

Cancer Dashboard for Denmark – Lung cancer

Bardh Manxhuka, Katarina Gralén, Thomas Hofmarcher



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Purpose

In 2023, the Swedish Institute for Health Economics (IHE) launched an international initiative with support from MSD, aiming to facilitate the exchange of best practices in cancer care across European countries. This initiative is called "*Cancer Dashboards in Europe*". It has its background in the launch of the Europe's Beating Cancer Plan and the question of how to translate political commitment into action. The objective is to create country-specific dashboard-style reports with a comprehensive and illustrative description of a selected set of key indicators in all areas of cancer care. These indicators benchmark the current status quo in a country against target values specified in national cancer plans, targets set by international organizations, or values of other countries. The reports also provide evidence-based recommendations on how to improve the current situation in a country.

This dashboard report for Denmark focuses on lung cancer. It is intended to reinforce the implementation of Cancer Plan V and other ongoing initiatives to improve lung cancer care in the country. The description seeks to support Danish policymakers in the decision-making and prioritization of initiatives in lung cancer care. The dashboard is intended to be a living document, which 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 Denmark or the EU.

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Foreword

Lung cancer remains one of the most pressing health challenges in Denmark, continuing to be the leading cause of cancer-related death among both men and women. Despite substantial progress in survival and major advances in treatment, Denmark still reports the highest incidence and mortality rates for lung cancer in the Nordic region. These trends underline the urgency of continued action across prevention, early detection, and access to effective treatments.

Comprehensive tobacco control remains the cornerstone of lung cancer prevention. While smoking prevalence has declined markedly over recent decades, it remains higher than in neighboring countries, and further progress is essential to achieving a smoke-free generation. At the same time, early detection offers new opportunities: the ongoing regional screening pilot in region Syddanmark provides a promising foundation for evidence-based national implementation once results become available.

Diagnosis and treatment of lung cancer in Denmark are characterized by a strong health workforce, well-established patient pathways, and broad use of multidisciplinary care. However, timely and equitable access to innovative therapies - both immunotherapies and targeted treatments - remains an area where Denmark could improve. The expansion of palliative care capacity will also be critical to meeting future patient needs. Importantly, marked regional variation persists across several dimensions of care and outcomes, highlighting the need for consistent quality standards and transparent reporting. The planned merger of region Sjælland with region Hovedstaden in 2027 might mask disparities that are visible in the data now and that should be addressed.

This report by the Swedish Institute for Health Economics (IHE) provides a comprehensive and data-driven overview of lung cancer care in Denmark. By combining national and regional indicators, benchmarking against the Nordic region and the European Union, the dashboard offers valuable insights into where Denmark performs well and where further effort is needed. Its evidence-based recommendations can guide the implementation of Cancer Plan V and strengthen the link between policy ambitions and measurable outcomes.

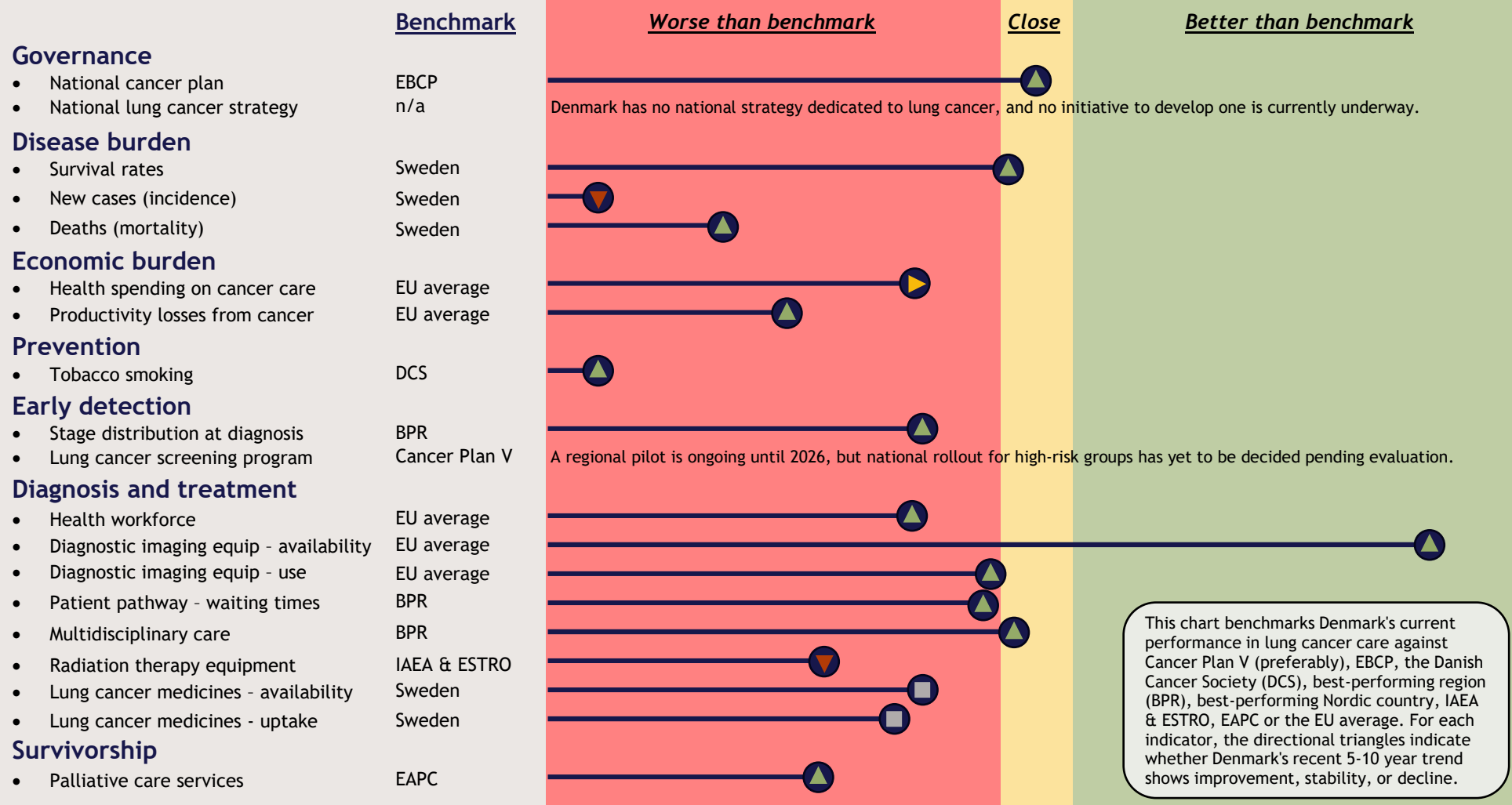
I commend the authors for their thorough and insightful analysis and hope that the findings presented in this report will support continued progress toward prevention, earlier diagnosis, equitable care, and better outcomes for all Danes affected by lung cancer.

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Dashboard overview Denmark – Lung cancer

Comparative Performance: Denmark vs. Benchmark



Legend: ▲ Positive development, ► Stable development, ▼ Negative development, ◻ No data or not applicable

Notes: EBCP = Europe's Beating Cancer Plan, DCS = Danish Cancer Society, BPR = best-performing region, IAEA = International Atomic Energy Agency, ESTRO = European Society for Radiotherapy and Oncology, EAPC = European Association for Palliative Care, equip = equipment, n/a = "not available".

Regional overview of selected indicators in lung cancer care in Denmark

Pillar (Indicator)	Hovedstaden	Sjælland	Syddanmark	Midtjylland	Nordjylland	Reference year(s)
Disease burden						
New lung cancer cases (incidence, crude rates) per 100,000 inhabitants	70	99	101	89	107	2023
New lung cancer cases (incidence, age-standardized rates) per 100,000 inhabitants	63	69	73	71	78	2023
Lung cancer deaths (mortality, crude rates) per 100,000 inhabitants	44	69	66	54	65	2023
Lung cancer deaths (mortality, age-standardized rates) per 100,000 inhabitants	40	47	48	44	47	2023
Five-year age-standardized relative survival in lung cancer (%)	33%	28%	28%	33%	32%	2021-2023
Economic burden						
n/a	n/a	n/a	n/a	n/a	n/a	n/a
Prevention						
n/a	n/a	n/a	n/a	n/a	n/a	n/a
Early detection						
Share (%) of lung cancer patient diagnosed at stage I	29%	25%	24%	28%	37%	2024
Share (%) of lung cancer patient diagnosed at stage IV	44%	40%	46%	44%	36%	2024
Lung cancer screening	no	no	pilot	no	no	2025
Diagnosis and treatment						
General practitioners per 100,000 inhabitants	85.2	76.6	91.3	89.1	72.0	2022
Pulmonologists per 100,000 inhabitants	4.9	2.9	3.5	3.8	4.5	2022
Diagnostic radiologists per 100,000 inhabitants	15.8	6.5	10.7	12.0	11.3	2022
Pathologists per 100,000 inhabitants	5.6	3.4	4.4	4.2	5.2	2022
Clinical physiologists per 100,000 inhabitants	3.8	1.5	3.5	3.8	4.5	2022
Clinical oncologists per 100,000 inhabitants	6.4	4.1	6.8	5.5	5.4	2022
Thoracic surgeons per 100,000 inhabitants	1.9	0.3*	1.5	1.4	2.0	2022
Cancer nurses per 100,000 inhabitants	6.7	3.3	4.3	6.8	6.1	2022
Share (%) of lung cancer patients receiving surgical treatment within 44 days	79%	41%	84%	78%	84%	2024
Share (%) of lung cancer patients receiving medical treatment within 41 days	89%	69%	94%	85%	91%	2024
Share (%) of lung cancer patients receiving radiation therapy within 45 days	71%	43%	80%	70%	75%	2024
Share (%) of lung cancer patients discussed at a multidisciplinary team conference within 90 days of diagnosis	94%	96%	88%	91%	84%	2024
Radiation therapy centers (number)	2	1	2	2	1	2025
Share (%) of stage IV NSCLC patients receiving oncological treatment within 365 days of diagnosis	76%	66%	76%	73%	68%	2023
Survivorship						
n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes: This table provides a comparative overview of selected indicators in lung cancer care across Denmark's five healthcare regions. It is intended to offer a snapshot of regional variation in lung cancer burden and care delivery, based on the most recent publicly available data. The best-performing region(s) for each indicator is shaded in green; the worst-performing one(s) in red. "n/a" indicates that data were not available or not disaggregated by region. For further details, see the relevant sections in the main body of the dashboard. * The low value is because there is no thoracic surgery unit in Sjælland.

High-level recommendations

Governance

- ✓ Develop a national lung cancer strategy with clear, long-term goals, using indicators of lung cancer burden, including regional incidence and survival rates, as performance benchmarks.
- ✓ Leverage existing initiatives under Cancer Plan V to improve capacity and reduce regional variation in lung cancer care.

Funding

- ✓ Ensure that both current and future resources are allocated towards interventions that are effective, equitable, and efficient. Maximizing health outcomes per krone spent is essential to delivering high-quality cancer care while sustaining a high-performing healthcare system.
- ✓ Apply a societal perspective in evaluating targeted investments in earlier detection and treatments in order to acknowledge and capture reductions in productivity losses induced by survival gains.

Prevention

- ✓ Raise taxes for tobacco products and close existing loopholes in smoking bans to achieve smoke-free indoor and outdoor environments in public places.
- ✓ Focus tobacco control efforts and targeted campaigns on youth and underserved groups to accelerate progress towards a smoke-free generation.

Early detection

- ✓ Based on the experience and evaluation of the current lung cancer screening pilot in Syddanmark, consider nationwide implementation.
- ✓ Strengthen system readiness for national screening by addressing workforce shortages, scaling digital infrastructure and capacity (e.g. through AI in diagnostics), and developing targeted outreach strategies with primary care.

Diagnosis and treatment

- ✓ Reduce regional disparities in workforce density, diagnostic and treatment waiting times to ensure equitable, guideline concordant care and better outcomes.
- ✓ Accelerate access to EMA-approved lung cancer medicines that are recommended in European clinical guidelines and that have shown to be highly effective and cost-effective.
- ✓ Systematically monitor and publish real-world treatment patterns in lung cancer as a quality indicator in the Danish Lung Cancer Registry to ensure adherence with clinical guidelines.

Survivorship

- ✓ Fully integrate palliative care into lung cancer services through national capacity planning, stronger links with oncology, and sustained investment in line with demographic needs.

Background

IHE Cancer Dashboards

Cancer has received growing political attention across the European Union (EU) in recent years. The launch of Europe's Beating Cancer Plan (2021) by the European Commission reflected a strengthened commitment to addressing the burden of cancer in a more systematic and coordinated way (1). Across the EU, cancer is the second-leading cause of death in both men and women, responsible for more than one in five deaths, and has already become the leading cause in several EU countries, including Denmark (2). Substantial inequalities in cancer care persist, both between and within EU countries. A key challenge lies in translating international and national initiatives into action: while the policy landscape is rich in ambition, it often lacks funding and clear and practical tools to support implementation, guide prioritization, and monitor progress at national and regional level.

To help bridge the gap between policy plans and action, the Swedish Institute for Health Economics (IHE) has developed a series of national Cancer Dashboards since 2023 for countries such as Austria, Greece, Italy, Lithuania, Poland, and Portugal. These dashboards provide an intuitive and structured overview of how countries perform in cancer care. By combining data, benchmarking, and evidence-based recommendations, they offer policymakers and stakeholders actionable insights, highlighting where progress is being made, where efforts must accelerate, and where strategic investment is required. Ultimately, each dashboard serves as a navigation tool to support the planning, implementation, and evaluation of effective, equitable, and outcome-oriented cancer control.

While some dashboards cover cancer care in general, others focus on specific cancer types. A recent example is the Lung Cancer Dashboard for Poland, launched in 2024, which benchmarked national and regional performance against EU and global standards (3). Building on this work, the current dashboard turns the focus to lung cancer in Denmark.

