Global status report on cancer 2026

The future we choose together

International Agency for Research on Cancer
World Health Organization

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Contents

Foreword from the WHO Director-General ..... **v**

Foreword from the IARC Director ..... **vi**

Acknowledgements ..... **vii**

Abbreviations ..... **xii**

Executive summary ..... **xiv**

1 Introduction **1**

1.1 A critical juncture for cancer control 1

1.2 A critical measure for health systems 4

1.3 A critical focus on inequity and on listening to people affected 5

1.4 Scope and purpose of this report 5

2 The global cancer burden: what we know from the data and from the people affected **7**

2.1 Global cancer incidence rates 8

2.2 Global cancer mortality rates and survival 11

2.3 Tracking SDG 3.4: premature mortality from NCDs 21

2.4 Trends: current drivers and future projections 26

2.5 Capturing the lived experience of people affected by cancer 38

2.6 Cancer's financial burden and economic costs, for health systems and societies 54

3 Status update: progress made and key gaps in implementation **57**

3.1 Risk factors and prevention 58

3.2 Early detection 82

3.3 Treatment 107

3.4 Supportive, palliative care and survivorship care 123

4 What drives success, what slows our progress: global alignment and systemic challenges **135**

4.1 Monitoring and evaluating our progress together 135

4.2 Global leadership, translated into integrated action 141

4.3 National transition from strategies to implementation 178

4.4 Individual and community level priorities 198

5 A future we choose together: better capabilities, better protections, better value **205**

5.1 Redefining success: ending cancer's identity crisis 205

5.2 Three shifts: better capabilities, better protections, better value 208

5.3 Seven recommendations: shared actions for a shared future 211

5.4 The future we choose together 224

References **226**

Annex **250**

Foreword from the WHO Director-General

While some health crises unfold quickly, others build more slowly. That makes them no less devastating. The data in this report make clear that cancer is an unfolding global crisis.

In certain aspects of cancer control – such as those where progress is driven by WHO's global initiatives on breast, cervical and childhood cancer – there are clear and encouraging signals that our approaches work. Fewer women are being diagnosed with cervical cancer due to increasing HPV vaccination coverage and screening. The global cancer burden has also been blunted by reductions in tobacco use driven by the WHO Framework Convention on Tobacco Control. Our ability to diagnose cancer earlier and treat it more effectively have improved drastically because of sustained, substantial investments in research and innovation. More people have access to radiotherapy. Governments are increasingly prioritizing cancer in their national health policies.

These successes only tell part of the story. Across all cancers and all stages of the cancer care continuum, progress remains unevenly distributed and highly inequitable, between countries and within them.

The testimonies gathered through the *WHO Global survey on the lived experience of people affected by cancer* give resonance to the depth, breadth, and long-lasting impacts of cancer, for the individual who is diagnosed and for their family. Listening to and learning from the people directly affected through a people-centred approach must be recognized as a strategic driver of national and global cancer agendas that will contribute to improve outcomes worldwide – not an afterthought.

Another important driver of progress is robust monitoring. Measurement builds trust, improves delivery and promote accountability. The upcoming WHO Global Cancer Monitoring Framework – that set the foundation for this report –provides clear, comparable and carefully chosen indicators to deliver progress.

Both the weight of the numbers and the power of the personal stories presented in this report attest to the urgent need for us to unite globally, across all stakeholder groups, to reorient our efforts and bring about three shifts in cancer control: first, better capabilities to implement the interventions that we know can work; second, better protection against the harms of cancer, including social protection and universal health coverage; and third, better value, measured in terms of survival, function and quality of life.

Achieving these shifts will require us all to play our part. The choices we make now and in the coming years will shape the burden and the experience of cancer for years to come. Only with all the necessary elements in action can our ambitions translate into meaningful progress for all and allow us to build the future we choose together – and a better future characterized by health for all.

Dr Tedros Adhanom Ghebreyesus
WHO Director-General

Foreword from the IARC Director

The WHO *Global status report on cancer 2026* comes at a pivotal moment for global health. Cancer continues to expand in scale and complexity, driven by demographic change, evolving risk factors, and persistent inequities in access to prevention and care. While the global burden is rising, so too is our capacity to respond – through stronger scientific evidence, better data, and more effective preventive interventions.

As the World Health Organization's specialized cancer research agency, IARC's role is to generate the scientific evidence that underpins effective cancer prevention and control and to provide the global cancer statistics that inform national and international responses. The findings and data presented in this report draw, in part, on IARC's scientific contributions. Over recent decades, this evidence base has grown substantially. Today, the challenge is no longer only to understand cancer – but to ensure that knowledge is translated into action, equitably and at scale. A further and equally pressing challenge is to address the persistent inequity in access to the data needed to monitor and evaluate progress in cancer control – because without reliable, inclusive surveillance, the most vulnerable populations risk remaining invisible to policy.

This report highlights a central reality: progress is uneven. Important advances in prevention, early detection, treatment, and survival coexist with major gaps, particularly in low- and middle-income countries. Strengthening cancer surveillance systems, expanding population-based registries, and improving data quality remain essential to guide national policies, allocate resources, and measure impact.

A key strength of this report is its integrated perspective – combining robust epidemiological data with insights into patient experience and system performance. This approach reinforces a critical point: cancer control must be people-centred, grounded not only in statistics but in lived realities.

Scientific evidence shows that a substantial proportion of cancers can be prevented – up to 40%. Research from IARC has been instrumental in establishing this estimate, reducing exposure to established risk factors – such as tobacco, alcohol, unbalanced diets, infections, environmental and occupational hazards – remains one of the most powerful levers for impact. At the same time, scaling up early detection, screening, and access to care is essential to improve survival and quality of life.

Looking ahead, progress will depend on three priorities: first, stronger data and accountability frameworks to track results and guide action; second, greater investment in implementation, ensuring that proven interventions reach all populations; and third, sustained international collaboration, linking research, policy, and practice.

Addressing cancer effectively requires aligning science with policy, and innovation with equity. This is at the core of IARC's mission – to bridge research and action for global cancer prevention.

Cancer affects all societies, but its burden is not borne equally. This report calls for renewed commitment to ensuring that advances in knowledge and care benefit everyone, everywhere.

Dr Elisabete Weiderpass, Director of the International Agency for Research on Cancer (IARC)

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Abbreviations

AI	artificial intelligence
ASIR	age-standardized incidence rate
ASMR	age-standardized mortality rate
CBE	clinical breast examination
COVID-19	coronavirus disease
CT	computed tomography
DALY	disability-adjusted life year
EML	essential medicines list
DBT	digital breast tomosynthesis (3D mammography)
FCTC	Framework Convention on Tobacco Control
FIT	faecal immunochemical test
GAPPA	Global action plan on physical activity
GBCI	Global Breast Cancer Initiative
GCMF	Global Cancer Monitoring Framework
GDP	gross domestic product
gFOBT	guaiac faecal occult blood test
GICC	Global Initiative for Childhood Cancer
GICR	Global Initiative for Cancer Registry Development
HBV	hepatitis B virus
HCV	hepatitis C virus
HIC	high-income country
HDI	Human Development Index
HIV	human immunodeficiency virus
HPV	human papillomavirus
IARC	International Agency for Research on Cancer
IAEA	International Atomic Energy Agency
KPI	key performance indicator
LIC	low-income country
LMIC	low- and middle-income country
L-MIC	lower-middle-income country
M&E	monitoring and evaluation

MPOWER	Package of measures to assist country-level implementation of effective interventions to reduce the demand for tobacco contained in the WHO FCTC, where M: Monitor tobacco use and prevention policies; P: Protect people from tobacco use; O: Offer help to quit tobacco use; W: Warn about the dangers of tobacco; E: Enforce bans on tobacco advertising, promotion and sponsorship and R: Raise taxes on tobacco
MRI	magnetic resonance imaging
NCCP	national cancer control plan
NCD	noncommunicable disease
NEML	national essential medicines list
NGO	nongovernmental organization
NHL	non-hodgkin lymphoma
NSOAP	national surgical, obstetric and anaesthesia plan
OECD	Organisation for Economic Co-operation and Development
OOP	out-of-pocket
PBCR	population-based cancer registry
PED	patient experience data
PET	positron emission tomography
PSA	prostrate-specific antigen
QoL	quality of life
R&D	research and development
RCT	randomized controlled trial
SD	standard deviation
SDG	Sustainable Development Goal
UHC	universal health coverage
UICC	Union for International Cancer Control
U-MIC	upper-middle-income country
UN	United Nations
USA	United States of America
VIA	visual inspection with acetic acid
WCRF	World Cancer Research Fund
WHA	World Health Assembly
WHO	World Health Organization

Executive summary

The cancer burden: near universal in its reach, highly inequitable in its impact

Cancer will afflict one in five of us in our lifetime, and affect nearly all of us. Our experience of the disease and chances of surviving now depend less on the stage or biology of our disease than on where we live and our economic circumstances. 20.6 million people received a cancer diagnosis worldwide[1] in 2024 (19.5 million new cancer diagnoses excluding non-melanoma skin cancer: 9.9 million in men and 9.6 million in women); the number of new cancer diagnoses is projected to reach 35 million per year by 2050. But this underplays the impacts of the global cancer burden. One in five of us will develop cancer ourselves. When we account for the impacts of a cancer diagnosis on close family members, roughly 92% of all people globally will be affected by cancer at least once in their lifetime.

Yet although the cancer burden is near-universal in its reach, people's lived experience of the disease is highly inequitable, with significant variation both between and within countries. New WHO estimates of breast and childhood cancer survival reveal the extent of global inequalities: in high-income countries (HICs), where cancers are more likely to be diagnosed early, five-year net survival now exceeds 85%; in low-income countries (LICs) it drops below 45%. Cancer is increasingly a driver of premature mortality, and in 2021, was the leading cause of premature mortality in 41 countries, the second leading cause in 37 countries, and third leading cause in 47 countries. Only 12 countries are on track to meet the target of reducing premature cancer mortality by one-third by 2030. In contrast, 48 countries have rising rates of premature mortality from cancer linked to rising cancer burdens.

The lived experience of cancer: human, financial and societal hardships

The WHO global survey on the lived experience of people affected by cancer provides valuable qualitative insights into the human, financial and societal impacts of cancer on people's lives, given voice in their own words. Across all settings, a cancer diagnosis often leads to substantial hardship. The psychosocial burden of cancer is profound and prolonged: respondents to the global survey report significant disruptions to emotional well-being with more than half experiencing mental illness, at least 45% suffering financial hardship, and nearly all caregivers reported strain including unpaid services, prolonged grief or social isolation.

For individuals and families, cancer brings acute and often prolonged financial hardship due to high out-of-pocket costs, lost income, and the risk of catastrophic health expenditure: at household level, cancer is a leading driver of medical bankruptcy. Even in countries with

[1] Including non-melanoma skin cancers.

universal health coverage (UHC), indirect costs of cancer – loss of employment or productivity for people diagnosed with cancer and their caregivers, transportation costs, childcare – can be ruinous. Approximately half of patients and their families currently experience catastrophic health expenditures. More broadly, the overall economic burden of cancer between 2020 and 2050 is equivalent to an annual tax of approximately 0.55% on global gross domestic product.

Implementation progress: some success, substantial gaps

Significant, measurable progress has been made in cancer prevention and control globally, particularly with accelerated uptake of cancer policies, but a substantial implementation gap has emerged between plans and outcomes. Moderate progress has been achieved in select areas like tobacco control. Implementation of tobacco control policies under the WHO Framework Convention for Tobacco Control (FCTC) has contributed to a 27% reduction in the prevalence of tobacco use since 2010, but incomplete delivery of recommended implementation measures known as MPOWER[2] contributes to ongoing tobacco use. In cervical cancer, the introduction of one-dose vaccination schedules has enabled significant progress toward elimination targets, but a substantial implementation gap exists: although 85% of countries have integrated human papillomavirus (HPV) vaccination into their national immunization programmes, what matters is whether girls are getting the vaccine. Coverage with the first dose of HPV among girls is now estimated at 31%. While far from the target of 90% by 2030, it represents moderate progress from the 17% coverage in 2019. Breast cancer control, a WHO Best Buy for the prevention and control of noncommunicable diseases (NCDs), has not been broadly prioritized: outcomes vary dramatically, with cancer survival exceeding 85% in HICs but as low as 42% in many low- and middle-income countries (LMICs).

Early detection programmes delivered through a primary health care approach, which have transformed cancer survival rates in HICs, are not implemented at scale in most LMICs due to inadequate infrastructure, insufficient workforce capacity and lack of sustained financing.

Only 28% of countries include a minimum cancer management package in their UHC benefit packages, meaning that a large proportion of the world's population still lacks access to basic cancer care. Even when treatment is available, it can remain inaccessible and out of reach in LMICs, where high out-of-pocket costs cause catastrophic financial hardship and contribute to up to 90% of people unable to appropriately complete treatment in some settings. An overview of key implementation gaps contributing to the plan-to-action gulf in cancer control is presented in Table 1.

[2] MPOWER: Package of measures intended to assist country-level implementation of effective interventions to reduce the demand for tobacco, contained in the WHO FCTC, where M: Monitor tobacco use and prevention policies; P: Protect people from tobacco use; O: Offer help to quit tobacco use; W: Warn about the dangers of tobacco; E: Enforce bans on tobacco advertising, promotion and sponsorship and R: Raise taxes on tobacco.

Table 1 Status overview: progress and key implementation gaps in cancer prevention and control

Cancer control domain	Current status	Key implementation gaps
Tobacco use prevalence	**Moderate progress**	**Plans:** 155 countries have at least one best practice MPOWER measure, up from 44 in 2007 **Outcomes:** approximately 27% reduction in global tobacco use by 2025 compared to 2010 baseline
Alcohol use	**Insufficient progress**	**Plans:** uneven progress in SAFER implementation; alcohol control policies remain weak in LMICs with only 16 of 46 sub-Saharan African countries having formal alcohol policies **Outcomes:** alcohol consumption fell to 5.0 L per capita in 2022 from 5.7 L in 2010
Unhealthy diet	**Partial progress** (limited data)	**Plans:** high uptake of sugar-sweetened beverage taxation, but only around 40–60 countries have implemented measures to restrict food marketing to children **Outcomes:** limited high-quality data; available data suggest insufficient fruit and vegetable intake for cancer risk reduction
Excess body weight (obesity)	**Worsening trend**	**Plans:** most countries slow to implement system-level measures, with obesity policies existing in many HICs but lacking in LMICs **Outcomes:** no country has halted rise in obesity; 31% to 43% increase in overweight compared to 2010
Physical inactivity	**Worsening trend**	**Plans:** fewer than half of countries have a current, costed, and funded national physical activity policy **Outcomes:** 31% of adults do not meet guideline recommendations; 80% of adolescents insufficiently active
Infection-associated cancers (HPV, HBV, HIV)	**Partial progress**	**Plans:** broad adoption of vaccination programmes with 85% of countries including HPV vaccination in their immunization programmes, 115 countries with HBV birth-dose vaccination (2026) **Outcomes:** infection-related cancers decreased from 16% in 2008 to 10% in 2022; population-weighted vaccination coverage for HPV only 31% globally (2026)
Early diagnosis programme	**Insufficient progress**	**Plans:** 90% of national cancer control programmes (NCCPs) include early detection for breast/cervical, but few have structured pathways with measurable targets **Outcomes:** 91% of HICs have >60% of breast cancer cases diagnosed in stage I + II compared to 28% of LMICs with available data (2025)
Screening programmes	**Insufficient progress**	**Plans:** screening remains a cancer policy priority with more than 75% having national cancer screening programmes; 45% of countries have adopted HPV-based screening **Outcomes:** 5-year cervical cancer screening coverage is 26% in LMICs and 74% in HICs (population weighted) (2023) with high loss-to-follow-up after positive screening test

Cancer control domain	Current status	Key implementation gaps
Diagnostic work-up & staging	**Insufficient progress**	**Plans:** 44% of NCCPs address diagnosis/staging with defined strategies and measurable indicators **Outcomes:** 47% of populations globally have little to no access to basic diagnostic services leading to delays in receiving cancer diagnosis and initiating treatment
Cancer surgery access and quality	**Partial progress** (limited data)	**Plans:** growing existence of national surgical, obstetric and anaesthesia plans in >40 countries **Outcomes:** limited inclusion in public-sector health benefit packages; post-operative mortality gap of 4–5 times between LMICs and HICs in multi-country study
Radiotherapy access	**Insufficient progress**	**Plans:** approximately 50% of NCCPs have explicit radiotherapy strategies **Outcomes:** 23 LMICs have no radiation facility; only 19–25% of LICs have reimbursement of radiotherapy in national health benefit packages; substantial radiotherapy downtime in LMICs; 109 countries have an increase in radiotherapy density per cancer patient comparing 2020 with 2026
Systemic therapy & access to cancer medicines	**Minimal progress**	**Plans:** increased inclusion in policies but with poor policy coherence across cancer plans, essential medicines lists and health benefit packages; yet of 50 analysed anti-cancer medicines in WHO's EML, only 28 (median) appear in NEMLs **Outcomes:** limited data; increasing financing for cancer medicines in HICs; reports of hospital availability ranged from only 9–54% of LICs and lower-middle-income countries, compared with 68–94% in HICs
Palliative and supportive care	**Insufficient progress**	**Plans:** inclusion of palliative care in NCCPs; 69% of governments dedicate funding for palliative care **Outcomes:** 73 million people need palliative care/year; only 14% receive it
Survivorship care and rehabilitation	**Insufficient progress**	**Plans:** 52% of NCCPs included strategies that addressed post-treatment follow-up care **Outcomes:** limited data; available data suggest deficits globally with more significant lack of access in LMICs where less than 50% have access to rehabilitation and 20% have pathways for oncofertility
NCCP and other cancer policies	**Insufficient progress**	**Plans:** substantial increase in dedicated NCCPs from 50% in 2010 to 82% (2021); 73% of countries have cancer guidelines; 52% are utilized in at least 50% of facilities (2021) **Outcomes:** only 28% of countries included comprehensive cancer control in their health benefit package; catastrophic health expenditure prevalence from cancer approximately 50–60% globally
Workforce for cancer control	**Minimal progress**	**Plans:** increasing inclusion of workforce for cancer in NCCPs **Outcomes:** limited data; available studies show workforce gaps of 2–5 times between HICs and LMICs; workforce for cancer experiencing high burnout and attrition

Delivering on policy intent: addressing systemic challenges through integrated actions

Political commitments have been a driver of optimal progress when they are translated into integrated action: national cancer control plans (NCCPs) that are properly funded; cancer included into UHC with accessible services; robust cancer registration systems that enable planning and monitoring; meaningful involvement of civil society in cancer policy processes; and active engagement in global initiatives including WHO's Global Breast Cancer Initiative, Cervical Cancer Elimination Initiative, and Global Initiative for Childhood Cancer and IARC's Global Initiative for Cancer Registries.

Significant systemic challenges across the cancer continuum mean that single-domain approaches risk being undermined by gaps elsewhere in the system, or by the lack of social protections to support access to care. Comprehensive, integrated approaches yield better outcomes than isolated, disease-specific interventions. Global challenges include underinvestment in prevention and early detection programmes; persistent inequity in access to diagnostic tests and radiotherapy, cancer medicines and surgery; an imbalanced research and development agenda that prioritizes cutting-edge high-cost treatments that deliver only marginal clinical benefits; insufficient skilled workforce, lacking in numbers and in geographic distribution; and inadequate financing for cancer control in LMICs. Tackling these effectively requires integrated approaches and coordinated action across multiple levels – from global governance to community-based health systems.

Implementation progress, or rather lack of it, is a key gap: governments are increasingly endorsing NCCPs and adopting essential national medicines lists, but too many remain unfunded and unimplemented. The cancer planning tools, monitoring frameworks, implementation guidance, and capacity-building support needed by countries at every income level to design, fund, and evaluate national cancer control programmes grounded in evidence and built on proven effectiveness are available: WHO, IARC, International Atomic Energy Agency (IAEA) and partners provide them. Yet implementation of WHO's Best Buys for the prevention of noncommunicable diseases, for example, remains inadequate, with only 30% of NCCPs incorporating cancer prevention interventions. A significant barrier to effective prevention is the growing influence of commercial determinants of health – that is, the strategies and actions of commercial actors that shape individual health decisions through product design, packaging, marketing, research funding and lobbying.

The future we choose: investment based on value, innovation driven by outcomes

Spending patterns on cancer are paradoxical. A research and development agenda driven by commercial returns rather than value for patients has resulted in development of therapies attracting the greatest investment, but these are not necessarily those delivering the greatest clinical benefit. Many new drugs and medical technologies have provided marginal clinical gains despite extreme financial cost. Meanwhile, the social innovations and human capital that are needed to translate innovations into outcomes remain chronically underfunded. Technologies and treatments receive the attention and the financing;

survivorship and palliative care receives neither. This spending paradox has profound implications for LMICs. If such technologies are adopted indiscriminately, we risk importing the same misallocations that are driving expenditure in HICs, while diverting scarce resources away from essential, proven, affordable high-impact interventions.

In many countries of different health system complexity, governments are often falling short not just in terms of how much they are investing in cancer, but in how they allocate expenditure across the cancer continuum. In LMICs, underinvestment in prevention and early detection continues to drive premature cancer death rates. In HICs, health care expenditure on cancer is compromised by systemic inefficiencies and the misallocation of resources toward high-cost, low-value interventions. The role of upstream market dynamics and the global pricing and procurement architecture cannot be ignored either. Realizing the true potential of cancer innovation in LMICs and beyond therefore requires not just equitable access but value-based adoption frameworks grounded in rigorous assessment to ensure that cost is commensurate with clinical benefit. This is dependent on establishing, maintaining and strengthening population-based cancer registries (PBCR) that can improve cancer surveillance, alongside robust progress monitoring of indicators from the WHO Global Cancer Monitoring Framework.

Health system performance in cancer management can be a catalyst for change or a driver for human, financial and societal crises – this is something we choose together, through the actions we take and don't take, as stakeholders. Without accelerated action, the burden of cancer for individuals, families and societies will continue to worsen, with the steepest increases faced by LMICs, whose health systems are least equipped to respond. These increases are driven by population growth, ageing and rising exposure to lifestyle and environmental risk factors: nearly 40% of new cancer cases are preventable through risk factors we already have evidence-based measures to address. The report provides the evidence that cooperation across disciplines, sectors, and borders is the single greatest determinant of success. A better future is open to us. We only need to implement it.

Our way forward: three shifts in cancer control: better capabilities, better protections, better value

The *Global status report on cancer 2026* comes at a pivotal moment for the global cancer community – a moment that demands a fundamental shift to reorient our approach toward the priorities and needs of people affected by cancer (see Annex) and enable transparent, systematic and globally aligned monitoring of progress across the cancer continuum.

For too long, the cancer agenda has been caught in an identity crisis, pulled between the pursuit of cure and the practice of care, between technological ambition and human need. Our renewed global cancer agenda must value care as highly as cure, recognizing that most people diagnosed with cancer will live with the disease rather than be cured of it. And it must work actively to promote health, ensure social protections, and reduce stigma.

The report calls on all stakeholders to implement key actions, coordinated around seven recommendations, in order to deliver, together, the three shifts we need in global cancer control: better capabilities, better protections and better value (Table 2).

Table 2. Seven recommendations, three shifts in cancer control

Shift 1: Better capabilities	1. Embed cancer control within health system strengthening and UHC, using NCCPs as the catalyst for strategic action. 2. Strengthen health system capacities for comprehensive integrated cancer service delivery.
Shift 2: Better protections	3. Include people with lived experience in all cancer-related decision-making. 4. Enhance community-level health promotion on cancer and strengthen social protections.
Shift 3: Better value	5. Promote alignment and transparency in global cancer data on burden of disease and health system performance. 6. Unify the cancer agenda around equity-based, system-wide solutions. 7. Align research and innovation with public health priorities and the service needs of LMICs.
Each recommendation specifies key actions for: governments · international organizations · civil society · academic institutions · private sector · WHO	

The future we choose together

In 2026, the global cancer story is one of profound inequity. The primary gap is no longer a gap in knowledge, but a gap between what we know and what we do, between what we plan and what we implement. The future of cancer control will be shaped by the choices we make together as we define what we value, what we measure, whom we listen to, and what we are willing to finance.

This report is an invitation to make those choices together; it provides the evidence base and the framework to guide us in those decisions and monitor their implementation and their impact. When global and national efforts on cancer are integrated and implemented through better capabilities, monitored using robust data that are transparent and aligned across regions and across initiatives; when cancer's human, financial and societal impacts are mitigated through better protections; when research and innovation prioritize better value and better outcomes for us all; and when people with lived experience of the disease as patients and caregivers are central partners in decision-making – only then can our ambitions translate into meaningful progress for all, and allow us to build the future we choose together, a better future for us all.

1 Introduction

1.1 A critical juncture for cancer control

Six years on since the first WHO report on cancer was published in 2020, we face a critical juncture for cancer prevention and control. Across the globe, and across all income settings, the human, financial, and societal consequences of cancer are profound and growing – for health systems, economies, individuals and families *(1, 2)*.

Cancer is a leading cause of premature death and disability, accounting in 2021 for approximately 9% of the global burden of disease *(3)*. In a growing number of countries, cancer has surpassed cardiovascular disease as the leading cause of premature deaths among adults aged 30 to 69 *(4)*. In 2024, there were 20.6 million new cancer cases worldwide[3] (19.5 million new cancer cases excluding non-melanoma skin cancer: 9.9 million in men and 9.6 million in women) and nearly 10 million people will die from this disease. Approximately one in five people will be diagnosed with cancer during their lifetime *(5)*. The cumulative global economic cost of cancer is projected to exceed US$ 33.2 trillion[4] between 2020 and 2050 *(1)*.

The enormity of these numbers must not detract from the real and personal human experiences of individuals living with cancer and their caregivers. The global cancer community continues to see real progress in many important aspects of cancer control, but when we take the time to ask people with lived experience of cancer – as WHO has done in its survey of lived experience – it is clear that we continue to fall short in ways that make a qualitative difference to people's lives.

Hard-won gains, undermined by the current global reality

In part, this is because hard-won gains in cancer prevention and control are being undermined, or even reversed by a de-prioritization of cancer services against the current global reality of geopolitical instability, including armed conflict, economic crises, the coronavirus disease (COVID-19) pandemic, and political fragility. The effects of this are especially consequential in countries undergoing epidemiological transition, where ageing populations and rising cancer incidence require rapid scale-up of health system capacity and sustained strategic investment to deliver cancer services at a pace commensurate with the growing burden *(6, 7)*. As cancer rates rise, the urgent need for investment is most critical in low- and middle-income countries (LMICs), which are often facing both limited resources and rising incidence rate, requiring health systems to strengthen in leaps.

With less than five years remaining to achieve the Sustainable Development Goal (SDG) targets, the world stands at a critical juncture for achieving health-related targets for the 2030 Agenda for Sustainable Development. Based on 2010–2019 data, only 12 countries are

[3] Including non-melanoma skin cancers.

[4] Based on Chen et al. (2023) (*1*), the original estimate of INT$ 25.2 trillion in constant 2017 prices was converted to US$ in 2024 prices using a US CPI adjustment factor from the World Bank.

on track to meet the SDG 3.4 target to, by 2030, reduce by one-third premature mortality for all cancers *(3)*. In contrast, 48 countries have rising rates of premature mortality from cancer linked to rising cancer burdens *(3)*.

The world faces a fundamental choice: without urgent, integrated and sustained action by all stakeholders, cancer incidence will only continue to rise, avoidable deaths will increase, and gains achieved over decades of investment will be put at risk, deepening inequities and costing millions of avoidable lives lost.

Reasons for optimism

Yet despite the scale of the challenge, there are compelling reasons for optimism. Evidence-based preventive and control measures are being implemented by a growing number of governments, with accelerated formulation and implementation of national cancer control plans (NCCPs) indicating strengthened political prioritization of cancer in national health agendas *(8)*. At the global level, World Health Assembly resolution WHA70.12 and the renewed commitments made by United Nations (UN) Member States at the 2025 Fourth High-level Meeting of the UN General Assembly on noncommunicable diseases (NCDs) reflect a growing political commitment to NCDs, including cancer prevention and control. WHO's Global Childhood Cancer Initiative, Cervical Cancer Elimination Initiative, Breast Cancer Initiative and IARC's Global Initiative for Cancer Registries have generated significant national action. Civil society, international cancer organizations and nongovernmental organizations (NGOs) have all been instrumental in elevating cancer on the global agenda and better engaging people with lived experiences, as reflected in WHO Framework for meaningful engagement of people living with noncommunicable diseases, and mental health and neurological conditions *(9)*. We must now build on this positive momentum until every person, everywhere, can access high-quality cancer prevention and care.

The *Global status report on cancer 2026* sets out how we can do this, through complementary stakeholder actions coordinated around seven recommendations, to achieve the three key shifts we need in cancer control: better capabilities, better protections and better value.

