages in line with WHO recommendations.
- Assess introduction of the Nutri-Score labelling system to positively impact nutritional choices (55).

Prevention

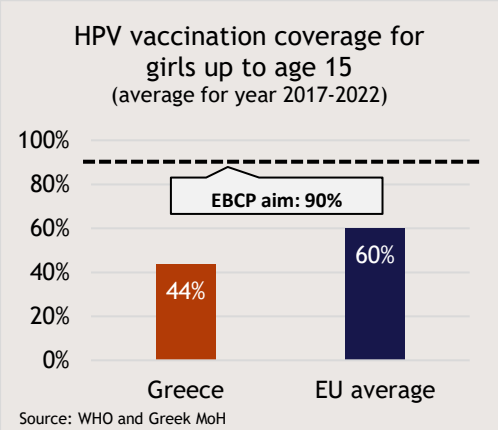
Vaccination against human papillomavirus (HPV)

Background

- HPV is a group of sexually transmitted viruses that causes around 2.5% of all cancers in women and men in Europe (56). Vaccination against HPV became initially available in 2006 in the EU (57). It has been found to be an effective and cost-effective way to prevent cervical cancer and other types of HPV-related cancers (56). According to the WHO, the primary approach should be to vaccinate girls and boys at around age 9-14, just before puberty and start of sexual activity (58).
- In Greece, HPV vaccination was introduced in the national immunization program for girls in 2008 and the program was extended to boys in 2022 (59). The HPV vaccine is now fully reimbursed for boys and girls aged 9-18 years (9-11 years primary cohort and 11-15 years and 15-18 years include catch-up cohorts) (60). In addition, for specific risks groups, e.g. MSM and immunocompromised, the vaccine is offered and reimbursed up to 45 years of age (61). In May 2022, with a joint press release, the MoH and the Ministry of Digital Governance announced the establishment of a National Vaccination Registry for children & adolescents, including among all relevant vaccinations also HPV (62).
- The EBCP includes the aim of a 90% HPV vaccine coverage rate (VCR) of girls in the EU and to significantly increase the VCR in boys by 2030 (2).

Current status in Greece

- Greece has not reported HPV VCR data to the WHO immunization database and official statistics of the HPV VCR are scarce, which makes country comparisons challenging. According to a recent report by the MoH, the HPV VCR for girls aged 11-18 years was estimated to be 55.4% in the years 2017-2022 (59). For girls aged 11-14 years, the HPV VCR was estimated to be 43.8% for the same time period (59). By comparison, the WHO immunization database includes HPV VCR estimates for girls by age 15, and the EU average (for countries with data) for the years 2017-2022 is 60% (63). In 2023, the highest VCR for girls in the EU was achieved in Portugal with 91% (63), which was the only country to already meet the EBCP aim of a 90% VCR.



- There have not been any data yet officially reported regarding the HPV VCR for boys in Greece. In other EU countries, the HPV VCR for boys ranged from 16% in France to 88% in Portugal in 2023 (64).
- A recent study by the European Commission investigated vaccine confidence[1] among EU countries. Based on a sample of 1000 individuals in Greece, 67% of the respondents believed that the HPV vaccine is important and 74% that it is safe, effective and compatible with ones beliefs (65). The HPV vaccine confidence level in Greece is comparable with the EU average, although several countries including Portugal and Spain had a vaccine confidence of above 80% whereas Slovakia and the Netherlands had the lowest level of around 63% (65).
- According to a study from Greece, the main determinant that influences parents to get their daughters vaccinated was a recommendation from the daughter's treating physician (66).

Recommendations

- Ensure regular public reports on HPV vaccination coverage and use incentives for pediatricians to report HPV vaccinations in the already established vaccination registry for children & adolescents.
- Strengthen educational campaigns to target health care professionals, parents, adolescents, and schools.
- Involve pediatricians and primary care physicians to raise awareness of the positive benefits for boys to get the HPV vaccination.
- Consider implementation of SMS-reminder services to parents to get their children vaccinated.
- Consider introducing a school-based HPV vaccination program for the primary cohort of 9-11-year-old children and consider applying the Council recommendation from June 2024 on vaccine-preventable cancers for adolescent and pre-adolescent HPV vaccination (67).

[1] The term “confidence” includes four dimensions of aspects that relate to individuals’ assurance of vaccines, confidence in the importance of vaccines, in their safety, in the effectiveness of vaccines, and compatibility of vaccines with religious or personal beliefs.