Lung cancer

Lung cancer is the leading cause of cancer-related death in both men and women in Denmark. In 2023, it accounted for 5,259 new diagnoses (13% of all new cancer cases) and 3,356 deaths (21% of all cancer deaths) (4). Men and women represent a roughly equal share of incidence and mortality, but women have consistently reported higher survival rates. Compared to its Nordic neighbors, Denmark continues to stand out with substantially higher incidence and mortality rates alongside lower survival, although the survival gap has narrowed considerably over the last 20 years (4).

Major opportunities exist to reduce the burden of lung cancer, particularly through prevention, earlier detection, and the adoption of effective novel medicines. For instance, tobacco smoking remains by far the leading risk factor, and organized population-based screening for high-risk individuals offers the potential to identify cases at an earlier, more treatable stage.

The annual reports from the Danish Lung Cancer Registry (DLCR) have for more than 20 years delivered information on patient outcomes and care delivery and the results have often led to public discussions. Despite the focus on regional differences within Denmark, there is still substantial and persistent regional variation in cancer care delivery and outcomes. This dashboard brings together key pieces of this information by applying a regional lens within Denmark alongside international benchmarking.

Structure of the dashboard and choice of indicators

This report begins with an overview of key Danish and European governance frameworks relevant to cancer/lung cancer, including Denmark's national cancer plan (Cancer Plan V) and Europe's Beating Cancer Plan (EBCP). It then provides a detailed analysis of the disease burden and economic burden of lung cancer, highlighting the impact of the disease on patients, the healthcare system, and society at large. These contextual elements set the stage for understanding the urgency of national-level action. The report then follows the lung cancer care pathway, structured around the four pillars of the EBCP. Together, the dashboard presents a comprehensive view of the current status of lung cancer management in Denmark.

The dashboard is structured as follows:

- **Governance** (2 indicators): National cancer/lung cancer strategy
- **Disease burden** (3 indicators): Survival rates, new cases (incidence), deaths (mortality)
- **Economic burden** (2 indicators): Health spending on cancer care, productivity losses from cancer
- **Prevention** (1 indicator): Tobacco smoking
- **Early detection** (2 indicators): Stage distribution at diagnosis, lung cancer screening

- **Diagnosis and treatment** (8 indicators): Health workforce, availability of diagnostic imaging equipment, use of diagnostic imaging equipment, lung cancer patient pathway and waiting times, multidisciplinary care, radiation therapy machines, availability of novel lung cancer medicines, uptake of novel lung cancer medicines
- **Survivorship** (1 indicator): Palliative care services

The indicators were partly chosen based on the previous IHE Cancer Dashboard focusing on lung cancer for Poland (3). The selection was further refined based on discussions with MSD Denmark and local data availability.

For each indicator across the lung cancer care pathway, this report provides:

- A general explanation of its relevance, and how it relates to Cancer Plan V and the EBCP
- A description of the current situation in Denmark, with regional and/or international comparisons
- Recommendations for improvement and alignment with national and international targets

Data sources for all indicators are summarized in Appendix Table A1. All data were drawn from publicly available sources.

Benchmarking is conducted both intra-nationally (comparison of the five Danish regions) and internationally against other big Nordic countries (comparison with Finland, Norway, Sweden) and the EU average, whenever data are available.

Governance

Danish Cancer Strategy – Cancer Plan V (Kræftplan V)

In May 2025, the Danish government adopted Cancer Plan V, the fifth national cancer plan, with the aim of improving life with and after cancer (5). While the plan acknowledges the burden of lung cancer and includes related initiatives, such as tobacco control and a screening pilot, it does not include dedicated focus on lung cancer as a disease area. There is no dedicated national strategy for lung cancer (or lung diseases more generally), leaving current and future initiatives without an overarching framework to guide implementation, integration, and long-term planning. In contrast, countries such as Poland have recently adopted dedicated national strategies to combat lung cancer more directly (6), offering a timely example of structured and proactive planning in response to a high-burden disease.

Even so, Cancer Plan V with an annual budget of DKK 600 million from 2025 onwards is the most ambitious Danish cancer plan to date. The strategy comprises 36 initiatives across four strategic pillars and builds on the 2024 Health Reform (7).

The three overarching goals are:

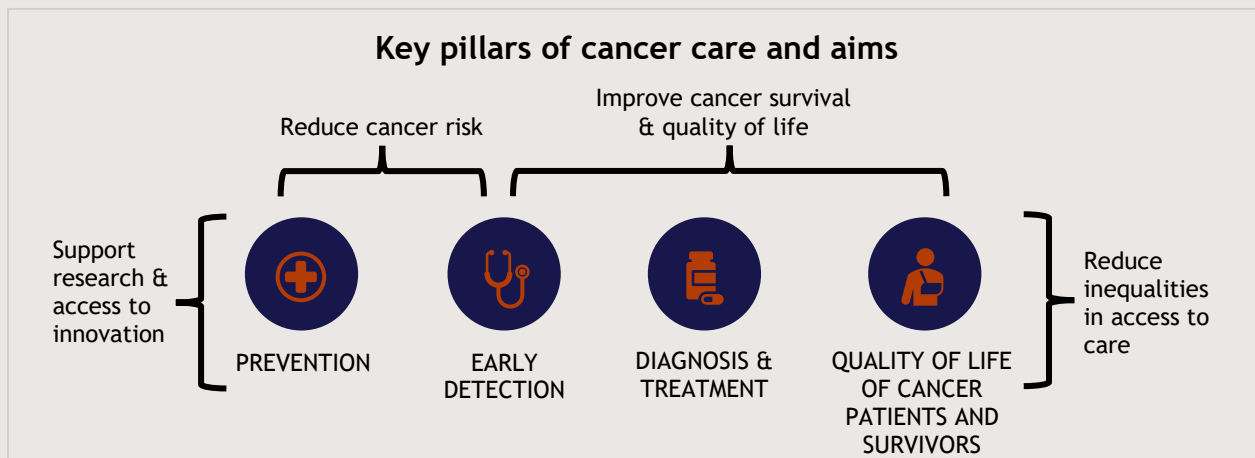
1. To ensure that cancer patients receive the necessary help and support after hospital treatment.
2. To ensure greater involvement of patients in decisions about their cancer pathway.
3. To raise cancer survival in Denmark to the top among the Nordic countries.

The 36 initiatives are organized under four pillars:

1. **Improving quality of life for cancer patients:** e.g. late effects clinics, enhanced rehabilitation and palliative care, new standards for prehabilitation, and financial support for dental problems related to treatment.
2. **Personalized cancer care:** including further development of cancer patient pathways, increased patient involvement, better digital tools, streamlined information sharing across sectors, and national efforts to strengthen early detection of cancer.
3. **More cancer-free and healthy life years:** focusing on targeted prevention through new regulations on tobacco, alcohol, solarium use, and unhealthy food marketing to children, as well as initiatives like better support for smoking cessation and a pilot study on lung cancer screening.
4. **Quality development in cancer care:** with investment in artificial intelligence (AI) and precision medicine, improved data use for real-world monitoring of new cancer medicines, and initiatives to ensure equal access to treatment across regions.

Europe's Beating Cancer Plan (EBCP)

In February 2021, the European Commission unveiled Europe's Beating Cancer Plan (EBCP), a comprehensive policy initiative aimed at tackling cancer through 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) (1). 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) and to support research and access to innovations to advance cancer care from the current status quo.



The EBCP not only prioritizes comprehensive cancer control but also stresses the importance of research and innovation in cancer care. It supports projects like the EU4Health Program's SOLACE project to refine lung cancer screening protocols (9). Furthermore, the EBCP aligns with the EU Cancer Mission under the Horizon Europe 2021-2027 research funding program, emphasizing a collaborative approach to reducing cancer prevalence and enhancing patient care across Europe.

Disease burden of cancer

In 2023, 5,259 new cases of lung cancer (2,770 women, 2,489 men) were reported in Denmark, making it the second most commonly diagnosed cancer in men (12%) and women (13%) (4). Lung cancer also accounted for 3,356 deaths (1,671 women, 1,685 men), making it the leading cause of cancer-related death in both men (19%) and women (22%).

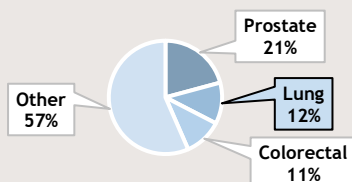
Lung cancer incidence and mortality rates varied substantially across Danish regions in 2023 (4). Incidence ranged from 70 cases per 100,000 inhabitants in Hovedstaden to 107 per 100,000 in Nordjylland. Mortality followed a similar pattern, ranging from 44 lung cancer deaths per 100,000 in Hovedstaden to 69 per 100,000 in Sjælland.

Compared to other Nordic countries, Denmark had the highest incidence rate of lung cancer in 2023 (88 cases per 100,000), as well as the highest mortality rate (56 deaths per 100,000) (4). These rates are roughly twice as high as in Sweden, which had the lowest incidence and mortality rates among the Nordic countries.

In Denmark, age-standardized incidence rates (ASR, Nordic) in lung cancer have declined in men from 89 to 71 cases per 100,000 inhabitants from 2003 to 2023 (4). In contrast, rates in women increased from 59 to 70 cases, nearly reaching the level of men. Age-standardized mortality rates fell in both sexes, from 84 to 49 deaths in men and from 51 to 41 in women (4). Similar trends in incidence and mortality rates have been observed in the other Nordic countries, which results in a continued wide gap between Denmark with higher rates than the other countries (4).

Cancer incidence among men in Denmark in 2023

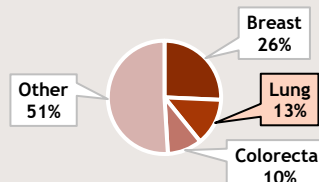
Number of new cases: 21,162



Source: NORDCAN

Cancer incidence among women in Denmark in 2023

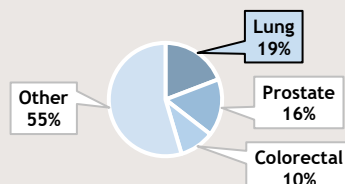
Number of new cases: 20,256



Source: NORDCAN

Cancer mortality among men in Denmark in 2023

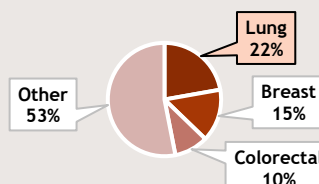
Number of deaths: 8,780



Source: NORDCAN

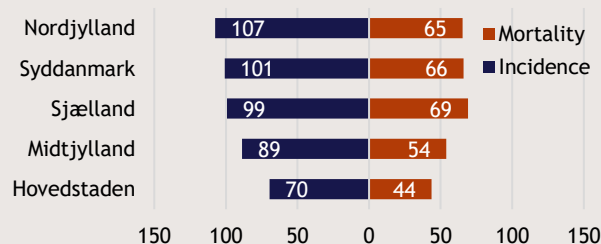
Cancer mortality among women in Denmark in 2023

Number of deaths: 7,521



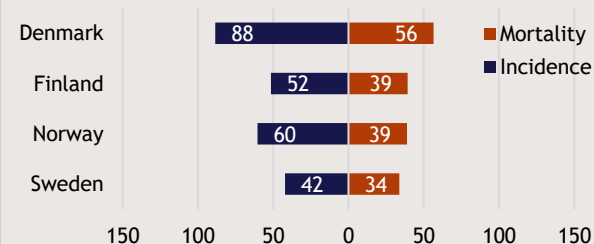
Source: NORDCAN

Lung cancer incidence and mortality per 100,000 inhabitants in 2023, by Danish region, both sexes



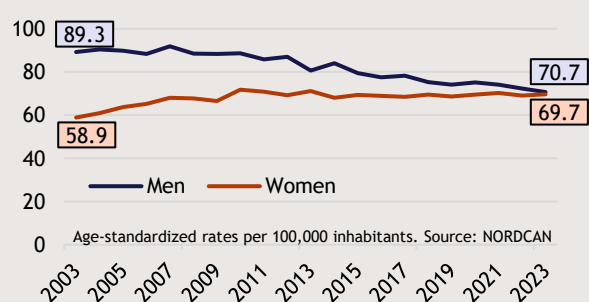
Crude rates per 100,000 inhabitants. Source: NORDCAN

Lung cancer incidence and mortality per 100,000 inhabitants in 2023, by Nordic country, both sexes



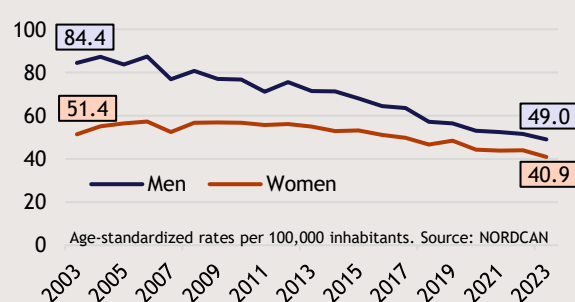
Crude rates per 100,000 inhabitants. Source: NORDCAN

Changes in lung cancer incidence (ASR, Nordic) in Denmark over time, by sex



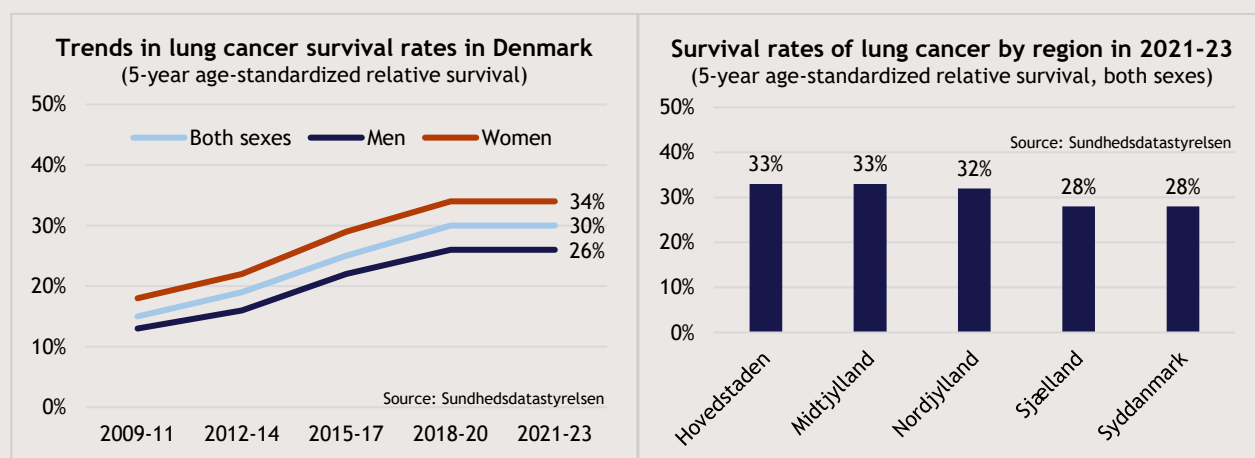
Age-standardized rates per 100,000 inhabitants. Source: NORDCAN