Without urgent, integrated, sustained action by all stakeholders, gains achieved over decades of investment will be put at risk

Box 1. What is new in the *Global status report on cancer 2026*?

The first WHO report on cancer was published in 2020 *(10)*. Since then, considerable progress has been made but persistent challenges remain unresolved. Building on previous publications by WHO including IARC, the 2026 WHO report brings new evidence, using priority indicators informing WHO's Global Cancer Monitoring Framework to push the cancer agenda and provide specific recommendations.

The first WHO and IARC cancer reports from 2020:

- presented the global burden of cancer;
- positioned cancer as a global public health priority;
- provided guidance on how evidence can inform national cancer programmes and policies; and
- analysed approaches to improve cancer planning, financing and implementation.

Building on those previous reports, the new *Global status report on cancer 2026:*

- analyses the key drivers of success and systemic challenges behind the progress made, and not made, in cancer prevention and control;
- utilizes priority indicators that are informing the WHO Global Cancer Monitoring Framework to track our progress;
- incorporates the perspectives of people with lived experience of cancer;
- makes practical recommendations to policymakers and stakeholders for action.

1.2 A critical measure for health systems

The challenges we face in cancer control mirror the pressures confronting health systems generally. These include rapidly rising health care costs, delayed implementation of evidence-based policies, a workforce under strain, weak surveillance systems, market fragmentation, supply chain disruptions, complex care delivery pathways, and inequitable access to care.

> *Progress in cancer control is both a disease-specific response and a strategic investment in health system resilience*

Quality of cancer control services has therefore emerged as a vital measure of overall health system performance and a key indicator of health system maturity as countries advance toward universal health coverage (UHC).

This means that progress in cancer control is both a disease-specific response and a strategic investment in health system strength, equity and resilience – an investment that builds integrated, people-centred health systems that enable everyone to achieve the highest attainable standard of health (Table 3).

Table 3. Cancer control as a measure of health system performance

Assertion	Rationale
Cancer control reflects health system performance and maturity	Cancer outcomes depend on a functional continuum of integrated services ranging from health promotion, primary preventive measures, screening and early detection, timely and accurate diagnosis, evidence-based multidisciplinary treatment approach with inclusion of palliative, rehabilitation and supportive care. Effective service delivery requires coordinated primary, secondary and tertiary care linked through reliable referral systems and strong, integrated data systems.
Impactful cancer control is closely linked to UHC	Equitable access to essential services and financial risk protection, which are core components of UHC, are prerequisites for progress in cancer control. High out-of-pocket (OOP) costs for cancer care are a major cause of catastrophic health expenditure.
Cancer outcomes vary based on system strength and investment	Inequities in cancer survival are driven by differences in prevention, early detection, diagnostic capacity, treatment access, workforce density, and financing mechanisms. High prevalence of workforce shortages and burnout in oncology undermines the quality and continuity of cancer services.
Oncology is a leading field in health products and system innovations	Oncology has been a leading field for precision medicine, next-generation molecular testing, digital pathology, AI-enhanced diagnostics and treatment decision tools, and an ever-expanding armoury of novel targeted therapies and immunotherapy. Adoption of these innovations tests entire health systems including regulatory systems, health technology assessment capacity, procurement mechanisms, and reimbursement design and value-based pricing frameworks.

1.3 A critical focus on inequity and on listening to people affected

Inequities in cancer exist across the cancer continuum, between countries and within them, such that a person's chances of surviving cancer depend less on the biology of their disease than on where they live, their economic circumstances, and whether their country has invested in comprehensive cancer care as part of UHC.

In many LMICs, limited access to essential, integrated services contribute to survival gaps *(11)*. Only about 28% of countries include the basics of cancer management within their financed core health-benefit packages *(11)*. Meanwhile, global investments in cancer research, technological innovation, and advanced treatments are asymmetrically focused on HICs.

Even within HICs, inequities along education, gender, socioeconomic and ethnic lines *(12–14)* are compounded by the growing financial burden of cancer care, which often pushes households into excessive OOP expenses and poverty, undermining public health gains *(15, 16)*.

Tackling these inequities effectively requires us to better understand the multifactorial impact of cancer on people's lives, and the broader difficulties encountered by those individuals and by their families, caregivers, health systems and societies both in accessing care and in living with and beyond cancer. This requires us to engage people affected by cancer in shaping the global cancer research and policy agenda in more meaningful ways.

1.4 Scope and purpose of this report

The purpose of the report is to present new data and, drawing on the lived experiences of cancer patients, explain the actions and investments needed to further advance cancer control. This includes offering actionable, equitable strategies for global improvements in cancer control, prioritizing people-centred prevention and care.

Although the report's primary audience is government policymakers, especially in LMICs, its messages and recommendations also apply to technical programme managers, health professionals, civil society and advocates, philanthropic organizations, academia, the private sector, and people affected by cancer worldwide.

In section 2, the report presents the current cancer burden, its trends, determinants, and impact on individuals, families and health systems. Drawing on a global survey, it incorporates the perspectives of people with lived experience of cancer as a foundational input to its analysis; their voices are incorporated throughout the report.

In section 3, the report provides a status update on implementation progress in key cancer control domains that will enable alignment in the systematic tracking of progress across the cancer continuum.

In section 4, it analyses the drivers of success and the systemic challenges that are impeding success in achieving equitable cancer control.

In section 5, the report outlines our path forward, specifying actions needed by all stakeholders, coordinated around seven recommendations, to deliver the three shifts we need in cancer control: better capabilities, better protections and better value.

2 The global cancer burden: what we know from the data and from the people affected

This section describes the current global cancer burden – key trends in incidence and mortality, the risk factors and determinants driving those trends, and the broader burden that cancer exacts on individuals, families, health systems and societies.

> *The global cancer burden is substantial and growing, uneven and inequitable, and multi-layered in its impacts*

The quantitative data presented draw on the world's most comprehensive cancer surveillance resources, and attest to a global cancer burden that is substantial and growing, uneven and inequitable, and multi-layered in its impacts *(17)*.

The qualitative data attest to cancer's human impact. People diagnosed with cancer endure not just the disease itself, but gruelling treatments with profound and often lifelong side-effects, layered on top of significant psychological distress. The diagnosis alone triggers existential fear that can last long after treatment ends. Critically, this also affects spouses, parents, children and siblings who take on unpaid caregiving roles that damage their own careers, mental health and relationships. In the results of the WHO global survey on the lived experience of people affected by cancer, we hear in people's own words how their lives are affected (see section 2.5).

The financial and economic impacts of cancer, too, are multi-layered: health systems are strained by the rising costs of care, creating complex and delicate allocation dilemmas. For diagnosed individuals and their families, cancer brings acute and prolonged financial hardship through high OOP costs, lost income, and the risk of catastrophic health expenditure: cancer is a leading driver of medical bankruptcy at household levels. Even in countries with UHC, indirect costs of cancer – lost wages, housing, childcare – can be ruinous (see section 2.6).

Box 2. What is cancer?

Cancer is the disease that happens when cells in the body start to grow and multiply in an uncontrolled way. There are over 100 different types of cancer, each with their own names, symptoms and treatments *(18)*. Some grow and spread faster than others.

Cancer can start in almost any cell or tissue in the body – from the skin to the blood, lungs to bones. Normally, cells divide to help us grow, heal and replace old or damaged cells, but sometimes this careful process breaks down due to changes in the cell's DNA. When this happens, abnormal cells can build up to form a lump known as a tumour, and these cells can invade nearby tissues or spread to other parts of the body in a process called metastasis.

Our understanding of what causes cancers to start is substantial: to date, IARC has identified 135 agents that are carcinogenic to humans *(19)*. Our age is one factor that affects our risk: our bodies have ways to repair or remove damaged cells, but these natural defences get weaker as we age. Genetics plays a part. Other factors that affect our chances of a cancer developing include the environment we live in, our lifestyle, and our exposures to chemicals or infections.

2.1 Global cancer incidence rates

By cancer type

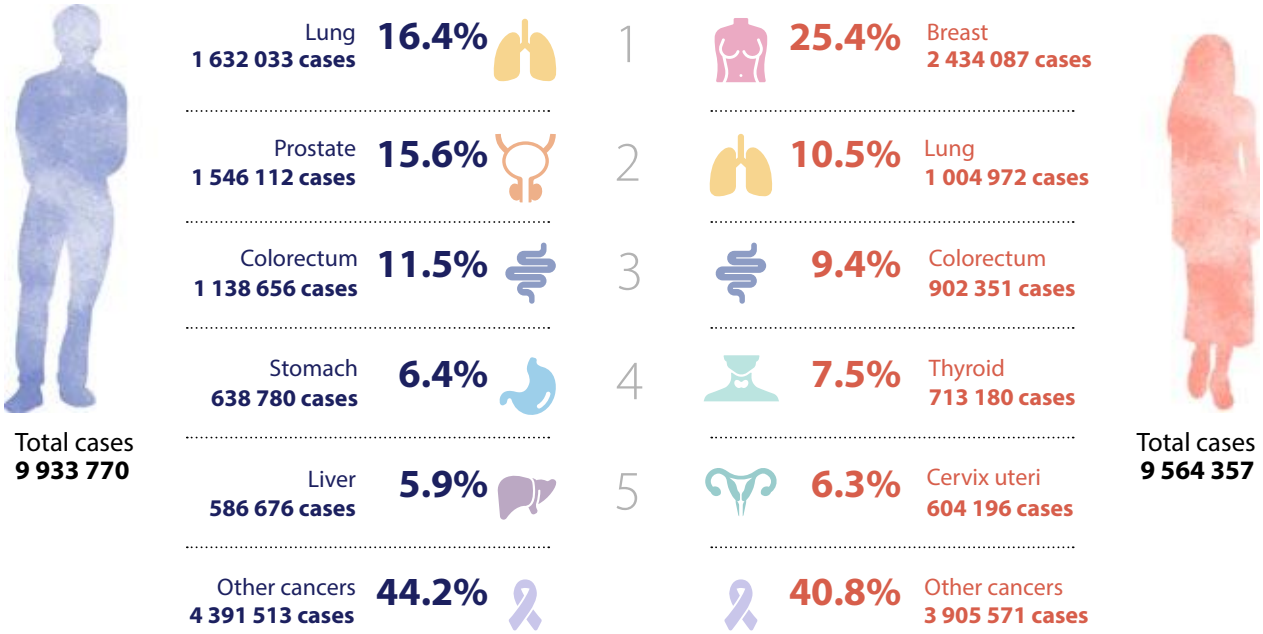
In 2024, there were 20.6 million new cancer cases worldwide[5] (19.5 million new cancer cases excluding non-melanoma skin cancer: 9.9 million in men and 9.6 million in women). In men, the highest incidence was recorded for lung cancer[6] (1.6 million cases), followed by prostate cancer (1.5 million cases) (Fig. 1). Among women, breast cancer had the highest incidence with 2.4 million new cases, followed by lung cancer[6] with 1 million recorded cases (Fig. 1). For either sex, colorectal cancer is the third most common cancer (1.1 million cases for men, 0.9 million cases for women) *(5)*.

Childhood cancer is considered distinct from adult cancers: an estimated 400 000 new cancers arise annually among children and adolescents worldwide (0–19 years old), with approximately 90% thought to occur in LMICs *(20)*.

[5] Including non-melanoma skin cancers.

[6] Comprising tracheal, bronchial, and lung cancers (ICD-10: C33–C34) as classified in GLOBOCAN 2024.

Fig. 1. Global incidence of cancer by type of cancer for males and females, 2024



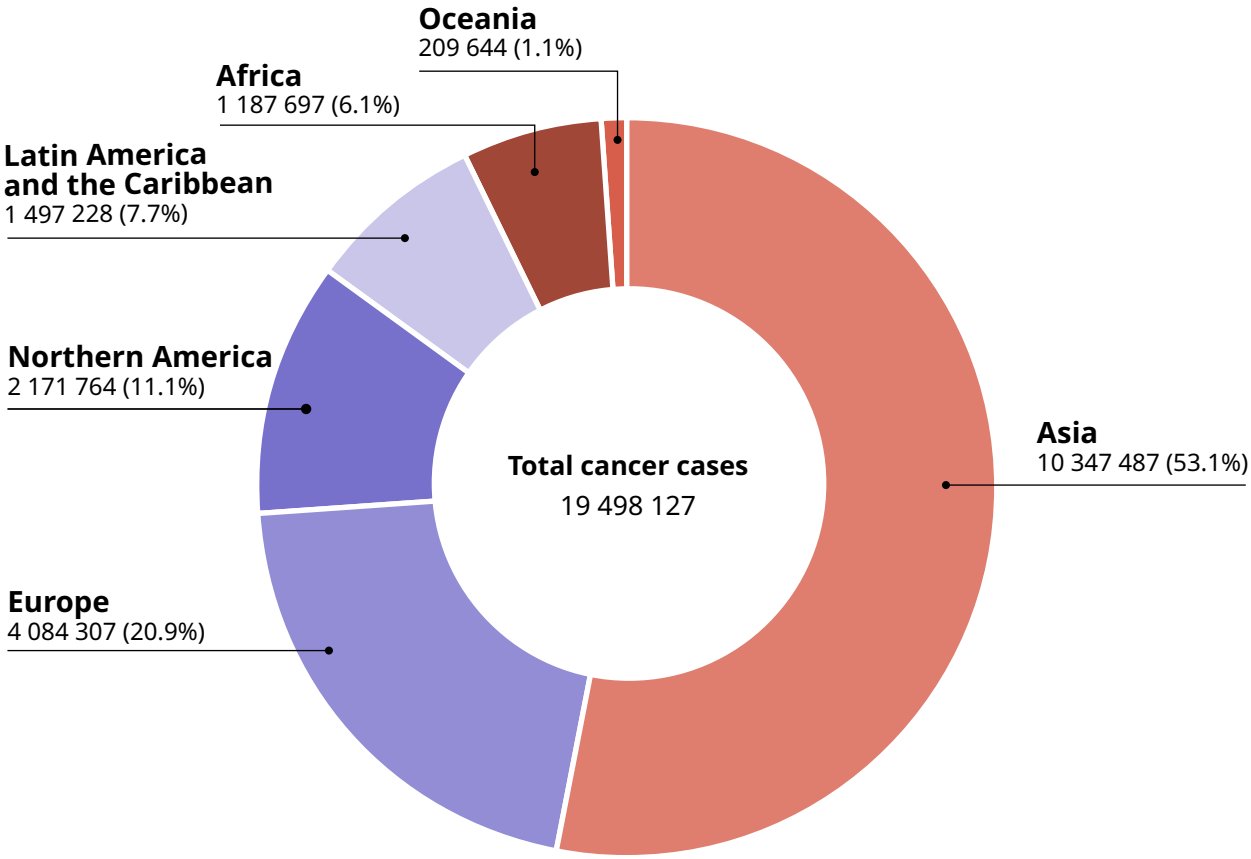
Cumulative risk

The cumulative risk (0–74 years of age) of developing cancer is approximately 19.8%, which means about one in five of us will develop cancer in our lifetime *(5)*. This represents the probability of developing cancer between birth and 75 years of age based on current rates. This risk varies substantially by setting, reaching 27.6% in countries with very high Human Development Index (HDI) compared to 12% in countries with low HDI, reflecting differences in life expectancy and diagnostic capacity including rates of indolent cancers identified through screening programmes, and risk factor exposure rather than inherent biological susceptibility *(21)*.

By continent

In terms of absolute numbers, it is Asia that dominates the global distribution of new cancer cases, accounting for 53% of the total burden (attributed to its vast population), compared to 21% and 11% of new diagnoses for Europe and northern America respectively (Fig. 2) *(5)*.

Fig. 2. Global incidence of cancer, by continent, 2024



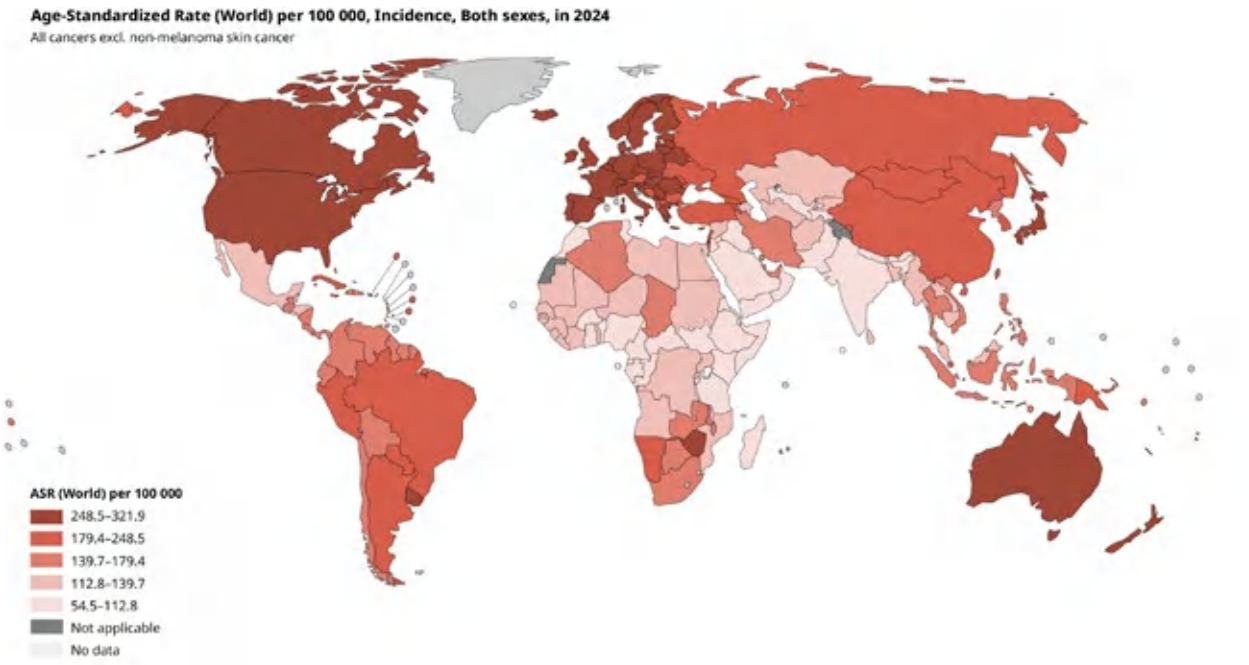
By income level

Most of the cancer cases recorded in 2024 occurred in HICs and upper-middle-income countries (U-MICs) (6.9 and 7.9 million cases respectively), followed by L-MICs (4 million cases) and LICs (0.6 million cases) *(5)*.

When looking at global age-standardized incidence rates (ASIR), the cancer burden is substantially higher in HICs (275 per 100 000 population) compared to U-MICs (197 per 100 000 population), L-MICs (119 per 100 000 population) and LICs (122 per 100 000 population) (Fig. 3).

This trend is attributed to the higher prevalence of risk factors such as smoking, infections, alcohol consumption, obesity and physical inactivity, coupled with greater access to diagnostic testing and fewer competing causes of death.

Fig. 3. National age-standardized cancer incidence rates per 100 000, both sexes, 2024



2.2 Global cancer mortality rates and survival

2.2.1 Cancer mortality rates

An estimated 9.7 million deaths globally were attributable to cancer in 2024 *(5)*. Of all cancer deaths, over 4.8 million occurred among adults aged 30 to 69, representing a substantial burden of premature cancer mortality. Approximately one in nine men and one in 13 women will die from cancer before the age of 75 years old *(5)*.

> *Approximately one in nine men and one in thirteen women will die from cancer before the age of 75*

WHO Global Health Estimates from 2021 reveal that cancer is the leading cause of premature mortality in 41 countries, the second leading cause in 37 countries, and third leading cause in 47 countries. Cancer contributed to approximately 16.5% of all global deaths (excluding COVID-19-related deaths), making cancer the second leading cause of death after cardiovascular disease *(3)*.

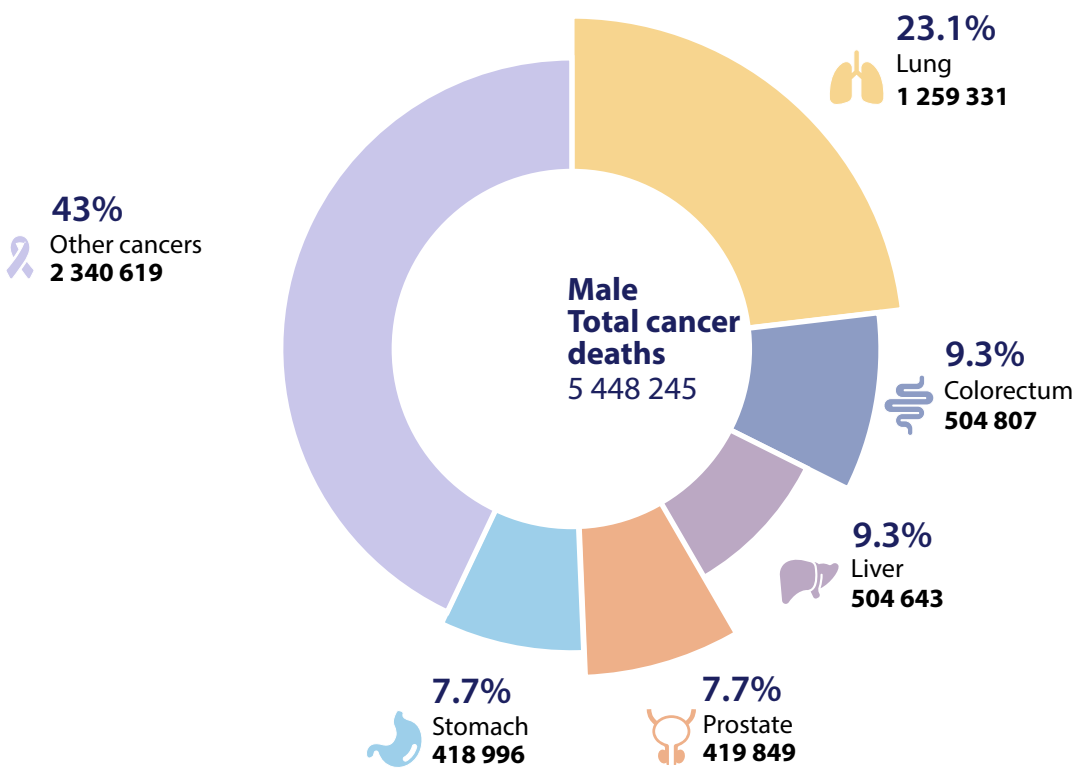
By cancer type

GLOBOCAN 2024 data provide specific mortality figures by cancer type. Among men, lung cancer[7] was the leading cause of cancer-related deaths (1.3 million deaths), followed by colorectal cancer (0.5 million) and cancer of the liver and intrahepatic bile ducts (0.5 million). For women, breast cancer caused the highest number of cancer-related deaths (0.7 million), followed by lung cancer (0.6 million) and colorectal cancer (0.4 million) *(5)* (Fig. 4).

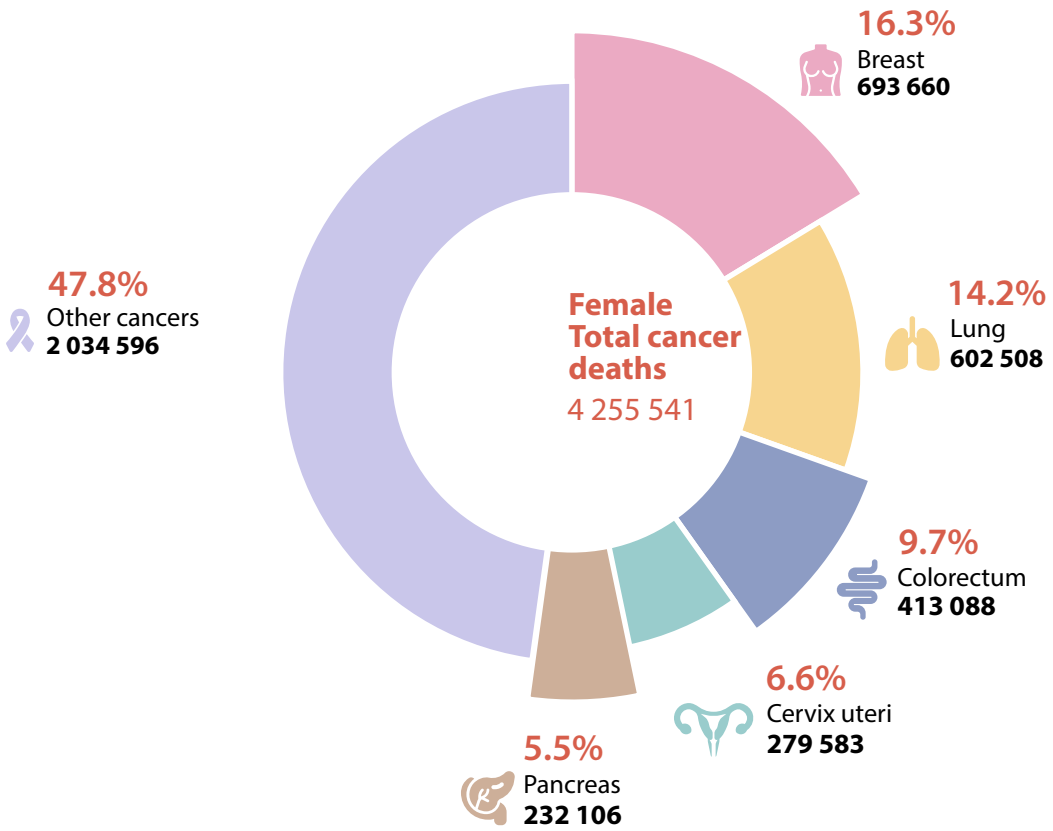
[7] Comprising tracheal, bronchial, and lung cancers (ICD-10: C33–C34) as classified in GLOBOCAN 2024.

Fig. 4. Global mortality of cancer, by type of cancer for (a) males and (b) females, 2024

a.



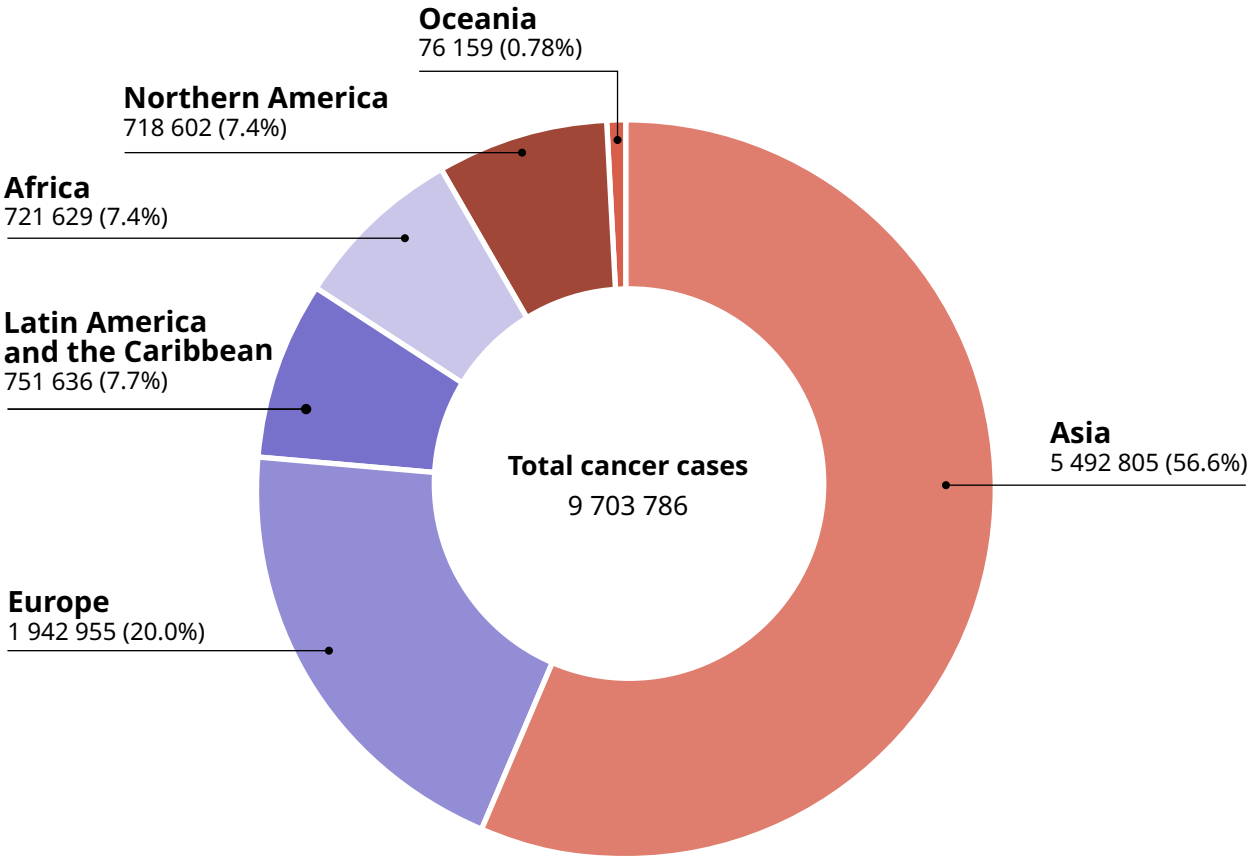
b.



