# IARC Impact in practice series
# The Denmark experience

As an IARC Participating State since 1990, Denmark has used IARC as a practical mechanism for turning its high-quality registries, cohorts, and epidemiological expertise into actionable international evidence. Through IARC, Denmark connects its national strengths to global research networks, common standards, and comparative analyses that no country could generate alone. This has strengthened prevention, informed regulation, supported screening and early detection strategies, and ensured that Danish experience helps shape how cancer risks, burden, and outcomes are measured across Europe and beyond. Membership gives Denmark both a voice in international priority-setting and concrete operational value through shared methods, benchmarking tools, and coordinated multicountry studies.

**Why IARC membership made the difference for Denmark:**

- **Scientific leadership at scale:** Between 2016 and 2026, Danish researchers co-authored 678 publications with IARC, representing just over one in ten Danish oncology papers. These collaborations place Danish institutions at the centre of large international research programmes on cancer causes, prevention, survival, and population trends.
- **Evidence used across government:** Around 80 Danish national and local policy documents cite IARC research, including documents from Miljøstyrelsen, Sundhedsstyrelsen, Statens Institut for Folkesundhed, the Folketing, and municipalities. IARC evidence supports decisions on PFAS and other hazardous chemicals, alcohol and obesity prevention, physical activity, and measures such as the planned 18+ age limit for indoor tanning.
- **Registry power for better planning:** Through IARC, Denmark's population-based registries feed into Nordic and international platforms that compare cancer incidence, survival, and future burden across countries using harmonised methods. This gives Denmark practical tools to benchmark performance, identify inequalities, and plan more effectively for prevention and care. A Danish Cancer Society–funded project with IARC is also using shared Nordic data to model future cancer burden under different prevention scenarios.
- **Standards, skills, and long-term impact:** Training placements, competitive fellowships, and formal partnerships with the Danish Cancer Society and the University of Copenhagen help sustain Danish expertise in cancer epidemiology and surveillance. At the same time, Danish experts contribute to IARC Monographs, Handbooks, and WHO classifications, ensuring that Danish experience informs both global standards and national action.

## Part I. Scientific leadership through international collaboration

### Exceptional collaboration intensity and depth

Denmark's partnership with IARC is highly intensive and deeply integrated into global cancer research networks. Over 2016-2026, Danish researchers produced **6,331 oncology publications**, of which **678 were co-authored with IARC**, averaging around **68 joint papers per year**[1]. This means **just over one in ten** Danish oncology articles involve IARC collaboration, a striking share for a country of Denmark's size and one that places Danish institutions among the most scientifically engaged Participating States.

The collaboration is defined not only by volume but by exceptional international coordination. IARC-linked papers with Danish co-authors involve a **median of 36 institutions per article, compared with 4 institutions for Danish oncology publications without IARC participation**, and connect **2,366**

### Cancer in Denmark: a high-income burden with opportunities for prevention

Based on recent Globocan estimates, cancer remains a major public health challenge in Denmark, with around **48 800 new cases** and more than **17 200 deaths** each year. Age-standardised incidence is among the highest globally, reflecting both well-established early detection and screening as well as continued exposure to modifiable risk factors such as tobacco, alcohol, obesity, and UV radiation. Although mortality rates are lower than in many countries with similar incidence, cancer is still a leading cause of premature death, underlining the need to fully exploit prevention and early-detection opportunities.

[1] Data derived from Web of Science records of IARC-Denmark co-authored papers published between January 2016 and January 2026.

**partner institutions across 179 countries**. This pattern shows that Denmark's work with IARC is firmly embedded in large, multicountry infrastructures, positioning Danish groups at the core of truly global consortia.

Micro-topic analysis confirms that Denmark-IARC publications are concentrated in high-impact, data-intensive domains. The largest clusters are **genome-wide association studies**, **nutrition and obesity**, and **screening disparities**, complemented by strong activity in **metabolomics**, **genetic testing**, **metabolic syndrome**, **fatty acids**, and **disease mapping**, as well as site-specific research on **ovarian, pancreatic, thyroid and lymphoid cancers**, **HPV and cervical cancer**, and **colonoscopy-based screening**. Together, these patterns depict a partnership focused on cutting-edge molecular and cohort-based epidemiology, where multinational pooling and high-quality Danish registry data are essential to deliver policy-relevant evidence.