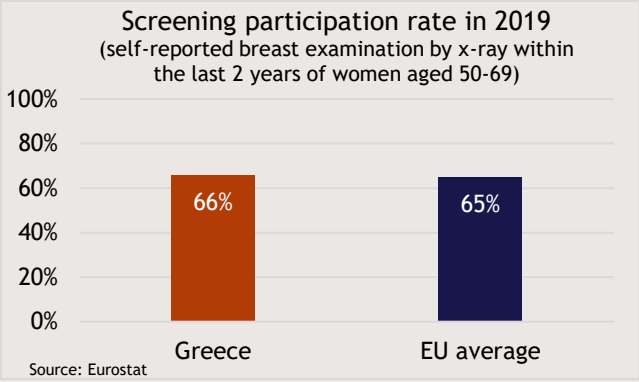
Early detection
Breast cancer screening

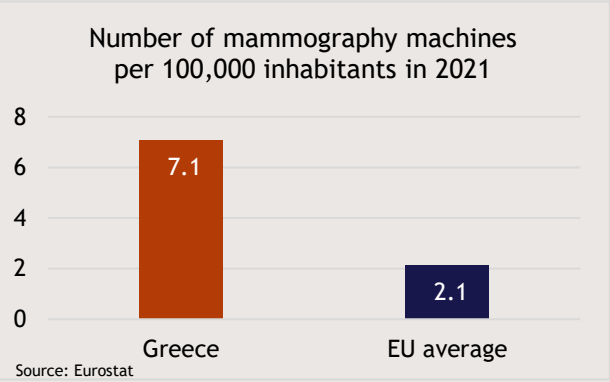
Background

- The goal of breast cancer screening is to detect a tumor as early as possible, as early diagnosis would offer the best chance of reducing mortality from breast cancer (68). Apart from the higher survival rates in early disease stages, treatment costs are also 3-5 times lower, compared to treating metastatic patients (stage IV) (69).
- The EBCP includes the aim that 90% of the target population in each country should be invited for breast cancer screening by 2025 (2). Moreover, the updated screening recommendation by the Council from 2022 states that breast cancer screening with mammography should be conducted in women aged 45–74 years (previously 50–69 years) (70), with women aged 45-49 screened every 2 or 3 years, women aged 50-69 screened every 2 years, and women aged 70-74 screened every 3 years (70, 71).
- A population-based breast cancer screening program named "Fofi Gennimata" was introduced in 2022 for women between 50-69 years of age, being the first screening program for any cancer in Greece (9). Following announcements from the Greek Prime Minister in late 2023, the program has now expanded, to include women aged 45-74 years, in line with the latest European guidelines (72), with the first participation invitations having been sent already to this wider group in May 2024 (9, 73). Simultaneously, in 2024, the Ministry presented the "PROLAMVANO" prevention program, which includes both implemented and ongoing population-based cancer screening programs (breast, cervical and colorectal cancer), highlighting the government's focus on early detection of cancer (74).

Current status in Greece

- Self-reported data from the European Health Interview Survey 2019 indicate that 66% of women aged 50–69 in Greece had undergone a mammography within less than 2 years, which is close to the EU average (26, 75). This represented an increase in the screening rate in Greece, up from 60% in 2014.
- Currently, more than 300,000 women have already used the population-based screening program, which has resulted in more than 20,000 new cancer cases identified (73).
- Greece has the highest number of mammography machines per 100,000 inhabitants available in the EU of which the majority (82%) are located in ambulatory care (76).
  Important within-country differences in the screening rate exist in Greece both based on education level and urbanization status. Based on self-reported data from 2019, women with tertiary education had a screening rate of 80% whereas women with lower secondary education had a rate of 53% (75). The screening rate was 70% for women living in cities and 55% for women living in rural areas (77).





Recommendations

- Ensure continuity of awareness campaigns for the breast screening program, particularly among women with lower socioeconomic status (lower education and living in remote areas).
- Ensure sustainability of the breast cancer screening program and establish a goal of detecting a certain proportion of cases in early stages.
- Ensure monitoring, periodic and public reporting of the program's participation rates and progress.
- Ensure access to mammographies to all women across Greece regardless of geographic area and socioeconomic status.

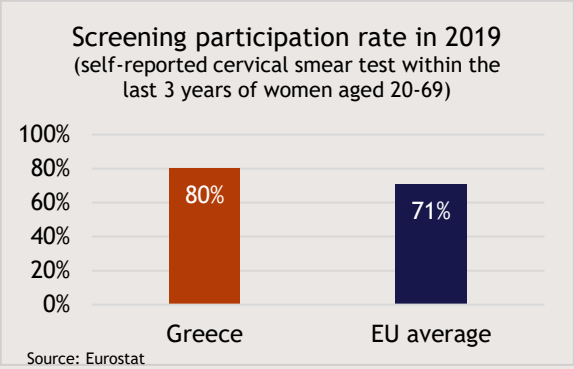
Early detection
Cervical cancer screening

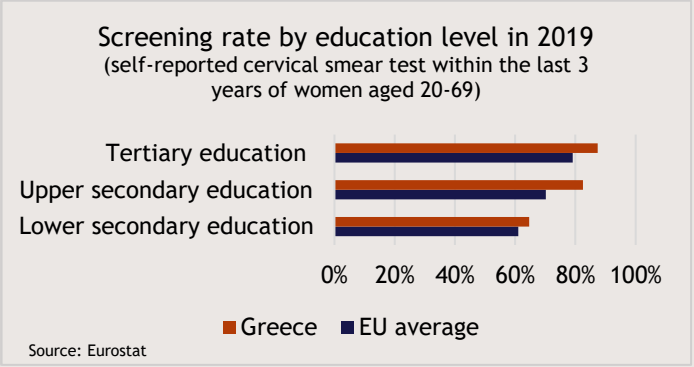
Background

- The aim of cervical cancer screening is to detect a cancer before the onset of symptoms or even earlier in its pre-stages. In early disease stages, survival rates are highest and treatment costs lowest (78, 79). The screening used to be done with a Pap smear test every three years. Upon the discovery of HPV as the cause of cervical cancer, several screening tools have been identified, such as the development of the HPV test, which is encouraged to take place at a minimum of 2 lifetime screens (58).
- The 2022 screening recommendations published by the Council state that countries should use only clinically validated assays as the preferred screening tests (HPV DNA test) and screen women aged 30-65 at an interval of five years or more (70).
- Among EBCP's flagship initiatives was also the development of a new EU Cancer Screening Scheme, to ensure that by 2025, 90% of the target population is offered cervical cancer screening (2). This initiative will be implemented through "EUCanScreen", a 4-year program initiated in June 2024, and will include cervical, as well as breast and colorectal screening (80).
- Until recently, Greece was implementing opportunistic screening for cervical cancer. In May 2024, the population-based screening program for cervical cancer was initiated, with the first invitation SMS being sent to 119.800 eligible women between the ages of 21-29 within the Attica region, for a Pap test free of charge (10). This program, which is part of the "PROLAMVANO" umbrella, targets 2,5 million women, including also women between 30 to 65 years, who will be offered an HPV-DNA test.

Current status in Greece

- Self-reported data from the European Health Interview Survey 2019 indicate that 80% of women aged 20-69 had a screening within the last 3 years, up from 76% in 2014. The rate in 2019 is above the EU average of 71% (26, 81).
- Screening rates have been reported to be higher among women with a tertiary education (87%) as compared to women with a lower secondary education (65%) (81). A recent study in Greece found that women of older age, low educational background, refugee/migrant or Romani background had a higher prevalence of insufficient knowledge and false perception around cervical cancer preventive activities (82). Earlier findings also indicate that screening adherence in Greece is lower among migrants from other EU countries and from non-EU countries as compared to local citizens (83).
- Urbanization status is modestly related to differences in cervical cancer screening rate (83% for women living in cities and 73% for women living in rural areas) (84). The use of self-sampling kits with HPV tests that are provided by visiting midwives have already been tested with promising results in remote areas in Greece (85).