By continent

Cancer mortality varied by geographical region with most cancer deaths recorded in Asia (56.6%) followed by Europe (20% of cancer deaths) (Fig. 5) *(5)*.

Fig. 5. Global mortality due to cancer, by continents, 2024



By income level

By income level, U-MICs recorded the highest number of deaths in 2024 (4.1 million), followed by HICs (2.8 million), L-MICs (2.4 million), and LICs (0.4 million). These absolute figures reflect differences in population size rather than cancer-related outcomes. When assessed by age-standardized cancer mortality rates (ASMR), the estimates are more comparable: highest ASMR is 91 per 100 000 population for U-MICs and the lowest ASMR is 72.5 per 100 000 population for L-MICs (Fig. 6) *(5)*.

Fig. 6. National age-standardized cancer mortality rates per 100 000, both sexes, 2024

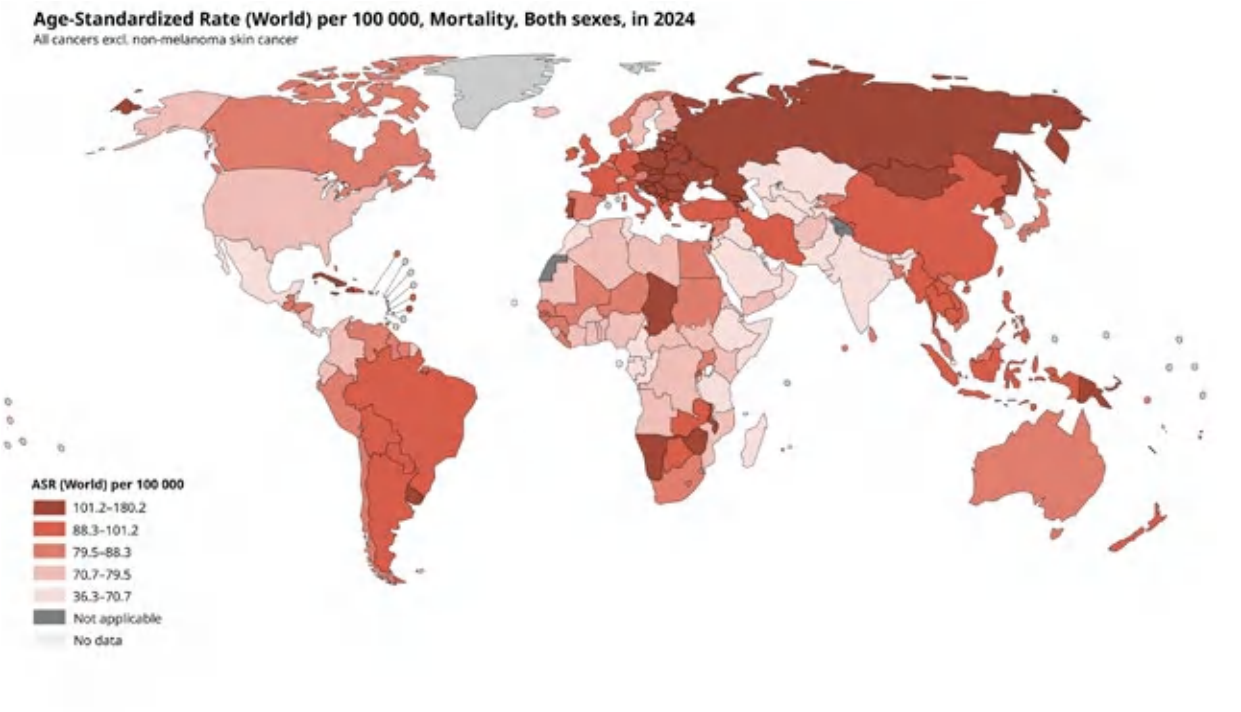
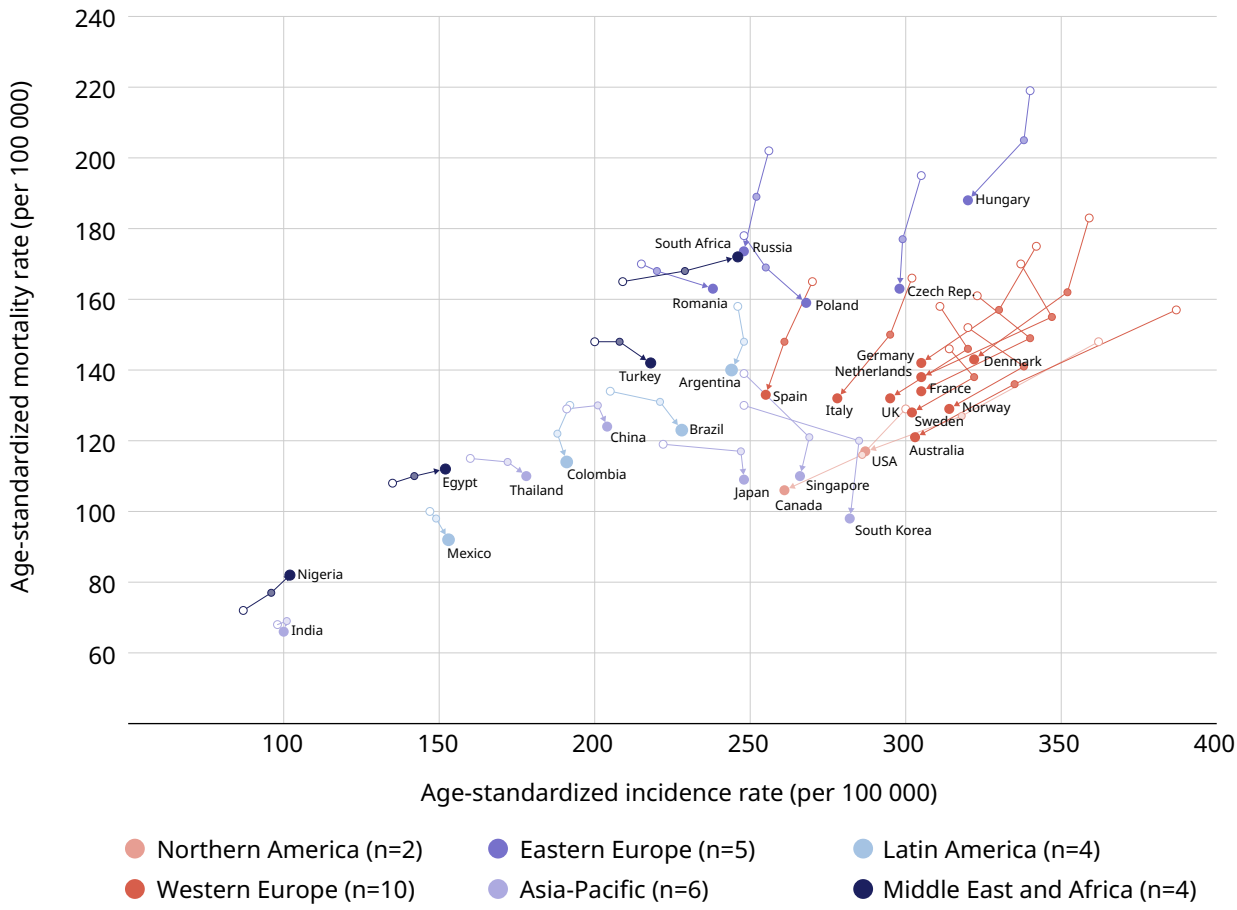


Fig. 7. Trends in age-standardized cancer incidence and mortality, by continent, from 2002 to 2024



Temporal trends in ASIR and ASMR also reveal divergent trends across countries by income level. The majority of countries in Western Europe have seen a reduction in ASIR and ASMR, while data from LMICs demonstrate an increase in ASIR, ASMR or both (Fig. 7) *(22)*.

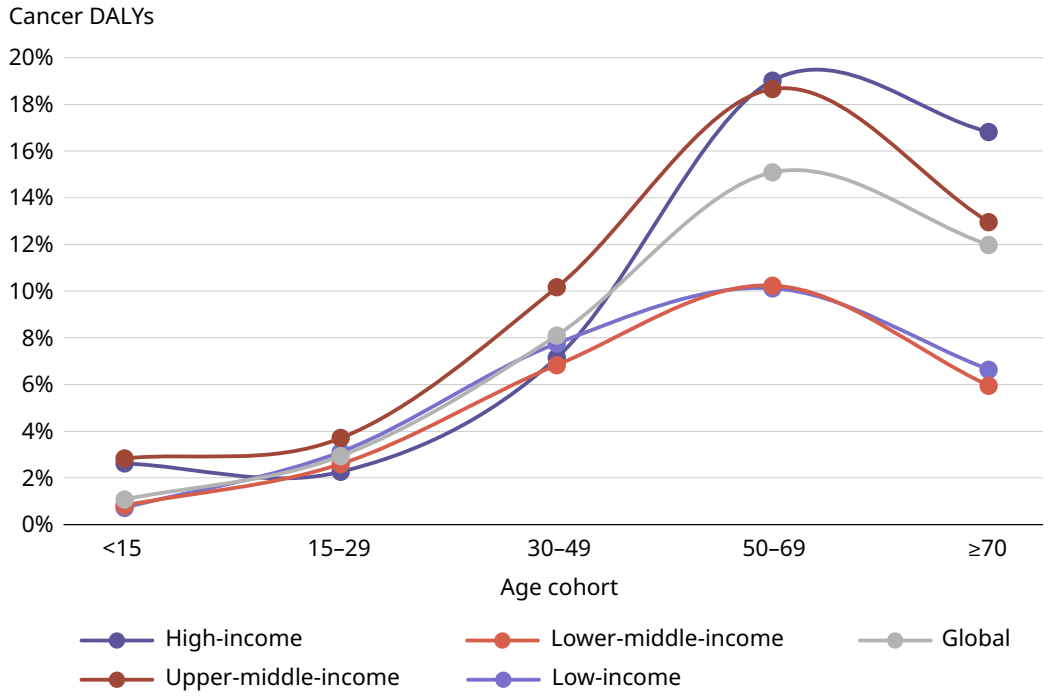
Disability-adjusted life years (DALYs)

Disability-adjusted life years (DALYs), a health metric that measures years of life lost and years lived with disability, provides a more comprehensive picture of cancer burden than incidence or mortality data alone.

> *Cancer DALYs represent 9% of total health DALYs*

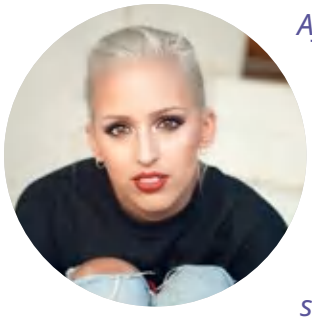
In 2021, cancer DALYs represented 9% of total DALYs, a percentage that increases with age, income-level and time (Fig. 8) *(3)*. Comparing data from 2000 and 2021, there is a striking overall increase from 1.2% to 1.4% of total DALYs among children <15 years old, an increase from 12.1% to 14.8% among people aged 30–49 years old, and an approximately 5% increase in people aged 50–69 years old (from 22.8% to 27.3%) and those 70+ (from 28.4% to 33.6%, noting that the percentage of cancer DALYs could have been even higher in the absence of the COVID-19 pandemic). These trends reflect both rising cancer incidence and successful communicable disease control in midlife and foreshadow rapid rising proportion of cancer burdens in LMICs *(3)*.

Fig. 8. Cancer as a share of total disability-adjusted life years, by age cohort and income group, 2021



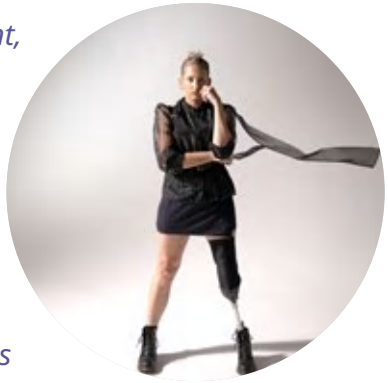
Income group	<15y	15–29y	30–49y	50–69y	≥70y
Low-income	0.72	3.11	7.75	10.12	6.64
Lower-middle-income	0.82	2.60	6.83	10.24	5.95
Upper-middle-income	2.84	3.71	10.16	18.66	12.96
High-income	2.62	2.26	7.15	19.02	16.82
World	1.08	2.93	8.10	15.10	11.98

Lower share — Higher share



After being diagnosed at 15 with Ewing Sarcoma, I was left with nerve damage on the leg and chronic pain. That led to more than 20 surgeries, innumerable appointments, physical and mental struggles, and in 2021, I made the decision to amputate. I am now a left below-the-knee amputee – and this has opened a whole new world of barriers... I hope one day the world realizes that people with disabilities also want to participate in life, not just survive.

The effect of my diagnosis on both my emotional and mental health has been incredibly big and difficult to process. It's only after I've finished having issues with my physical health that I have realized how burned out I was, how much I had ignored my mental health whilst focusing on solving the other problems. There is a need to have psychological help that goes parallel with the treatment and the following years. This help also must be according to the age of the patient/survivor.



I was diagnosed as a teenager, and after finishing my treatment, I felt like I was dropped back into the world, back into high school, after what seemed like a bad dream. For many years, I felt the dissonance of my life experience compared to my peers. It was a difficult adjustment because I felt I had to navigate those new waters on my own. I had my follow-up appointments, but they were all about my physical health; I was barely asked about my mental health. That – and the issues I had post-treatment – made my mental health issues very layered, and I've had to work on them for a really long time.

Every time I had a new surgery, I felt the tsunami of destruction over and over again. It's only now, 19 years after, as an adult, that I have realized how burned out I am. And only now do I feel like I can work out some of those psychological issues I wasn't warned about.

Andrea Ruano, person with lived experience of cancer, Spain

2.2.2 Cancer survival

CONCORD results on cancer-specific 5-year net survival reported improvement over the past two decades in many regions of the world. In HICs, five-year net survival for cancers such as breast, colorectal and childhood cancer now exceeds 80–90% (Fig. 9), thanks to advances in early detection (Fig. 10), timely diagnosis, treatment, and supportive care *(23)*.

> *Cancer-specific 5-year survival has improved significantly in many regions of the world*

Fig. 9. Survival trends from (a) breast, (b) colorectal and (c) prostate cancer, 2000–2014

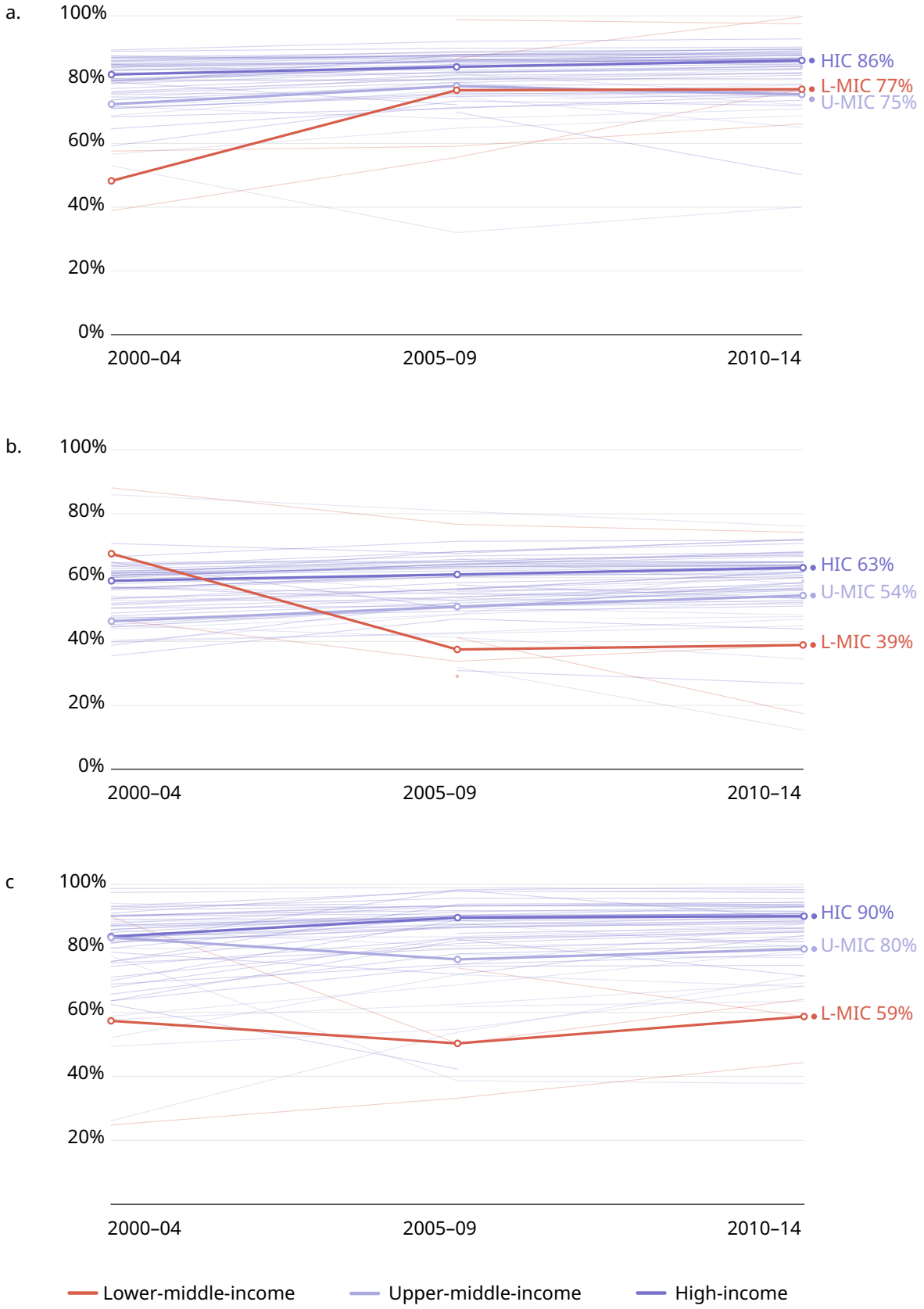
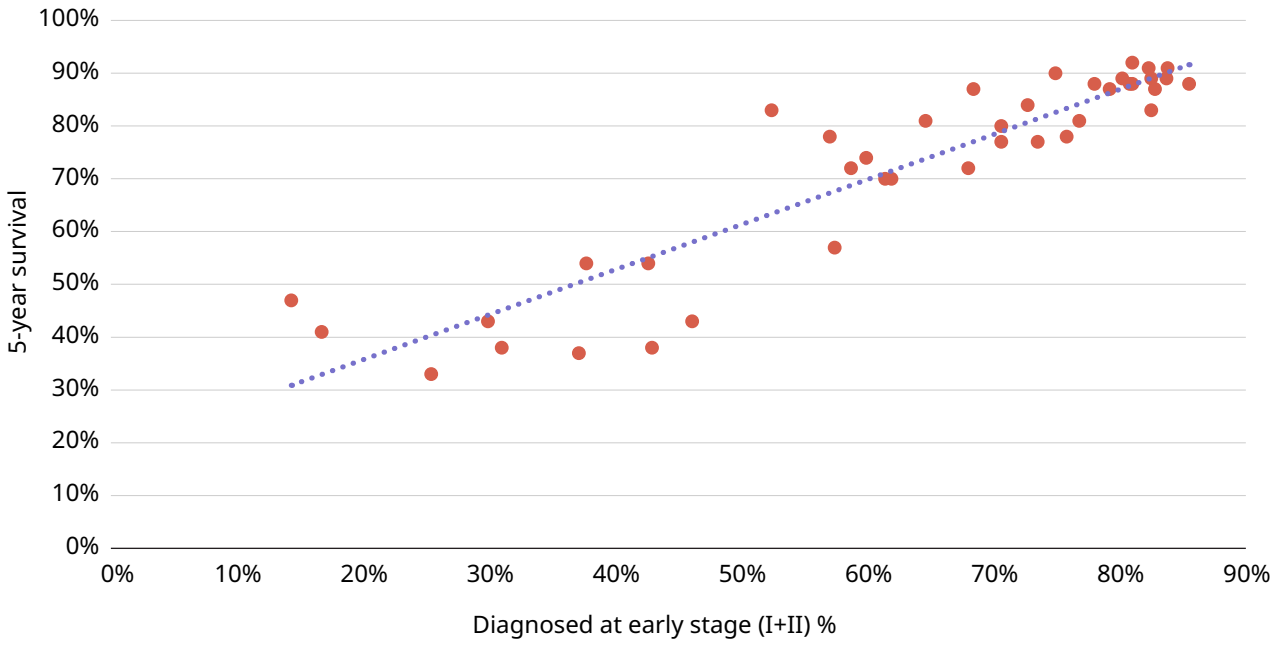


Fig. 10. 5-year net survival in breast cancer *(24)* (2017–2021) by proportion of breast cancers diagnosed in early stage, 2010–2019[8]



New WHO survival estimates for breast cancer and childhood leukaemia

In response to WHO Member States' requests to strengthen cancer surveillance to inform country-led actions, in 2026, WHO produced breast and childhood cancer survival estimates for the first time *(20)*. Data were modelled for all Member States for the period 2017–2021, drawing on observed survival data and health system predictors of cancer care effectiveness.

> *WHO has produced country-comparable survival estimates for breast and childhood cancer for the first time*

For breast cancer, 5-year net survival estimates were four-fold higher in many HICs than in some sub-Saharan African countries (Fig. 11a). The median age-standardized 5-year net survival during 2017–2021 was 39% in sub-Saharan Africa, with more than half of countries not reaching 50% *(24)*.

These inequities underscore the importance of the Global Breast Cancer Initiative (GBCI), which provides governments with a framework for strengthening breast cancer services through early detection, timely diagnosis, and comprehensive management with the goal of reducing breast cancer mortality by 2.5% per year and saving 2.5 million lives by 2040 (see section 4.2.1).

[8] 5-year net survival in breast cancer (*24*) (2017–2021) by proportion of breast cancers diagnosed in early stage, 2010–2019.

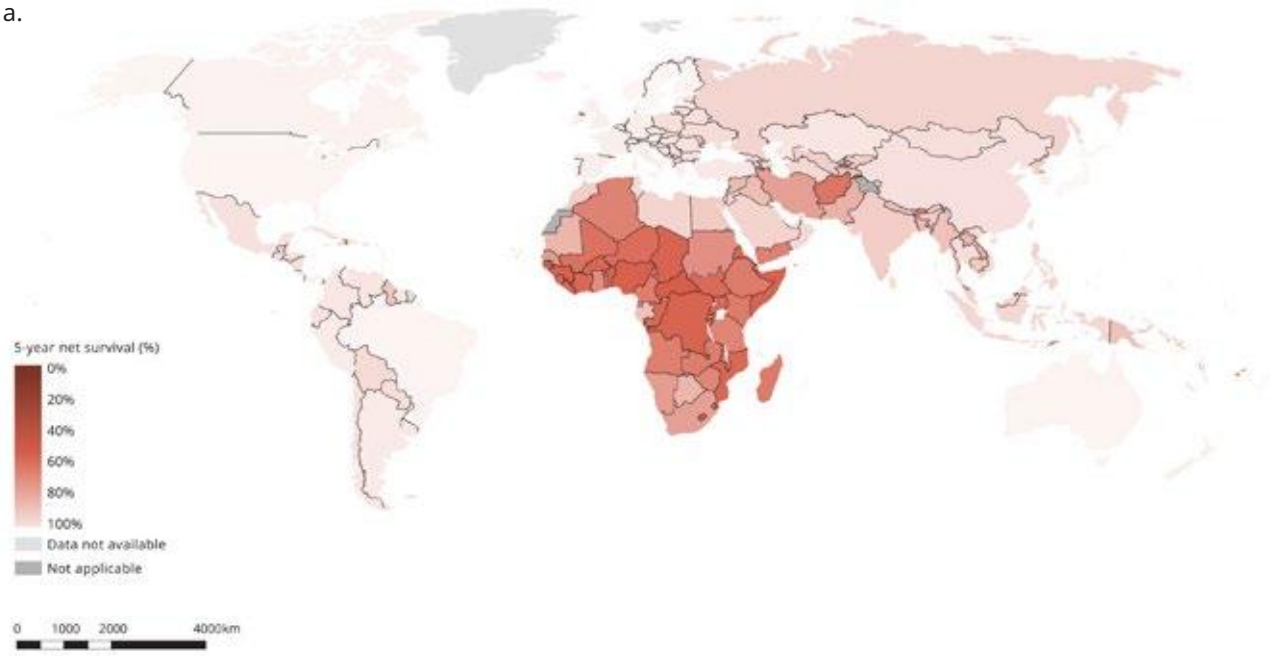
WHO five-year net survival estimates for children diagnosed with lymphoid leukaemia report substantial improvement in global survival between 2000 and 2021. Overall, for the years 2017–2021, 104 (54%) among the 194 countries reached the 60% five-year survival for acute lymphoblastic leukaemia set up under the Global Initiative for Childhood Cancer (GICC) *(20)* (see section 4.2.1).

The median survival estimates revealed an uneven progress between regions, with most of the African (with medians between countries varying from 19–74%), and South-East Asia (26–69%) and specific areas of the Eastern Mediterranean (19–83%) regions falling behind the progress made by the Region of the Americas: with medians between countries varying from 22–92%; European: 51–93% and Western Mediterranean 25–91% regions (Fig. 11b).

These estimates align with the 2026 release of CONCORD-4 estimated 5-year Cancer Survival Index for all childhood cancers combined, which demonstrated an increase in most countries between 1990 and 2019. For children diagnosed during 2015–19, the index was more than 80% in most HICs, in the range 60–80% in most U-MICs, and in the range 50–60% in the five participating L-MICs *(25)*.

Fig. 11. Age-standardized 5-year net survival estimates for (a) women diagnosed with breast cancer, 2017–2021 and (b) children diagnosed with lymphoid leukaemia, 2000–2021

a.



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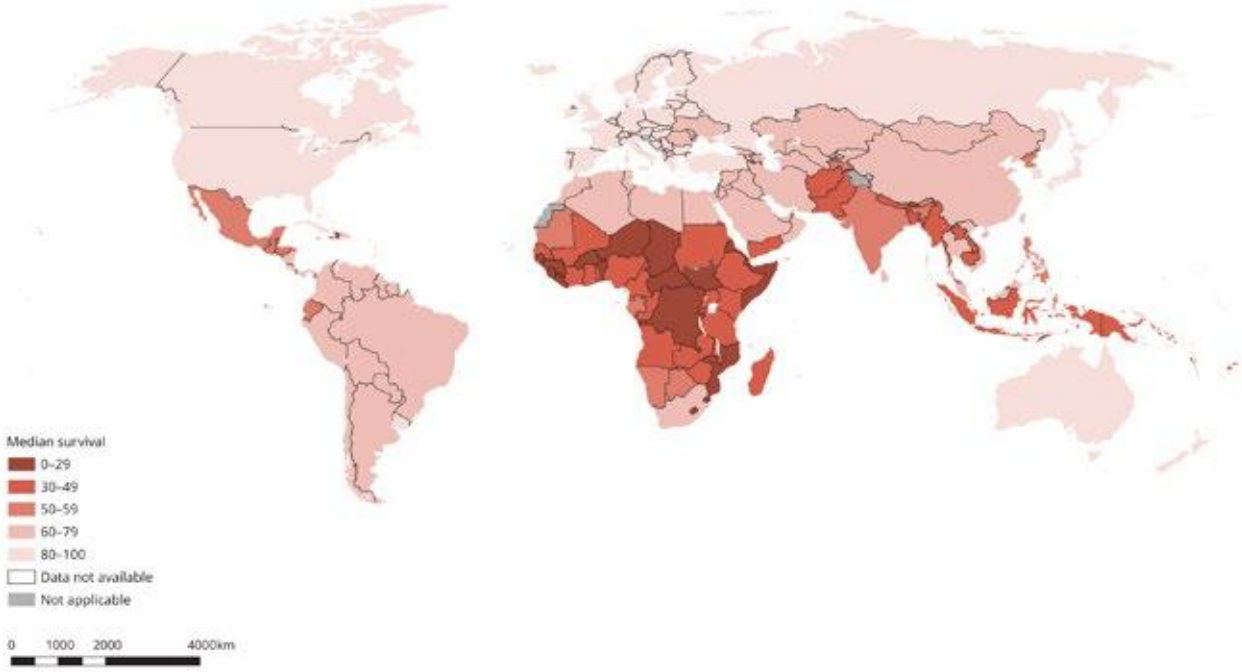


2.3 Tracking SDG 3.4: premature mortality from NCDs

Between 2010 and 2019, only 12 countries were on track to meet the SDG 3.4 target for all cancer combined, which aims for a one-third reduction in premature mortality from NCDs, including cancer, by 2030. In contrast, 48 countries have rising rates of premature mortality from cancer linked to rising cancer burdens *(3)*.