Changes in lung cancer mortality (ASR, Nordic) in Denmark over time, by sex

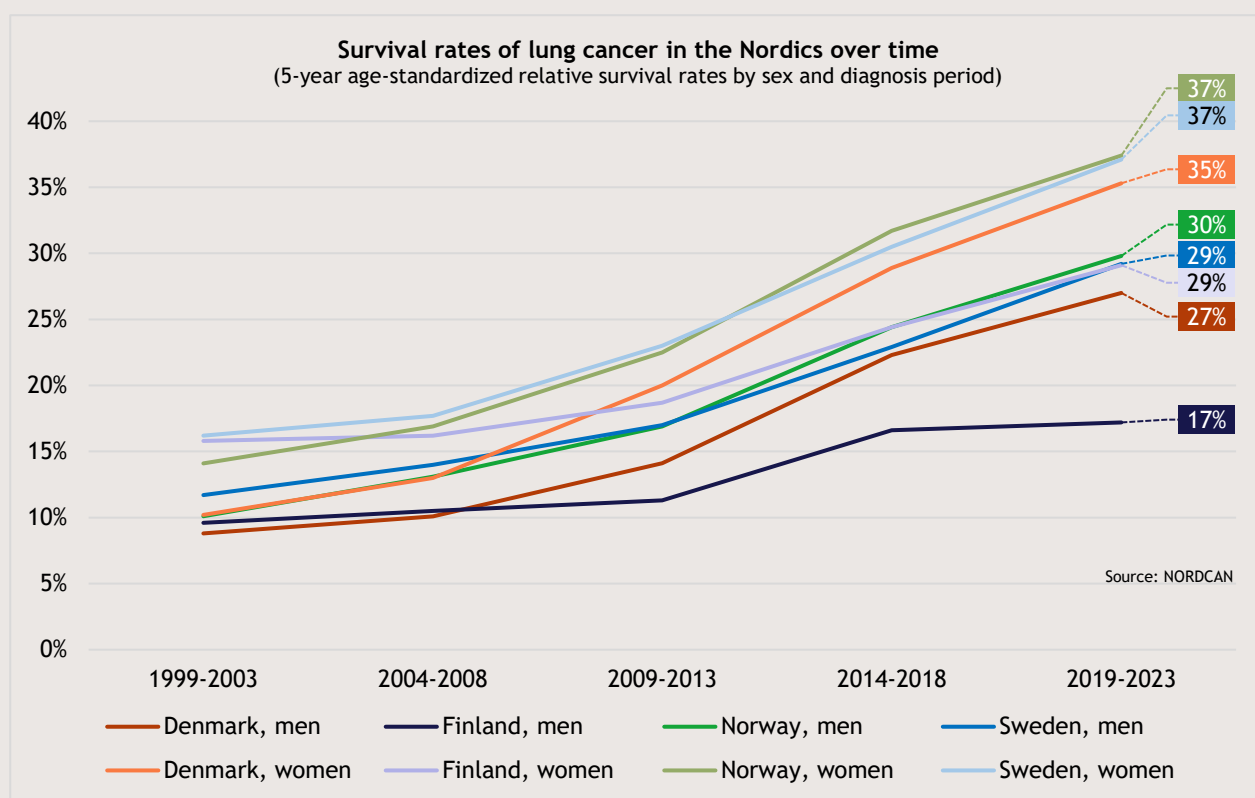


Age-standardized rates per 100,000 inhabitants. Source: NORDCAN

Lung cancer continues to have relatively low survival rates compared to most other cancers, but outcomes have improved significantly over the past decade. According to data from the Danish Health Data Authority (Sundhedsdatastyrelsen), between the diagnosis periods 2009-2011 and 2021-2023, age-standardized five-year survival doubled from 15% to 30% (10). More detailed information from the DLCR shows that five-year overall survival has improved for all disease stages, e.g., in stage IA from 51% to 61% in 2005-2008 to 2017-2020, in stage IIIA from 12% to 27%, and in stage IVA from 2% to 11% (11). Regional discrepancies are also evident, with Sjælland and Syddanmark reporting the lowest five-year survival rates (10).



Compared to other Nordic countries, Denmark ranks in third place - closely behind Norway and Sweden - for lung cancer survival in individual diagnosed in 2019-2023, according to NORDCAN data. The age-standardized five-year relative survival was 27% for men and 35% for women (4). Lung cancer survival has increased significantly across all Nordic countries over the past two decades, in particular in Denmark which overtook Finland (4). These improvements coincide with the introduction of novel lung cancer medicines in the 2010s (see indicator “Availability of novel lung cancer medicines”).



Recommendations

- Continue to decrease lung cancer incidence by strengthening tobacco control measures and continue to increase lung cancer survival by improving early detection and care provision.
- Use lung cancer burden indicators as benchmark for system accountability under current and future cancer plans and to guide strategic investment in the workforce and care capacity.

Economic burden of cancer

In Denmark, the overall economic burden of cancer was estimated at €3.9 billion in 2018, corresponding to €680 per capita (12). The majority of this burden was attributable to productivity losses among working-age patients (43%), followed by healthcare expenditure (38%) and informal care (19%).

The overall 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):

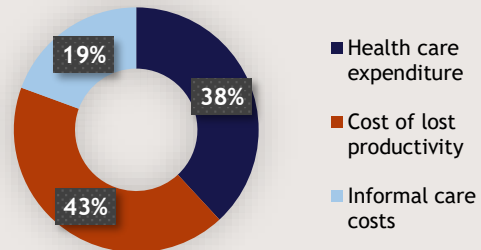
- Productivity losses from absence due to sickness, permanent incapacity/disability, and premature mortality of working-age patients



Informal care costs:

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

Composition of the economic burden of cancer in Denmark in 2018

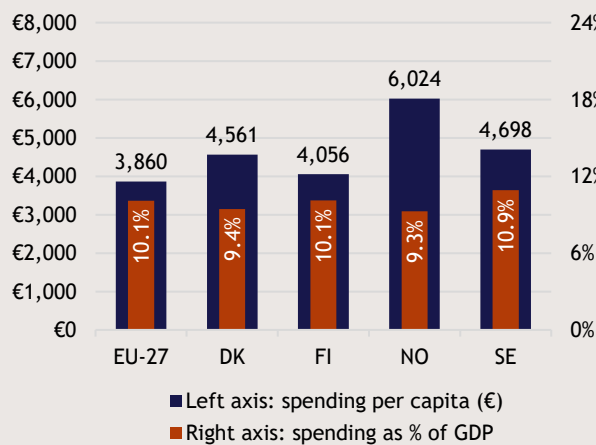


Source: Hofmarcher et al. (2020)

More recent estimates show that the economic burden of cancer (excluding informal care costs) in Denmark declined from €664 to €559 per capita between 2000 and 2023 (in 2023 prices) (13). Healthcare spending on cancer increased by about 33%, reaching €263 per capita in 2023 (€201 after adjusting for purchasing power parity, PPP), which was below the EU average (€268), Sweden (€240), and Norway (€259) (13).

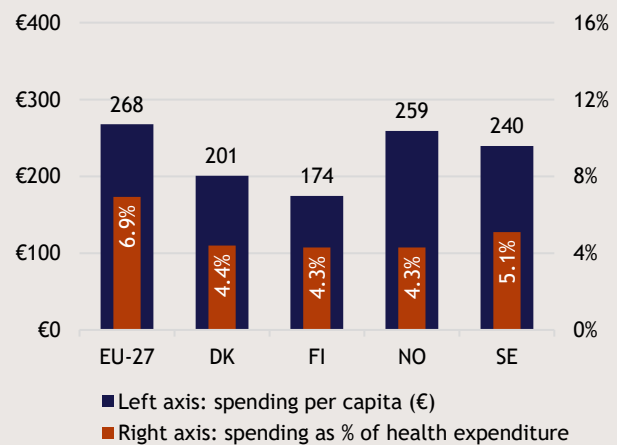
The cost of lost productivity declined by 37% over the same period, from €468 to €296 per capita (13). This downward trend, despite the continued rise in the annual number of new cancer cases (4), reflects the improving survival rates in Denmark and underlines the economic value of investments in effective cancer care. Comparable but less substantial declines in productivity losses have been observed in the other Nordic countries (24-30%) (13).

Healthcare expenditure in 2023 (Per capita, PPP adjusted)



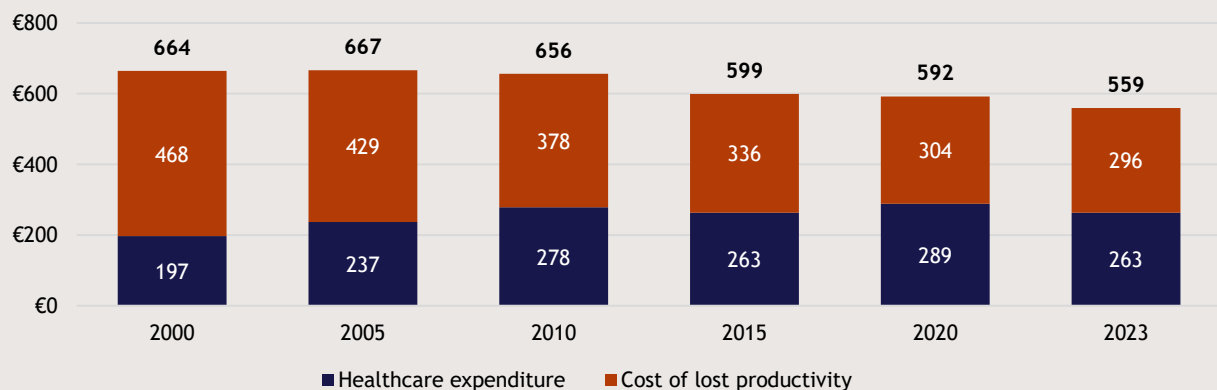
Source: Manzano et al. (2025)

Cancer care expenditure in 2023 (Per capita, PPP adjusted)



Source: Manzano et al. (2025)

Economic burden of cancer in Denmark in € per capita (2023 prices)



Source: Values for 2000 to 2020 are unpublished data from Manzano et al. (2025)

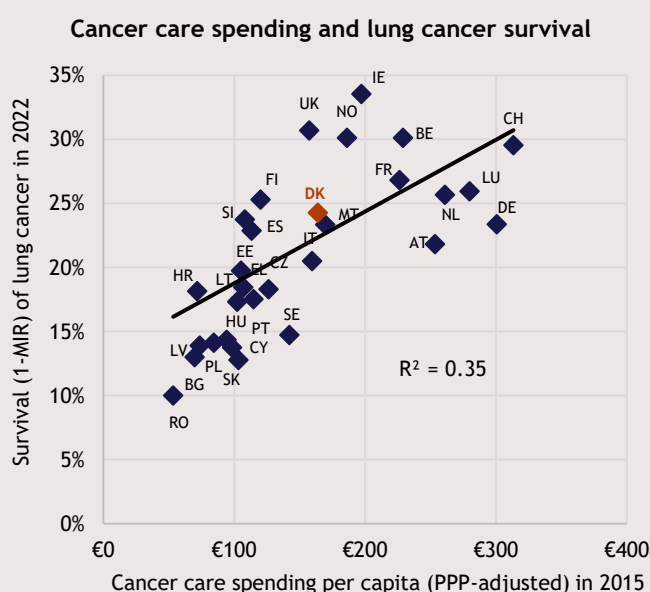
The specific amount of Denmark's cancer care expenditure allocated to lung cancer is not known. Data from other countries show that lung cancer treatment accounts for about 10% of total cancer care expenditure, which is relatively close to the share of lung cancer incidence in total cancer incidence. For instance, in the United States, lung cancer accounted for around 11% of total cancer care expenditure in both 2015 and 2020 (14), while in Sweden it was 8% in 2013 (15), and 8% across the EU in 2009 (16).

A 2016 national analysis based on 2013 incidence data found that lung cancer imposed the highest societal cost of all cancer types in Denmark (17). The five-year societal cost per lung cancer patient was estimated at DKK 397,000, well above the all-cancer average of DKK 315,000 (17). With 4,468 new cases in 2013, lung cancer's total cost to society exceeded DKK 1.77 billion, accounting for approximately 15.3% of the total societal cost of cancer in Denmark. This estimate includes both healthcare costs (e.g. hospital and primary care) and productivity losses, based on income differences compared to individuals without cancer. Costs incurred by patients' partners, both in terms of healthcare and lost income, were also included. Because of lung cancer's high mortality, many patients do not survive long enough to incur healthcare costs beyond the first year. As a result, more than 70% of healthcare costs per patient were incurred in the year of diagnosis.