Recommendations

- Continue implementation of the national organized cervical cancer screening program to women between 30-65 years of age.
- Establish aims to detect a certain proportion of cases in early stages.
- Ensure sustainability of the screening program.
- Ensure monitoring, periodic and public reporting of the program's participation rates and progress.
- Establish referral pathways for patients with positive findings.
- Explore the possibility of introducing HPV self-sampling kits to improve participation.
- Raise awareness of the benefits of getting screened with targeted campaigns aimed at marginalized populations to increase their participation.

Diagnosis and treatment

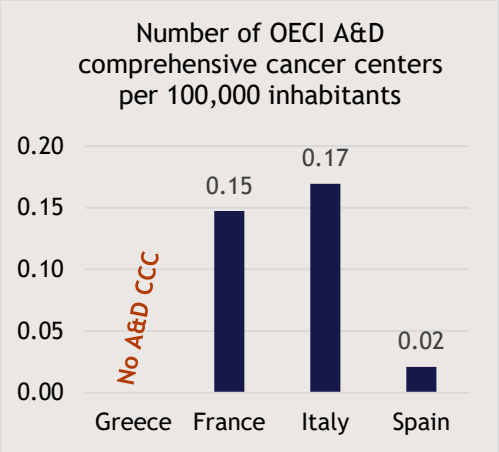
Comprehensive cancer centers

Background

- A comprehensive cancer center (CCC) is often characterized by its organizational quality, multidisciplinarity, and integration of research into clinical care (translational research) (86). Patients diagnosed and treated in specialized cancer centers (including, but not limited to CCCs) generally have better access to advanced diagnostics and therapies as well as clinical trials, which results in better outcomes than of patients treated in general hospitals (87).
- To date, a "universal definition" of a CCC has not been identified. The Organisation of European Cancer Institutes (OECI) facilitates the development of accrediting CCCs around the world by means of quality standards which represent the European consensus for evaluating the performance of cancer centers (86). The European Society for Medical Oncology (ESMO) also provides an accreditation program to recognize cancer centers that provide highly integrated oncology and palliative care services (88). However, since countries might also rely on national accreditation systems other than those of the OECI and, country comparisons regarding the number of CCCs would not be feasible. At the EU policy level, the accreditation and designation (A&D) by the OECI is the most acknowledged and therefore used here.
- The EBCP states that by 2025 a new EU Network of CCCs aiming to increase cross-border collaboration in quality-assured diagnosis and treatment processes. This Network will support member-states to establish at least one national CCC per country by 2030, which should cover 90% of eligible patients the aim of (2).

Current status in Greece

- A designated CCC is not yet available in Greece (37). Progress is being made, with one hospital (General Oncology Hospital of Athens "Saint Savvas") being currently in the OECI A&D process (89).
- In 2023, the Greek government issued terms and conditions for cancer treating centers to be considered as a Center of Excellence for the treatment of melanoma and other skin cancers (FEK B 5882/ 09.10.2023) (90). The criteria for this accreditation include specific requirements of medical equipment, staff expertise, clinical study participation and access to laboratory and other necessary clinical units. In February 2024, Ippokrateio in Thessaloniki was the first melanoma center to acquire this accreditation at public hospital level (85), while in the private sector, Metropolitan received accreditation as a Breast Cancer Centre in March 2024 (91).



Recommendations

- Establish a framework for CCCs in Greece (e.g., similar to the one for melanoma centers).
- Provide a roadmap of actions required to upgrade existing hospitals to comprehensive cancer centers.

Diagnosis and treatment

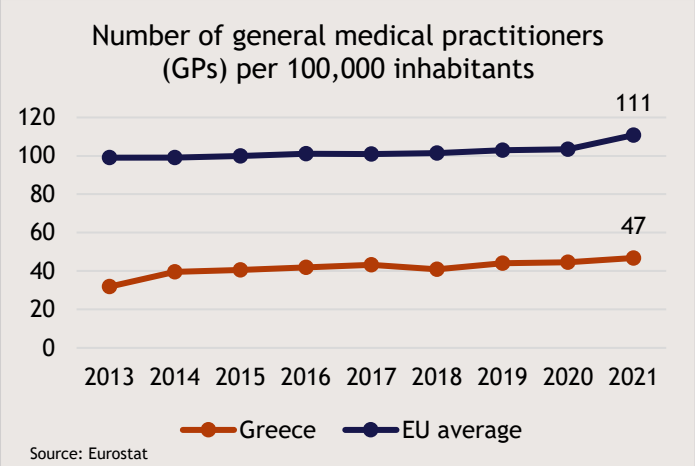
Human resources

Background

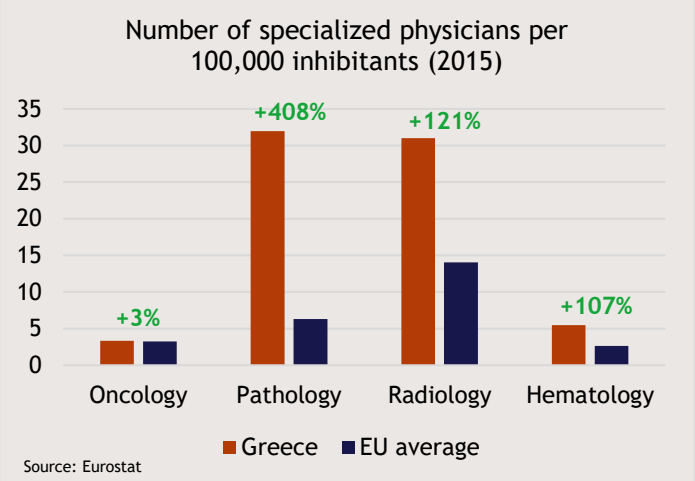
- Modern cancer care is highly specialized and requires competence from different medical fields. This includes pathologists, oncologists, surgeons, radiologists, specialist cancer nurses, and meeting coordinators (92). Primary healthcare professionals (HCPs) can help facilitate early diagnosis, through recognizing early signs and symptoms and making appropriate referrals (93).
- Nurses play a crucial role in providing a broad range of services throughout the care pathway from primary care to hospitals and long-term care facilities (94).