However, there are grounds for optimism. Between 2000 and 2019, premature mortality rates from cancer declined in 138 out of 183 countries (75%) *(3)*. Projections up to 2050 indicate a continued but unequal reduction in global premature mortality from cancer across countries by income level (Fig. 12 and Fig. 13) with the lowest decline in LMICs (see Box 3 for the methodology of projections).

> *Only 12 countries are on track to meet SDG target 3.4 for all cancers*

Progress is being driven by primary prevention efforts, such as tobacco control (lung, head and neck, bladder) and reduction in consumption of salted foods and reductions in *Helicobacter pylori* infection (gastric cancer), HBV vaccination (liver cancer), HPV vaccination (head and neck, and cervical cancer) with slower progress in cancers requiring robust health systems for early detection and treatment, such as breast, colorectal and prostate cancers *(26)*.

Box 3. Methodology for projections

The age-standardized mortality rates (ASMRs) per 100 000 population for individuals aged 30–70 years, both sexes combined, for each of the four major NCDs, were estimated using the WHO Global Health Estimates age-specific crude mortality rates by year, location, disease and age group. ASMRs were calculated by direct standardization using the WHO standard population. Projections for 2020–2050 were generated by fitting linear regression models to the 2000–2019 ASMR trends separately for each location and disease. The years 2020 and 2021 were excluded from model fitting because mortality patterns during the COVID-19 pandemic were atypical and could introduce instability into long-term trend estimates.

Fig. 12. Global age-standardized mortality rate for both sexes between 30 to 70 years old per 100 000 population for the four major NCDs (cardiovascular disease, cancer, diabetes, and chronic respiratory diseases), 2000–2050

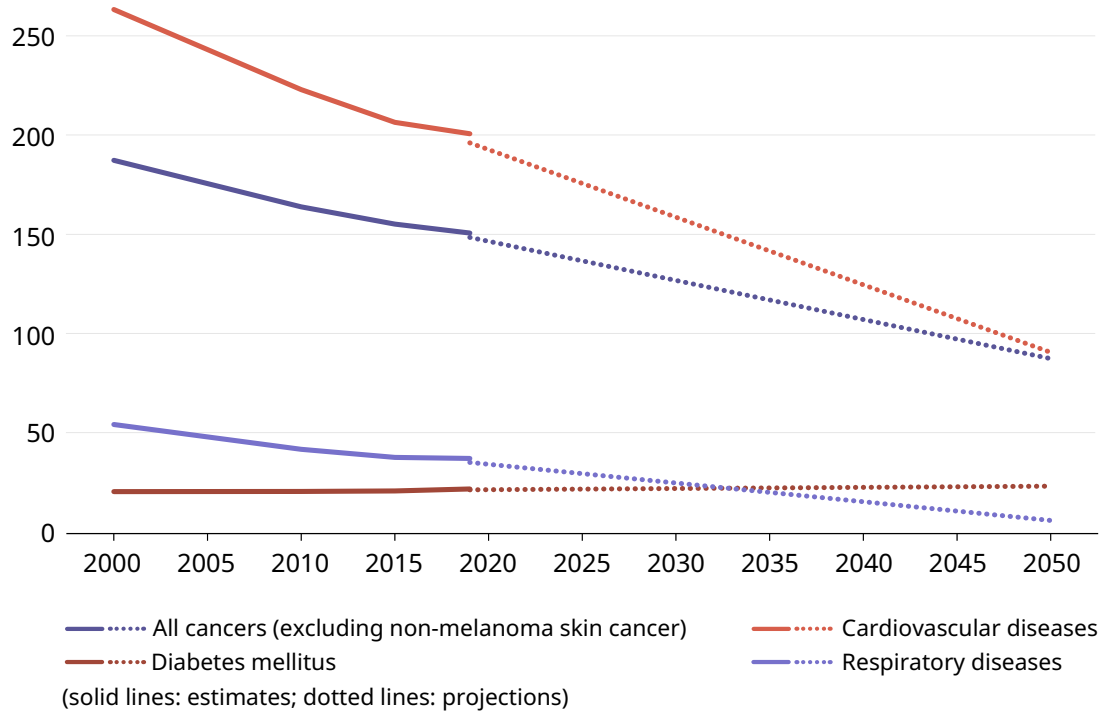
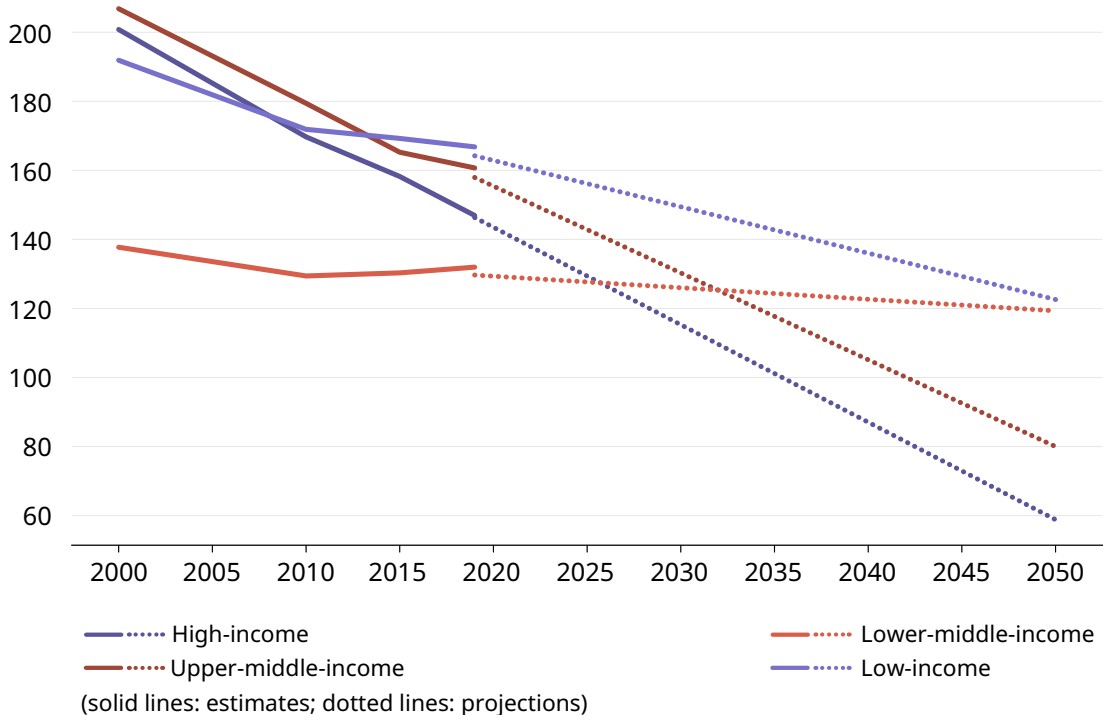


Fig. 13. Global age-standardized mortality rate for both sexes between 30 to 70 years old per 100 000 population, for all cancers excluding non-melanoma skin cancer, by income group, 2000–2050



Box 4. Inequalities in cancer service coverage, social determinants of health and health outcomes

Predictors of inequalities are complex and intersecting, an unjust interplay of social, economic and structural factors. Populations with factors predictive of inequalities are more likely to experience worse outcomes and increased hardship after treatment (see section 2.5).

Education level

Individuals with lower levels of education are more likely to engage in high-risk behaviours such as smoking and poor dietary habits, which contribute significantly to higher cancer incidence and mortality rates. Educational differences also impact health literacy and trust in the health sector, with the potential for unsuccessful navigation of complex care steps following a cancer diagnosis *(27)*.

Rural vs urban

Rural populations face significantly lower access to cancer early detection, diagnosis, and treatment compared to urban areas, with coverage gaps globally (*27–29*). In the USA (2015–2019 data), HPV-associated cancer incidence was 12.3 per 100 000 non-metropolitan areas versus 11.1 in metropolitan areas, driven by higher cervical and oropharyngeal cancer rates due to limited vaccination and screening uptake (*30*). Diagnostic and treatment centres are predominantly situated in urban locations, creating severe barriers for rural populations (*31*).

> *The gap between rural and urban cancer care is not merely a matter of geographic distance, but reflects a deeper inequality in life chances. While diagnostic and treatment services are concentrated in urban areas, patients in rural regions often face a long and difficult care journey. Patients are forced to travel long distances repeatedly under challenging conditions just to access essential services. This distance not only leads to delays in diagnosis but also makes continuity of treatment a daily struggle, often resulting in interruption. Limited access to information and support – particularly among patients with low literacy levels or those navigating the system alone – further increases their vulnerability within the health system.*

Mohamed Belkadi, patient advocate, Morocco

Racial group

Systemic and structural racism contribute substantially to cancer inequities, resulting in marginalized racial subgroups facing significantly lower relative survival rates, longer delays in initiating therapy, and an increased risk of dying from highly treatable malignancies due to unequal access to early detection and advanced precision medicines. In multiple countries, black people experience significantly worse outcomes; mortality rates are declining at a slower rate and threatening future gains because of racial inequalities *(32, 33)*. The landmark African Breast Cancer – Disparities in

Outcomes study (ABC-DO) by IARC revealed large racial variations in Namibia (84% in white women, 69% in mixed race women, and 45% in black women) and South Africa (54% in mixed race women and 46% in black women), with lower 5-year survival in other countries (37% in Zambia, 31% in Uganda, and 24% in Nigeria) *(34)*.

Gender

Males generally experience higher cancer incidence and mortality rates than females across most non-sex-specific cancers: men are both more likely to get cancer, and more likely to die from it. However, when women get cancer, they experience more difficulties than men do in accessing the same level of care. Contributing factors to these disparities differ across the life course (*35*). Sexism intersects with ageism and racism, with evidence that older women have historically been underrepresented in cancer research and less likely to receive guideline concordant care. Globally, women in LMICs are significantly less likely to receive timely treatment than men for comparable cancers (*14, 36*).

I was already stage III when they found the tumour because I was systematically being told I was overreacting and I was making everything up.

Mila Ogalla, person with lived experience of cancer, Spain

Persons with disabilities

In a limited number of countries with available data, persons with disabilities encounter additional barriers to cancer prevention and care, facing a higher mortality from preventable cancers *(37–39)*. Compared to people without disabilities, persons with disabilities receive poorer quality cancer care, including lower access to state-of-the-art care or curative-intent therapies, treatment delays, undertreatment or excessively invasive treatment, worse access to in-hospital services, less specialist health care utilization, less access to pain medications and inadequate end-of-life quality of care *(40)*. In HICs, screening uptake is substantially lower among disabled populations due to inaccessible facilities and stigma, while in LMICs, this gap increases, with comorbidities amplifying inequities *(41)*. Disability-disaggregated data reveals 40% lower treatment completion rates, underscoring the urgent need for inclusive health systems *(42)*. Persons with albinism deserve specific attention, owing to the cumulative effects of disability, social inequalities, stigma as well as excessive vulnerability to skin cancer *(43)*.

The world is not prepared for people with disabilities; I now realize we're often the afterthought.

Andrea Ruano, person with lived experience of cancer, Spain

Indigenous populations, immigrants and displaced populations

Indigenous peoples experience disproportionate cancer burdens due to systemic barriers in access to clinical trials, preventive services and treatment. In Australia, Indigenous Australians have breast cancer mortality rates 1.2 times higher than non-Indigenous populations, with 5-year survival at 81% versus 90% *(44)*. In New Zealand, compared to non-Māori, Māori women are twice as likely to be diagnosed with cervical cancer, three times as likely to die from this disease, and their screening coverage is 47% compared to 76% *(45)*.

There is no information about cancer in the indigenous dialects. Also, no real support or early detection of cancer in these populations.

Carmen Monge, person with lived experience of cancer, Costa Rica

Box 5. Cancer in emergencies

In any emergency setting, whether conflict, natural disaster or climate shock, access to essential medicines and diagnostics can become severely limited. Health care infrastructure is often decimated, and cancer prevention, detection and treatment are further complicated by the burden of trauma and displacement.

At the end of 2025, at least 117.8 million people worldwide were forcibly displaced. Population displacement leads to a lack of continuity of care for patients in host countries – and 68% of refugees and those in need of international protection are hosted in LMICs *(46)*, already facing their own challenges.

My house was destroyed during the conflict and I could not obtain my medical papers and test results and the papers that show that I was insured through social security.

Person with lived experience of cancer, displaced from Beirut to Jbeil, Lebanon

Living in conflict-affected settings is known to increase avoidable deaths *(47, 48)*. Conflicts cause the destruction of infrastructure such as health facilities and equipment, they disrupt supply chains for cancer medicines and prevent equipment maintenance, and the physical violence, loss of salaries and destruction of infrastructure caused by conflicts cause the workforce to flee. Where services remain, they are redirected towards trauma and acute care. Financial constraints and higher prices for services, as well as workforce shortages and lack of surveillance and monitoring systems all exacerbate the challenges of delivering care in emergency settings *(49)*.

Consequently, conflicts disrupt cancer care right across the continuum *(50)*. Where patients can still access services, continuity of cancer care is often lost due to displacement, economic hardships or travel insecurity; there is a lack of safe corridors to allow patients to access services, either in safe areas within their own countries or across borders. Where conflicts are protracted, lasting decades, this often results in cancer care services not being developed, such as the lack of radiotherapy in Somalia, Haiti and several countries of the Sahel region of Africa.

Lessons learned from Ukraine and other conflicts emphasize the value of regional and international solidarity. The inclusion of cancer control in emergency response plans is needed to carry out and use research to improve continuity of care, during and after emergencies and disasters *(49)*. This includes deployment of innovative models for integrating the cancer care continuum so as to enhance health care system resilience in emergencies *(8)*. WHO and partners outlined a global vision that includes integrating cancer in humanitarian response efforts; addressing the specific needs of paediatric patients with cancer; improving cancer intelligence and surveillance systems; conducting research to explore cancer care in emergencies and developing strategies to navigate the logistical and financial challenges of providing cancer care during crises *(49)*. Priority actions are also outlined in the war and cancer manifesto *(50)*.

> *People living with NCDs in humanitarian crises are more likely to see their condition worsen due to trauma, stress, or the inability to access medicines or services.*
>
> *We must find ways to better integrate NCD care in emergency response.*
>
> WHO Director-General, Dr Tedros Adhanom Ghebreyesus

2.4 Trends: current drivers and future projections

2.4.1 Past trends

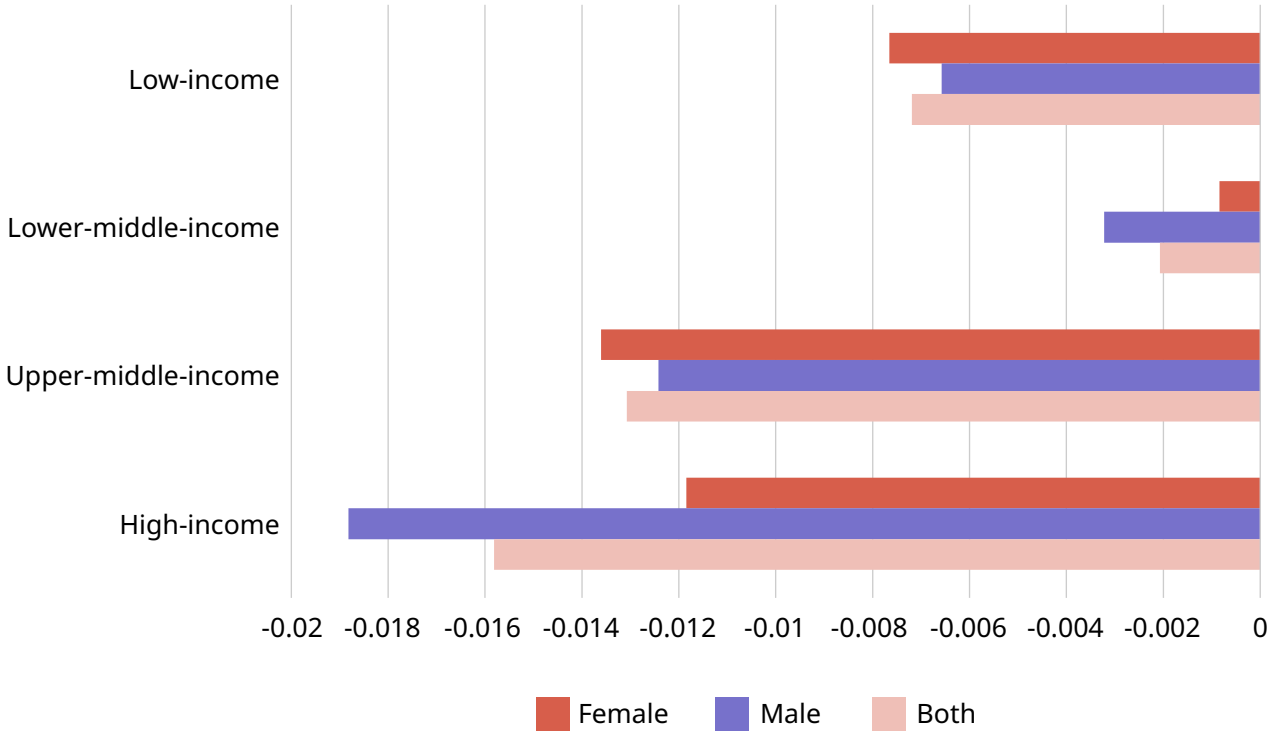
Widening health inequities

Overall, over the past decade, cancer incidence and mortality rates have risen most rapidly in settings with the weakest health systems, widening existing inequities.

> *Cancer acts as both a marker and a driver of health inequity*

As premature mortality rates are decreasing more slowly for women than for men, cancer acts as a key driver of gender disparity *(26)*. Consequently, cancer acts as both a marker and a driver of health inequity, and places a disproportionate burden of avoidable suffering on populations with the fewest resources (Fig. 14) *(3)*

Fig. 14. Trends in the annual rate of change in premature mortality from 2000 to 2019 for all cancers, by sex and income level



Lung cancer

Mortality from lung cancer has reduced following the impact of tobacco control measures

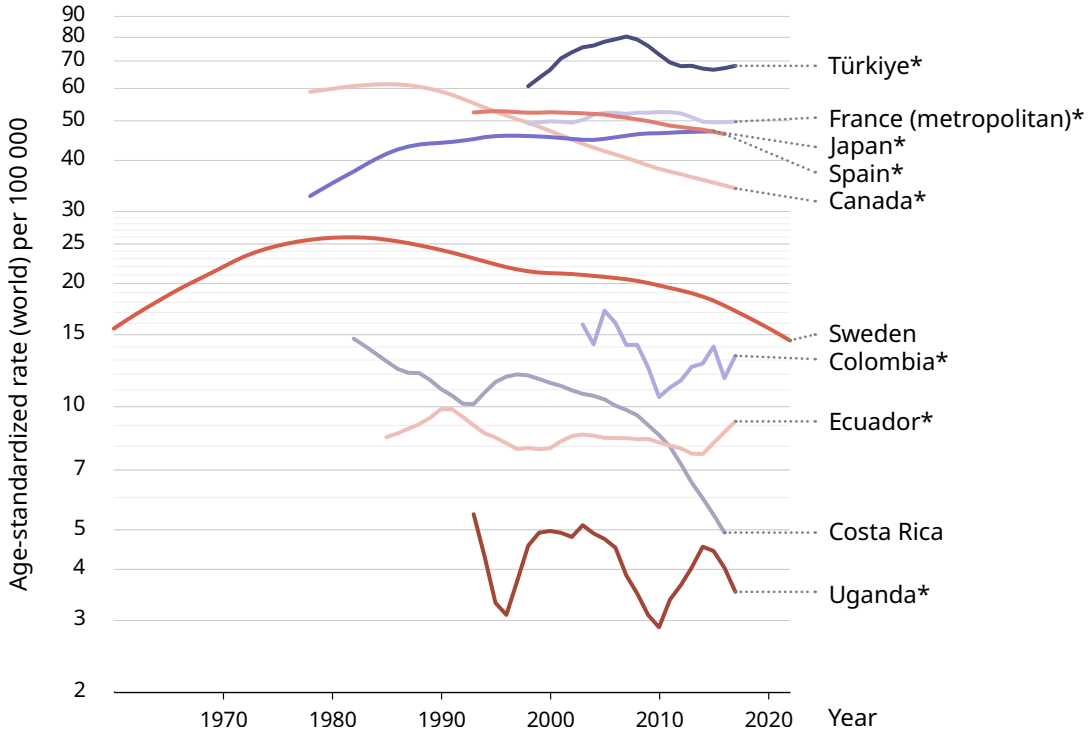
Mortality from lung cancer in men was increasing before the 1980s, predominantly due to tobacco use, before reducing significantly following the impact of tobacco control measures (Fig. 15a). Lung cancer mortality in males has also declined in nearly all countries in the past 20 years, because of these reductions in incidence and, in HICs, progressive improvements in early detection and high-quality treatment including innovative targeted medicines (see Fig. 15b) *(22, 51, 52)*.

Breast cancer

Conversely, breast cancer incidence in females has generally increased consistently, likely related to population ageing, increased risk factor exposures and detection through screening programmes in HICs (Fig. 16a) *(22)*. Breast cancer mortality is a mixed picture: most HICs have achieved reductions in ASMR, while in some U-MICs, mortality rates continue to increase or remain stable (Fig. 16b).

Fig. 15. Lung cancer trends in (a) age-standardized incidence and (b) mortality in males, selected countries

a.



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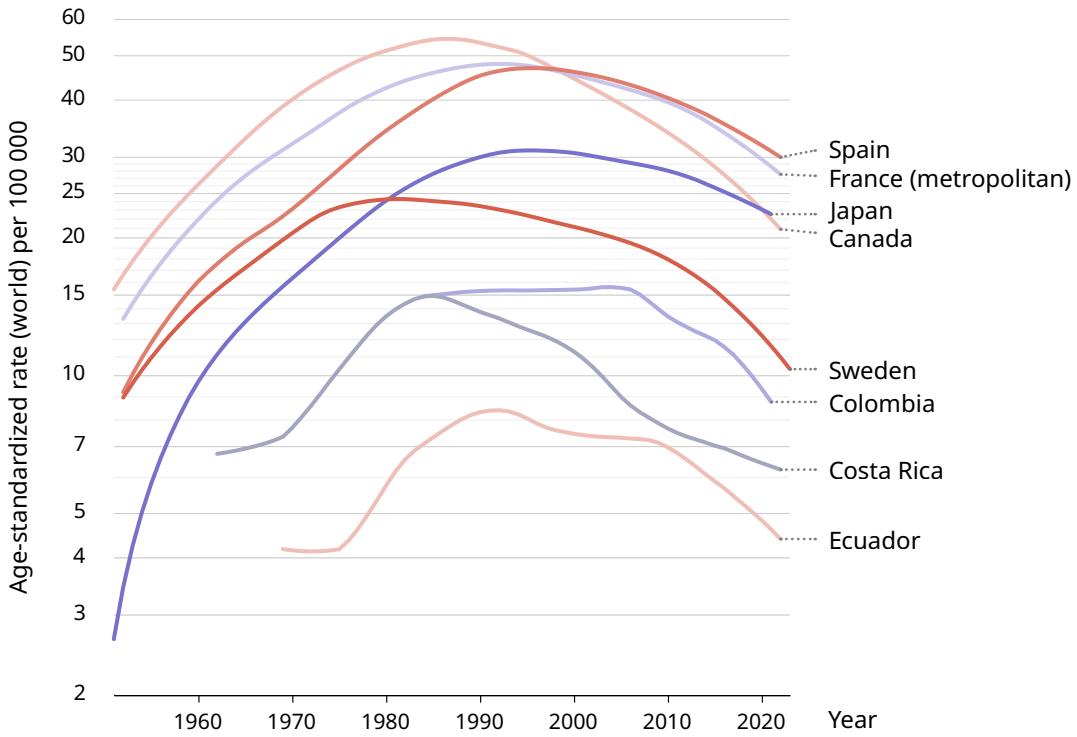
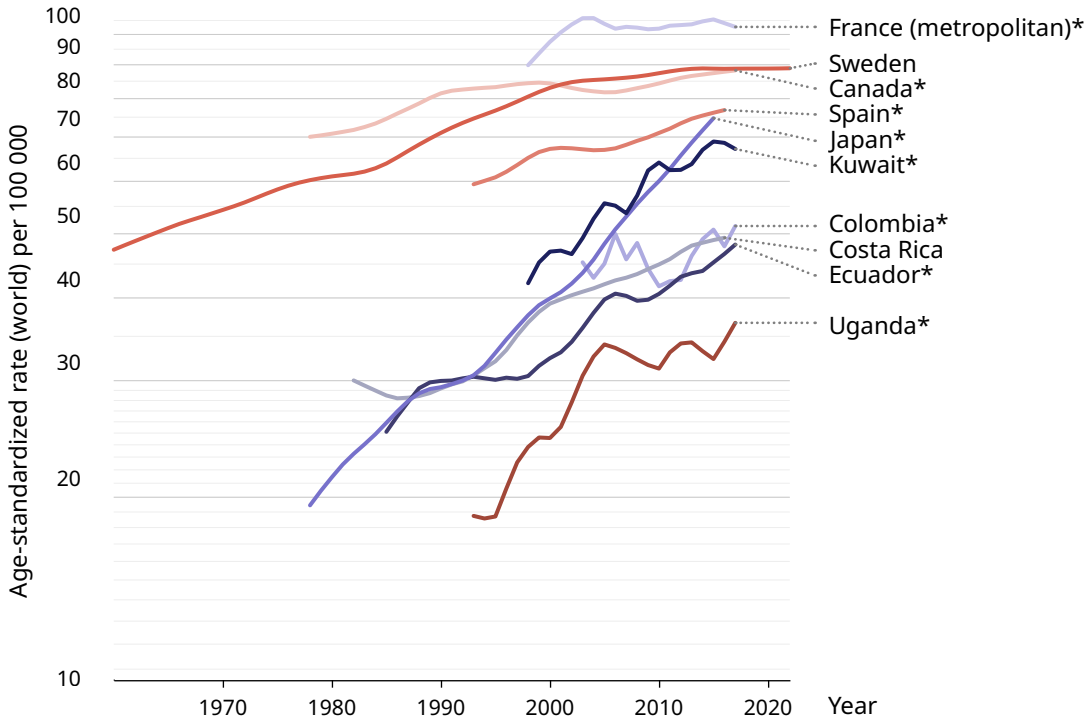


** Subnational data*
Lines are smoothed by the LOESS regression algorithm (bandwidth: 0.25)
Rates are shown on a semi-log scale

Fig. 16. Breast cancer trends in (a) age-standardized incidence and (b) mortality in females, selected countries

a.