Health spending on cancer care & survival rates

The ultimate aim of health spending on cancer care is to improve patient outcomes, both in terms of survival and quality of life. The figure to the right offers a crude way of exploring the link between cancer care spending and patient outcomes in lung cancer across EU countries; see Manzano et al. (2025) for clarification on methodology (13). While this association does not prove causality, it is consistent with previous evidence showing that EU countries investing more in cancer care tend to achieve better survival outcomes (18). The upward-sloping trend line suggests that countries with higher cancer spending (on all cancer types) tend to achieve higher survival in lung cancer. In contrast, countries with low spending generally report lower survival (mostly in Eastern Europe). Denmark appears close to the middle of the distribution, both in terms of cancer care spending and lung cancer survival, suggesting it performs roughly in line with what its investment level would predict. This reinforces a key insight: underinvestment may limit survival gains, while additional resources, if used effectively, could support improved outcomes. However,

it also underlines that spending alone is not enough. Patient outcomes are shaped by how resources are allocated and used across the entire care pathway. Strategic prioritization, such as early detection, timely diagnosis, and equitable access to effective treatment, is essential to translating spending into tangible survival benefits. Going forward, further gains in survival will likely depend on the effective adoption and expansion of innovation, such as lung cancer screening (see indicator "Lung cancer screening") and novel lung cancer medicines (see indicator "Availability of novel lung cancer medicines"), many of which come at a higher cost. Health systems must therefore ensure that investments in lung cancer care, and cancer care in general, are used in a cost-effective and outcome-oriented way. This means not only evaluating the value of new interventions but also identifying and addressing inefficiencies along the entire care pathway.



Source: own calculations based on the methodology used by Manzano et al. (2025)
Notes: MIR = mortality to incidence ratio based on age-standardized rates

Recommendations

- Establish systematic reporting of healthcare spending by cancer type. The lack of cancer-type-specific expenditure data hampers effective prioritization, value assessment, and resource planning.
- Ensure that increased spending is directed towards high-impact areas along the care pathway and addresses bottlenecks. This includes early detection, timely diagnosis, access to novel diagnostics and therapies, and care coordination.
- Apply a societal perspective in evaluating targeted investments in earlier detection and treatments in order to acknowledge and capture reductions in productivity losses induced by survival gains.

Prevention

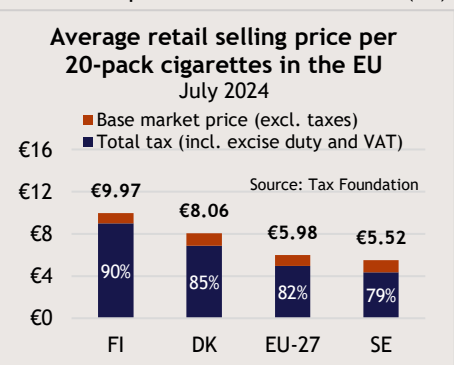
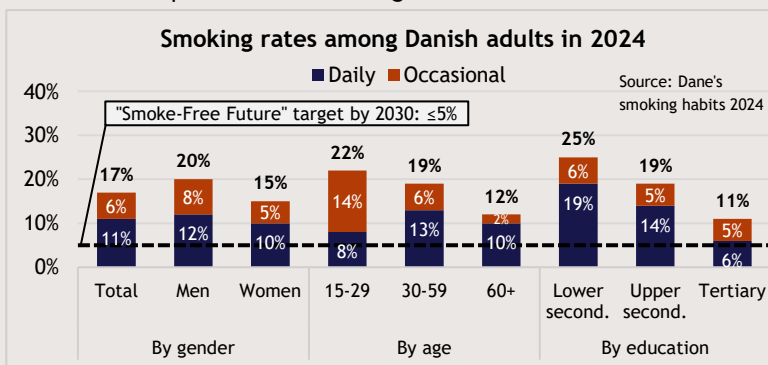
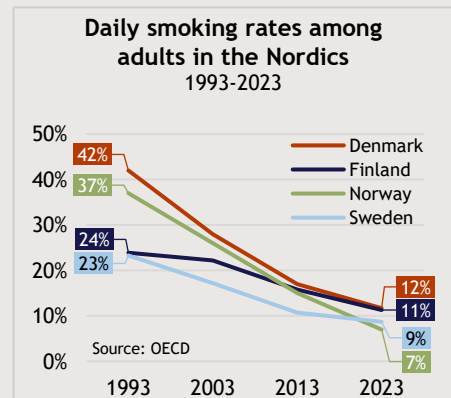
Tobacco smoking

Background

- Tobacco smoking is a major risk factor for developing various cancer types (19), and it has been linked to cancers at 12 different sites (20). Around 80% of all lung cancer cases are linked to cigarette smoking (21).
- The WHO suggests that implementing tobacco control measures can prevent one in five annual cancer cases (22). In 2008, the WHO introduced the MPOWER framework - a package of six evidence-based, cost-effective, high-impact policy measures to help countries reduce the demand for tobacco (23). As part of this framework, best practice for tobacco taxation is defined as a total tax share of at least 75% of the retail price (23, 24). Only one EU country (the Netherlands) had implemented all six MPOWER measures at the best-practice level in 2023 (25).
- The EBCP aims to help create a “Tobacco-Free Generation” where less than 5% of the population uses tobacco by 2040, compared to around 25% today (1).
- Since ratifying the WHO Framework Convention on Tobacco Control in 2005, Denmark has implemented a broad tobacco control framework, including plain packaging, a display ban, rotating graphic health warnings, a ban on flavored tobacco products, and comprehensive advertising and sponsorship bans (26). In 2020, Denmark strengthened legislation on tobacco products, smoke-free environments, and advertising (26). Still, smoking remains permitted in designated indoor areas in many workplaces and public venues, except in educational settings for children and adolescents (26). A smoke-free youth generation by 2030 is a central objective first set out in Denmark’s previous cancer plan (Cancer Plan IV) and reaffirmed in Cancer Plan V, aiming to ensure that no children born in recent years become smokers by 2030 (5, 27). In parallel, the Danish Cancer Society and TrygFonden launched the “Smoke-Free Future” partnership in 2017, targeting a reduction of adult smoking prevalence to 5% or less and no children smoking by 2030 (28).

Current status in Denmark

- OECD data show a steady decline in daily smoking among Danish adults (aged 15+), from 42% in 1993 to 12% in 2023 (29). The decrease was similar for men and women. While below the EU average (18%) (30), Denmark still has the highest rate among the Nordic countries.
- Data from the 2024 survey on Danes’ smoking habits show that 17% of adults are current tobacco smokers (11% daily and 6% occasional) (31). This is down from 19% in 2022 but remains well above the Smoke-Free Future partnership’s target of 5% or less by 2030. Smoking is more common in men than women (20% vs. 15%) and highest among adults aged 15-29 (22%) (31). Smoking rates also vary significantly by education level: 25% of adults with lower secondary education are current smokers, compared to 11% with tertiary education (31).
- According to the DLCR, nearly nine in ten (86%) patients diagnosed with lung cancer were current or former smokers in Denmark in 2024 (11). This highlights the potential long-term impact of reducing smoking prevalence on lung cancer incidence in Denmark.
- As of July 2024, the average retail price of a 20-pack of cigarettes in Denmark was €8.06, with taxes making up 85% of the price – one of the highest rates in the EU and above the MPOWER best-practice threshold of 75% (32).



Recommendations

- Raise taxes for tobacco products and close existing loopholes in smoking bans to achieve smoke-free indoor and outdoor environments in public places.
- Focus tobacco control efforts and targeted campaigns on youth and underserved groups.

Early detection

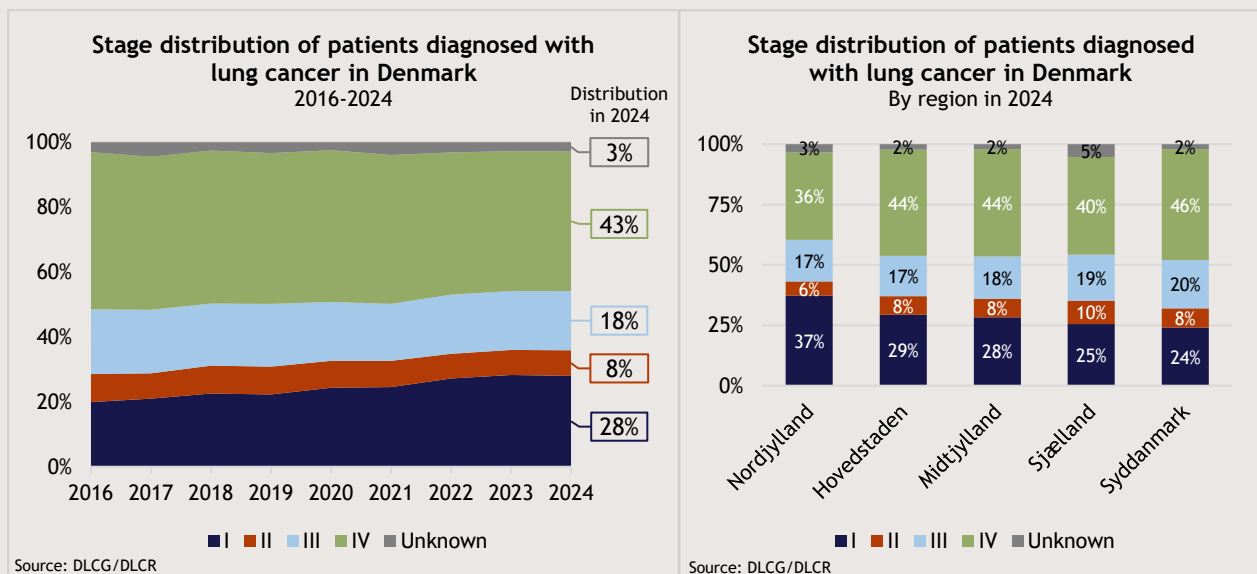
Stage distribution at diagnosis

Background

- The stage distribution at diagnosis is a crucial indicator of the effectiveness of a healthcare system in detecting lung cancer early. Early-stage diagnosis significantly increases the chances of successful treatment and long-term survival. For instance, the five-year survival rate in stage I lung cancer was 63% compared to only 4% in stage IV in England in the diagnosis period 2016-2020 (33). General benchmarks for the ideal stage distribution at diagnosis for lung cancer do not exist, but the general aim is to have a large proportion of cases diagnosed at early, more treatable stages.
- The stage distribution at diagnosis for lung cancer has remained largely unchanged over the years. Around 50% of lung cancer patients in Europe are still diagnosed at a metastatic stage (34). Several factors contribute to this persistent pattern, including the asymptomatic nature of early-stage lung cancer, lack of public awareness, and potential delays in the care process (35). General practitioners (GPs) play a crucial role in early detection, and their awareness and understanding of the etiology and symptoms of the disease are essential for timely referral and diagnosis.
- Cancer Plan V acknowledges the challenge of diagnosing lung cancer early and prioritizes earlier detection, but sets no specific targets for stage at diagnosis (5). Key initiatives include strengthened data reporting on cancer stage, enhanced support for GPs, and a pilot study on targeted lung cancer screening running until 2026.

Current status in Denmark

- Data from the Danish Lung Cancer Group/Register show that nearly half (43%) of lung cancer patients in Denmark were diagnosed at stage IV in 2024 (11), where survival prospects are poor. The proportion of patients diagnosed at stage I increased from 20% to 28% between 2016 and 2024 (11, 36), indicating gradual improvement in early detection. Recent research suggests that the rising proportion of stage I diagnoses in Denmark may partly reflect increased use of computed tomography (CT) scans for non-cancer conditions, leading to more incidental findings (37). Despite this progress, the overall stage distribution remains heavily weighted towards late-stage diagnoses. Stage distributions in 2024 were broadly similar in Norway (42% stage IV, 30% stage I) (38), and in Sweden (45% stage IV, 34% stage I) (39).
- Regional variation exists in the stage distribution of lung cancer diagnoses in Denmark. In 2024, the proportion of patients diagnosed at stage I ranged from 24% in the region of Syddanmark to 37% in Nordjylland (40). Similarly, the proportion diagnosed at stage IV ranged from 36% in Nordjylland to 46% in Syddanmark (40). These disparities may suggest potential differences in referral practices, diagnostic capacity, handling of incidental findings, or patient behavior across regions despite the existence of the standardized clinical pathway (pakkeforløb).



Recommendations

- Improve early diagnosis by raising GP awareness of lung cancer symptoms to reduce time to specialist referral.
- Consider nationwide roll-out of organized lung cancer screening for current and former smokers following conclusion of current pilot; see next indicator for details.

Early detection

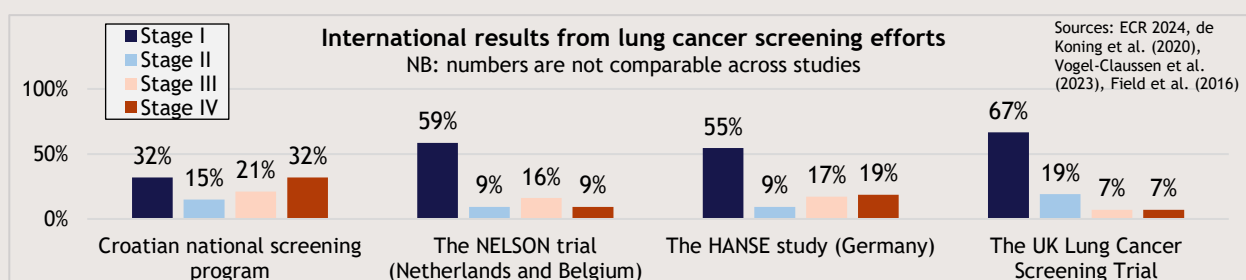
Lung cancer screening

Background

- The detection of lung cancer at earlier stages results in higher survival rates and lower treatment costs (33, 41). However, due to the mild and non-specific symptoms of lung cancer in early stages, the disease is diagnosed at a metastatic stage in around 50% or more cases (34). Results from several randomized-controlled trials show that targeted screening of former and current heavy smokers with low-dose computed tomography (LDCT) leads to an extensive shift of patients to an earlier stage at detection and, subsequently, has the potential of reducing lung cancer mortality by at least 20% (9, 42). The number needed to be screened to avoid one cancer death has been estimated to be around 130-220 individuals, which is considerably lower in comparison with breast cancer (645-1724 individuals) (42).
- The updated screening recommendation by the Council of the European Union from 2022 states that countries should explore the feasibility and effectiveness of LDCT to screen individuals at high risk for lung cancer, including heavy smokers and ex-smokers, and link screening with primary and secondary prevention approaches (43). Furthermore, EU countries are encouraged to conduct research on how to reach and invite the target group, as population registries do not contain information on people's past and current smoking behavior. To support the implementation and optimization of LDCT screening programs, a large EU project called SOLACE, funded under the EU4Health Program, is ongoing in multiple EU countries (9).
- Croatia is the only EU country with an ongoing national lung screening program, launched in 2020 (44), while several others have either ongoing or recently concluded large-scale pilot programs (44-46). In the Nordics, regional pilot studies are underway in Denmark (47, 48), Finland (49), Norway (50, 51), and Sweden (52, 53).
- Cancer Plan V supports the exploration of targeted lung cancer screening for high-risk individuals through a dedicated pilot study in Region Syddanmark, with the aim of generating evidence on implementation, including the potential role of AI (5). The pilot is supported by DKK 30 million in government funding.