Current status in Greece

- There is a lack of a national database regarding the number of physicians (of any specialty) that are professionally active in Greece. In addition, Greece lacks a national system that tracks medical graduates, including monitoring the emigration of physicians to other countries or unemployment status (95). According to the Medical Association of Athens, a total of 12,226 physicians emigrated from Attica between 2009 and 2020 in the aftermath of the economic crisis (96).
- According to available statistics from Eurostat in 2021, the number of physicians (of any specialty licensed to practice) in Greece was 629 per 100,000 inhabitants which is considerably higher than the EU average of 408 physicians per 100,000 inhabitants (97).
- The majority of Greek physicians are specialized and there is a considerable shortage of general physicians (GPs). In 2021, GPs accounted for 6.5% of all physicians in Greece whereas the proportion in the EU was 27% (98). Data from Eurostat show that the number of GPs in Greece has been around 60-70% lower than the EU average over the last decade (98).
- There is also a considerable geographical imbalance in the availability of physicians in Greece. In 2019, the number of physicians (of any specialty) ranged from around 814 physicians per 100,000 inhabitants in the region of Attica to around 312-320 physicians per 100,000 inhabitants in Central Greece and the North Aegean regions (96).
- According to HeSMO, the number of oncologists in Greece can be estimated based on its membership, which currently stands at 383. Its membership directory provides a reliable indicator of medical oncologist professionals actively involved in cancer care in Greece.



Source: Eurostat

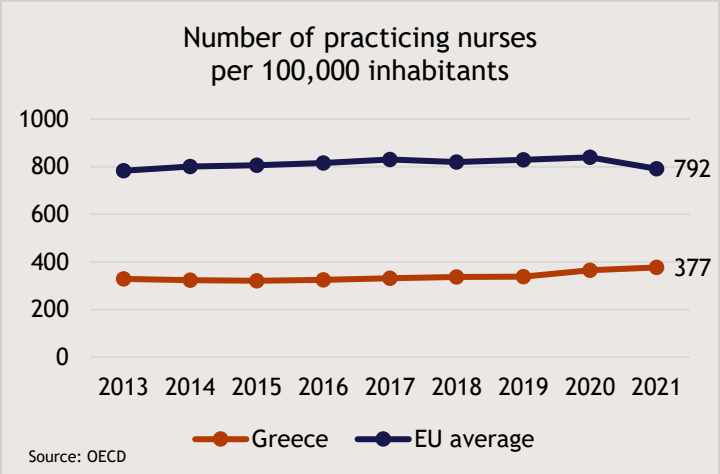


Source: Eurostat

(description continues on the next page)

- HeSMO plays a critical role in advancing oncology education and research in Greece through its various initiatives. Since 1999, HeSMO scholarships have supported young oncologists by offering financial aid for specialized training at leading centers in Europe and the US. In 2023, HeSMO introduced two significant opportunities through partnerships with Columbia University Irving Medical Center (CUIMC) and The Christie NHS Foundation Trust. At CUIMC, a Greek oncologist will be trained in oncology research for adolescents and young adults, while at The Christie NHS Foundation Trust, a young oncologist will focus on clinical cancer research and training. These partnerships provide invaluable experience and exposure to specialized areas of oncology. Additionally, HeSMO has sponsored research programs and doctoral theses since 2000, enabling young oncologists to conduct clinical and translational research in Greece. The project "EOPE Academy" offers interdisciplinary training in key areas such as Leadership in Oncology, Health Policy, Bioethics, and Health Economics, helping expand the knowledge and capabilities of oncologists beyond traditional oncology education. The "Hellenic Academy of Oncology (EAKO)", founded by HeSMO in 2007, is a vital institution providing advanced and specialized education to young oncologists in training in Greece. This 1-year intensive program consists of eight three-day seminars led by distinguished oncologists and healthcare professionals, focusing on the diagnosis, treatment, and management of various types of cancer. The program complements the mandatory clinical and theoretical training provided during residency, bridging the gap between university education and clinical practice (99-101).
- The Greek government has recently adopted measures to increase the number of physicians working in public hospitals and primary care centers. In hard-to-fill positions in public hospitals and primary care centers, it is also possible for private practitioners to perform contracting employment in the public sector while continuing their private practices (26).

  The availability of nurses is comparatively low in Greece. Data from the OECD show that the number of practicing nurses has been around 340 per 100,000 inhabitants in Greece over the last decade (102). The EU average has been more than twice as high with around 810 practicing nurses per 100,000 inhabitants during the same period (102).



- Long working hours and low pay have been identified as key challenges for the NHS. A relevant study highlighted that the overall level of job satisfaction among oncology nurses affects the likelihood of changing duties within the hospital (103).
- The Hellenic Oncology Nursing Society (ESNE) promotes the specialization of oncology nurses (104), through ongoing training programs specialized on topics of oncology nursing (105).

Recommendations

- Establish a national system that records and monitors the number of practicing physicians within different specialties.
- Provide incentives to tackle brain-drain among recent medical graduates.
- Intensify relevant training for oncology nurses and increase the number of oncology nurses.
- Provide incentives for oncology nurses.

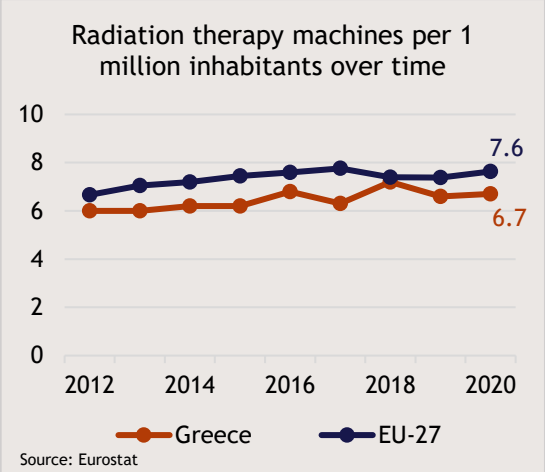
Diagnosis and treatment
Radiation therapy equipment

Background

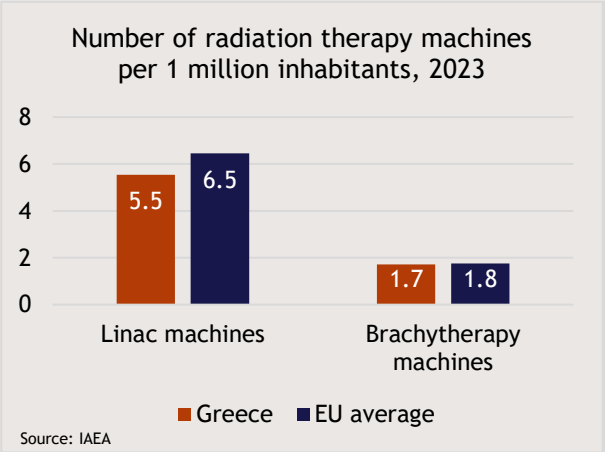
- Radiation therapy plays a crucial role in the treatment of common cancer types. Approximately 50% of all cancer patients require radiation therapy at some point during their treatment (106). The effectiveness of radiation therapy in targeting and eliminating tumors significantly influences patients' survival rates and quality of life (107-109).
- 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 health care workforce, along with new radiotherapy equipment to address patients' needs (110).
- A recommendation from the 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 (111, 112).