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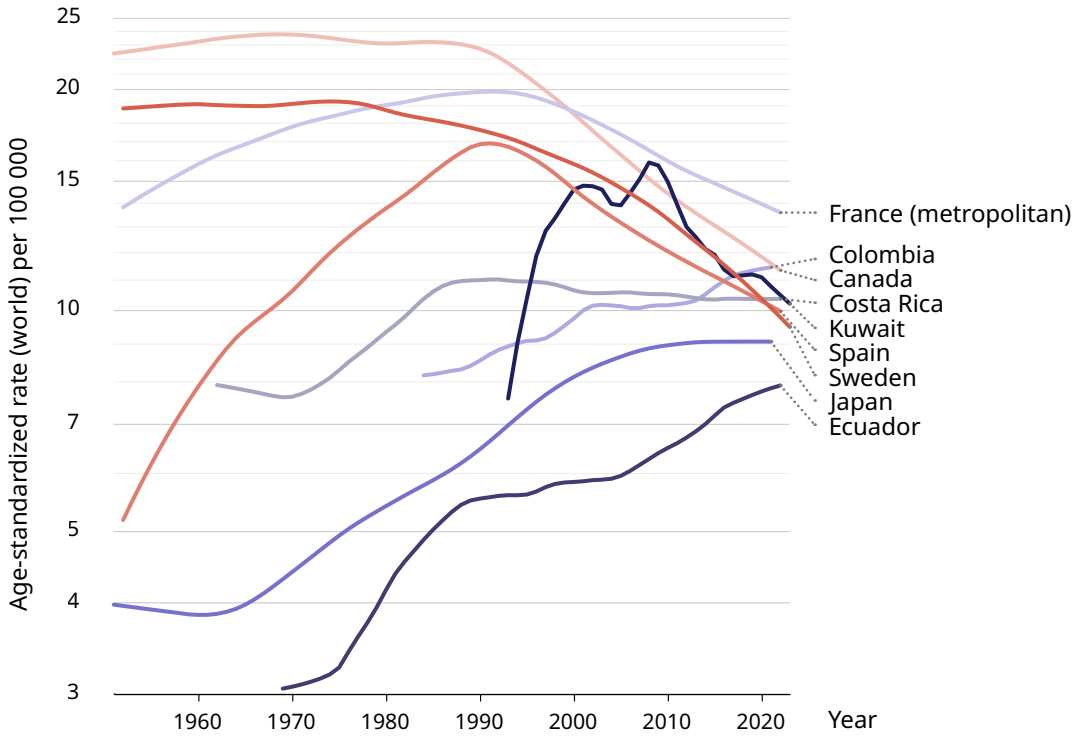


** Subnational data*
Lines are smoothed by the LOESS regression algorithm (bandwidth: 0.25)
Rates are shown on a semi-log scale

2.4.2 Future cancer trends

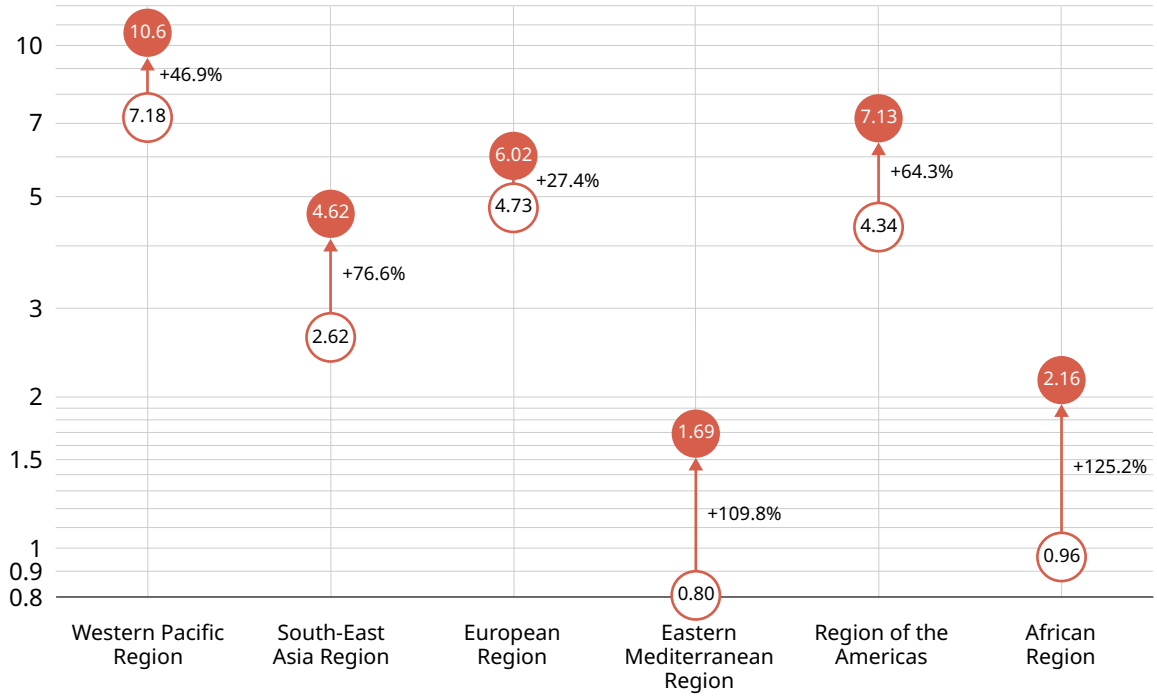
IARC estimates (based on projected changes in population growth and ageing, and assuming overall cancer rates remain unchanged) project a 66.7% global increase in incidence by 2050, with the greatest burden in LICs (133.3 %) and lower-middle-income countries (86.5 %) *(5)* (Fig. 17a). All WHO regions are projected to experience an increase in cancer incidence, with the biggest increases projected in the African and Eastern Mediterranean regions with 125.2% and 109.8% respectively (Fig. 17b).

> *IARC estimates project a 66.7% global increase in cancer incidence by 2050*

Fig. 17. Estimated number of new cancer cases from 2024 to 2050, both sexes, by income level (a) and WHO region (b)

a. Estimated number of new cases (in millions) by income level

b. Estimated number of new cases (in millions) by WHO region



2.4.3 Drivers of increasing cancer burden

Ageing populations

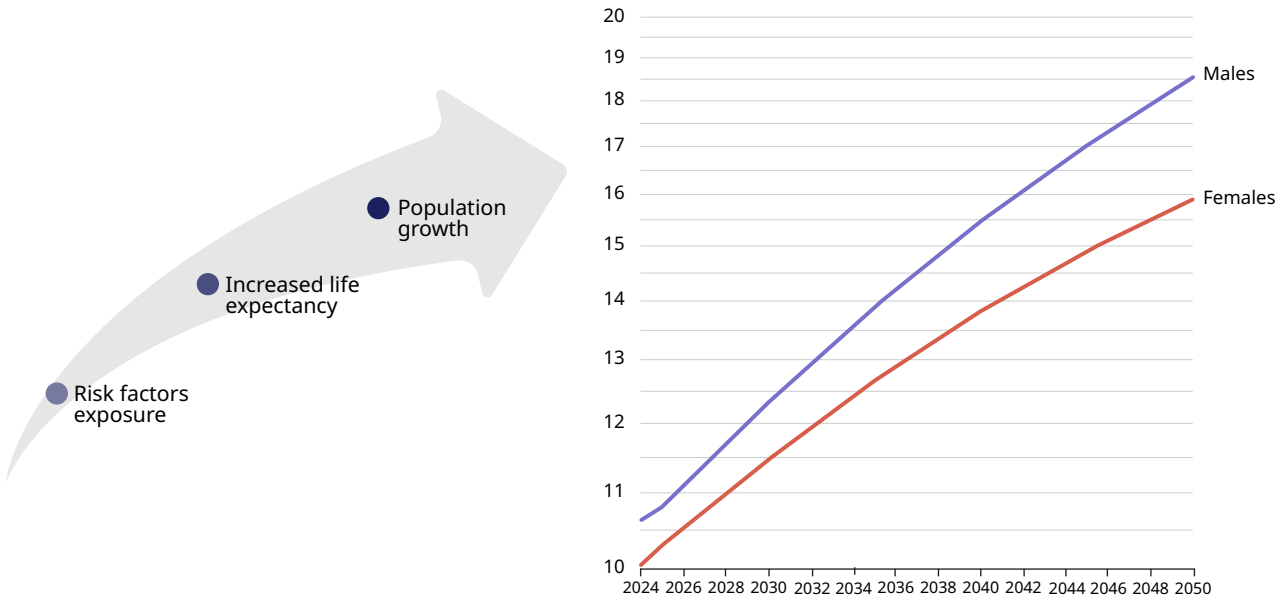
The increase in older population is a significant driver of the projected increase in cancer incidence for the next decades. Individuals aged 65 and above accounted for 53% of the 20.6 million cancer cases in 2024 *(53)*. For select cancers, however, there are increasing rates among younger populations (Box 6).

> *Most cancer-related cases are in individuals aged 65 and older; however, some cancers are becoming more common in younger people*

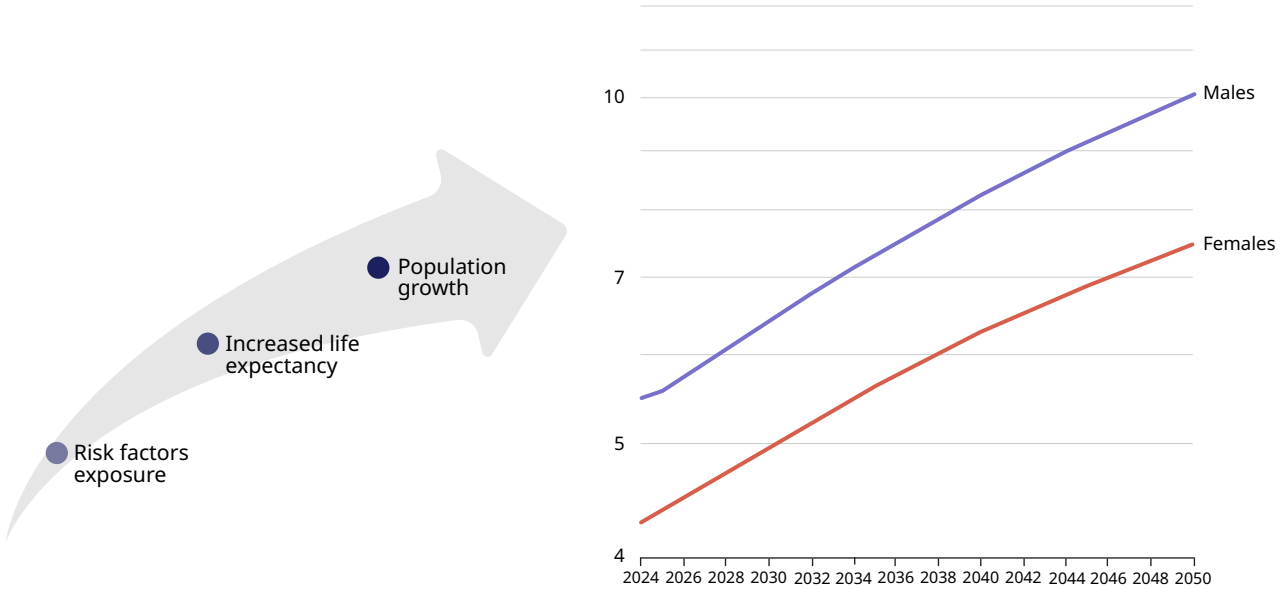
In addition to demographic changes and ageing populations, persistent risk factor exposures for cancer will play a key role in the overall projected increase in cancer incidence (Fig. 18a) and mortality (Fig. 18b).

Fig. 18. Incidence (a) and mortality (b) projected estimated numbers for all cancers, 2024 to 2050, by sex

a. Estimated number of new cases (in millions)



b. Estimated number of deaths (in millions)



Modifiable risk factors

In 2022, 38% of all new cancer cases worldwide were attributable to 30 modifiable risk factors; in women, the proportion was 30% (2.7 million), and in men 45% (4.3 million). The proportion of preventable cancers varied across regions and sex, ranging in women from 25% in the Northern Africa and Western Asia to 38% in sub-Saharan Africa; and from 28% in Latin America and the Caribbean to 57% in East Asia *(54)*.

> *38% of all incident cancers could be prevented by modifiable risk factors*

The leading contributors globally were tobacco use, infections, alcohol consumption, and high body-mass index (BMI) accounting for 15%, 10%, 3% and 2% of all new cancer cases, respectively (Fig. 19).

Tobacco use is a risk factor for multiple cancer types. The global average of tobacco use in 2005 was estimated at 29.4% of people aged 15 or older (45% of males and 13% of females). By 2024, tobacco use rates had dropped to an average of 19.5% (32.5% of males and 6.6% of females), and its prevalence continues to decline in all WHO regions (Fig. 20a) *(55)*.

In 2022, a total of 2.3 million new cancer cases (10%) were attributable to infectious agents – mainly *H. pylori,* human papillomavirus (HPV), hepatitis B, hepatitis C and Epstein-Barr viruses *(54)*. Substantial progress has been made to reduce infection-associated cancers, particularly HPV linked to the Cervical Cancer Elimination Initiative and among populations living with HIV. Slower progress has been noted in infection-related liver cancer due to suboptimal vaccination rates and inadequate access to treatment for viral hepatitis.

Globally, in 2022, nearly 700 000 new cancer cases (3%) were attributable to alcohol consumption *(54)*. Alcohol consumption is projected to increase globally, led by increased consumption in the South-East Asia and Western Pacific regions (Fig. 20b).

In 2022, cancer incidence attributable to excess body weight was 2.4%, with 537 702 new cancer cases *(54)*. Projections on obesity prevalence depict a dramatic increase in the coming years in all WHO regions. Additionally, obesity is rising faster in LMICs and small island developing states than in more wealthy economies (Fig. 20c).

The scale of recently established risk factors (such as soil and air pollution, microplastic consumption) is not well established, though increasing exposures are reported.

Fig. 19. Cancers attributable to modifiable risk factors, number of absolute cases per cancer type for (a) women and (b) men, 2022

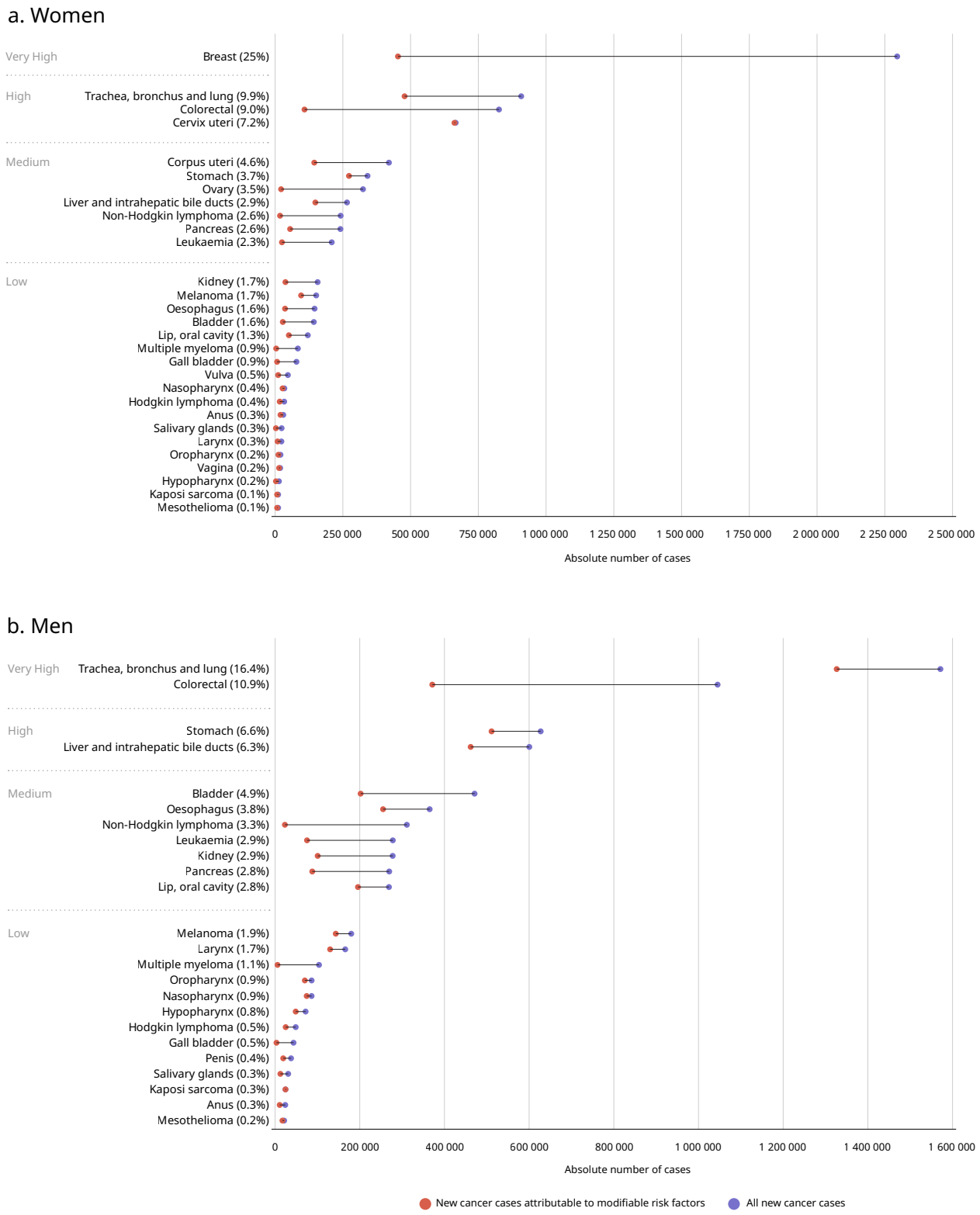
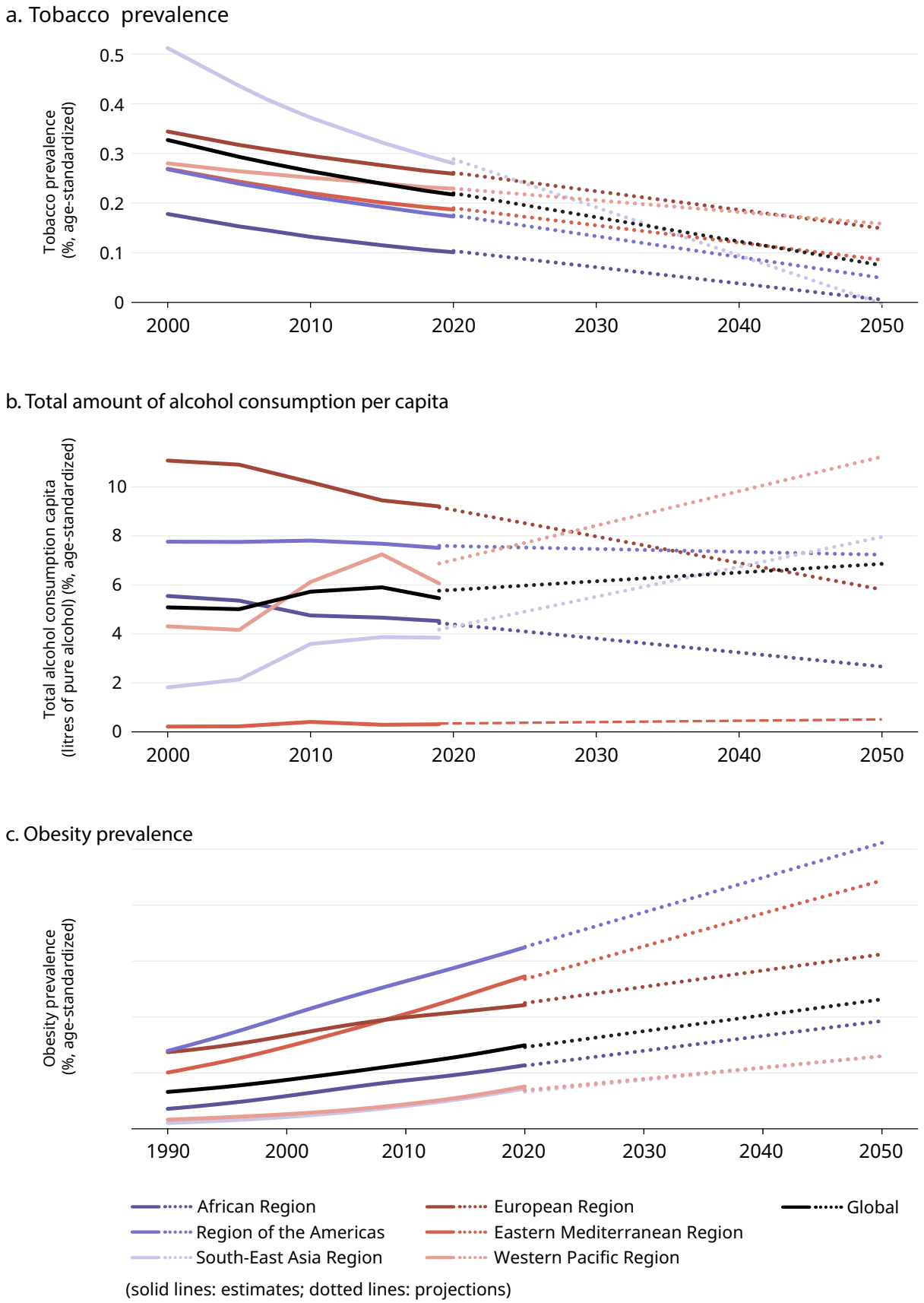


Fig. 20. Prevalence trends for (a) tobacco (15 years and older) (b) alcohol (15 years and older) and (c) obesity (18 years and older), both sexes, globally and by WHO region



Methodological note: to project annual trends in alcohol consumption, obesity prevalence and tobacco use from 2020 to 2050, linear regression models were fitted to the previously estimated WHO regional estimates for each risk factor. The regression models were fitted using the available WHO regional estimates for each risk factor: 2000–2019 for alcohol consumption, 1990–2022 for obesity prevalence, and 2000–2030 for tobacco use (including WHO projected estimates). Trend projections were estimated using the WHO available

*Available when the data was obtained online (in data.who.int and GHO) in 2025.

**2000–2019 for alcohol consumption; 1990–2022 for obesity prevalence; and 2000–2030 for tobacco use.

Box 6. Cancer in young adults: tracking emerging trends

Regular monitoring of cancer registry data is particularly important for tracking emerging cancer risk in younger populations, where some concerning trends are now being documented globally. Between 1990 and 2019, the global incidence of early-onset cancer among adults under 50 years rose by 79.1%; people younger than 50 are the only age group to experience a sustained increase in incidence from 1995 through 2021 *(56)*.

> *Global incidence of early-onset cancer among adults under 50 years rose by 79.1% between 1990 and 2019*

For selected cancers (such as thyroid and breast) there is an increase in ASIR that can be partially explained by screening that result in overdiagnosis (see section 3.2.2). However, increases outside of screened populations suggest that exposure to risk factors, epigenetic changes, host-environment interactions or other factors are contributing to the rise. Increasing rates of other cancers, such as colorectal cancer, are less well understood. It is not yet clear whether they may be related to novel factors (linked to the gut microbiome, for example), or relate to more established risk factors, including obesity, lack of physical activity and unhealthy diet (section 3.1.2) (Fig. 21).

These alarming trends underscore the critical role of cancer registries, and of continual resourcing of capacities to assess cohort-specific trends, enabling timely revision of the underlying etiology, screening eligibility thresholds and targeted prevention strategies for younger adults *(57)*.

> *In adolescents [like patient Meena], the tragedy cuts deeper. Because at sixteen, life is just beginning – and yet, it is already being negotiated against cost, culture, and circumstance. She did not abandon treatment. Treatment, in many ways, abandoned her.*
>
> Sukdev Nayak, health care professional, India

Fig. 21. Number of countries seeing an increase in age-standardized cancer incidence, by age group, 1995–2021, of the 63 countries contributing to IARC's Cancer Over Time dataset

Cancer type	Age group										
	<30	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	>74
Thyroid	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries
Non-Hodgkin lymphoma	97% 61 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries
Breast	94% 59 countries	100% 63 countries	100% 63 countries	100% 63 countries	97% 61 countries	97% 61 countries	97% 61 countries	98% 62 countries	100% 63 countries	100% 63 countries	100% 63 countries
Colorectum	89% 56 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries
Liver	84% 53 countries	84% 53 countries	87% 55 countries	87% 55 countries	87% 55 countries	87% 55 countries	87% 55 countries	87% 55 countries	87% 55 countries	87% 55 countries	87% 55 countries
Lung	32% 20 countries	37% 23 countries	38% 24 countries	68% 43 countries	83% 52 countries	92% 58 countries	95% 60 countries	95% 60 countries	97% 61 countries	100% 63 countries	100% 63 countries
Prostate	0% 0 countries	33% 21 countries	94% 59 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries	100% 63 countries
Bladder	1.6% 1 countries	17% 11 countries	33% 21 countries	33% 21 countries	33% 21 countries	33% 21 countries	33% 21 countries	33% 21 countries	33% 21 countries	33% 21 countries	33% 21 countries
Cervix uteri	0% 0 countries	0% 0 countries	1.6% 1 countries	1.6% 1 countries	1.6% 1 countries	1.6% 1 countries	1.6% 1 countries	1.6% 1 countries	1.6% 1 countries	1.6% 1 countries	1.6% 1 countries
Stomach	0% 0 countries	0% 0 countries	0% 0 countries	0% 0 countries	0% 0 countries	0% 0 countries	0% 0 countries	0% 0 countries	0% 0 countries	0% 0 countries	0% 0 countries

2.5 Capturing the lived experience of people affected by cancer

The human impact of cancer cannot be captured by counting the number of cases, but only by listening to those with lived experience of the disease as patients, caregivers and survivors.

In listening, what becomes plain is that the impact of cancer for individuals goes beyond the effects of the disease on their body, but encompasses a range of broader impacts that reach into every aspect of their lives, affecting their family members, who must become caregivers, and ripple out to health systems and societies. Qualitative research to better understand these experiences can help us design policies, programmes and progress that better meet the needs of people affected by cancer.

> *Global cancer policies must be shaped by more than data and scientific research they must also reflect the voices and lived experiences of people impacted by the disease.*
>
> Dr Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization

2.5.1 A global survey on lived experience of people affected by cancer

The WHO Framework for the meaningful engagement of people living with NCDs, launched in 2023, called for increased awareness of the multifactorial impact of cancer on individuals' lived experience, and an increased international focus on engaging people with lived experience of cancer in shaping the global cancer research and policy agenda *(9)*. Informed by that framework, from 2024 to 2025 WHO conducted its first cross-sectional global survey on the lived experience of people affected by cancer *(58)*.

The WHO global survey on the lived experience of people affected by cancer was intended to inform understanding of how the experience of cancer can impact different areas of people's lives, including their social, emotional, and financial health. This was explored by inviting people diagnosed with cancer, family members of people affected by cancer, and family members of a person who has died from cancer, to complete an online survey, which was made available in 10 languages.

The survey captured data from 4262 individuals affected by cancer who responded to the survey, of whom 3975 provided complete responses to one or more outcome measures. These 3975 respondents included individuals across 116 countries (47% LMICs): 1505 individuals diagnosed with cancer themselves, and 2470 reporting on the cancer experience of their family member/loved one *(58, 59)*. People living with/beyond cancer were a median age of 49 years old at the time of the survey (median age 43 at diagnosis).

> *From diagnosis through all treatments, the patient must do a ton of self-advocacy to not fall through the cracks, and it's exhausting.*
>
> Survey respondent, person living with/beyond cancer

2.5.2 How the experience of cancer impacts quality of life

WHO defines lived experience as what someone has experienced themselves, especially when it gives the individual knowledge or understanding that people who have only heard or learned about such experiences do not have *(9)*.

The experience of cancer affects individuals by impacting on multiple aspects of their quality of life (QoL). The WHO global survey explored these impacts using the WHO Quality of life framework (WHOQOL), which conceptualizes QoL through six domains:

i. physical QoL (e.g. pain, sleep)

ii. psychological QoL (e.g. feelings, cognitive functioning)

iii. independence (e.g. mobility, substance use)

iv. social relationships (e.g. activities and social support)

v. environment (e.g. financial resources and physical environment), and

vi. spirituality (e.g. spiritual or religious beliefs).

Survey respondents were asked about each of the domains relevant to their experience. All respondents were asked about health-related QoL, emotional problems, mental health, anxiety, financial well-being, relationship impact, post-traumatic growth, support service use, and education and work problems. Some questions were asked only to patients (health behaviours, survivorship care experience, fertility experiences, perceived cancer impact), some only to caregivers (caregiver burden, sibling impact), and some only to the bereaved (end-of-life care experience, prolonged grief).

Physical QoL

Pain

WHO survey results found that 55% of respondents diagnosed with cancer (n=827/1505) reported mild to severe pain. This is consistent with a recent umbrella review that found over half of people diagnosed with cancer experience persistent pain through cancer treatment *(60)*. Recent reviews highlight that high-quality interventions remain limited, especially in low-resource settings. International guidelines suggest ongoing, widespread use of non-steroidal anti-inflammatory drugs for bone and inflammatory pain, in combination with opioids, in line with the WHO Analgesic ladder for cancer pain relief.

> *I wish there'd been honest conversations about long term effects: unresolved pain, disability, fatigue, poverty...*
>
> Survey respondent, person living with/beyond cancer

Fatigue

Cancer-related fatigue is recognized as one of the most common and impairing symptoms of cancer and cancer treatment, yet evidence regarding the most effective approaches to addressing this burdensome symptom remains inconsistent *(61)*. WHO global survey results found that about 69% of respondents diagnosed with cancer (n=1038/1505) reported mild to very severe fatigue, consistent with recent reviews reporting a similar prevalence *(60)*.

> *Brain fog and fatigue are routinely ignored by medical professionals and disability plans. They only care about things like nausea, that would prevent treatment from going forward. But fog and fatigue are debilitating.*

Survey respondent, person living with/beyond cancer

Psychological QoL

Mental health and emotional problems

People affected by cancer often experience significant psychosocial hardships. These challenges can include distress related to financial toxicity, fear, social isolation, anxiety and depression, which may be intensified by the stress of diagnosis, treatment, and uncertainty about the future (see section 4.4).

An estimated 60% of people affected by cancer experience mental illness *(62)*, with many reporting discrimination and social stigma affecting their education, employment and relationships. Results from the WHO global survey highlight that mental health challenges such as depression, anxiety and post-traumatic stress disorder are similarly prevalent among people diagnosed with cancer and their family members/caregivers (depression: 25% vs 20%, anxiety: 22% vs 17.8%, post-traumatic stress: 10.6% vs 11.3%).