Current status in Denmark

- A three-year pilot study on lung cancer screening is currently underway in Region Syddanmark (2024-2026), led by Odense University Hospital and commissioned by the Danish Health Authority (47, 48). It targets current and former heavy smokers aged 60-74 living on Funen and nearby islands, who are invited to annual LDCT scans. Around 1,300 individuals are participating in the pilot (54). As of June 4, 2025, 20 cases of lung cancer have been detected, with 80% diagnosed at an early stage (54). Although promising, these initial results should be interpreted with caution, as no further details have been published. The Danish Health Authority is monitoring the pilot, which will be evaluated after its conclusion in 2026 to inform the decision on national rollout (48).
- A successful pilot alone is not enough to enable national rollout. Lung cancer screening on a national scale will require adequate diagnostic and follow-up capacity. Key structural challenges, such as Denmark's shortage of radiologists (see indicator "Health workforce"), must be addressed to manage the large scan volumes involved.
- International experiences highlight the potential value of lung cancer screening programs in shifting the stage distribution towards earlier stages. The first results of Croatia's national lung cancer screening program, presented at the European Congress of Radiology (ECR) in 2024, indicated that lung cancer was diagnosed in 1.2% of 27,000 screened individuals, with 47% detected at early stages (stage I or II). Similar benefits have been observed in the NELSON trial (55), the German HANSE study (56), and the UK Lung Cancer Screening Trial (57). While methodologies and settings vary, making direct comparisons challenging, there is mounting evidence of substantial benefits of LDCT screening for patient outcomes.



Recommendations

- Ensure systematic evaluation of the pilot to guide national rollout, with a focus on operational challenges.
- Strengthen system readiness by addressing radiologist shortages and scaling supportive technologies such as AI.
- Develop targeted outreach strategies and educational efforts to raise awareness and address stigma surrounding lung cancer. Encourage GPs to refer patients to lung cancer screening if risk factors (e.g., smoking) are present.

Diagnosis and treatment

Health workforce

Background

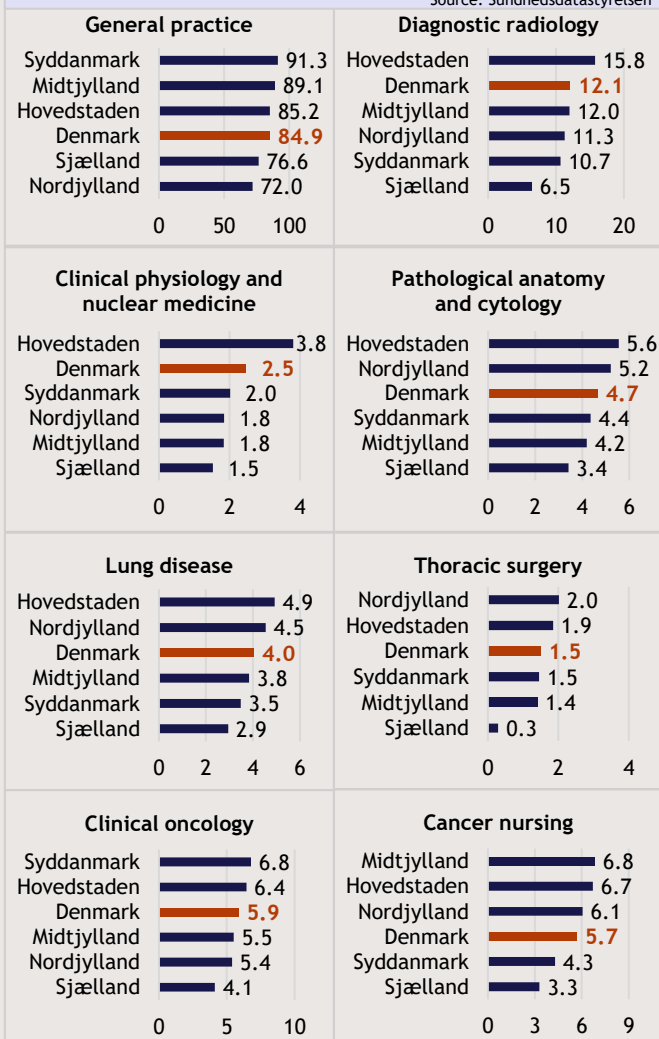
- Modern lung cancer care is highly specialized and requires competence from different medical fields. This includes pulmonologists, diagnostic radiologists, and pathologists for the diagnosis of lung cancer, and surgeons, therapeutic radiologists, medical oncologists, and pulmonologists for the treatment. GPs play a key role in facilitating early diagnosis in primary care as they refer symptomatic patients to the appropriate specialist.
- The 2024 Health Reform Agreement sets a national goal of reaching at least 5,000 GPs actively working in general practice by 2035, in response to shortages and unequal distribution of GPs in Denmark (7). To achieve this, the number of GP training positions will be increased starting with the Danish Health Authority's 2026 dimensioning plan, alongside efforts to improve geographic distribution and shift more care tasks to general practice.
- Cancer Plan V identifies workforce capacity and skills as critical to delivering timely and high-quality cancer care (5). It highlights challenges in radiology, pathology, and operating capacity, and calls for strengthening hospital cancer departments, palliative care services, and the role of GPs in follow-up and care coordination.

Current status in Denmark

- Denmark has one of the highest densities of all practicing physicians in the EU (58), but falls below the EU average and most Nordic countries but Sweden in terms of GP density (59).
- A 2024 national demand analysis in Denmark identified a total shortfall of over 2,000 specialists relative to required capacity across medical specialties (60). Among the ten specialties analyzed, general practice and diagnostic radiology are critical to lung cancer care. In 2024, general practice faced a shortfall of 407 GPs (8.3% below required capacity), while diagnostic radiology lacked 91 radiologists (11.5%). To meet the national target of 5,000 GPs actively working in general practice by 2035, an estimated 6,500 GPs will be needed, recognizing that many work outside of general practice (24% in 2024) (60). As of January 1, 2025, Denmark had a full-time GP capacity of 3,547 GPs across 1,618 general practices (61). With current training levels, general practice would still fall short by around 250 GPs by 2035, and diagnostic radiology would remain undersupplied through 2045 (60).
- There are substantial regional disparities in the density of specialists and nurses essential to lung cancer care in Denmark (see graphs to the right) (62). While the presented figures reflect educational background, and not necessarily the current clinical role, they highlight differences in regional potential to deliver lung cancer care. Region Sjælland, in particular, is consistently underserved across key specialties (62), which may partly help explain its persistent delays in treatment timelines (63), and subsequently its comparatively low survival rates (10). Uneven distribution of key professionals together with difference in regional patient population (presence of comorbidities, socio-economic status, etc.) may contribute to geographic inequalities in timely diagnosis, treatment, and patient outcomes.

Number of specialized physicians and cancer nurses per 100,000 inhabitants in Denmark (as of Dec 31, 2022)

Source: Sundhedsdatastyrelsen



Recommendations

- Support timely implementation of GP training expansion under the 2024 Health Reform Agreement to address persistent shortages, and ensure it is matched by policies to retain GPs in general practice.
- Implement targeted workforce incentives in underserved regions to close gaps in lung cancer care capacity.

Diagnosis and treatment

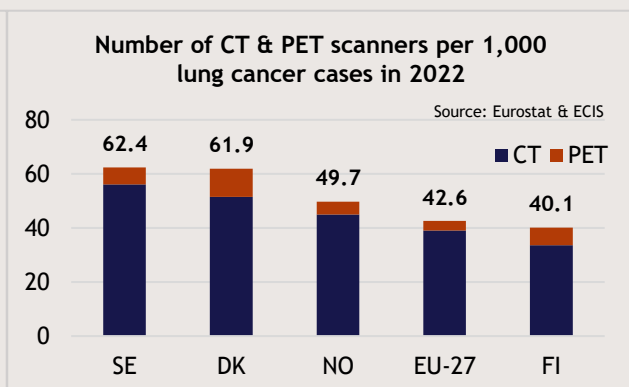
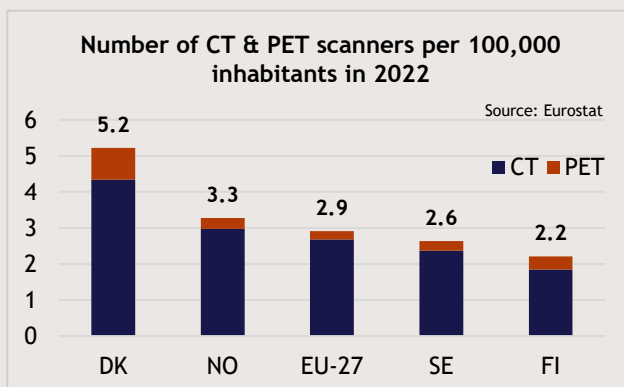
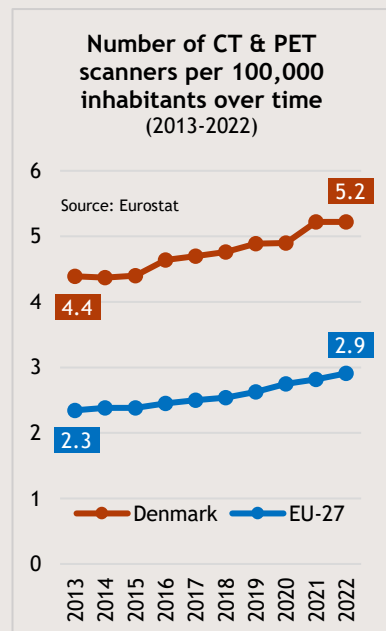
Availability of diagnostic imaging equipment

Background

- Imaging equipment such as computed tomography (CT) scanners and positron emission tomography (PET) scanners support physicians in the lung cancer care pathway from diagnosis to treatment and follow-up.
- The investment costs for scanners are high and they require specialized medical personnel to operate them, which naturally restricts their availability. General guidelines or benchmarks regarding the ideal number of scanners per inhabitant or cancer patient do not exist. An undersupply of scanning units may lead to access problems in terms of geographic proximity and/or waiting times.
- Danish clinical guidelines for lung cancer diagnosis recommend imaging modalities such as contrast-enhanced CT and PET/CT scans for confirmation, staging, and treatment planning (64). Ensuring adequate availability of such scanners is essential to support adherence to these national diagnostic pathways.
- Cancer Plan V identifies diagnostic capacity as critical to improving timely cancer care, highlighting radiology, pathology, and operating capacity as particularly challenged areas in need of strengthening (5). It promotes the use of technologies such as AI in image analysis to support earlier detection and more efficient care, while allocating permanent funding to reinforce capacity and modernize hospital equipment (5).

Current status in Denmark

- Denmark has seen a steady increase in the availability of diagnostic imaging equipment, with the number of CT and PET scanners rising from 4.4 to 5.2 per 100,000 inhabitants between 2013 and 2022 (65). This corresponds to a 15% increase for CT scanners and a 44% increase for PET scanners. In 2022, Denmark had the highest availability of these scanners in the Nordic region and was 45% above the EU average of 2.9 per 100,000 (65).
- While scanner availability is commonly measured and compared per 100,000 inhabitants to reflect general system capacity, adjusting for lung cancer incidence provides a more targeted view of how capacity aligns with the specific burden of this disease. In 2022, Denmark had 61.9 CT and PET scanners per 1,000 lung cancer cases, second highest in the Nordic region after Sweden (62.4 per 1,000) and well above the EU average (42.6 per 1,000) (65, 66).
- While Denmark has a comparatively high availability of imaging equipment, the quantity of scanners alone does not guarantee timely and equitable patient access or effective diagnostic use. Capacity planning must also consider regional distribution, sufficient staffing, equipment maintenance to prevent bottlenecks in the diagnostic pathway, and scanner utilization in clinical workflows (see next indicator).



Recommendations

- Maintain high availability of diagnostic imaging equipment through continued investment in maintenance and renewal of CT and PET scanners.
- Ensure adequate medical staff (imaging physicians, radiology technicians, and nurses) who can operate the equipment effectively and avoid idle running.
- Consider annual tracking and publication of scanner availability and use by region to guide resource planning.