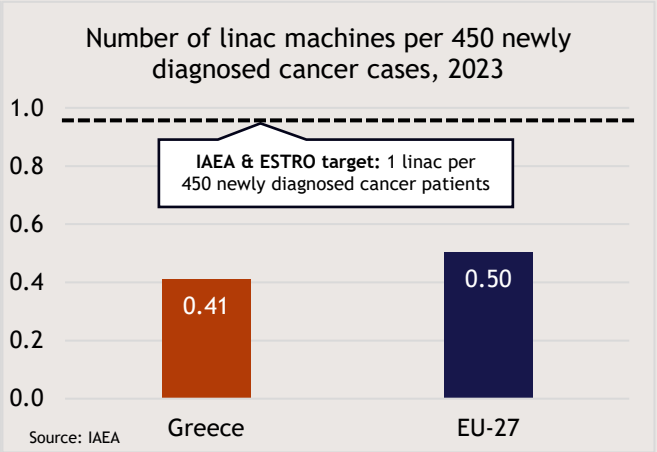
Current status in Greece

- Eurostat data indicates a stable development of the number of radiation therapy machines[2] in Greece over the last decade, reaching 6.7 machines per 1 million inhabitants in 2020. In comparison, the EU average was 7.6 machines per 1 million inhabitants in 2020 (113).
- Looking at the type of radiation therapy machines, Greece has fewer linac machines than the EU average (5.5 per 1 million inhabitants in comparison with 6.5 per 1 million inhabitants) (114). According to 2023 data from the IAEA, the number of brachytherapy machines in Greece is comparable with the EU average (1.7 and 1.8 per 1 million inhabitants, respectively) (114).
- Currently, neither Greece nor the EU average reaches the aim by the IAEA/ESTRO to have one linac machine available for every 450 new cancer cases per year (111, 112).



- A 2019 study on the availability of radiation therapy machines in each administrative health region in Greece found that the availability of linac machines was highest in Attica and Central Macedonia (5.7 and 4.8 per 1 million inhabitants, respectively), whereas relevant data were not presented for regions such as Central Greece, Ionian islands, North and South Aegean, Peloponnese and West Macedonia (115). This could mean that patients in the latter regions might need to travel to major urban areas to get treatment.





Recommendations

- Continue to invest in improving the availability of radiation therapy infrastructure and ensure the availability and adequate training of qualified specialists who can operate the machines.
- Optimize geographical coverage of radiation therapy services across regions.

[2] Radiation therapy equipment includes machines like linear accelerators, Cobalt-60 units, and brachytherapy units used in cancer treatment.

Diagnosis and treatment

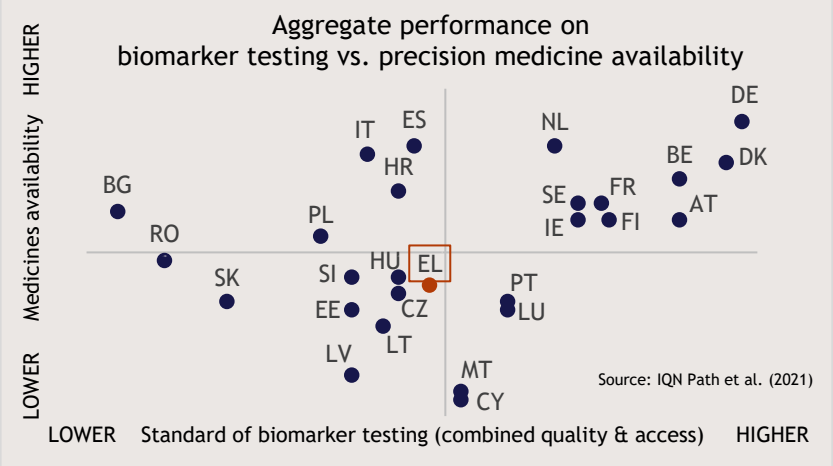
Biomarker testing

Background

- Biomarker testing is part of the diagnostic process of cancer care. Biomarkers have become fundamental not only to inform tumor diagnosis and prognosis, but also to drive therapeutic decisions (99).
- Testing with single biomarkers has been done for decades in certain cancer types (e.g., breast cancer). Multi-biomarker testing, specifically with next-generation sequencing (NGS) technology, tests for several biomarkers in parallel rather than sequentially. NGS testing is increasingly being used in several cancer types, complementing or replacing in some cases single biomarker testing (116).
- The EBCP's flagship initiative number 6 "Cancer Diagnostic and Treatment for All" includes several action plans, among which is the use of NGS as personalized cancer diagnosis and treatment (2).
- ESMO has introduced a metric called the ESMO Scale for Clinical Actionability of molecular Targets (ESCAT) that ranks molecular targets according to their value for treatment (117) (see Appendix for more details). Based on the ESCAT classification, ESMO issued its first recommendation to use NGS in the treatment of advanced non-small cell lung cancer (NSCLC), prostate cancer, ovarian cancer, and bile duct cancer in 2020 (118) and early breast cancer in 2023 (117).

Current status in Greece

- Greece currently ranks among countries with a medium position regarding reimbursement and quality of biomarker testing, along with Hungary and Czechia (119).
- In Greece, single biomarker testing such as immunohistochemistry to determine PD-L1 status has been reported to usually be available for patients in need but variability among public facilities exists. However, official reimbursement for IHC tests is limited to very few biomarkers and tumor types since 2014 (e.g. PD-L1 is not reimbursed whereas HER2, MMR, ALK are reimbursed for only very few and specific tumor types). Similarly for some other molecular biomarkers like EGFR, KRAS, MSI, NRAS while BRCA was only partially officially reimbursed in 2022 for breast and ovarian cancer only (120).