> *My son struggles with intense anxiety about future diagnoses from treatment and I worry about further decline and the fact that he may never live on his own and have a normal adult life. He is debilitated by anxiety and has memory and cognitive function issues.*

Survey respondent, parent of a childhood cancer survivor

Grief

While often associated with bereavement, grief can also be anticipatory, related to changes in functioning, appearance, relationships and lifestyle following a cancer diagnosis. Grief can contribute to poor health-related QoL for people living with and beyond cancer as well *(63)*. WHO survey results found 24.5% of people living with/beyond cancer and 21% of family members reported experiencing grief.

> *For those bereaved families, don't forget about them. Provide information for grief support, programs that may assist with funeral expenses and programs to help with getting kind of rehabilitated (if that is the word) into life without their loved one.*

Survey respondent, bereaved family member

Medical systems should explain options like palliative care and grief care early, as patients often lack the capacity to seek them later.

Survey respondent, person living with/beyond cancer

Caregiving burden

Caregivers and families bear a significant emotional and physical burden, balancing caregiving responsibilities with their own well-being. Caregiving burden is associated with poor health-related QoL *(64)*. The WHO global survey found that about 30% of family members (n=729/2470) reported one or more forms of caregiving strain (for example, responding "I agree" or "I strongly agree" to statements such as "I feel tired or exhausted caring for my family member", "While caring for my family member, I felt my own health was negatively affected", or "While caring for my family member, I felt isolated and lonely"). Of the 2470 family members who responded to the survey, 163 indicated they are unemployed due to health reasons and 88 of these (54%) reported unemployment was due to caregiving requirements.

Balancing daily life and caregiving is extremely hard. Parents often skip meals, siblings endure sacrifices, and everyone becomes exhausted. Support for caregiving families should be increased and clearly communicated.

Survey respondent, parent of a child with cancer

When my daughter was diagnosed and going through treatment, my husband was able to continue working, while I stayed with her almost 24/7.

She was just a baby, and it was an incredibly difficult time. I didn't want to ask other family members for help because of the risk of infection, so I carried most of the weight myself. I will always be grateful that my husband was there. Still, it was a very heavy responsibility, especially as a first-time mom.

Alma Seidel, mother of a childhood cancer survivor, Mexico/Germany

My mum was the one that had to leave everything to take care of me. Not my father nor my brother. And it was expected to happen that way.

Mila Ogalla, person with lived experience of cancer, Spain

I am a Turkish woman who has lived through cancer. I often say I was lucky, mine wasn't too bad. I placed myself in the hands of my parents, especially my mother, who became my caregiver. They carried everything: the tests, the surgery, the treatment, the isolation. I argued with my mother at times, telling her she was too controlling. I was going to be fine and I was. Then my father got cancer. Three times. Over the last decade, my small family of four has faced cancer almost every two years. And I understood my mother: having a loved one diagnosed is harder than being the patient yourself. You worry more. You carry more decisions you are not even equipped to make, financial strain, emotional exhaustion. Yet the world is less understanding. You are still expected to work, to function, to suppress what you are going through. As both a patient and a caregiver, you are at the mercy of your employer's "understanding". As a caregiver, you have no formal rights; no protected time off, no structured psychological support. The third time my father was diagnosed, I worried less about him and more about my mother, the main caregiver, already exhausted. I was not sure how much more she could carry.

Irmak Ozer, person with lived experience of cancer, Türkiye

Independence

Mobility

A diagnosis of cancer and subsequent treatments can impact mobility directly (i.e., through surgery-related disability), or indirectly through symptom burden related to pain, nausea, or peripheral neuropathy *(65)*. Reduced mobility may limit a person's ability to commute, travel independently, participate in daily activities, or access education, work, and health care services.

People diagnosed with cancer – in my case, radical mastectomy and thyroid gland cancer – should be granted disability pension! At my age, with all these problems, I don't think I can return to work.

Survey respondent, person living with/beyond cancer

We request that disability certificates be granted to individuals who have lost a part of their body that cannot be restored, so they too can benefit from the support that comes with this certificate – such as tax exemptions, free treatment tickets, and other related benefits.

Even though we also have a missing breast, this certificate is only granted to some people, which is not fair. We are not treated equally, even though the condition is the same.

Survey respondent, person living with/beyond cancer

Education and employment impacts

A cancer diagnosis can significantly disrupt education and employment for the individual diagnosed, interrupting schooling, training, or career progression due to treatment demands, fatigue, and long-term health effects. Many people diagnosed with cancer face delays in completing education, reduced work hours, job loss, or difficulties returning to work, with lasting impacts on income and career development.

Cancer is associated on average with a 25% productivity loss from absenteeism and a 23% loss from presenteeism, alongside a 19% reduction in working hours. Less than half (47%) of people return to work following treatment, while 9% experience job loss (35% among people with advanced cancer), 29% are unemployed, 11% receive long-term disability or pension benefits, and 14% retire early. Across these outcomes, labour and productivity impacts are consistently greater among women than men *(66).*

Family members may also experience education and employment consequences, including missed schooling, reduced workforce participation, or taking unpaid leave to provide care and attend medical appointments. The average caregiver of an individual affected by cancer spends more than 50 days providing support, contributing an average of 45 hours of unpaid care each week. Female caregivers provide a disproportionate share of unpaid care, with greater consequences for their labour force participation and productivity compared to men. On average, employed caregivers reduce their working hours by 13%, are absent from work for 5% of working days, experience a 24% reduction in workplace productivity (presenteeism), and 30% report reduced professional responsibilities. The impacts are greater among caregivers of people with advanced cancer and during palliative care, with women generally experiencing greater labour and productivity consequences than men *(67)***.**

Findings from the WHO global survey are consistent with these observations. Among 3975 respondents affected by cancer, 11.4% (n=454) reported being unemployed. In addition, 16% (n=636) reported disruption to employment through job loss or reduced working hours, while 5% (n=198) reported disruption to education through reduced study hours or discontinuing their studies altogether.

WHO survey results found about 11.4% (n=454/3975) of individuals affected by cancer reported unemployment. However, 16% (n=636/3975) reported disruption to employment in the form of losing their job or needing to work less hours, and 5% (n=198/3975) reported disruption to education in the form of needing to study less hours or quit studies all together.

> *Medical institutions should serve as the entry point for introducing educational, vocational, and social rehabilitation for cancer patients. Together with patients, they should visualize treatment plans, care, and side-effects, and collaborate with educational, vocational, and social activity settings. This should not be a one-time effort but repeated as needed.*
>
> Survey respondent, parent of a child with cancer

Social relationships

A cancer diagnosis can place significant strain on marriages and intimate relationships, as couples navigate emotional distress, uncertainty, and changes in roles and responsibilities. Communication challenges, altered intimacy, and differences in coping styles can create tension or misunderstanding between partners. Family relationships may also be affected, with parents, children, and extended family experiencing worry, fear, or shifts in dependency and caregiving dynamics. While some relationships become strained, others may grow stronger through shared coping, mutual support, and increased emotional closeness *(68, 69)*.

The WHO global survey found that among the 3975 participants who completed the survey, 3191 were in a relationship at the time of the cancer experience; 9% (n=284/3191) reported their relationship was challenged by the cancer experience, while 20% reported it stayed the same or got stronger (n=637/3191). Approximately half of caregivers (n=527/1010) reported having their relationships with friends and other family members suffer. Among the 55 siblings who responded to the survey, 87% reported one or more positive effects from going through their sibling's cancer experience. However, 67% reported one or more unmet needs related to their experience with their sibling with cancer, most commonly "Having someone I can talk to about my feelings regarding my sibling's cancer".

> *A painful experience on all levels. No psychological or social support for the family.*

> *Difficulty balancing work and accompanying my child during treatment. Unfortunately, the hospital was not clear or honest at any stage, especially when the cancer spread and the situation became very difficult.*

Survey respondent, child of someone who died from cancer

> *Our relationship has become stronger, and seeing things that are not satisfactory has become easy and manageable. Illness makes you feel that everything in life is easy compared to health. There is nothing more difficult than cancer.*

Survey respondent, parent of a child with cancer

Environment

Key contributors to environmental QoL include financial toxicity and physical environment.

Financial toxicity

Cancer is among the most financially devastating diagnoses a household can face *(70)*. Families face greater financial hardship at the time of a cancer diagnosis than those dealing with other diseases *(70)*. In the WHO global survey and a systematic review, approximately 45–60% of people diagnosed with cancer experience catastrophic health expenditure, leading to impoverishment, food insecurity, and disrupted education for the children and sibling of cancer patients (see section 4.4.1) *(15)*.

The words "you have cancer and at advanced stage" arrived not only as a medical verdict but as an economic sentence passed on an entire household.

Within weeks of beginning treatment at a private specialist hospital in Lagos, the costs began to compound in ways no salary could absorb. Consultation fees, diagnostic scans, chemotherapy cycles, and prescription medications; procured at a high cost. My monthly out-of-pocket medical expenditure exceeded my take-home pay by a factor of three. Savings accumulated over a long period dissolved within four months; our poultry farm gone and other properties were not spared.

The cancer did not only invade my body; it invaded the walls of our home, the school fees I could no longer pay, the plate of food that was no longer enough.

I was the tree my family sheltered under. When I fell ill, the storm reached everyone.

Dozie Akwarandu, person with lived experience of cancer, Nigeria

Offer more financial support to low-income families. They can't afford medical devices and treatments that are not covered by the government and don't have private insurance. They can't work because they don't have to leave to go to appointments. They have no money to buy food at the hospital while their child is in treatment.

Survey respondent, parent of a child with cancer

Anything to help with finances would be appreciated, whether its working with banks to help families with a mortgage/rent payment or helping with utilities, gas, food. Even if those expenses are covered by the family, there are other expenses to help the cancer patient feel comfortable at home... it could be mattress pads, a supportive chair to help them be comfortable or stand easier, additional cleaning products, air purifiers, rails in bathrooms to help them stand and be able to be more independent, new clothes/shoes depending on weight gain/loss, there are so many additional expenses that insurance doesn't cover and you wouldn't think about until you are in this situation.

Survey respondent, child of a person with cancer

Physical environment

The well-being of people affected by cancer can be substantially affected by the physical environment, including the spaces in which they receive care, live, work, and recover.

Hospital accessibility, hygiene, noise, lighting, and privacy can affect comfort, stress levels, dignity, and engagement with treatment and support services. Home and community environments – such as housing quality, proximity to services and food, and transport infrastructure – can either enable or hinder recovery, independence, and participation in daily life. Unsupportive or inaccessible physical environments may exacerbate fatigue, financial and psychosocial distress, and social isolation, while well designed, clean, and inclusive spaces can promote well-being *(71–73)*.

There is literally nowhere nearby to buy ready-made food (at least a cafeteria in the hospital building would help). Cooking in a multicooker is not allowed in all departments, even in the same hospital. Two people stay in the hospital (the child and one parent), but only one meal is provided, as if the accompanying parent could go home to eat. If there is no one to cook and bring food daily or do laundry, you will drown in debt. Parents are not provided with a pillow, blanket, or bedding – everything must be bought and brought.

Survey respondent, parent of a child with cancer

For family members coming from afar, such as the father, accommodation and food support should be ensured by building a facility next to the hospital exclusively for these patients, where they can stay for a small fee. This is very important because in such a critical situation, while dealing with the child, they should not have to worry about accommodation and food.

Survey respondent, parent of a child with cancer

Spirituality

Cancer can have a profound impact on spirituality, prompting people to reflect on meaning, purpose, faith, and beliefs about life, suffering, and mortality. For some, a diagnosis may strengthen spiritual or religious beliefs, providing comfort, hope, and a framework for coping during uncertainty and distress. Others may experience spiritual distress, including feelings of anger, loss of faith, or questioning previously held beliefs. These spiritual changes can influence emotional well-being, coping strategies, and the types of support people seek throughout the cancer journey *(74)*. WHO global survey responses suggest 52% (n=182/352) of individuals whose loved one died from cancer felt that their religious/spiritual needs were met through the end-of-life process (Fig. 22).

To overcome this disease, morale is very important. We ask that you be closer to family members and organize activities that provide spiritual and social support to help them feel better.

Spouse of someone diagnosed with cancer

I found that when I changed her death narrative to, her death was an event in her life, instead of her death was the end of her life (again, my spiritual views), it really helped. But other people just don't get it and it's so hard to talk about.

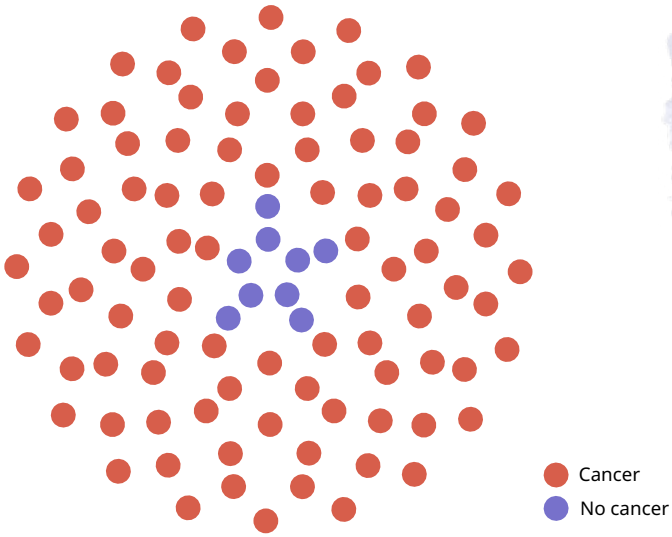
Parent of a child who died from cancer

Fig. 22. Impact of cancer across six domains of the WHO Quality of Life Framework with data from WHO global survey and related systematic reviews

Box 7. Through a personal diagnosis or as a family member, cancer impacts nearly all of us

When we account for the impact of cancer on family members, around 92% of all people globally will be affected by cancer at least once in their lifetime – either through their own diagnosis, or as a caregiver of a parent, spouse, child or close family member (Fig. 23).[9]

Fig. 23. Lifetime risk of having a close family member impacted by cancer



> *Cancer affects 92% of people in their lifetime, through their own diagnosis or that of a close family member*

This means cancer can be considered a near-universal life experience. This has profound implications for workforce capacity, household finances, and health system design at population level.

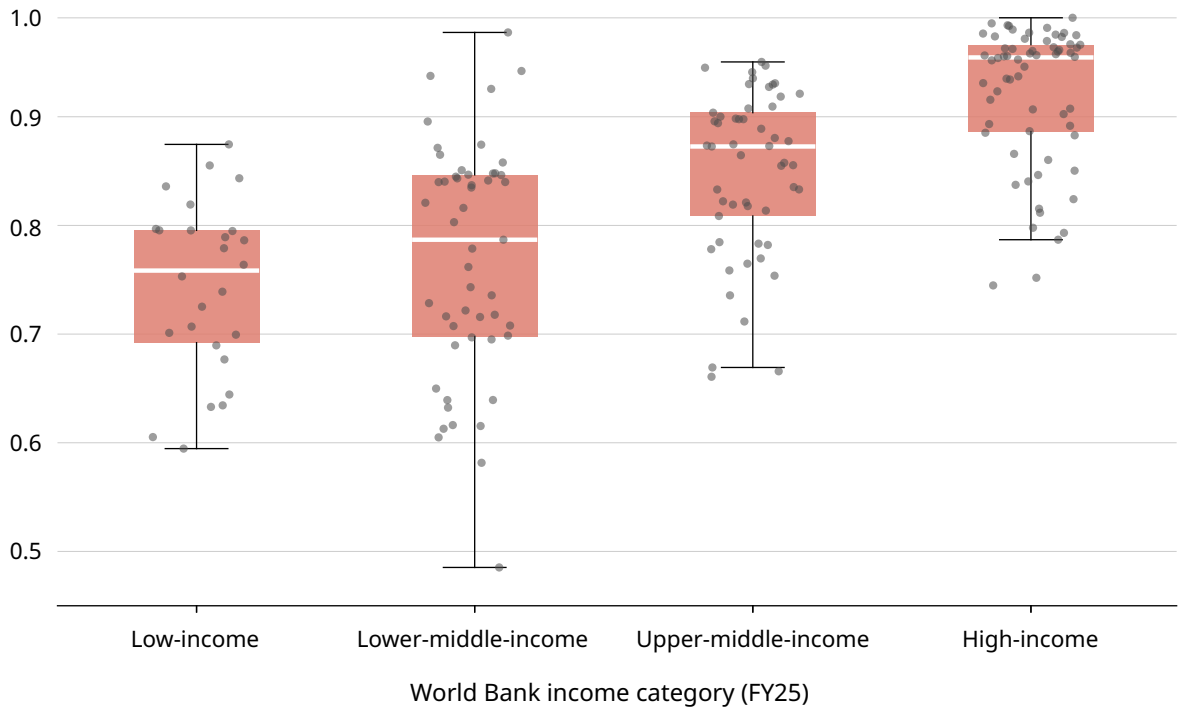
In HICs, individuals can expect to be affected by cancer twice during their lifetime, once as a patient and once as a caregiver (Fig. 24).[10]

> *On the day of my child's diagnosis, the shock was overwhelming. I feared the word "cancer" before I even understood it, and I was terrified of how our lives would change.*
>
> Batoula Abdeen, parent of a child with cancer

[9] WHO unpublished data.

[10] WHO unpublished data.

Fig. 24. Family cancer risk by income level



Methodological note: estimating the probability that an individual or a close family member will develop cancer in their lifetime. The estimate is derived from a probabilistic model combining three publicly available data sources: country-level lifetime cancer risk *(21);* demographic indicators from the United Nations World Population Prospects 2024, including total fertility rate (TFR) and the probability of death before age 60 (Q0060); and the probability of ever marrying by age 50–54, drawn from the United Nations World Marriage Data 2019. A close family is defined as the reference individual together with two parents, siblings (calculated as TFR at the year of the median-aged person's birth, minus one), a partner (weighted by the country-specific probability of ever marrying), and children (TFR 2025). To avoid overestimating risk by including relatives unlikely to reach the age at which most cancers occur, the number of parents, siblings, partner and children is weighted by the probability of survival to age 60 (1 – Q0060/1000). The probability that at least one member of the adjusted close family develops cancer in their lifetime is then calculated as 1 – (1 – p)^N, where p is the country-specific lifetime cancer risk and N is the adjusted family size. Global estimates apply the same formulae to population-weighted averages of the underlying indicators across 194 countries.

Several methodological limitations should be noted. The model assumes that cancer occurrence is independent across family members, which does not account for shared genetic susceptibility, environmental exposures, or behavioural risk factors that cluster within families. It applies a uniform country-level lifetime risk to all relatives, without stratification by age or sex, and uses national averages that mask important sub-national variation.

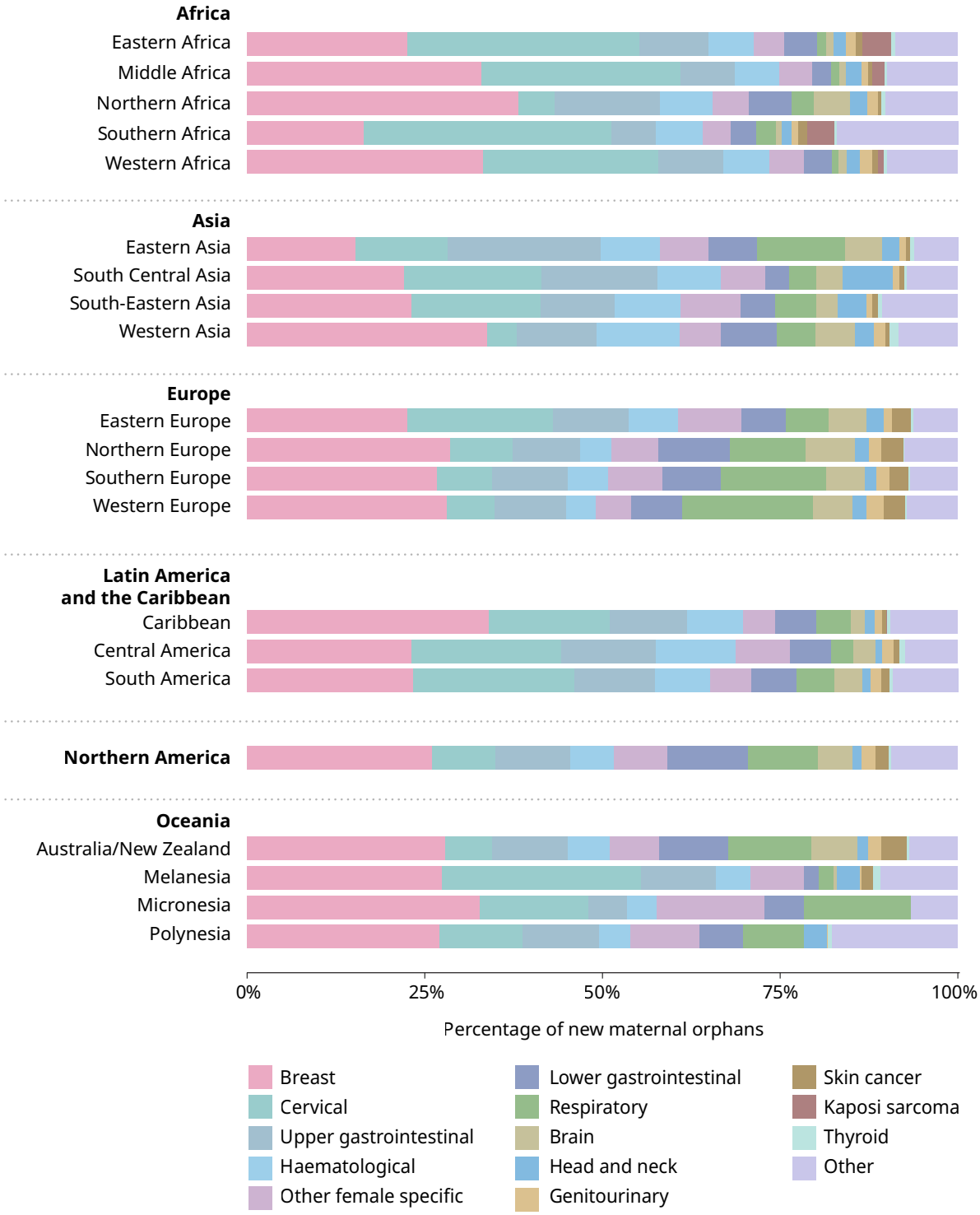
Box 8. Children losing a parent to cancer

Cancer has an intergenerational impact. Children of parents with cancer face increased risks of long-term mental health challenges and behavioural issues. Children orphaned by cancer experience emotional trauma, loss of parental guidance, limited support networks, malnourishment, barriers to their continuing education and financial instability *(75)*.

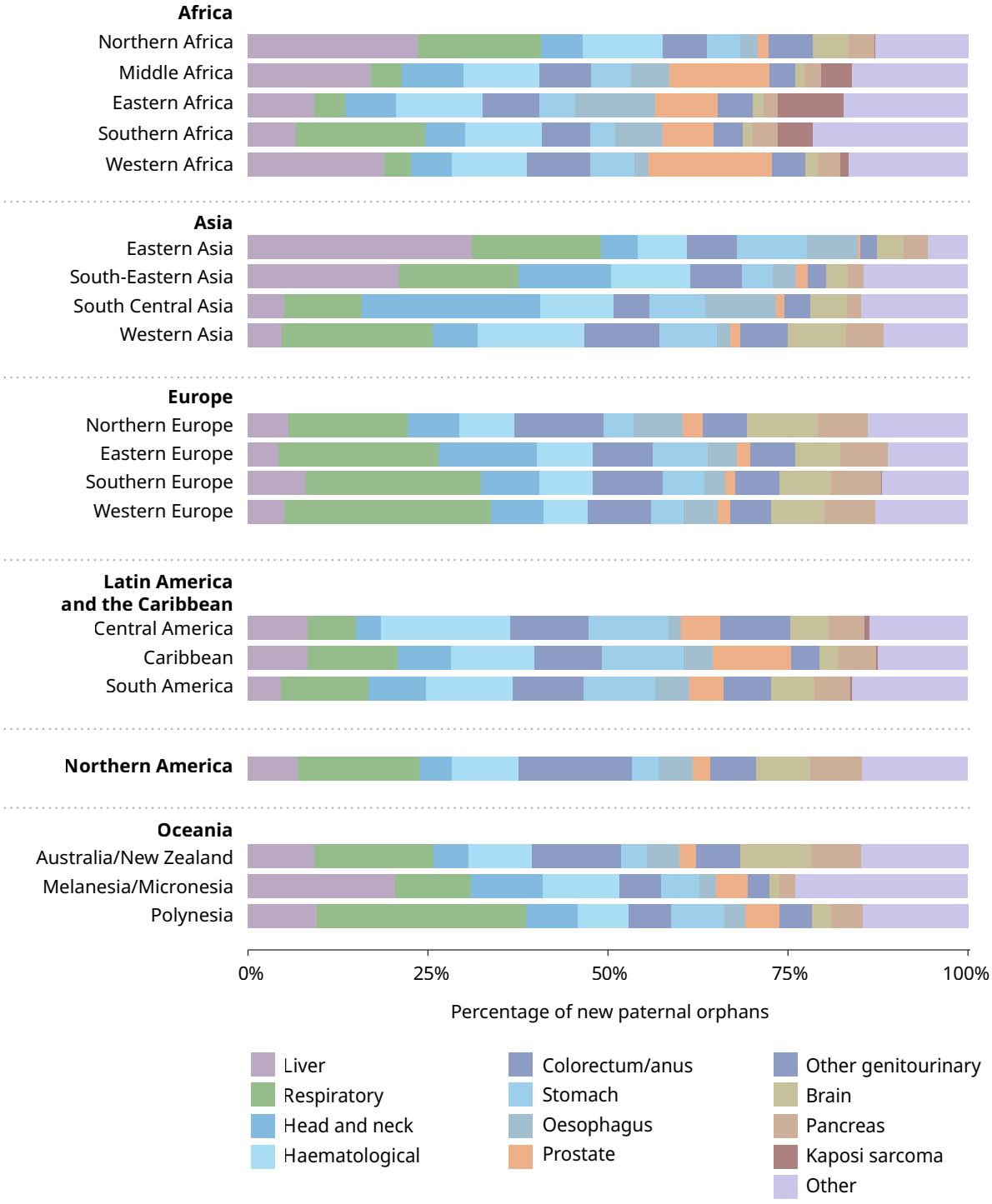
In 2020, the 4.4 million cancer deaths among women and 5.5 million cancer deaths among men left 1.04 and 1.41 million children as maternal and paternal orphans, respectively. Of the 1 million children who became new maternal orphans, one in four lost their mother due to breast cancer and one in five due to cervical cancer. Almost half of the new maternal orphans were in Asia, and more than a third (35%) were in Africa. Six countries alone accounted for two-fifths of the worldwide total of maternal orphans: India, China, Nigeria, Indonesia, Ethiopia and Pakistan *(76)* (Fig. 25).

Fig. 25. Percentage distribution of site-specific cancer deaths giving rise to (a) new maternal orphans due to cancer and (b) new paternal orphans, 2020, by WHO region

a. Maternal orphans



b. Paternal orphans



My mum was diagnosed with breast cancer in 1994 when I was 16 and my brother was 4. I was at the start of my A levels at the time. During my first year of A levels she had chemotherapy and radiation treatment, and during my A level exams in 1996 she had a mastectomy. She was in hospital recovering from the operation on my 18th birthday. The cancer went into remission for several years, then in 2000 it returned and she had a major operation removing part of her chest to remove the cancer. In 2002 she was told the cancer had spread and she had a year to live. She died in October 2003 aged 47.

My mum spent the last five months of her life in an oncology ward in hospital and then in a hospice as she was unable to walk. I looked after her for 4 to 5 hours a day and during that time saw a great deal of illness and suffering and met many women who went on to die. Since witnessing this, as well as my mum's prolonged illness, I have struggled with anxiety, especially health anxiety, intrusive thoughts, difficult memories and periods of depression. All major life events come with the inevitable sadness that my mum is not here to see them.

From learning of my mum's illness at 16, I developed a sense that anything may go wrong at any moment, and that the future is something to be scared of. I felt certain that I would also get breast cancer and die at 47 as my mum did, or die in some terrible accident. At the time, I lost any sense of purpose with school and stopped studying, I finished the exams but I did not do well. I went on to art school but I didn't have any plan. I thought that thinking about the future was pointless. Since then I have struggled with knowing what to do with my life, to make decisions based on the idea the future will happen, and have found relationships and managing money difficult. In some ways this has been exciting, I have been married and divorced twice, I have travelled a lot and have had many jobs, but I have found it difficult to settle into something and feel permanence.

Understanding the impact of these things has taken me many years. I have only recently realized how experiencing my mum's illness as a young person shaped my view of life, and more importantly, that it is not the only view you can have. I thought for a long time that I was bad at life decisions, but I see now how much of this was a result of the uncertainty I lived with in late childhood and early adulthood, and that my fear of the future was bound up in the horrible things I witnessed in the past. The impact is still something I live with but I understand it better. I have had counselling a number of times which helped a great deal, and 12 years ago I had a son which helped me to find new positive ways to view the future.