### ➔ Leadership in European and global research infrastructure

Through IARC, Danish institutions are not simply participants in international research: they help power major European and global infrastructures that generate the evidence base for cancer prevention, screening, and risk regulation. These platforms allow Danish data, expertise, and public-health strengths to be used at a scale far beyond what any country could achieve alone, while also ensuring that Denmark benefits directly from shared methods, pooled evidence, and international benchmarking. Examples from the past decade (2016-2026) include:

- **Nordic cancer statistics and forward planning.** As outlined in **Box #2**, Denmark's population-based registries are a core component of **NORDCAN 2.0**, the Nordic platform for comparable cancer statistics. Current joint work with IARC and the Danish Cancer Society goes a step further: it is developing scenario-modelling tools that can estimate how different prevention strategies may affect future cancer burden, turning registry data into practical support for policy and priority-setting.
- **Prospective cohorts and exposome research.** Danish cohorts and biobanks are deeply embedded in IARC-coordinated prospective research. The **Diet, Cancer and Health** cohort, Denmark's contribution to the **European Prospective Investigation into Cancer and Nutrition (EPIC)**, has followed 57,053 adults from Copenhagen and Aarhus since the mid-1990s, combining detailed dietary and lifestyle information with biological samples and register linkage. This makes Denmark a major contributor to multinational studies on diet, obesity, and cancer risk, including recent evidence showing that healthier plant-based diets can reduce the risk of developing both cancer and cardiometabolic disease.
- **Radiation and environmental epidemiology.** Denmark is one of the five founding countries in **COSMOS (Cohort Study on Mobile Phone Use and Health)**, the large European cohort on mobile phone use and health, with around 30,000 Danish participants. Findings from COSMOS, together with complementary

**Box #2: Danish registry leadership in global cancer evidence**

A distinctive strength of the Denmark–IARC partnership lies in Denmark's long-standing tradition of population-based registries and nationwide follow-up. The Danish Cancer Registry, established in 1943, is one of the oldest continuous cancer registries in the world. Coupled with the unique personal identification number and comprehensive health and social registers, it enables decades of follow-up on incidence, survival, treatment, and long-term outcomes for the entire population. Near-complete coverage and high-quality linkage provide an exceptional foundation for epidemiology, screening evaluation, and health-system planning.

Through IARC, these national assets feed directly into **NORDCAN**, the Nordic cancer statistics platform, which delivers harmonised and comparable data on incidence, mortality, prevalence, and survival across the Nordic countries. **NORDCAN 2.0** now offers more than 70 years of data for numerous cancer sites and interactive tools to visualise trends and project future burden. Denmark, together with IARC and Nordic partners, is also engaged in the redevelopment of NORDCAN to support scenario modelling of prevention and early detection policies, making the platform an international reference for benchmarking outcomes and assessing the real-world impact of cancer-control strategies.

Denmark also plays an active role in the **International Cancer Benchmarking Partnership (ICBP)**. Within this framework, the **SurvMark-2** programme coordinated by IARC develops standardised survival indicators, staging definitions, and registry quality methods to enable fair and robust international comparisons across high-income countries. Danish registry experts contribute high-quality data and methodological expertise, helping to interpret international differences in lung, oesophageal, and other cancers, and to identify opportunities for earlier diagnosis and improved care.

By embedding its registries within IARC-coordinated platforms, Denmark helps shape the international standards for measuring and comparing cancer burden and survival, ensuring that Danish and Nordic experience directly inform global evidence and policy.

Nordic analyses of glioma incidence trends, provide some of the strongest long-term evidence available on mobile phones and brain tumour risk, helping inform national and European radiation-protection guidance. Danish data have also contributed to influential IARC-linked work on declining human fertility and male reproductive cancers, highlighting the potential role of endocrine-disrupting environmental exposures.

- **International survival benchmarking.** Within the IARC-coordinated **International Cancer Benchmarking Partnership (ICBP) SurvMark-2** collaboration (see **Box #2**), Denmark contributes high-quality registry and clinical data to comparative studies of lung, oesophageal, and other cancers. These analyses do more than describe differences between countries: they help identify where earlier diagnosis, more complete staging, or better care pathways can improve outcomes in practice.
- **Global capacity-building and childhood cancer.** Denmark's collaboration with IARC also extends beyond Europe. Together with the Danish Cancer Society, Denmark contributes to projects such as the **Evaluating Medical Oncology Outcomes (EMOO)** study on lung cancer care in Asia, as well as multinational work on childhood solid tumours, paediatric CT radiation, and **Environmental Hazards and Prevention of Acute Lymphoblastic Leukaemia in Children (ENV-ALL)**. These initiatives extend Danish methodological strengths into international cancer-control capacity-building while also advancing evidence on some of the most sensitive and policy-relevant areas of cancer prevention.