- The availability of multigene biomarker tests (NGS) is low (restricted to academic and private institutions), and the reimbursement level has also been reported to be low due to public funding constraints and lack of public policy that advocates for multi-biomarker testing (see graphs below) (119).
- Access to biomarker testing, due to lack of reimbursement, has been mitigated by other stakeholders through patient programs, such as the scientific community (e.g., HeSMO, Greek Pathologists Society), pharmaceutical companies and patients, covering the costs for their testing on an out-of-pocket basis.
- HeSMO, in collaboration with a significant number of experts, has also developed a consensus statement titled "Guidelines regarding basic principles & conditions of biomarker analysis in patients with solid tumours" (121).
- The turnaround time for single and multi-biomarker testing has been reported to be short (<2 weeks) in Greece and comparable with countries such as Germany, Denmark, and the Netherlands (119).
- In an international survey conducted by ESMO in 2021, medical oncologists and pathologists in Greece stated that genomic alteration scales (e.g. ESCAT) are not used as a decision tool to prioritize testing for genomic alterations and that access to molecular biomarker tests is not perceived as equal in the country (122).

Recommendations

- Ensure the reimbursement of essential single and multi-biomarker tests in line with recommendations by ESMO and their ESCAT system.
- Prioritize reimbursement of biomarkers related to cancer therapies that are already reimbursed in Greece.
- Establish a quality assurance scheme for single and multi-biomarker testing and expand the diagnostic infrastructure in public hospitals to be able to perform and analyze single and multi-biomarker tests in-house.

Diagnosis and treatment

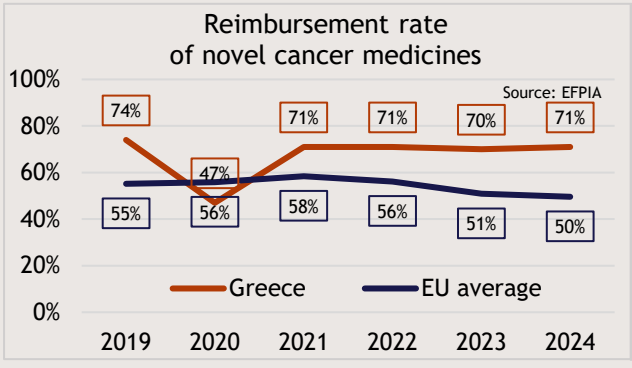
Novel cancer medicines

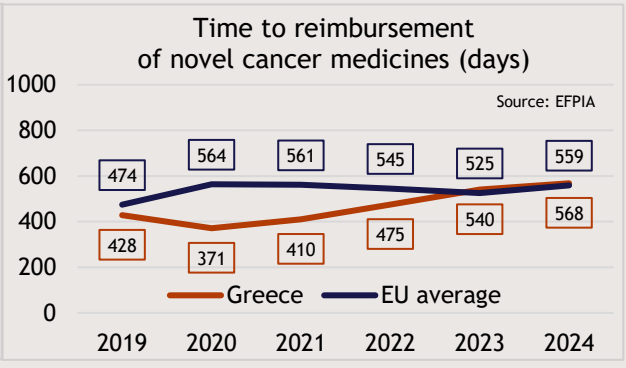
Background

- Around 100 novel cancer medicines have been approved by the European Medicines Agency (EMA) over the last decade. However, there are considerable differences as to when and to what extent EU countries are able to ensure access to these new treatments to all eligible patients (23, 123).
- The local availability of new medicines is defined by the European Federation of Pharmaceutical Industries and Associations (EFPIA) as the inclusion of a centrally approved medicine by the EM) in the national/regional public reimbursement list (124). EFPIA publishes an annual report, the EFPIA WAIT indicator, which monitors the availability of recently approved medicines.
- The availability of novel cancer medicines differs considerably between EU countries (124). Many causes for delays and unavailability of novel medicines at the country level have been identified (123), such as (i) limited public budgets for medicines, (ii) late company submission or late start of the national pricing and reimbursement process, (iii) lack of clearly defined timelines for pricing and 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 ensure timely and equitable access of patients across countries to available new medicines and to shorten the time from EMA approval until patient access (125). In addition, the new EU HTA regulation (HTAR) will apply for cancer medicines from 12th January 2025. This will entail a joint (cross-country) clinical assessment of the effectiveness of new medicines. Towards this direction, the Greek government will receive technical support from DG REFORM to improve the current HTA process and develop the necessary framework for the effective implementation of HTAR (126, 127).

Current status in Greece

- The reimbursement rate, defined as medicines accessible on the public reimbursement list, in Greece for novel cancer medicines (EMA approved in 2019-2022) was 71% in 2024 (124). The reimbursement rate increased from 47% (year 2020) to 71% in 2021, and it has been above the EU average ever since.
- The reimbursement time from EMA approval to local reimbursement in Greece was on average 568 days in 2024, which is close to the EU average of 559 days (124). However, during the past four years, the reimbursement time in Greece has increased every year whereas the EU average time has remained stable.
- Greece has a non-independent HTA-system, meaning that the HTA and the negotiation committees are not independent bodies. This has been suggested to reduce transparency and efficiency of the evaluation process, specifically in terms of timely price negotiations and reimbursement decisions (128). Greece also relies on an external reference pricing system, where pricing of a new product cannot occur unless the same product has a listed price in at least three other eurozone member states (128).
- Greece has a case-by-case electronic pre-approval system (EPAS) for novel high cost medicines, which requires physicians to file for individual reimbursement on a case-by-case basis (120). The EPAS system can be used for EMA-approved high-cost medicines that are not yet locally reimbursed, but also for already reimbursed medicines.





Recommendations

- Increase the transparency of the HTA process to facilitate the process of providing necessary documentation.
- Ensure adoption and smooth implementation of EU HTA regulation.
- Ensure systematic monitoring of patient access and use of novel cancer medicines.

Diagnosis and treatment

Clinical guidelines and referral pathways

Background

- Up-to-date national clinical guidelines are crucial to ensure that health care providers are using the latest available treatments and that patients get equal access to quality care across the country (120). Clinical guidelines serve also as a quality assurance strategy to optimize patient care and reduce practice variation, as they should be informed by systematic reviews of evidence and guide practices towards a more effective and cost-effective use of treatments and interventions (129).
- ESMO provides clinical practice guidelines that are widely used and adopted in EU countries into national clinical guidelines (130). ESMO is regularly updating their "living guidelines" for a large number of cancer types (131).
- The establishment of standardized cancer care pathways or referral patterns is a governance tool that can support physicians in the often complex decision-making processes, reduce waiting times and improve timely and quick diagnosis as well as access to treatment and improve quality of cancer care (132, 133). Thus, it is important to establish standardized cancer care pathways and define the services to be received.