Emily May, who lost her mother to cancer, United Kingdom

2.6 Cancer's financial burden and economic costs, for health systems and societies

The financial burden and economic costs of cancer for health systems and societies are substantial.

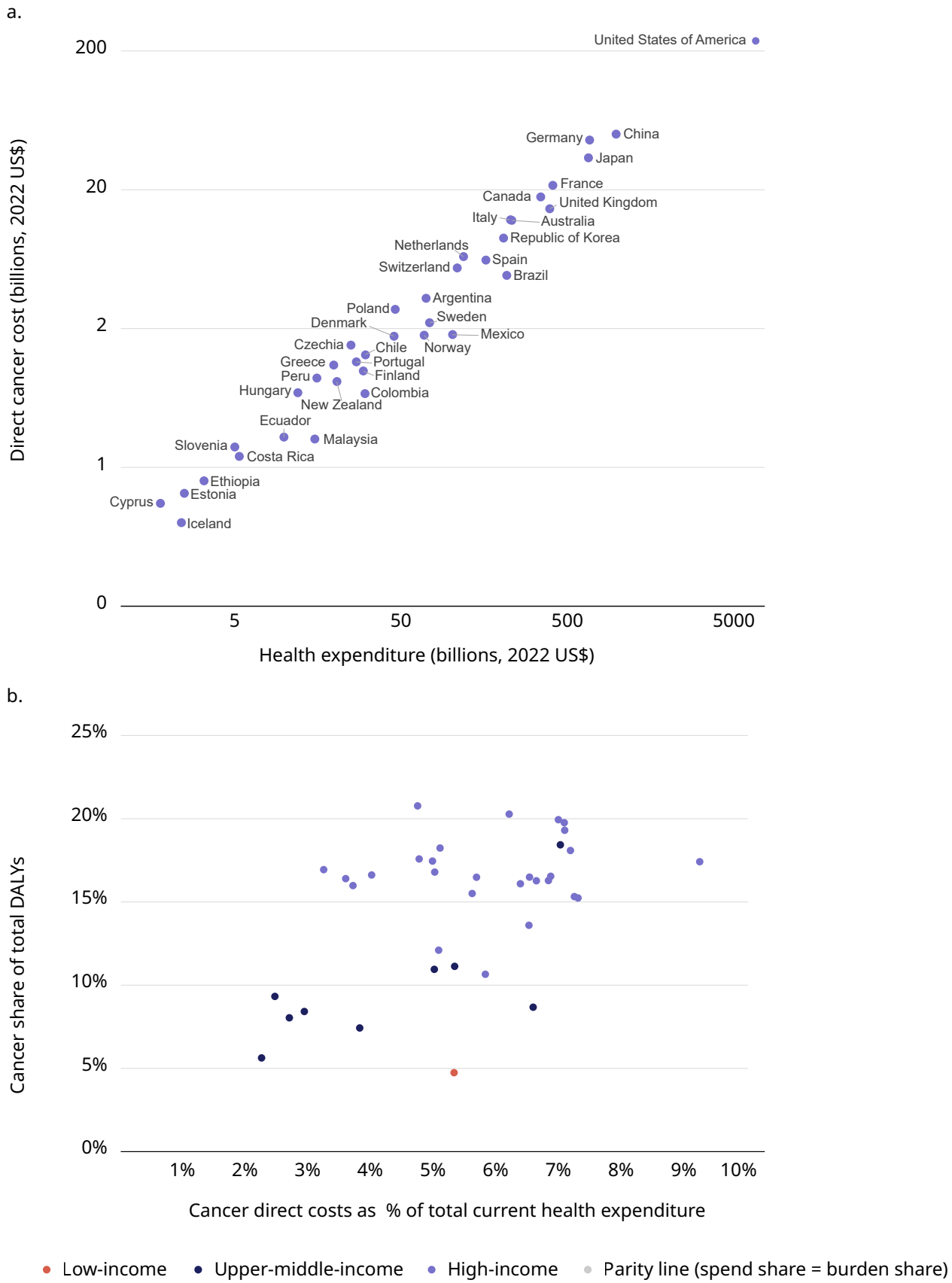
2.6.1 Health care expenditure

Health systems worldwide face mounting challenges in financing cancer costs alongside competing health priorities and limited resources, underscoring the urgent need to develop sustainable financing mechanisms that expand access while minimizing OOP payments (see section 4.3.1). Based on the cancer statistics reported by the National Cancer Institute, in the USA, national cancer care costs were estimated at nearly US$ 209 billion in 2020, with projections indicating increase in the coming years *(77)*. Across countries, direct cancer expenditure varies widely (Fig. 26a) *(78).* Costs rose steadily over time, with annual growth rates ranging from 1.4% to 9.3%, in countries with high-quality data, consistently outpacing gross domestic product growth by 1.0%–7.7% over the respective observation periods (*78*) . In Europe, cancer's share of total health care expenditure has remained stable at around 6–7% despite the cancer increasing burden, although the composition of the direct costs related to cancer medicines have grown (see section 4.3.3). In select HICs with available data, cancer medicines have increased from accounting for less than 10% of direct cancer expenditure in 1995 to more than 40% in 2023 *(79, 80)*.

Overall, the cancer burden accounts for a larger proportion of the total disease burden than expenditure on cancer of total health expenditure (Fig. 26b) *(78)*.

> *Overall, cancer remains underfunded relative to its disease burden*

Fig. 26. Expenditure on cancer care as (a) direct cancer costs by total health expenditure in USD (2022) and (b) proportional expenditure on cancer against the disease burden, up to 2022

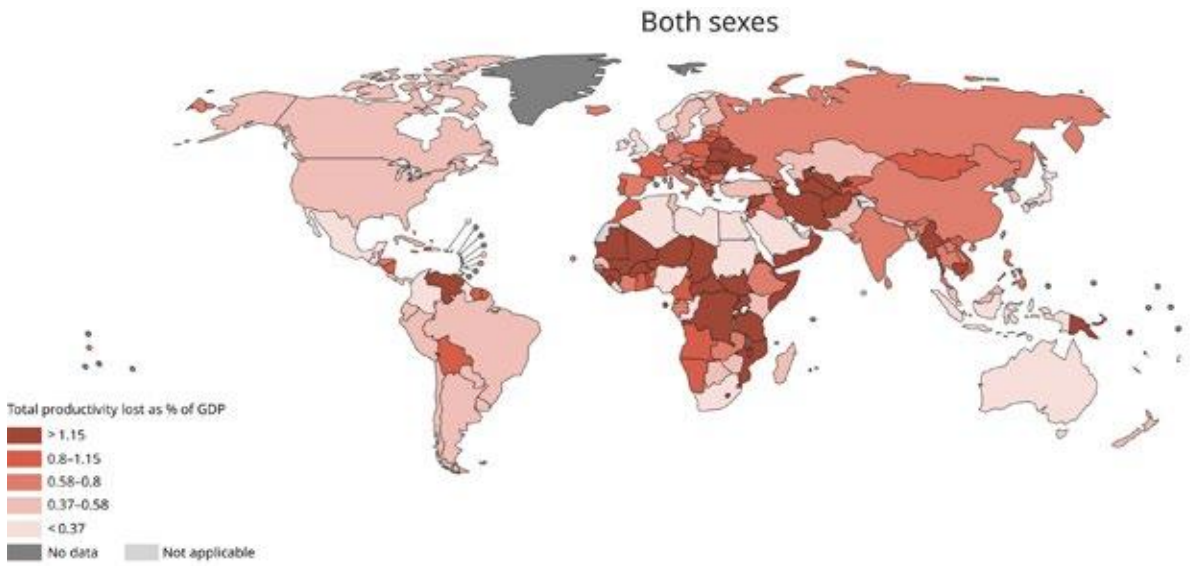


2.6.2 Economic costs

Investment in cancer prevention and care is warranted by the substantial and growing economic burden of cancer on societies globally, which extends far beyond direct health care costs, offering a full social return on investment of US$ 9.50 for every dollar invested in cancer prevention and control *(10)*. The overall economic burden of cancer between 2020 and 2050 is equivalent to an annual tax of approximately 0.55% on global gross domestic product *(1)*. The major contributor is lost productivity resulting from illness and premature death (Fig. 27) *(2)*.

> *Governments can expect a return on investment of US$ 9.50 for every dollar invested in cancer prevention and control*

Fig. 27. Productivity loss from cancer, both sexes, 2022



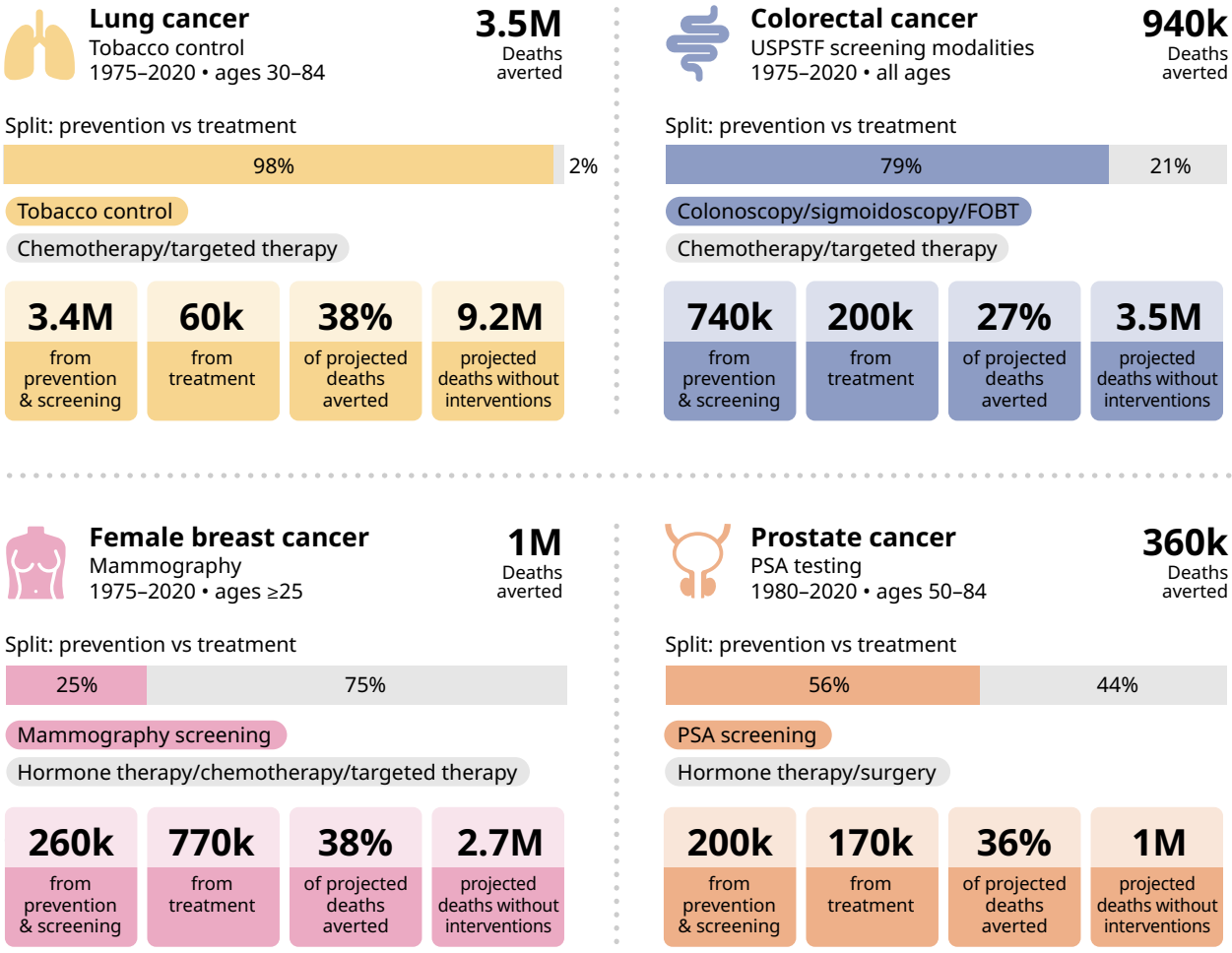
3 Status update: progress made and key gaps in implementation

This section provides a status update on implementation progress in cancer prevention and control, identifying successes and key gaps.

> *Progress in cancer control hinges on progress in implementation*

Effective, evidence-based cancer control measures with the potential to substantially alter the projected global cancer burden span the full care continuum. Where implemented, the effects of these interventions demonstrate that cancer outcomes at population level can be improved by investing in comprehensive, integrated and cost-effective approaches, equitably and at scale (Fig. 28). Progress in cancer control therefore hinges on progress in implementation.

Fig. 28. Contributions of prevention, screening and treatment interventions to cancer deaths averted in the USA, 1975 to 2020



USPSIF: United States Preventive Services Task Force; FOBT: faecal occult blood test; PSA: prostate-specific antigen.

Source: (81).

3.1 Risk factors and prevention

Nearly 40% of new cancer cases are preventable by reducing exposure to modifiable risk factors *(54)*. This means that cancer incidence and mortality can be substantially lowered in all settings by strengthening and scaling up comprehensive policies and programmes that address these risk factors.

Cancer prevention must be the cornerstone of every NCCP and a visible priority for ministers of health and health systems at all levels. Effective prevention requires sustained investment in awareness, advocacy and health literacy, especially among children and young people, so that populations are empowered to make informed choices and demand protective policies.

Yet although it is clear what needs to be done, implementation of WHO's Best Buys for the prevention of NCDs, including cancer, remains inadequate (Fig. 29) *(82),* with only 30% of NCCPs incorporating cancer prevention interventions in 2023 *(8)*.

Nearly 40% of new cancer cases are preventable by reducing exposure to modifiable risk factors

Fig. 29. Implementation of WHO NCD Best Buys, % countries with indicator partially or fully achieved, 2025

	Low-income	Lower-middle-income	Upper-middle-income	High-income	Africa	Americas	South-East Asia	European	Eastern Mediter-ranean	Western Pacific	Total
n	26	54	52	59	47	35	10	53	21	28	194
National NCD targets	46%	70%	79%	53%	57%	66%	100%	55%	52%	86%	64%
Mortality data	0%	33%	77%	95%	6%	86%	30%	96%	67%	54%	60%
Risk-factor surveys	62%	76%	87%	90%	60%	74%	100%	94%	86%	86%	80%
National action plan	50%	65%	65%	69%	51%	60%	90%	70%	57%	71%	63%
Tobacco taxes	27%	37%	60%	83%	28%	40%	40%	94%	57%	57%	56%
Smoke-free places	54%	74%	79%	73%	53%	77%	90%	75%	76%	86%	73%
Graphic warnings	58%	81%	75%	90%	66%	71%	80%	92%	76%	89%	79%
Tobacco advertising bans	65%	89%	73%	81%	74%	51%	90%	91%	95%	86%	79%
Tobacco mass media	12%	44%	42%	56%	30%	34%	60%	49%	48%	50%	42%
Alcohol-sale restrictions	88%	81%	92%	90%	85%	97%	90%	91%	90%	68%	87%
Alcohol advertising bans	38%	43%	46%	56%	28%	34%	50%	68%	71%	32%	46%
Alcohol taxes	69%	74%	85%	75%	68%	83%	70%	81%	71%	75%	76%
Saturated fatty acids and trans-fatty acids elimination policies (CCS2023)*	4%	33%	46%	83%	17%	49%	50%	85%	48%	29%	48%
Breastmilk code	73%	80%	67%	80%	72%	54%	80%	96%	81%	61%	75%
Physical activity mass media	8%	20%	48%	73%	11%	29%	50%	92%	14%	32%	42%
Clinical guidelines for cancer management	77%	89%	90%	92%	79%	91%	90%	94%	76%	100%	89%
HPV-vaccination programme coverage	42%	59%	69%	93%	60%	80%	70%	79%	33%	86%	70%

* WHO country capacity survey 2023.

% partially or fully achieved

<10% | 10–30% | 31–50% | 51–70% | 71–90% | >90%

Source: (83).

A key barrier to effective prevention is the growing influence of commercial determinants of health – defined as the strategies and actions of commercial actors that shape individual health decisions through product design, packaging and marketing, research funding and lobbying. By placing primary prevention at the forefront, and pairing it with strong communication and education strategies, countries can change current projections and move towards a future with substantially less cancer.

Cumulative interactions of cancer risk factors

While risk factors like tobacco, alcohol, and obesity each independently elevate cancer risk, their effects interact synergistically so that they can substantially exceed the sum of their individual contributions. This clustering of risk factors within individuals and populations is why vertical, single-factor interventions consistently underperform relative to integrated approaches that address shared upstream risk factor exposures. Fiscal measures such as health taxes, exemplify this integrated logic: they simultaneously reduce the incidence of multiple cancers, cardiovascular disease, diabetes, and liver disease, while generating revenue that can be reinvested in health systems.

3.1.1 Tobacco use: status overview and implementation progress

Status overview
Tobacco use remains the primary risk factor driving cancer incidence and mortality.

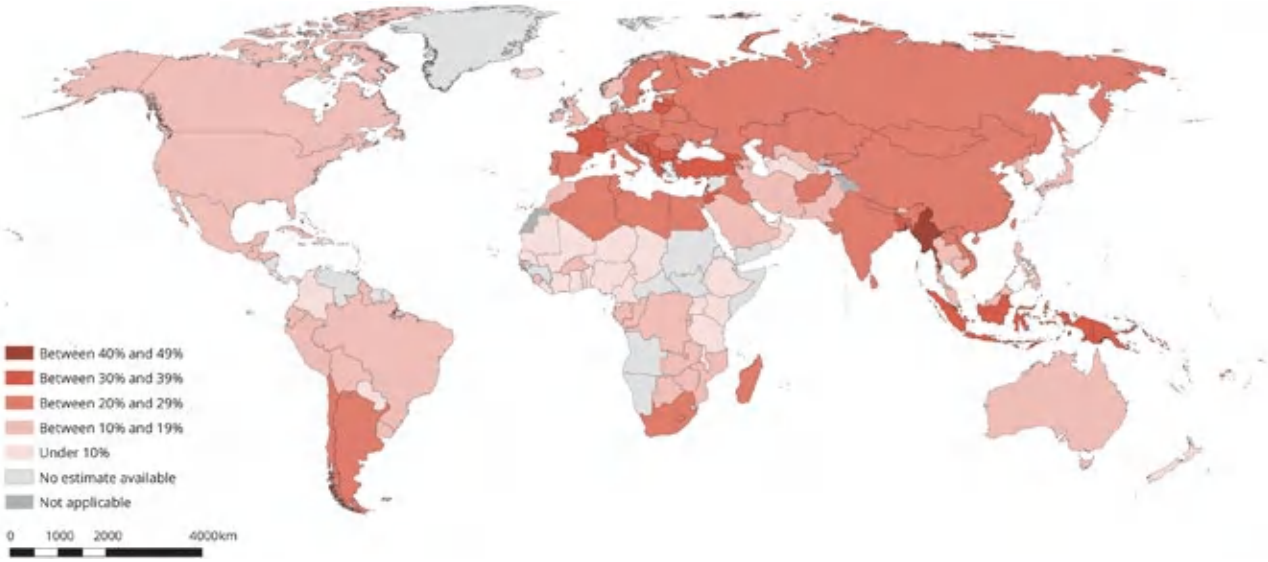
Approximately 1.2 billion people aged 15 years and older worldwide were tobacco users in 2024, representing a global prevalence of 19.5% – one in five people *(55)*. There are pronounced gender disparities in tobacco use, with prevalence of 32.5% among men compared with 6.6% among women. Regionally, the WHO European Region has the highest prevalence (24.1%), WHO African Region the lowest (9.5%), and the WHO Western Pacific Region accounts for over one-third of all adult users (Fig. 30).

> *A key barrier to effective prevention is the growing influence of commercial determinants of health*

Tobacco use (including use of water pipes and smokeless tobacco) is the largest risk factor for cancer. In 2022, tobacco use accounted for 15% (3.3 million) of all new cancer cases worldwide, including nearly 1.8 million lung cancer cases *(54)*. One in three oral cancer cases are linked to the use of smokeless tobacco or areca nut *(84)*.

> *Vertical, single-factor interventions consistently underperform relative to integrated approaches*

Fig. 30. Tobacco use prevalence by country, 2024



Implementation progress
Evidence-based policies have enabled progress in reducing tobacco use, although full implementation of recommended interventions has not been achieved.

Since 2000, the absolute number of tobacco users has declined by 177 million (from 1.38 billion) despite population growth *(55)*. With the relative reduction in prevalence since 2010 reaching 27% by 2025, the WHO NCD target of 30% reduction by 2025 will have been narrowly missed. Women have led the decline in tobacco use, meeting the target early (from 11% in 2010 to 6.6%), while men's prevalence fell more slowly (41.4% to 32.5%) *(55)*.

Key drivers include the WHO Framework Convention on Tobacco Control (WHO FCTC) and the MPOWER technical package through which WHO supports its implementation, providing governments with evidence-based, cost-effective strategies across six domains (Fig. 31).

Box 9. The challenges of implementing WHO FCTC: the MPOWER package

The Framework Convention on Tobacco Control was adopted by the World Health Assembly on 21 May 2003 and entered into force on 27 February 2005. Since then, it has been signed or otherwise acceded to by 182 countries and the EU, representing 94% of WHO Member States and covering 90% of the world's population *(85)*.

To assist signatory Member States with their implementation of the Convention, WHO developed a package of measures to assist country-level implementation of effective interventions to reduce the demand for tobacco contained in the WHO FCTC, where M: Monitor tobacco use and prevention policies; P: Protect people from tobacco use; O: Offer help to quit tobacco use; W: Warn about the dangers of tobacco; E: Enforce bans on tobacco advertising, promotion and sponsorship; and R: Raise taxes on tobacco.

Most countries have not achieved full implementation of the WHO Framework Convention on Tobacco Control and the MPOWER package. Tobacco control is often insufficiently prioritized, leading to inadequate funding or lack of legislative commitments, limiting implementation of tobacco control measures.

Implementation is further hindered by strong and sustained interference from the tobacco industry, which continues to use lobbying, litigation, marketing, and corporate social responsibility campaigns to delay, weaken, or block regulation, particularly in countries with fragile regulatory frameworks.

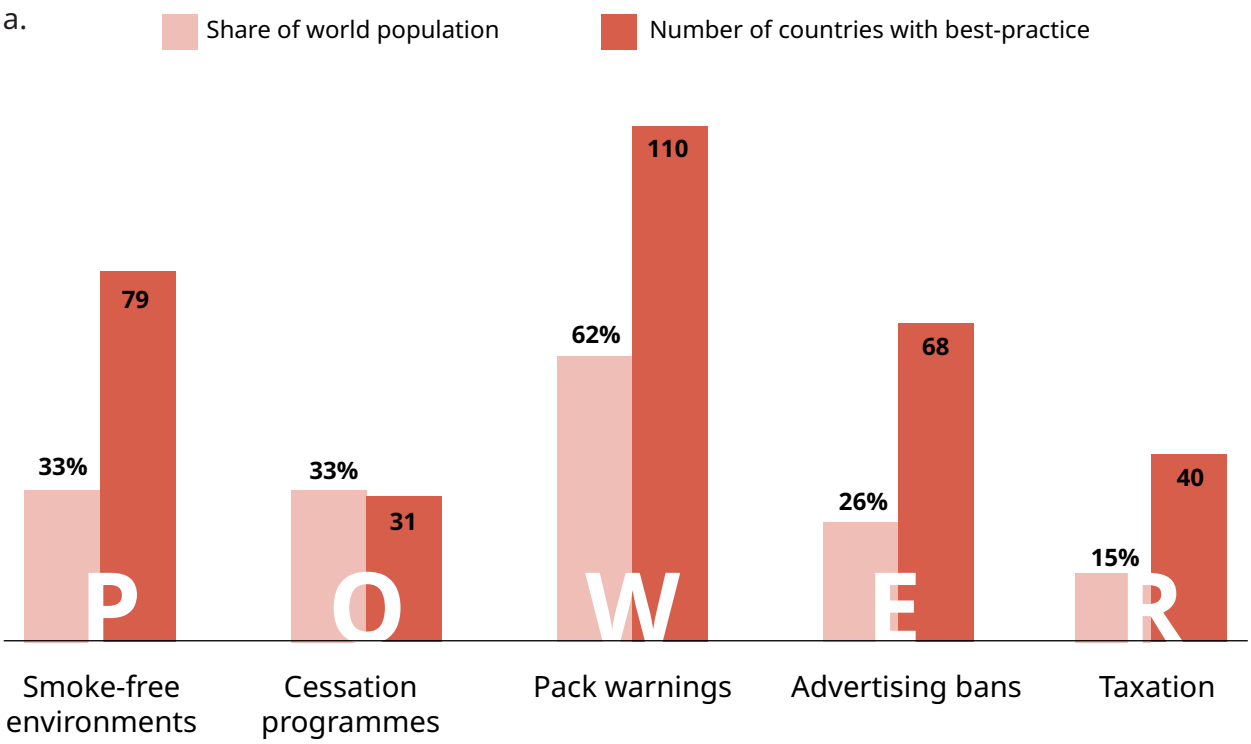
Limited technical capacity to enforce laws, competing economic interests (such as fears about tax revenue or jobs), and the rapid growth of novel tobacco and nicotine products also outpace regulatory responses, resulting in partial or inconsistent application of MPOWER across countries.

For two decades, the WHO FCTC has provided a unified global framework for reducing tobacco use and driving tobacco control action (see Box 9). Fiscal and regulatory tools, including increasing tobacco product prices, restricting duty-free tobacco imports by international travellers, and earmarking tobacco taxes for health, form part of the broader package of measures to curb tobacco consumption.

In parallel, countries have taken extensive action to protect people from exposure to second-hand tobacco smoke. To date, 79 countries (41%) have introduced measures to ensure that indoor workplaces, public transport, indoor public places and, where relevant, other public spaces are smoke-free. WHO data *(86)* reveal that 6.1 billion people are covered by at least one best-practice MPOWER measure, and 110 countries, home to 5 billion people, have implemented strong graphic health warnings (Fig. 32).

Fig. 31. MPOWER implementation progress by 2024, by (a) population coverage and number of countries and (b) number of best-practice measures implemented

a.



b.

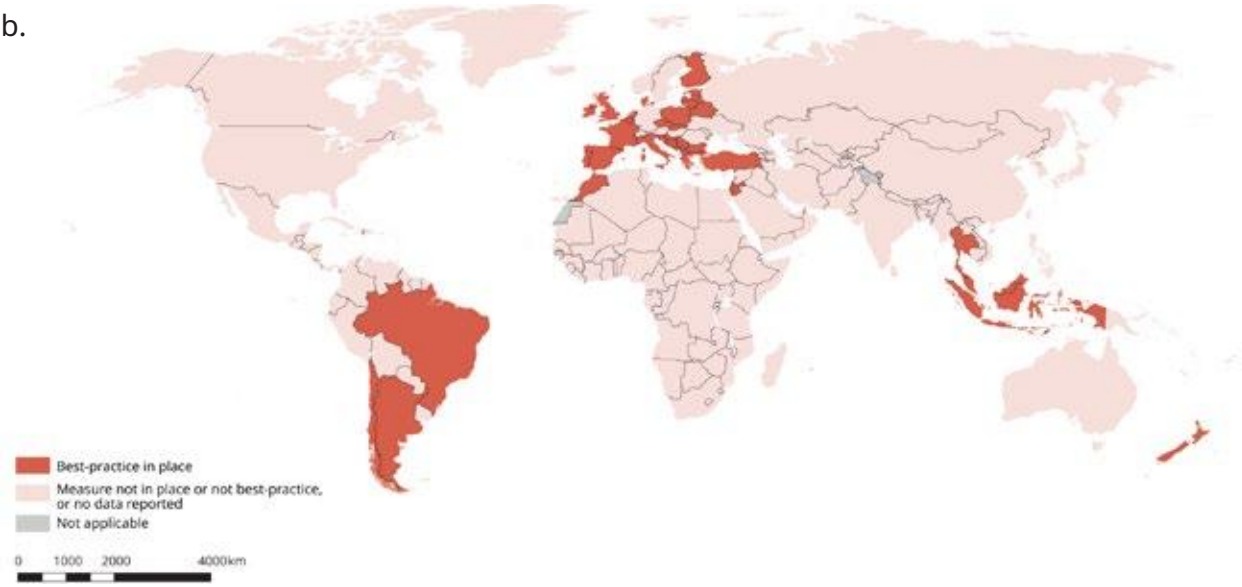
# of measures in place at best-practice level	2008	2010	2012	2014	2016	2018	2020	2022	2024
1 measure	41	50	56	62	54	56	46	50	48
2 measures	8	18	23	28	41	45	59	53	56
3 measures	6	5	10	11	23	32	35	38	40
4 measures	1	3	3	6	6	5	4	7	7
5 measures	0	0	1	1	1	2	2	4	4
No MPOWER measures	**139**	**119**	**102**	**87**	**70**	**55**	**49**	**43**	**40**

By the end of 2024, 68 countries had comprehensive tobacco advertising promotion and sponsorship bans and 40 countries had adopted rising taxes at the best-practice level (Fig. 32a and Fig. 32b) *(86)*. The progress is encouraging, but slow: incomplete implementation of the MPOWER package contributes to ongoing tobacco use, with the global population least well covered by measures relating to raising taxation and enforcing advertisement bans.