Diagnosis and treatment

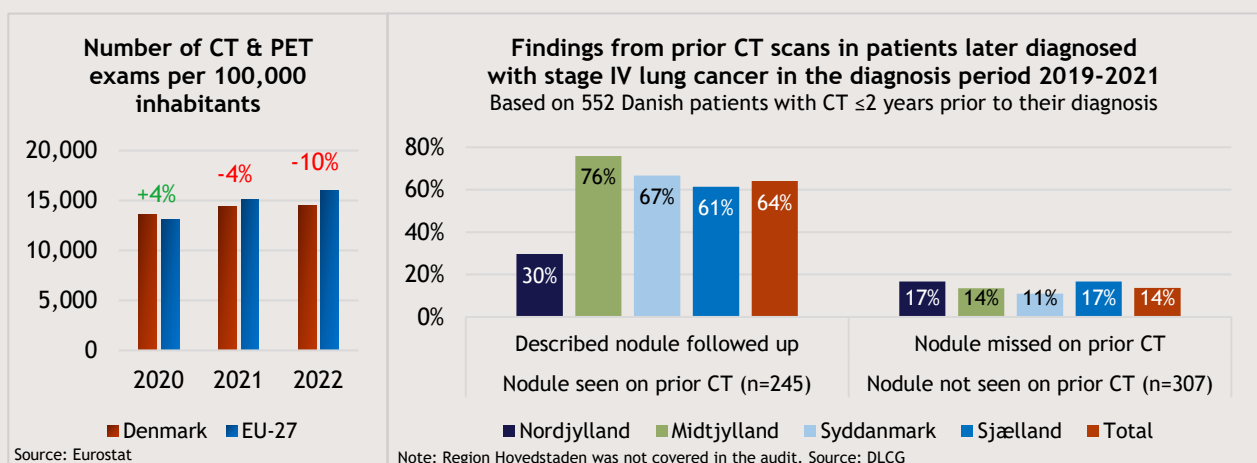
Use of diagnostic imaging equipment

Background

- While the quantity of imaging equipment reflects a system's diagnostic capacity, it does not indicate how effectively imaging is used to support patient care. Utilization patterns, including when scans are performed, how findings are interpreted, and whether follow-up is initiated, are critical to assessing performance.
- Danish clinical guidelines recommend the use of contrast-enhanced CT and PET/CT for diagnostic confirmation, staging, and treatment planning in lung cancer (64). When incidental nodules are detected, structured follow-up with repeat low-dose CT scans are recommended, based on clinical risk and radiological characteristics (64).
- Although Denmark has a comparatively high availability of imaging equipment (see previous indicator), this does not ensure timely, equitable or guideline-accordant use. Appropriate utilization depends on clinical judgment, reporting, and clear protocols for follow-up and referral. Variability in local workflows, staffing, and adherence to guidelines may lead to underuse or suboptimal use of imaging, even when scanners are physically available.

Current status in Denmark

- Between 2020 and 2022, Denmark performed approximately 13,500-14,500 CT and PET exams per 100,000 inhabitants annually, starting slightly above the EU average in 2020 (+4%) but falling below it in 2021 (-4%) and 2022 (-10%) (67). These figures suggest that Denmark performs fewer scans than the EU average despite notably higher scanner availability (see previous indicator), indicating a mismatch between capacity and utilization. However, Denmark still performed far more CT and PET exams than its Nordic neighbors in 2022, with 14,456 per 100,000 inhabitants versus 6,502 in Finland and 9,633 in Norway (67). Data for Sweden were not available.
- Recent findings from the Dansk Lunge Cancer Gruppe (DLCG) revealed substantial quality gaps in the diagnostic pathway for lung cancer. A 2023 clinical audit examined all patients diagnosed with stage IV lung cancer between 2019 and 2021 (4,066) in seven hospitals across four regions in Denmark and identified 552 individuals (14%) who had undergone a CT scan of the thorax within the two years prior to diagnosis (68). Among these, incidental lung nodules (i.e., unexplained lung spots) were described in 245 cases, yet only 64% were followed up in accordance with clinical guidelines (ranging from 30% in Nordjylland to 76% in Midtjylland) (68), suggesting inconsistent adherence to recommended practice. In the remaining 307 cases with no reported findings, the retrospective review revealed that 14% had a visible lesion at the site of subsequent cancer (ranging from 11% in Syddanmark to 17% in Nordjylland and Sjælland) (68), pointing to errors in radiological detection. The findings highlight systemic challenges across Denmark in both the interpretation and clinical follow-up of incidental imaging findings. The audit concluded that improvement is needed across all audited hospital departments and recommended more structured referral pathways to lung specialists when incidental findings are identified (68).
- In 2024, a proposal to raise the entry age in Denmark for filter function CT scans from 40 to 50 years was discussed due to low detection rates in younger patients (11). The Danish Health Authority found the data insufficient to support the change but remains open to future review. Any such shift may impede early detection in younger patients and should be carefully assessed for potential impact on diagnostic accuracy.



Recommendations

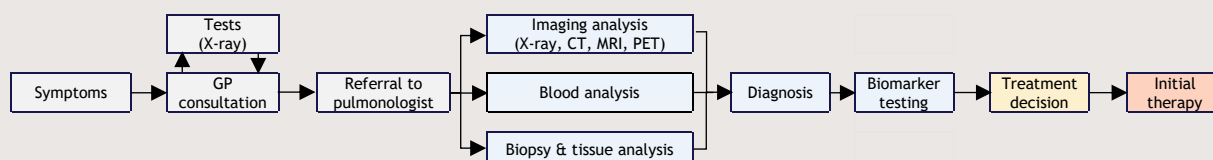
- Strengthen implementation of national guidelines on follow-up of incidental lung nodules by embedding structured protocols into hospital IT systems and radiology workflows, and ensuring timely specialist referral.
- Reduce missed lung lesions in CT scans through regular audit and feedback mechanisms supported by national quality assurance efforts, and explore the use of AI in CT analysis to further support diagnostic accuracy.

Diagnosis and treatment

Lung cancer patient pathway and waiting times

Background

- Lung cancer often presents with nonspecific symptoms, resulting in frequent misdiagnosis and multiple GP visits before referral, which contributes to the high proportion of late-stage diagnoses (34).
- Delays in the care pathway are common – from first symptoms to diagnosis and treatment – due to slow diagnostic procedures, lengthy assessments, and scheduling bottlenecks (69). The European Cancer Organisation recommends that clear care pathways should be defined to mitigate these delays and improve early detection and treatment outcomes (69). The general lung cancer patient journey can be visualized as following:

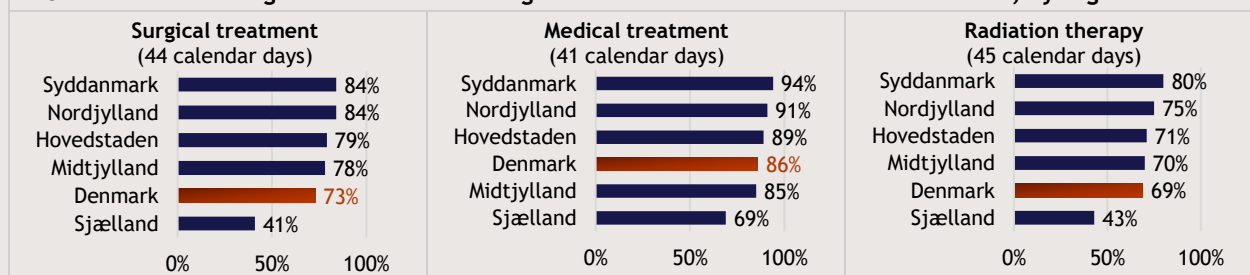


- Under Danish law, cancer patients are entitled to timely diagnosis and treatment. The diagnostic process must begin within 14 calendar days of referral for cancer investigation, and treatment must begin within 28 calendar days of treatment decision or within 14 calendar days of informed patient consent – whichever comes first (70, 71). If a region cannot offer treatment within the legal timeframe, it must actively arrange treatment elsewhere (70). If no timely offer is secured, the Danish Health Authority assumes responsibility for timely access (70).
- For lung cancer specifically, the Danish Health Authority defines a standardized clinical pathway (pakkeforløb) with recommended timeframes from referral to treatment: 44 days for surgery, 41 for medical treatment, and 45 for radiation (72). These timelines are not legally binding and may be exceeded if clinically justified.
- Cancer Plan V reaffirms timely cancer diagnosis and treatment as a national priority, emphasizing adherence to established cancer pathways and the continued enforcement of maximum waiting times (5). To support this, substantial permanent funding is allocated annually to strengthen diagnostic and treatment capacity nationally.

Current status in Denmark

- A 2024 report by the Danish National Audit Office estimated that in 6% of all cancer pathways between July 2019 and June 2023 (around 6,400 patients) treatment was delayed without any valid clinical or patient-related reason, in violation of Danish law (73). Thousands of patients were not offered alternative treatment by the regions when statutory deadlines could not be met. Oversight was weak, and underreporting by the regions meant that only a fraction of these breaches was reported to the authorities.
- In response, the Danish Health Authority revised its guidance on waiting times and introduced a new monitoring model in January 2024 (71, 74). Regions must now report all cancer pathways subject to maximum waiting times, not just violations, enabling real-time oversight and greater transparency (71). In 2024 and the first quarter of 2025, over 317,000 pathways were registered, with compliance reported in more than 99.9% of cases (75, 76).
- Despite strong legal compliance, there are notable delays in lung cancer care when assessed against clinical guidelines. In 2024, 73% of patients began surgery within the recommended 44 days, 86% began medical treatment within 41 days, and just 69% began radiation therapy within 45 days (63). Regional disparities were significant, with Sjælland consistently reporting the lowest compliance across all treatment types. Nevertheless, the proportion of patients experiencing delays in 2024 was lower than in 2018 (64% for surgical treatment, 80% for medical treatment, 65% for radiation therapy) (77), indicating improvements over time.

Share of Danish lung cancer cases initiating treatment within recommended timelines, by region in 2024



Recommendations

- Reduce delays in lung cancer care by systematically identifying and addressing root causes of prolonged waiting times by region.

Diagnosis and treatment

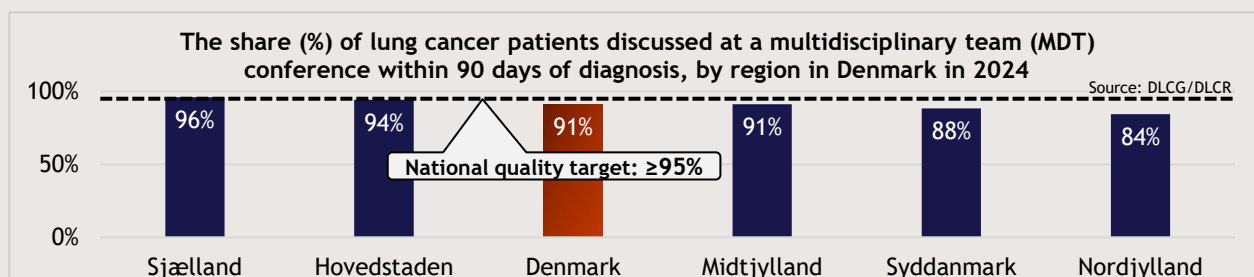
Multidisciplinary care

Background

- Lung cancer involves a complex care pathway that requires input and coordination between a team of multiple specialties, including oncology, pulmonology, radiology, surgery, pathology, and nursing. A multidisciplinary team (MDT) approach is widely recognized as best practice in high-quality lung cancer care (78-80).
- A growing body of evidence highlights the significant benefits of MDT care, including reduced waiting times, increased access to timely and accurate diagnosis and treatment, and enhanced patient satisfaction (81-83). In addition, multidisciplinary care is associated with higher adherence to clinical guidelines, broader use of different treatment modalities, and improved survival outcomes of lung cancer patients (83).
- The EBCP calls for strengthening MDTs as a core component of high-quality cancer care (1). The ESMO clinical practice guidelines recommend that lung cancer care be delivered in specialized centers where diagnostic and treatment decisions are discussed by an MDT, ensuring coordinated, expert-led care throughout the lung cancer care pathway (84).
- Danish clinical guidelines mandate that all lung cancer cases be reviewed at MDT conferences, with only limited clinical exceptions (85). This is actively monitored by the DLGG, benchmarked against the national quality target of at least 95% of lung cancer cases being discussed at an MDT conference within 90 days of diagnosis (11). Cancer Plan V acknowledges the importance of MDTs to strengthen coordination and cancer care quality (5). Further, it aims to ensure greater involvement of patients in decisions about their cancer pathway.

Current status in Denmark

- In 2024, approximately 91% of lung cancer cases in Denmark were discussed at an MDT conference within 90 days of diagnosis, up from 87% in 2022 but falling short of the national quality target of at least 95% (11). Only Sjælland met the target (96%), while regional variation ranged from 94% in Hovedstaden to 84% in Nordjylland. Although data entry is currently performed manually and may lead to some under-registration, regional audits indicate that missed registrations are limited and not systematic (11). Ultimately, the national target remains clinically relevant and achievable but may require targeted regional efforts to ensure standardized lung cancer care. Other Nordic countries also fell short of their MDT targets in 2024: In Sweden, 88% of lung cancer patients were assessed at an MDT conference before their primary treatment (target $\geq 95\%$) (86), while in Norway 94% of patients eligible for curative treatment were discussed in MDT meetings before treatment decision (target $\geq 95\%$) (38).
- Beyond the raw numbers of patients discussed, recent research has provided insights into the quality and conduct of MDT meetings. A 2024 observational study comparing lung cancer MDT meetings in Denmark and Norway found that Danish meetings were well-staffed and clinically robust but often overlooked patient perspectives and psychosocial factors (87). Discussions focused on diagnosis, staging, and treatment options, with limited consideration of whether patients would accept or manage the recommended care. Limited patient involvement in MDT discussions may result in treatment plans that patients are less likely to accept or adhere to.
- Another concern relates to variation in MDT assessments. A 2024 study tested how Denmark's four main lung cancer MDTs evaluated 60 standardized cases based on real diagnostic imaging (88). The cases were fictitious but designed to reflect real clinical complexity, using anonymized scans and validated patient information. Each MDT reported both cancer stage and treatment intent for each case. Full agreement was reached in only 42 of 60 cases (70%). Among the 18 remaining cases, 16 involved disagreements on treatment intent (curative vs. palliative), and 11 of those involved stage III, either in how it was classified or treatment intent (88). Such discrepancies may affect equitable treatment decisions and explain outcome differences between hospitals.



Recommendations

- Ensure all regions meet the 95% MDT target through targeted efforts and uptake of best practices from Sjælland.
- Improve patient-centered care by ensuring patient involvement and understanding of MDT treatment decisions.
- Strengthen national alignment through joint MDT education on clinical guideline-based diagnostic and treatment decisions, supported by systematic monitoring to ensure consistent and equitable care across the country.