### ➔ Shaping the global cancer research agenda and standards

Danish experts and diplomats help steer IARC's direction. Through seats on the **Scientific Council and Governing Council**, and active involvement in developing the Medium-Term Strategy (MTS), Denmark contributes directly to setting IARC's research and capacity-building priorities. This high-level engagement is a form of **soft power**. By shaping IARC's work programme, Denmark brings national and regional realities into global decision-making while gaining early insight into emerging priorities, methods, and partnership opportunities, aligning its own cancer plans and investments with cutting-edge international evidence.

Denmark's engagement with IARC extends to **active leadership in international standard-setting**. During the 2020-2025 cycle, 8 Danish experts have contributed to IARC's flagship normative programmes, including:

- **IARC Monographs Volume 126:** *Opium consumption*
- **IARC Monographs Volume 131:** *Cobalt, antimony compounds, and weapons-grade tungsten alloy*
- **IARC Monographs Volume 132:** *Occupational exposure as a firefighter*
- **IARC Monographs Volume 136:** *Talc and Acrylonitrile*
- **IARC Handbooks of Cancer Prevention Volume 20A:** *Reduction or cessation of alcoholic beverage consumption and cancer risk*
- **World Health Organization Classification of Tumours (Blue Books) 5th and 6th editions:** Editorial board and expert contributions supporting international standards for tumour pathology classification, diagnostic criteria, and reporting systems across multiple organ systems

## Part II. From evidence to action: IARC's impact on national Public Health

### ➔ Evidence that informs national regulation and prevention policy

In Denmark, IARC assessments are used as operational tools for risk assessment, planning, and prevention. An Overton analysis of Danish public-sector documents (2005-2026) identified **around 80 Danish policy and governmental documents** (2015–2025) citing IARC research, Citations are concentrated in authorities and advisory bodies responsible for **chemical and environmental regulation**, **cancer prevention**, and **health-system planning**, with frequent citations from **Statens Institut for Folkesundhed (National Institute of Public Health), Miljøstyrelsen (Environmental Protection Agency), Sundhedsstyrelsen (Danish Health Authority), the Folketing (Parliament),** and the **City of Copenhagen**. This pattern shows that IARC evaluations are routinely embedded in official analyses, reports, and background notes that shape Danish standards and public-health strategies.

IARC evidence is used to support, for example:

- risk assessments of **PFAS and other hazardous chemicals** in consumer products and the environment;
- guidance on **physical activity, obesity, alcohol, and cancer** in national prevention packages and surveillance reports;
- assessments of **air pollution and lung cancer risk** in urban and climate-related health planning;
- parliamentary background notes linked to **cancer plans and prevention initiatives**.

**Box #3: From carcinogen classification to youth protection: indoor tanning regulation**

Denmark's planned ban on sunbed use for minors is a clear example of how international cancer evidence can be translated into practical public-health protection. **After IARC classified UV-emitting tanning devices, and both UVA and UVB radiation, as carcinogenic to humans (Group 1),** this evidence was taken up in Danish health guidance. In its 2025 *Faktaark solarium*, the Danish Health Authority **explicitly refers to the IARC classification** and highlights the sharply increased melanoma risk associated with sunbed use at a young age.

Building on this evidence, and on WHO recommendations, the Danish government has moved to introduce a **statutory 18-year age limit for indoor tanning.** Announced in 2025 as part of a broader cancer-prevention package, the measure is designed to reduce avoidable exposure of children and adolescents to a known carcinogen. The proposed legal changes also require age-verification systems and tighter technical controls on tanning devices, strengthening both enforcement and consumer protection.

For policymakers, this is a concrete example of IARC's value: an independent carcinogen evaluation feeding directly into national guidance, legislative action, and stronger prevention for young people.