Current status in Greece

- The MoH publishes the therapeutic guidelines by HeSMO (134) on its website (135).
- The guidelines are updated on a regular basis by a special committee of HeSMO members appointed for each cancer type. The latest guidelines in their 10th version were published in 2023 (136), while HeSMO is also in the process of preparing a relevant mobile app (134).
- HeSMO has also translated clinical practice guidelines of ESMO into Greek language to facilitate their use in clinical practice (137).
- Standardized cancer care pathways or protocols of referral patterns are yet to be established by the MoH or related government bodies.

Recommendations

- Ensure that the established HeSMO national therapeutic guidelines are updated on a regular basis and applied more uniformly in routine clinical practice in all hospitals.
- Ensure availability and reimbursement of diagnostic tests and medical treatments according to updated therapeutic guidelines.
- Establish standardized cancer care pathways and referral patterns.

Diagnosis and treatment

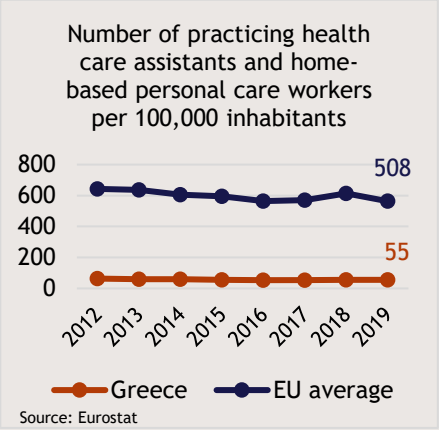
Home care services

Background

- Cancer patients experience frequently acute episodes of illness at home relating to treatment or disease progression which can result in unplanned emergency visits or hospitalizations (138, 139).
- Globally and in Greece, home care services (also referred to as hospice care) for cancer patients is becoming more recognized as a new approach of providing necessary cancer care to patients in need. It may also reduce the burden of hospitals by reducing unplanned health care utilizations and health care costs (138).
- Home care services for cancer patients can be an invaluable support for cancer patients whose health condition has declined, offering services such as monitoring of drug treatments and assessment of the need for hospitalization. This is translated into a reduced burden for the patients, as well as the healthcare system. By treating the right patient at the right level and setting of care, a more efficient care is achieved for the patient, along with the best use of resources for the hospital (140). In Greece, informal caregivers for cancer patients have reported multiple unmet needs (141, 142). The support from the public sector is limited, with informal caregivers receiving support from the private sector or NGOs (141).
- Palliative care services could also be home-based and were proposed as a solution to Greece's lack of access to palliative care (142); see the next indicator in the Dashboard.

Current status in Greece

- There is a lack of available national published data for Greece regarding the availability and use of home care services specifically relating to cancer care. A 2019 study estimated that 37% of the needs for palliative care services in Greece comes from oncology patients (143).
- Eurostat collects general data on the number of practicing health care assistants and home-based personal care workers. These data show that Greece was the EU country with the lowest number of health care assistants and home-based personal care workers with 55 such workers per 100,000 inhabitants in 2019 (144), a decline from 64 workers per 100,000 inhabitants in 2012.
- According to a report by the European Association for Palliative Care (EAPC), the number of home care services within palliative care was 0.02 per 100,000 inhabitants in Greece in 2019, far below the EU average of 0.48 services per 100,000 inhabitants (145).



Source: Eurostat

- In 2023, a national home care service program "Οικοθεν" was announced by a joint ministerial decision (FEK B' 3396/19.05.2023), aiming to allow patients to continue their treatment and care at home (146). The Agios Savvas Hospital in Athens was the first hospital to officially have implemented this program in 2023, while the "Metaxa" oncology hospital in Athens was the second to follow as of June 2024 (147), and the University Hospital of Alexandroupoli the third one as of September 2024.
- The public hospital Aretaiio has established the palliative care unit "Tzeni Karezi" for cancer patients, along with a "Pain Management" unit, with the latter offering palliative care across the disease pathway, as well as home-based services to cancer patients (142). "Galilea" and "Merimna" are also two non-profit organizations in Greece providing home-based palliative care services to cancer patients (148), with "Merimna" focusing on pediatric cancer patients and their families (149).
- The availability of home care services within cancer care seems to be very limited in Greece. As such, the Greek government in 2023 initiated a collaboration with ODIPY (Healthcare Quality Assurance Organisation), creating "NOSPI" (150). This is a 9-pillar system that aims to provide hospital care at home to chronic disease patients - through an MDT approach - while also offering support to their carers. In April 2024, three reference hospitals were identified as pilots (Agios Savvas in Athens (15), Ippokrateio in Thessaloniki (16), and PAGNI in Heraklion (17)), while more hospitals are expected to follow.
- Furthermore, the Greek government is also expanding the use of telemedicine within the National Telemedicine Network (EDIT) which provides home care services in particular for patients living in remote areas (151).

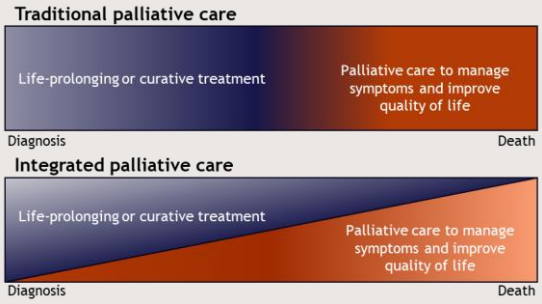
Recommendations

- Recognize the role of home-based services for cancer patients as an integrated part of cancer care provision within an established framework of an NCCP.
- Ensure smooth implementation of NOSPI and rely on learnings and existing systems in other countries with a home-based hospice system.
- Expand the range of home-based services and ensure smooth uptake of use of telemedicine services.