Diagnosis and treatment

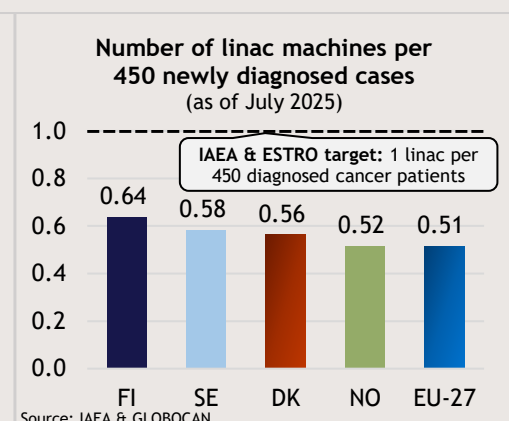
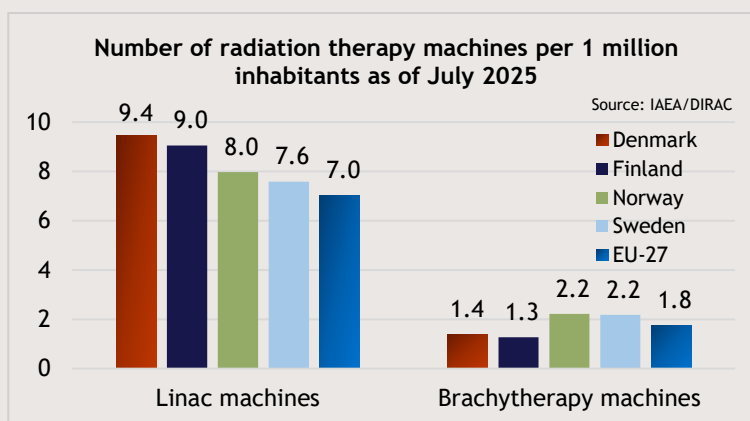
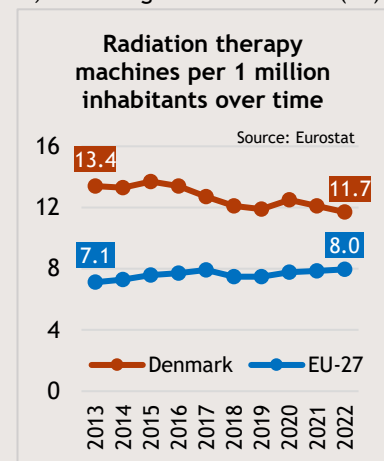
Radiation therapy machines

Background

- Radiation therapy plays a central role in some settings of lung cancer treatment, including concurrent chemoradiotherapy in stage III non-small cell lung cancer (NSCLC) and limited-stage small cell lung cancer (SCLC) (89-91).
- Improving access to radiation therapy requires not only sufficient equipment but also a qualified workforce to operate it. Strategic investments in both infrastructure and specialist personnel are essential to ensure timely and equitable access to radiation therapy for all patients in need (92).
- The International Atomic Energy Agency (IAEA) and the European Society for Radiotherapy and Oncology (ESTRO) recommend one linear particle accelerator (linac) per 450 newly diagnosed cancer patients (92, 93).
- Cancer Plan V underscores the importance of equitable access to high-quality cancer treatment and highlights radiation therapy as part of individualized care pathways (5). However, it does not include specific national targets for the availability of radiation therapy machines.

Current status in Denmark

- In 2022, Denmark had 11.7 radiation therapy machines per 1 million inhabitants, according to Eurostat data (65). This is the second highest density among EU countries with available data and 47% above the EU average of 8.0. However, this rate has gradually declined since 2013 (65).
- Denmark performs well in international comparison for linac availability, based on data from the IAEA's Directory of Radiotherapy Centres (DIRAC) (94). It has 9.4 linac machines per 1 million inhabitants as of July 2025, the highest among Nordic countries and above the EU average of 7.0 (94). By contrast, it has 1.4 brachytherapy machines per 1 million inhabitants, lower than the EU average (1.8) and trailing Norway and Sweden (2.2 each) (94).
- Neither Denmark, the EU average, nor any Nordic country currently meet the IAEA and ESTRO recommendation of one linac machine per 450 newly diagnosed cancer cases. Denmark performs just above the EU average (0.56 vs. 0.51) but remains slightly below Finland (0.64) and Sweden (0.58).
- Denmark currently has eight radiation therapy centers, with at least one in each of the five regions: two each in Hovedstaden, Midtjylland, and Syddanmark, and one each in Nordjylland and Sjælland (95). However, this does not say much about how available machines are used and whether patients receive timely and equitable access.



Recommendations

- Reverse the declining trend in machine density by investing in the maintenance, replacement, and expansion of radiation therapy infrastructure, and ensure investments are matched by sufficient qualified workforce capacity. Align efforts with the IAEA-ESTRO benchmark of one linac machine per 450 newly diagnosed cancer patients.
- Monitor and publish regional data on machine availability, capacity, and downtime to support transparency, guide equitable allocation of resources, and strengthen planning.
- Monitor and publish actual use and patient access to radiation therapy machines - nationally and by region - to support transparency and ensure timely and equitable treatment for all eligible cases.

Diagnosis and treatment

Availability of novel lung cancer medicines

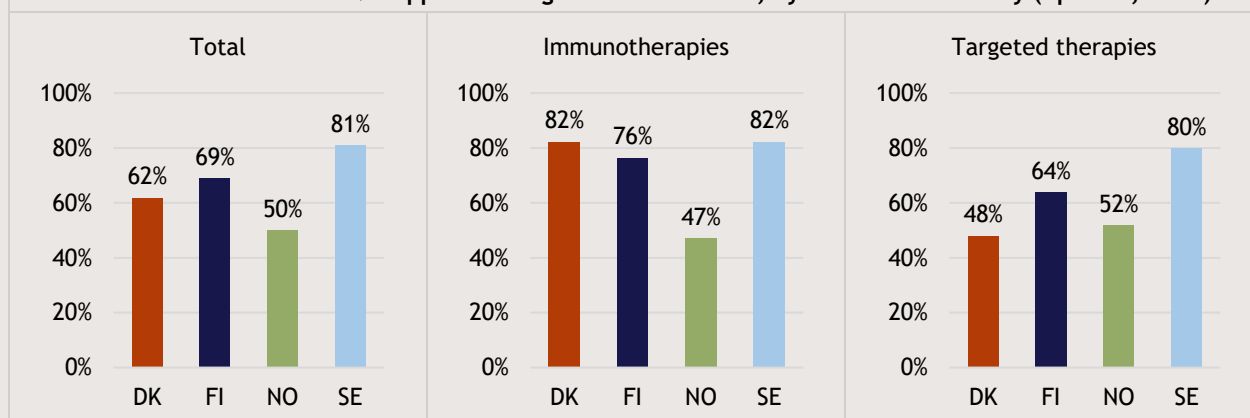
Background

- Over the past decade, a wave of new medicines has transformed lung cancer treatment standards. These primarily include immunotherapies, which enhance the immune system's ability to attack cancer cells, and targeted therapies, which focus on specific mutations that drive tumor growth. Most of these medicines have been approved since 2015 by the European Medicines Agency (EMA) for use in advanced-stage non-small cell lung cancer (NSCLC) and since 2019 in extensive-stage small cell lung cancer (SCLC); from 2021 onwards, they have also been introduced in early-stage NSCLC, and since 2025 in limited-stage SCLC (13, 96, 97).
- 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 (98). As of 12 January 2025, the EU HTA Regulation (HTAR) has entered into force for cancer medicines, introducing a joint (cross-country) clinical assessments of the effectiveness of new treatments (99).
- Cancer Plan V underscores the importance of timely and equitable access to novel cancer medicines as part of personalized treatment. It aims to accelerate national availability by enhancing data collection for conditional recommendations, establishing a national clinical database, and strengthening stakeholder collaboration (5).

Current status in Denmark

- According to the EFPIA Patients WAIT Indicator Survey, 63% of EMA-approved cancer medicines in the period 2020-2023 were reimbursed in Denmark at the beginning of 2025, higher than in Finland (57%), Norway (43%), and Sweden (50%) (100). The mean time from EMA approval to local reimbursement was almost one year (334 days) in Denmark, shorter than in Finland (395 days), Norway (637 days), and Sweden (448 days).
- According to the "Access to Treatment Atlas" by Lung Cancer Europe, an online database that tracks indication-level reimbursement information of lung cancer medicines across European countries (see Appendix Table A1), only 26 out of 42 EMA-approved lung cancer indications in 2015-2025 are available for patients as standard treatment in Denmark as of April 2025, corresponding to a 62% total reimbursement rate (101). This places Denmark behind Sweden (81%) and Finland (69%), but ahead of Norway (50%). When disaggregated by type of medicine, 82% of immunotherapy indications (14 of 17) are reimbursed in Denmark, compared to only 48% of targeted therapy indications (12 of 25), the lowest among the Nordic countries (101). This suggests a potential gap in access to precision medicines for Danish patients with oncogene-driven lung cancer, relative to patients in other Nordic countries.
- It is worth noting that lung cancer survival has improved across all Nordic countries at the same time as more and more novel medicines had been approved by the EMA and become accessible through national reimbursement in the 2010s (see "Disease burden"). While these parallel developments could be spurious, it does align with the overall survival gains observed in clinical trials of novel lung cancer medicines.

Reimbursement rates of EMA-approved lung cancer medicines, by treatment modality (April 16, 2025)



Source: own calculations based on Access to Treatment Atlas by Lung Cancer Europe (101).

Recommendations

- Address potential gaps in availability to ensure equal access across treatment modalities and molecular subtypes.
- Prioritize and accelerate the reimbursement and adoption of novel, effective, and cost-effective lung cancer medicines in line with recommended treatments in European clinical guidelines and as defined by the ESMO-MCBS framework (102).

Diagnosis and treatment

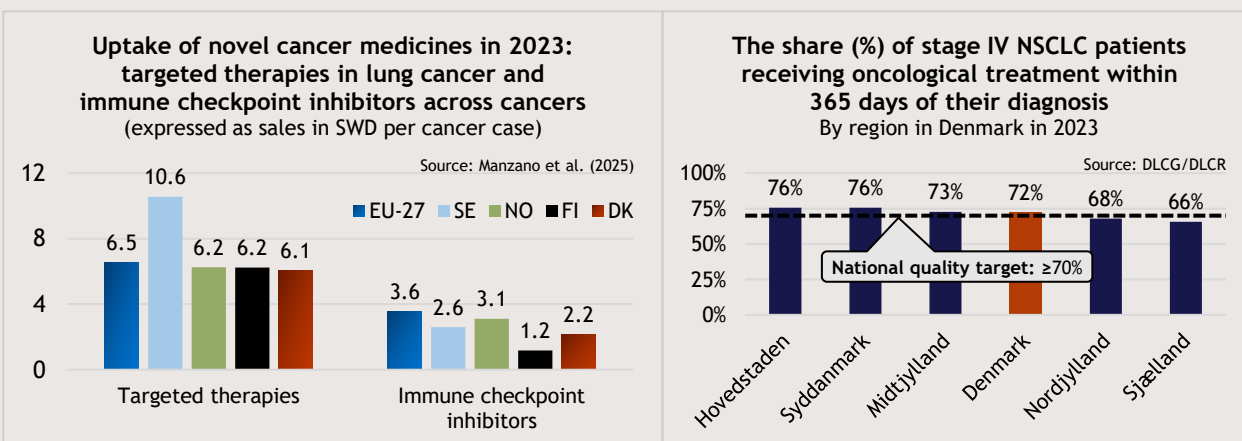
Uptake of novel lung cancer medicines

Background

- Lung cancer has been a major area of medical innovation, with immunotherapies (specifically immune checkpoint inhibitors) and targeted therapies reshaping standards of care across disease stages over the past decade (see previous indicator). Ensuring that these medicines are prescribed is essential to realizing their full potential.
- Reimbursement of novel medicines alone (see previous indicator) does not guarantee that patients are prescribed these medicines. The uptake (real-world use) of novel medicines depends on factors such as diagnostic capacity, infrastructure, treatment guidelines, and prescription practices. Previous research indicates that many lung cancer patients across Europe continue to receive outdated treatment regimens despite the availability of newer and guideline-recommended therapies (34), yet cross-country comparisons remain challenging, as few countries systematically collect and report real-world treatment data (97).
- Cancer Plan V highlights the need for stronger data collection and systematic follow-up to support the effective use of new cancer medicines. It includes plans to establish a national clinical database for personalized cancer care and to clarify how real-world data can be collected and used after treatments are introduced (5).

Current status in Denmark

- According to the IHE Comparator Report on Cancer in Europe 2025, the uptake of novel cancer medicines - measured in sold volumes (milligrams) - differs widely across European countries (13). Of 27 countries, Denmark ranked in 16th place in 2023, behind Sweden (6th place), Finland (13th place), and Norway (14th place).
- For targeted therapies in lung cancer, which are exclusively used to treat oncogene-driven NSCLC, Denmark's uptake was 6.1 standard weekly doses (SWD) per lung cancer case, according to the IHE Comparator Report (13). This was below the EU average (6.5) and the lowest uptake among the Nordic countries, well behind Sweden (10.6). Denmark's low uptake is consistent with the comparatively low national reimbursement of targeted therapies (see previous indicator) and may indicate potential gaps in access for patients.
- For immune checkpoint inhibitors, the uptake in Denmark was 2.2 SWD per cancer case, also below the EU average (3.6), according to the IHE Comparator Report (13). This figure reflects aggregated use across all cancer types, not just lung cancer. Among the Nordic countries, Denmark ranked above Finland (1.2) but remained behind Norway (3.1) and Sweden (2.6). While these results do not allow lung cancer-specific conclusions, they do suggest room for improvement in the overall use of immune checkpoint inhibitors in cancer care in Denmark.
- Denmark does currently not publicly report detailed lung cancer treatment patterns in the annual report of the DLCR (11). Registry data show persistent regional disparities in the share of stage IV NSCLC patients who receive active oncological treatment (systemic treatment or radiation therapy) within the first year of diagnosis. In 2023, this ranged from 66% in Sjælland to 76% in Hovedstaden (11). Both Sjælland and Nordjylland have failed to meet the national target of at least 70% in recent years, which may partly reflect that these regions have also historically reported the lowest per capita spending on cancer medicines in Denmark (103). A contributing factor to regional differences might be that the five regional medicine committees differ in how they handle the implementation of the Danish Medicines Council's recommended and equated treatments (104).