A concrete illustration is **Miljøstyrelsen's report "Perfluoroalkylated substances: PFOA, PFOS and PFOSA" (2015)**, which cites the IARC evaluation of the **carcinogenicity of perfluorooctanoic acid (PFOA)** and related substances when characterising cancer hazards. The report uses these IARC findings as a key scientific input for Danish and European risk management of PFAS, including setting priorities for restrictions, exposure reduction, and consumer protection. This example shows how IARC hazard classifications feed directly into Danish chemical regulation, with similar use of IARC evidence observable in air-pollution assessments and national prevention guidance.

➔ **A European multiplier for evidence-based cancer policy**

Across the European Union (EU), IARC acts as a **multiplier of national efforts**, turning scientific evidence into coordinated, practical action at scale. An Overton analysis (2005-2026) identified **over 500 EU policy and technical documents** citing IARC research, demonstrating that IARC evaluations are routinely used by EU institutions and agencies to inform legislation, guidance, and public health strategies.

IARC both generates the evidence and translates it into action. Through large research infrastructures such as **EPIC (the European Prospective Investigation into Cancer and Nutrition)** (see Section I), it produces long-term, high-quality data on risk factors and outcomes relevant to Europe. This is complemented by Europe-wide analyses that directly shape policy choices and guidance, for example, work showing that recent increases in prostate cancer incidence in Europe are likely driven by PSA testing patterns (with implications for screening approaches), comparative burden estimates for Europe (millions of new cancer cases and deaths annually), and major studies mapping socioeconomic inequalities in cancer mortality to inform targeted cancer control.

IARC also produces actionable modelling, showing that scaling up tobacco control could prevent one in four lung cancer cases in Europe (about **1.65 million fewer cases over 20 years**), and supports implementation through initiatives such as EU-funded implementation research such as **EU Joint Action on the implementation of cancer screening programmes (EUCanScreen)**, which sets common standards for screening delivery and quality assurance and **EUROHELICAN**, assessing the feasibility of population-based *H. pylori* test-and-treat strategies for gastric cancer prevention. In parallel, IARC remains a core technical partner in efforts to improve the quality, comparability and timeliness of cancer registry data and to refine indicators used in the **European Cancer Information System (ECIS)** and the **European Cancer Inequalities Registry (ECIR)**.

Together, this body of evidence feeds into one of IARC's flagship initiatives, the **European Code Against Cancer (ECAC)**, which converts evidence into clear, practical prevention recommendations for governments and citizens across Europe.

IARC also strengthens Europe's prevention ecosystem by convening and supporting major collaborative platforms, such as **Cancer Mission Europe** and **Cancer Prevention Europe** (including its Learning Centre), that accelerate translation of evidence into capacity building and practice across Member States.

By combining independent evidence, harmonised methods, and implementation support, IARC enables Participating States to **benchmark performance, share best practices, and adopt proven prevention strategies faster and more efficiently** than acting alone. For Denmark, this collaboration provides not only

access to data and expertise, but a seat at the table where **European and global cancer control standards are defined**.

## Part III. Building capacity for lasting impact

### ➔ Growing talent and partnerships for impact

Training and knowledge exchange are central to the Denmark–IARC partnership and take place on a continuous basis. During the 2021–2025 cycle alone, **seven Danish trainees** have undertaken medium-term attachments at IARC. In addition, **three Danish have received IARC's highly competitive postdoctoral fellowships** (in 1973, 1986, and 2004). This engagement is part of IARC's wider capacity-building ecosystem, which includes the IARC Research Training and Fellowship Programme, the IARC Learning Programme (including the Summer School), and global networks for cancer registries, screening, and biobanking. Together, these initiatives train thousands of professionals worldwide and generate durable benefits: in a 2024 outcome survey, **98% of postdoctoral respondents reported transferable skills, 72% maintained research ties with IARC after training, and over half progressed to leadership roles (53%) or managed independent research funding (52%)**. This creates a **two-way multiplier effect**: expertise gained at IARC is reinvested in national institutions, while the priorities, data, and methodological strengths of participating countries feed back into IARC's networks, helping shape future research, standards, and capacity-building efforts.

Institutional collaboration has also deepened. A **Memorandum of Understanding with the Danish Cancer Society (2019–2027)** and a **Memorandum of Agreement with the University of Copenhagen (2019–2023)** formalise long-term cooperation, anchoring joint projects, training placements, and knowledge exchange, and aligning Danish research priorities with IARC's global cancer prevention agenda.