Survivorship
Palliative care services

Background

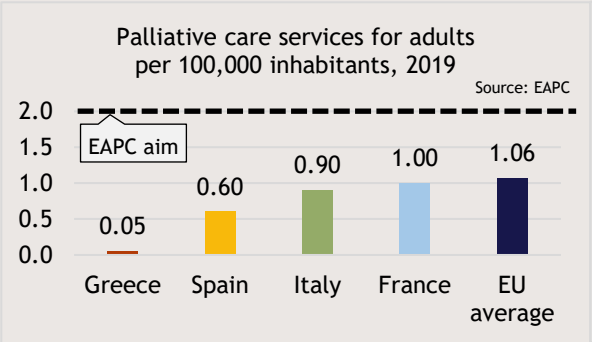
- Greece has the fourth highest proportion of people aged 65 or older in the EU (152), which could result to a high and increasing demand for palliative care (PC) services.
- Cancer is the most frequent cause of need for PC among life threatening or life-limiting health conditions (145). Within oncology, PC has traditionally had a strong focus at the end of life, but more recently there is a shift of integrating it earlier in the disease pathway (153).

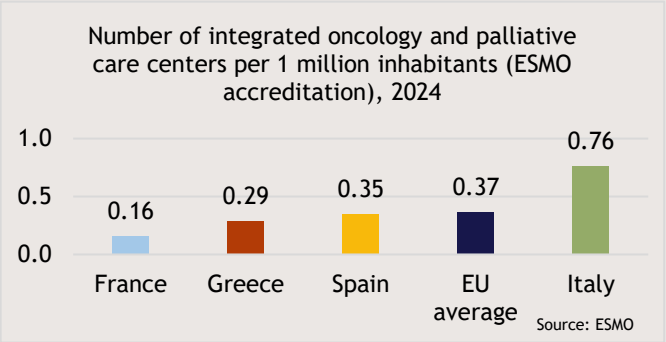


- The availability of PC services in a country is one metric to assess the capacity and potential access to PC. Another metric is the degree to which PC is integrated with the overall health care system (154). The European Association for Palliative Care (EAPC) recommends two specialized PC services per 100,000 inhabitants (145).
- In December 2022, a new framework and legislation for PC was introduced in Greece (155-157). This includes the establishment of a National Registry of Palliative Care Patients and a PC service provision system that covers outpatient settings, special outpatient clinics or day PC centers, PC hospices, and PC units operating in public hospitals or private clinics (156). In addition, a national committee for the development of PC has been tasked to develop PC protocols and the National Action Plan for the Development of Palliative Care. The latter will constitute the roadmap for the implementation of a coherent policy for the provision of holistic PC services with a five-year horizon (155).

Current status in Greece

- PC is often provided by NGOs as outpatient and home-based services, and there is a considerable shortage of specialized PC services (142).
- In 2019, Greece reported offering 0.05 (non-cancer specific) PC services per 100,000 inhabitants, which was the lowest number of all EU countries and remains low compared to the recommendation of 2 PC services per 100,000 by the EAPC (145). However, there has been a noticeable positive trend, as the availability has increased from 0.01 PC services per 100,000 in 2012 (158).
- With regards to cancer-related pediatric PC services, there are currently only two organizations (Merimna and Galilea) that provide home-based PC services for children up to age 18 (148, 149).
- Based on a voluntary ESMO accreditation system of cancer centers, a comparison of the integration of PC with oncology care can be made. Currently there are three[3] ESMO Designated Centers of Integrated Oncology and Palliative Care in Greece (88). This translates to 0.29 centers per one million inhabitants, which is below the EU average of 0.37 centers per one million inhabitants.





Recommendations

- The recent legislation and development of a National Action Plan for PC should expand PC services and personnel (with different specialties).
- Increase the budget for public healthcare services.

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Appendix: Methodology and sources for indicators

Prevention	
Tobacco smoking	Graphs: data sourced from OECD (35) and Tax Foundation (40).
Obesity	Graph: data sourced from WHO (159).
Vaccination against HPV	Greek data were sourced from a report by the Ministry of Health (59). For the EU average, the WHO immunization database was used (63).
Early detection	
Breast cancer screening	1st graph: Data sourced from Eurostat. Specification: Self-reported last breast examination by X-ray among women; age 50-69 years; X-ray within "less than 2 years" (year 2019) for all EU member states (n=27) (75). 2nd graph: Data sourced from Eurostat. Specification: Devices for medical imaging: Mammographs per 100,000 inhabitants (year 2020) for all EU member states (data not available for Ireland, Hungary, Netherlands, and Finland) (76).
Cervical cancer screening	Graphs: Data sourced from Eurostat. Specification: Self-reported last cervical smear test within 3 years among women aged 20-69 years (year 2019) for all EU member states (n=27) and by educational attainment level (81).
Diagnosis and treatment	
Comprehensive cancer centers	Data sourced from the OECI website (89).
Human resources	1st graph: Data sourced from Eurostat (98). 2nd graph: Data sourced from Eurostat (160). 3rd graph: Data sourced from OECD (102).
Radiation therapy equipment	1st graph: Eurostat (113). Specification: Medical technology – historical data (1980-2016) (years 2012-2020). Data not available for the Netherlands. Data not available for Belgium and Hungary 2018-2020, for Denmark 2012, for Latvia 2019-2020, for Sweden 2012-2014. Unweighted EU average. 2nd and 3rd graphs: Data sourced from DIRAC (Directory of Radiotherapy Centers) database (114). 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 2020-2023 apart from Luxembourg and Ireland (year 2017). Numbers of newly diagnosed cancer cases (all cancer types apart from non-melanoma skin) were sourced from ECIS - European Cancer Information System (year 2022). Population estimates were sourced from Eurostat.
Biomarker testing	The availability and quality of biomarker tests as well as the availability of precision medicines is based on composite scores. Data refer to year (119).
Novel cancer medicines	Graphs: data sources from the EFPIA Patients W.A.I.T. Indicator Surveys for 2019-2024 (124, 161-165). Data refer to the rate of availability and estimates of the time to availability of new cancer medicines at the beginning of year t of medicines with EMA approval in years t-5 to t-2. 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 averages. The EFPIA data only refer to new cancer medicines and not new indications of already approved medicines.
Clinical guidelines and referral pathways	Not applicable.
Home care services	Data sourced from Eurostat (144).
Survivorship	
Palliative care services	1st graph: Report by the European Association for Palliative Care (EAPC) (145). 2nd graph: Data sourced from ESMO’s website (88).


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