Recommendations

- Accelerate the adoption of immunotherapy and targeted therapies in line with European clinical guidelines.
- Systematically monitor and publish real-world treatment patterns in lung cancer as a quality indicator in the DLCR to ensure adherence with clinical guidelines.

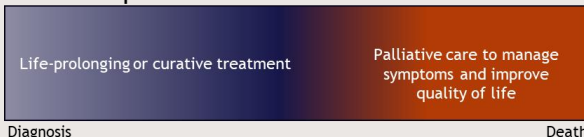
Survivorship

Palliative care services

Background

- In 2024, roughly a fifth (21%) of Denmark's population was aged 65 or older (105). This share has increased every year since 2004 (15%), reflecting a sustained trend of population aging and pointing to a growing demand for palliative care (PC) services (105).
- Cancer is the most frequent cause of need for PC among life threatening or life-limiting health conditions (106). 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 (107).
- 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 (108). The European Association for Palliative Care (EAPC) recommends two specialized PC services per 100,000 inhabitants (109).
- Cancer Plan V defines palliative care as a core component of high-quality cancer care and outlines broad initiatives to improve timely, equitable, and needs-based access (5). The plan aims to strengthen both basic and specialized palliation through national referral criteria, expanded training, outreach and hospice services, and wider use of digital solutions such as tele-palliation. Dedicated funding starts with 117 million DKK in 2025 and stabilizes at 52 million DKK annually from 2030 and onward. These funds are in addition to allocations under the 2024 Health Reform (7). Cancer Plan V sets no quantitative targets for palliative care (5).

Traditional palliative care

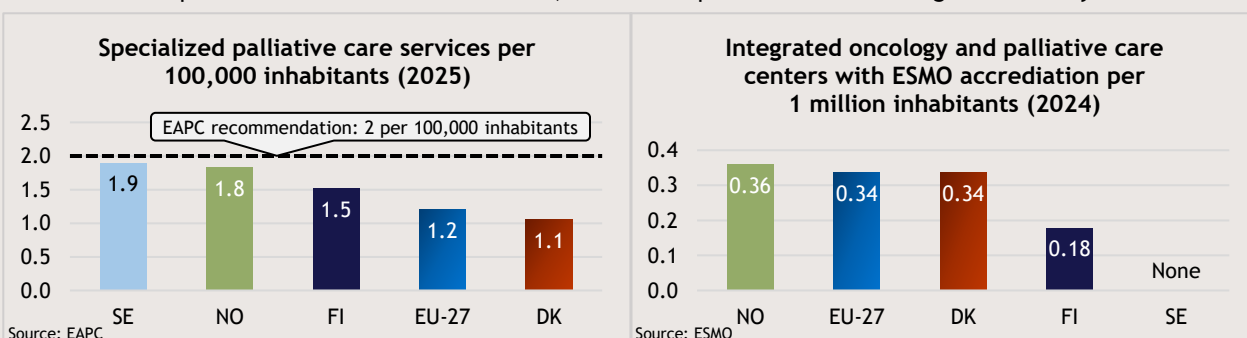


Integrated palliative care



Current status in Denmark

- Denmark has a national clinical guideline dedicated to palliative care pathways for lung cancer patients, most recently updated in 2025 (110). It outlines a structured approach for early and coordinated palliation across sectors, emphasizing the assignment of a named contact person (e.g., a physician or nurse) and access to "open admission" for patients in the terminal phase (i.e., nearing the end of life). While no quantified benchmarks are in place, the guideline identifies these two areas as key quality indicators to be monitored over time (110).
- National quality monitoring through the Danish Palliative Care Database (DPCD) shows progress in several aspects of specialized PC for cancer patients over the past decade, including expanded access (29% of patients who died had contact with specialized PC in 2010 vs. 50% in 2019) and increased use of multidisciplinary discussions within four weeks of contact (39% in 2010 vs. 73% in 2020) (111). However, only 66% of patients referred to hospital-based specialized PC teams in 2019 were seen within 10 days, well below the national target of 90% (111).
- Denmark has approximately 1.1 specialized (non-cancer-specific) PC services per 100,000 inhabitants in 2025, up from 0.9 in 2019 (106, 109). This is below the EU average (1.2 per 100,000) and lower than other Nordic countries. None meet the EAPC benchmark of 2 per 100,000, although Norway and Sweden come close.
- Based on a voluntary ESMO accreditation system of cancer centers, a comparison of the integration of PC with oncology care can be made (112). Denmark has two integrated oncology and PC centers, corresponding to about 0.3 centers per one million inhabitants in 2024, which is on par with the EU average and Norway.



Recommendations

- Ensure consistent implementation of the national clinical guideline for palliative care in lung cancer, with a particular focus on providing timely and equitable access for all lung cancer patients in need.
- Ensure an adequate and optimally distributed PC workforce to meet the growing demand from an aging population and align national efforts with the EAPC recommendation of two specialized PC services per 100,000.

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Appendix

Table A1: Methodology and sources for indicators

Governance	
National cancer plan	Analysis of Cancer Plan V (5). For dashboard overview: • Presence of national cancer plan in 2025 (yes = at benchmark)
National lung cancer strategy	Analysis of Cancer Plan V (5) and availability of lung cancer control strategies in Denmark. For dashboard overview: • Benchmarking not applicable.
Disease burden	
Survival rates	Data were sourced from Sundhedsdatastyrelsen (10) and NORDCAN (4). For dashboard overview: • Weighted average of 5-year age-standardized lung cancer relative survival of men and women in the diagnosis period 2019-2023, based on reported incidence over the same period (4).
Incidence (new cases)	Data were sourced from NORDCAN (4). For dashboard overview: • Lung cancer incidence crude rate per 100,000 inhabitants in 2023, All ages, Both sexes (4).
Mortality (deaths)	Data were sourced from NORDCAN (4). For dashboard overview: • Lung cancer mortality crude rate per 100,000 inhabitants in 2023, All ages, Both sexes (4).
Economic burden	
Health spending on cancer	Data on the economic burden of cancer in Denmark in 2018 were sourced from Hofmarcher et al. (2020) (12). Data on the healthcare and cancer care expenditure, as well as the cost of lost productivity among working-age patients in 2023 were sourced from Manzano et al. (2025) (13); values for 2000 to 2020 are unpublished data from Manzano et al. (2025) (13). For dashboard overview: • Healthcare spending on cancer per capita in EUR in 2023 (PPP-adjusted) (13). • Productivity losses from cancer per capita in EUR in 2023 (PPP-adjusted) (13).
Productivity losses	
Prevention	
Tobacco smoking	1st graph: OECD (29). Specification: Health: Risk factors for health: Tobacco consumption; share (%) of population aged 15+ who are daily smokers (years 1993, 2003, 2013, 2023). Data from 2022 instead of 2023 for Finland and Sweden. 2nd graph: Danes' smoking habits 2024 (31). 3rd graph: Tax Foundation (32). Figures are based on 2024 excise duties and VAT applied to the 2023 weighted average retail price (WAP), following the European Commission's reporting methodology. See source for clarification. For dashboard overview: • Smoking rates (daily and occasionally) among adults in 2024 (31).
Early detection	
Stage distribution at diagnosis	1st graph: Danish Lung Cancer Group/Registry - Data for 2016-2017 are sourced from the 2021 DLCC/DLCR report (36); data for 2018-2024 are from the 2024 DLCC/DLCR report (11). 2nd graph: The Danish Lung Cancer Group/Registry (11). Original data are reported at hospital level; for this graph, hospitals were grouped by administrative region: Bispebjerg/Frederiksberg and Herlev/Gentofte to Hovedstaden; Sjællands Universitetshospital to Sjælland; Odense/Svendborg, Sønderjylland, and Lillebælt to Syddanmark; Aarhus, Randers, Midt, and Gødstrup to Midtjylland; and Aalborg to Nordjylland. For dashboard overview: • Proportion of lung cancer patients diagnosed at stage I in 2024 (11).
Lung cancer screening	This visualization presents international results from various lung cancer screening efforts. Note that numbers are not directly comparable across studies. Early data from Croatia's national screening program were presented at the European Congress of Radiology (ECR) in 2024. Data from the NELSON trial (55), the HANSE study (56), and the UK Lung Cancer Screening Trial (57) are publicly available. For dashboard overview: • Benchmarking not applicable.
Diagnosis and treatment	
Health workforce	The eight graphs show the regional distribution (per 100,000 inhabitants) of selected health professionals relevant to lung cancer care. The data, source from the Danish Health Data Authority (Sundhedsdatastyrelsen) (62), reflect educational background and regional employment status. It includes individuals with relevant health education or specialization who were employed as of 31 December 2022. However, the data do not indicate whether these individuals currently apply their specialization in clinical practice. The figures should therefore be interpreted as reflecting the regional potential to deliver lung cancer care, rather than actual clinical capacity. Population figures are from Statistics Denmark as of 1 January 2023 (113). For dashboard overview: • Number of GPs per 100,000 inhabitants in 2021 (59).
Availability of diagnostic imaging equipment	1st graph & 2nd graph: Eurostat (65). Specification: Devices for medical imaging (CT and PET) per 100,000 inhabitants in hospitals and providers of ambulatory health care. Unweighted EU-average. 3rd graph: Eurostat and ECIS (65, 66). Specification 1: Devices for medical imaging (CT and PET) inhabitants in hospitals and providers of ambulatory health care. Specification 2: Estimated incidence by country - summary: Both sexes, Trachea, bronchus and lung, All ages, 2022. Unweighted EU-average. For dashboard overview: • Number of CT & PET scanners per 100,000 inhabitants in 2022 (65).
Use of diagnostic imaging equipment	1st graph: Eurostat (67). Specification: Number of examinations by medical imaging techniques (CT and PET) per 1 million inhabitants in hospitals and providers of ambulatory health care. Unweighted EU-average. Data are not available for Ireland and Sweden.

	<u>2nd graph</u>: DLCC (68). Original data are reported at hospital level; for this graph, the seven audited hospitals were grouped by administrative region to allow regional comparison. Aalborg was assigned to Nordjylland; Aarhus and Holstebro to Midtjylland; Odense and Vejle to Syddanmark; and Roskilde and Næstved to Sjælland. The Capital Region (Region Hovedstaden) was not covered in the audit. For dashboard overview: Number of CT & PET exams per 100,000 inhabitants in 2022 (67).
Lung cancer patient pathway and waiting times	Data illustrated in the graph are sourced from the Sundhedsdatastyrelsen's 2024 annual report "Monitorering af kræftområdet - Årsopgørelse 2024" (63). Timeframes reflect national clinical guidelines, not legally binding deadlines. For dashboard overview: Share of lung cancer cases initiating treatment within recommended timelines in 2024: weighted average of surgical treatment, medical treatment, and radiation therapy (63).
Multidisciplinary care	Data illustrated in the graph are sourced from the Danish Lung Cancer Group/Registry 2024 annual report (11). For dashboard overview: Share of lung cancer patients discussed at an MDT conference within 90 days of diagnosis (11).
Radiation therapy equipment	<u>1st graph</u>: Eurostat (65). Devices for medical imaging. Specification: Hospitals and providers of ambulatory healthcare, Radiation therapy equipment, 2013-2022, per 100,000 inhabitants. Data unavailable for Sweden 2013-2014; Germany, France, Netherlands, and Portugal 2013-2022; Belgium and Hungary 2018-2022; Latvia 2019-2022. Unweighted EU average. <u>2nd graph</u>: Data sourced from the DIRAC website (94). Population data sourced from Eurostat. <u>3rd graph</u>: Data sourced from the DIRAC website (94). Cancer incidence data sourced from GLOBOCAN. For dashboard overview: Number of linac machines per 450 newly diagnosed cases in 2025 (94).
Availability of novel lung cancer medicines	<u>All graphs</u>: The analysis is based on the Access to Treatment Atlas, launched by Lung Cancer Europe in April 2025 (101). The Atlas provides indication-level information on whether EMA-approved medicines are reimbursed nationally. While the dataset does not yet cover all currently EMA-approved indications in lung cancer, it represents the most detailed public source currently available for cross-country comparison. The underlying dataset for the constructed indicator covers the national reimbursement status of EMA-approved lung cancer indications between January 1, 2015 and April 16, 2025 (the launch date of the Atlas), i.e., older indications are excluded. A total of 60 EMA-approved indications for lung cancer were identified during this period based on the EMA Union Register of medicinal products for human use (96). Of these, 15 indications were not listed in the Atlas as of July 23, 2025 and were therefore excluded from analysis. An additional three indications were partially available in the Atlas but did not appear in the country-specific lists for any of the four considered Nordic countries and were excluded for consistency. This resulted in a final sample of 42 EMA-approved indications that were used to calculate reimbursement rates for this indicator, overall and disaggregated by treatment modality (immunotherapy and targeted therapy). For dashboard overview: Reimbursement rate of EMA-approved lung cancer medicine-indications in 2025 (101).
Uptake of novel lung cancer medicines	<u>1st graph</u>: Manzano et al. (2025) (13). Uptake was measured as standard weekly doses (SWD), defined as sold milligrams of medicines standardized by the recommended dosage. SWD were divided by the number of "cancer cases" per country. For targeted therapies, "cancer cases" refer to lung cancer deaths, and for immune checkpoint inhibitors they refer to cancer incidence (excl. non-melanoma skin cancer). For a detailed explanation of methodology, see section 4.6 in the source report (13). <u>2nd graph</u>: The Danish Lung Cancer Group/Registry (11). For dashboard overview: Mean of the two relative differences in the uptake of targeted therapies in lung cancer and immune checkpoint inhibitors (across all cancers) in 2023 (13).
Survivorship	
Palliative care services	<u>1st graph</u>: EAPC Atlas of Palliative Care (106). Palliative care specialized services per 100,000 inhabitants, p.71. Unweighted EU average. <u>2nd graph</u>: Data sourced from ESMO website (112). ESMO Accredited Designated Centers. Population data sourced from Eurostat. For dashboard overview: Number of specialized palliative care services per 100,000 inhabitants in 2025 (106).