Fig. 32. Tobacco prevention progress map: (a) enforcement bans on advertising, promotion and sponsorship at best-practice level, 2024; (b) raising taxes on tobacco at best-practice level, 2024

a.

b.



Monitoring progress

Global tobacco policy aims to reduce adult tobacco use by 30% by 2030 and strengthen implementation of the WHO Framework Convention on Tobacco Control as part of the Global action plan for the prevention and control of NCDs and SDG target 3.a.

Table 4. Status snapshot: tobacco use prevalence

Indicator status	**GCMF indicator:** current tobacco prevalence rate (%) • 22% global prevalence (SD 10–37%); 32.5% for men, 6.6% in women (2024, aged 15+) • Equates to 1.2 billion current tobacco users aged 15+ globally
Key gains and gaps	**State: Tobacco use linked with multiple cancer types** • Tobacco use is linked with at least 17 cancer types and accounts for 15% (2 million) of all cancer cases globally • Of the 38% of cancers preventable through modifiable risk factors, tobacco use is responsible for 40% **Plan: Progress in MPOWER implementation** • 155 countries have at least one best practice MPOWER measure, up from 44 in 2007 • 6.1 billion people covered by at least one best practice MPOWER measure • Mean MPOWER score now approaching 34 (in 2024), up from 25 in 2018 **Outcomes: Achieving reductions just short of the 30% target** • Achieved a ~27% reduction in global tobacco use by 2025 compared to 2010 baseline, falling just short of the Global NCD target of 30% reduction. **Barriers and threats:** **Gender gaps persist** • From 2010 to 2024, women's tobacco use fell from 11% to 6.6%, meaning that women both exceeded the 30% reduction target and met it early; the reductions in men's tobacco use continue to lag behind, falling from 41.4% to 32.5%. **Novel products pose new threats** • Novel products are outpacing regulation, threatening hard-won gains
Progress status	**Moderate progress**

3.1.2 Alcohol consumption: status and progress

Status overview
Alcohol contributes to many cancer types yet remains insufficiently addressed in global cancer control.

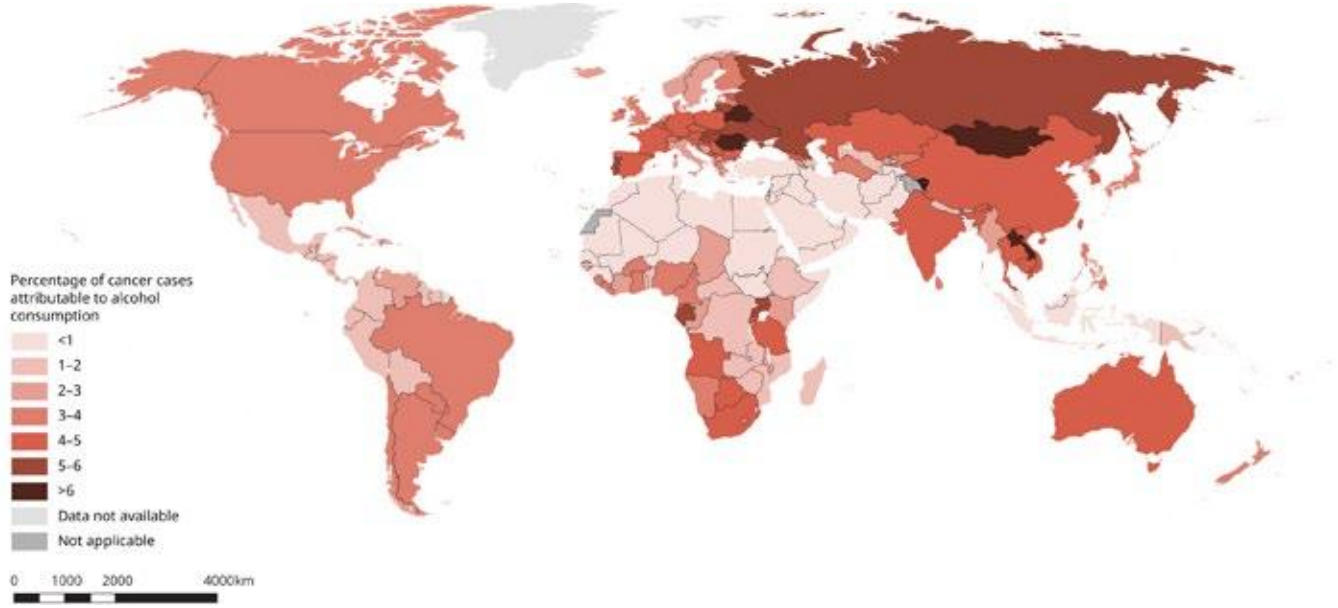
In 2022, global alcohol consumption reached 5.0 litres of pure alcohol per capita per year among people aged 15 years and older. Over 400 million people were living with alcohol use disorders, of whom 209 million had alcohol dependence *(87)*. This equated to 2.6 million annual deaths (4.7% of all deaths) in 2019, including 1.6 million from NCDs. The WHO European Region had the highest

> *Even at low levels of intake, alcohol consumption increases the risk of cancers; reducing or stopping alcohol use lowers the risk*

consumption, followed by the Americas, with men bearing 73% of the burden (2 million deaths) and LICs showing the highest death rates per litre consumed.

Globally, in 2022 alcohol consumption caused nearly 700 000 new cancer cases among men and women (3% of the global total, with 75% occurring in men) *(54)*. It is linked to cancers of the oral cavity, pharynx, larynx, oesophagus, upper aerodigestive tract, liver, colon, rectum, and female breast, with all types of alcoholic beverages posing a risk (Fig. 33). Oesophageal cancer accounted for 29% of cases in men, while breast cancer drove 57% of cases in women. Even at low levels of intake, alcohol consumption increases the risk of cancers of the oral cavity, pharynx, larynx, oesophagus and breast. Globally in 2020, 92% of alcohol-related cancer cases were due to risky (20–60 g ethanol/day) or heavy (>60 g/day) drinking among men, whereas nearly one-third (32%) of cases among women were linked to moderate drinking (<20 g ethanol/day) *(88)*. Reducing or stopping alcohol use lowers the risk, particularly for cancers of the oral cavity and oesophagus.

Fig. 33. Estimated percentage of cancer cases attributable to alcohol consumption, 2022



Social and economic changes have also led to increased alcohol use among women in selected regions, reflected in highly developed countries showing the highest burden of alcohol-attributable cancers in women, particularly driven by breast cancer *(89)*. Global shifts in drinking patterns and demographic changes suggest a future rise in alcohol-attributable cancers, especially in regions such as Eastern and South-Central Asia, underscoring the need for cancer prevention strategies within comprehensive national cancer plans.

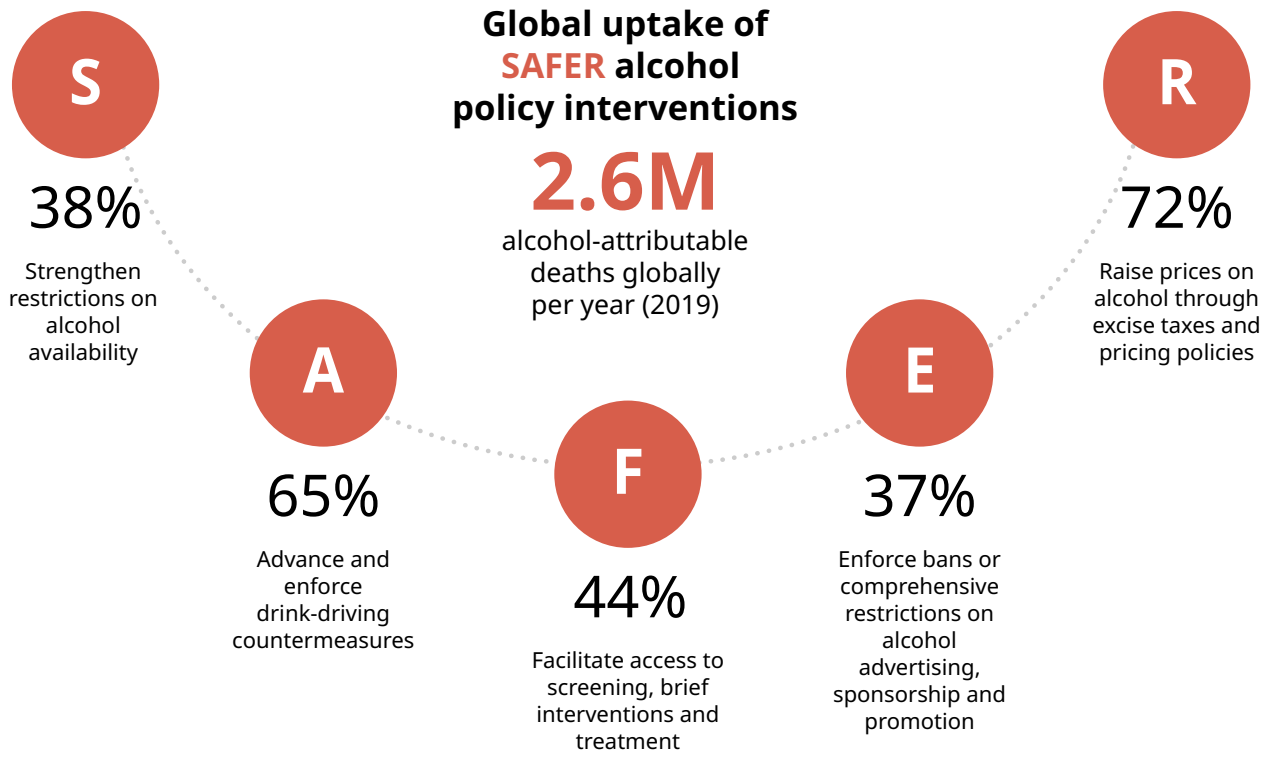
Implementation progress

Progress in alcohol policy implementation remains uneven, and trends in alcohol-attributable cancers vary across regions. Targeted communication strategies show promise in strengthening awareness of alcohol-related cancer risks.

Slight progress has been achieved in the past decades. Total per capita consumption declined from 5.7 litres in 2010 to 5.0 litres in 2022. Alcohol-attributable death rates dropped since 2010 in some regions, driven by reduced heavy episodic drinking among youth and better treatment access, though absolute numbers remain high. Progress is uneven: HICs achieved larger relative reductions, while LMICs face rising burdens.

There are clear policy solutions that can help countries address the impact of alcohol consumption on cancer incidence, outlined in WHO SAFER interventions and IARC's Handbook on Alcohol Prevention as part of WHO Global Alcohol Action Plan *(87, 90, 91)* (Fig. 34). For example, introducing cancer warning labels on alcoholic beverages, similar to tobacco warnings, could deter consumption and increase understanding of alcohol's cancer risks, potentially bolstering public support for alcohol control policies *(92)*.

Fig. 34. Summary of SAFER intervention programme implementation



Effective implementation relies on strong enforcement and regulation, which are often lacking in LMICs *(93)*. For example, only 16 of 46 sub-Saharan African countries have formal alcohol policies in 2015, despite heavy drinking contributing significantly to alcohol-related

cancer cases *(94)*. Globally, public awareness on the link between alcohol and cancer is still very low and data demonstrates the consequences for population health *(88)*.

Monitoring progress

A global target of at least a 20% relative reduction in the harmful use of alcohol by 2030 (baseline 2010) is reflected in both the NCD Global Monitoring Framework and the Global Alcohol Action Plan 2022–2030. Monitoring is conducted through SDG indicator 3.5.2, defined as alcohol per capita consumption (litres of pure alcohol per person aged 15 years and older) within a calendar year.

Table 5. Status snapshot: alcohol consumption

Indicator status	**GCMF indicator:** Alcohol per capita consumption (litres of pure alcohol, persons 15+/year) • Per capita consumption: 5.0 L in 2022
Key gains and gaps	**State: Alcohol-attributable cancers remain a major contributor to the global burden** • More than 740 000 cancers a year are alcohol-attributable, 4% of global total. **Plan: Inadequate, uneven progress in SAFER implementation, especially in LMICs** • Alcohol control policies remain weak in LMICs, where SAFER policy implementation is limited • Only 16 of 46 sub-Saharan African countries have formal alcohol policies **Outcomes: Significant undershooting of the milestone of 10% alcohol reduction by 2025** • Alcohol consumption fell to 5.0 L per capita in 2022 from 5.7 L in 2010 • Meeting the targeted 20% alcohol reduction by 2030 (in comparison with 2010) will require accelerated efforts. **Barriers and threats:** **Majority of alcohol-attributable cancers in men, but burden is shifting** • 75% of alcohol-attributable cancers occur in men. Yet, burden of alcohol-attributable cancers is shifting to LMICs and women **Public awareness remains low** • Only 46% of countries globally have alcohol advertising bans.
Progress status	**Insufficient progress**

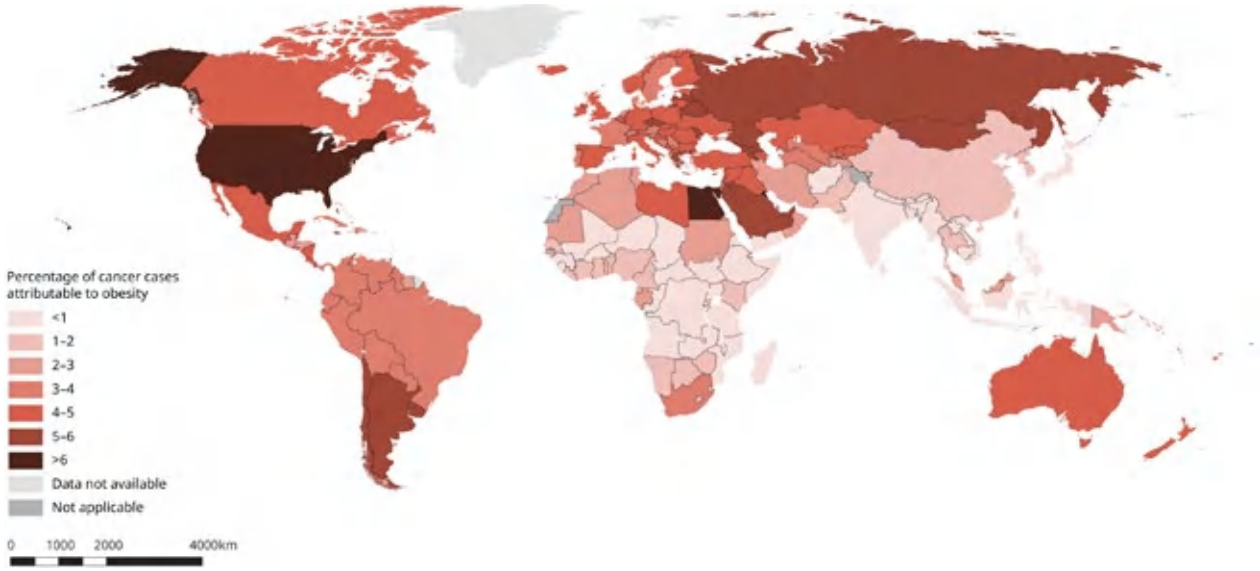
Note: SAFER implementation and alcohol consumption are monitored in Global Information System on Alcohol and Health (GISAH).

3.1.3 Unhealthy diet, excess body weight and lack of physical activity: status and progress

Status overview
Unhealthy diet, excess body weight and lack of physical activity are rising risk factors that will increasingly drive the cancer burden.

Based on data from the Institute for Health Metrics and Evaluation, globally, excess body weight has become one of the most widespread and fastest-growing health risks *(95)*. In 2022, about 2.5 billion adults (43%) were living with overweight, including approximately 890 million adults (16%) with obesity *(96, 97)*. 159 million children and adolescents are estimated to be living with obesity alone, and over 390 million are overweight. The prevalence of overweight among adults ranges from about 31% in regions such as South-East Asia and Africa to around two-thirds of adults in the Region of the Americas (Fig. 35) *(96)*.

Fig. 35. Percentage of cancer cases estimated to be attributable to obesity, 2022



Excess body fat (overweight and obesity) is causally linked to at least 13 types of cancer *(98)*. Globally, it accounts for about 4.5% of all cancer deaths, ranging from less than 1% in low-income countries to 7–8% in some HICs *(54)*. The contribution varies by cancer type, with excess body fat implicated in an estimated 40% of uterine cancer deaths, 19% of kidney cancer deaths, and 18% of oesophageal adenocarcinoma deaths.

Worldwide, adult obesity has more than doubled since 1990, and obesity among children and adolescents has roughly quadrupled over the same period, rising from about 8% in 1990 to around 20% in 2022 *(96, 97)*. In 1990, roughly one quarter of adults were overweight; by 2022 that figure had climbed to 43% and nearly 1 billion people were living with obesity, equivalent to

> *Excess body fat is causally linked to at least 13 types of cancer*

more than 1 billion people. In some high-income settings, adult obesity rates are beginning to plateau, but at very high levels, while the steepest increases are now seen in LMICs and small island developing states, where health systems are often least prepared to prevent and manage obesity *(99, 100)*.

Physical activity and healthy dietary patterns address body weight and thus reduce the risk of cancer. For example, physical activity is linked with reduction in cancers – both incidence and, in some instances, recurrence – of bladder, breast, colon, endometrium, kidney, stomach, and oesophageal adenocarcinoma (Fig. 36) *(101)*. Nevertheless, the global age-standardized prevalence of insufficient physical activity was 31.3% in 2022, an increase from 23.4% in 2000 and 26.4% in 2010, and 80% of adolescents are insufficiently active *(102, 103)*.

WHO and the United Nations Food and Agriculture Organization recommends 400 g of edible fruit and vegetables per day as a population-wide goal for the prevention of NCDs *(104)*. In 2021, the global average intake of fruit and vegetable was 121.8 g/day and 212.6 g/day, respectively, below the recommended intake range *(105)*. There is substantial evidence that sugar-sweetened drinks increase the risk of weight gain and obesity *(106)*.

Increased physical activity is linked with a reduction in cancers incidence and recurrence

Fig. 36. Relationships of unhealthy diet, excess body weight and lack of physical activity with cancer

Relative risk by cancer site – highest vs lowest exposure, meta-analysis estimates

▲ Increased risk ▼ Protective effect

D Unhealthy diet
Red and processed meat; low dietary fibre, fruit, vegetables

- **Colorectal cancer** — Per 100 g/day of red and processed meat; WCRF meta-analysis ▲
- **Colorectal cancer (protective)** — High vs low dietary fibre; WCRF CUP ▼
- **Colorectal cancer (protective)** — High vs low whole grain intake; WCRF CUP ▼
- **Colorectal cancer** — Per 10g/day ethanol in alcoholic drinks; WCRF meta-analysis ▲
- **Multiple sites** — Per 50g/day processed meat; IARC group 1 carcinogen ▲

W Excess body weight
Overweight and obesity (BMI ≥ 25); strong evidence for 13 cancer types

- **Endometrial cancer** — Overweight/obese vs normal weight; meta-analysis of 66 cohorts (Shi et al., 2024) ▲
- **Liver cancer** — Overweight/obese vs normal weight; meta-analysis of 66 cohorts (Shi et al., 2024) ▲
- **Kidney (renal cell) cancer** — Overweight/obese vs normal weight; meta-analysis of 66 cohorts (Shi et al., 2024) ▲
- **Colorectal cancer** — Overweight/obese vs normal weight; meta-analysis of 66 cohorts (Shi et al., 2024) ▲
- **Post-menopausal breast cancer** — Overweight/obese vs normal weight; meta-analysis of 66 cohorts (Shi et al., 2024) ▲
- **Stomach cancer** — Overweight/obese vs normal weight; meta-analysis of 66 cohorts (Shi et al., 2024) ▲

P Physical inactivity
Sedentary behaviour and insufficient physical activity vs most-active reference

- **Endometrial cancer** — High sedentary behaviour vs low; umbrella review (Hermelink et al., 2022) ▲
- **Colon cancer** — High sedentary behaviour vs low; umbrella review (Hermelink et al., 2022) ▲
- **Colon cancer (protective)** — Highest vs lowest physical activity; NCI meta-analysis 2016 (126 studies) ▼
- **Breast cancer (protective)** — Highest vs lowest physical activity; meta-analysis of 38 cohorts, NCI 2016 ▼
- **Sedentary behaviour -all-cancer mortality** — High vs low sedentary time; umbrella review (Hermelink et al., 2022) ▲
- **Physical activity - all-cancer mortality (protective)** — Most vs least active; meta-analysis of 71 studies ▼

CUP: Cancer Update Programme; WCRF: World Cancer Research Fund.

Sources: (105, 107–109).

> Implementation progress
> **Despite evidence of successful interventions to promote healthy diets, reduce excess body weight and increase physical activity, only a limited number have been implemented at scale.**

Some governments and communities have demonstrated that policies and programmes, which are reflected in WHO's Best Buys for the prevention and control of NCDs, targeting unhealthy diet, physical inactivity and can slow, and in some cases reverse, trends that are relevant for cancer prevention *(110)*. Successful, integrated examples include comprehensive school-based initiatives that improve the nutritional quality of meals, restrict marketing of unhealthy foods to children, and build more opportunities for daily physical activity and have been associated with stabilizing or modestly reducing weight in some settings *(93)*.

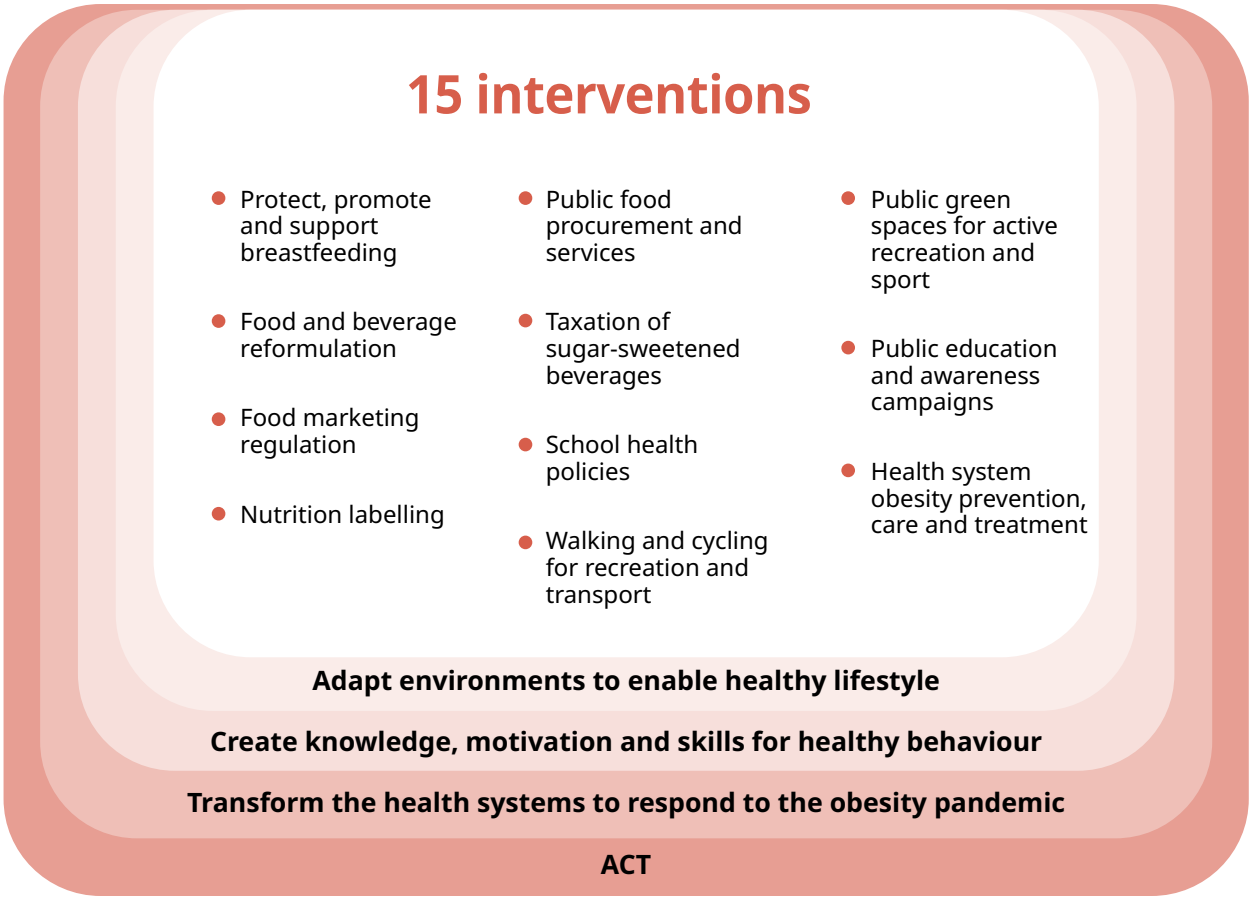
To address rising physical inactivity, the WHO Global action plan on physical activity 2018–2030 (GAPPA) sets a target of a 15% relative reduction in the global prevalence among adults and adolescents by 2030. The plan is structured around 20 policy actions across four strategic objectives: active societies, active environments, active people, and active systems (*111*). Physical activity policy remains spread thinly across health, transport, urban planning, education, and sport sectors. WHO's Global status report on physical activity 2022 found that fewer than half of countries have a current, costed, and funded national physical activity policy, and that less than 30% have implemented all the recommended GAPPA policy actions *(112)*.

> *Adolescent inactivity is at crisis level, with 80% of adolescents insufficiently active*

To further support countries in tackling the obesity epidemic, WHO launched, in 2023, the Acceleration Plan to Stop Obesity, in line with recommendations adopted by Member States at the 75th World Health Assembly *(113, 114)* (Fig. 37). Key strategies include fiscal policies such as taxation and incentives to improve the affordability and accessibility of healthy diets, encouraging consumption of whole grains, legumes, nuts, vegetables, and fruits, while reducing demand for unhealthy, ultra-processed foods or products high in fats, sugars, and salt *(115)*. Specific measures like sugar-sweetened beverage taxes and product reformulation by food manufacturers have demonstrated positive impacts. Only approximately 73 of 194 Member States reported implementing measures consistent with the WHO Set of Recommendations on restricting marketing of certain food products to children in 2023 *(83)*. As of July 2024, excise sugar-sweetened beverage taxes were applied at national level to at least one type of at least 116 countries *(116)*. Most countries have been slow to implement the WHO Acceleration Plan to Stop Obesity and related system-level measures because of limited political will, strong industry interference, and weak multisectoral coordination. Civil society has an important role to play in disseminating information and contributing to awareness campaigns.

> *Fiscal policies and incentives to improve the affordability and accessibility of healthy diets are a key prevention strategy*

Fig. 37. WHO technical package to stop obesity: selected proven interventions



Monitoring progress

WHO has established targets for unhealthy diet, excess body weight and lack of physical activity. Unhealthy diet is linked to the outcome indicator of halting the rise in obesity and diabetes by 2030. Globally accepted indicators related to unhealthy diet are linked to salt reduction and elimination of trans fats.

The target for insufficient physical activity among adults (18+) is reduction in physical inactivity, defined in the WHO Global action plan for the prevention and control of NCDs (10% reduction by 2025) and expanded in the WHO Global action plan on physical activity (15% reduction by 2030) as part of efforts to achieve SDG 3.4 on reducing NCD mortality.

Tables 6, 7 and 8 provide snapshots of the current status and progress made.

Table 6. Status snapshot: unhealthy diet

Indicator status	**GCMF indicator (core):** prevalence of inadequate fruit and vegetable consumption. • Limited high-quality data; available data suggest insufficient fruit and vegetable intake for cancer risk reduction
Key gains and gaps	**State: Poor nutritional intake associated with multiple cancer types** • Linkage to cancer risk through direct harm of certain foods (e.g. salted fish) or through obesity (e.g. sugar) **Plan: Limited but slowly increasing policy implementation** • Only around 40–60 of 194 Member States report implementing measures consistent on restricting food marketing to children • Policy coverage on sugar-sweetened beverages is expanding • Limited data on additional policies to increase fruit and vegetable consumption **Outcomes: Inadequate data** **Barriers and threats:** • Political will, industry interference and weak multisectoral coordination are barriers to action
Progress status	**Partial progress (limited data)**

Table 7. Status snapshot: excess body weight

Indicator status	**GCMF indicator (core):** overweight and obesity prevalence • 2.5 billion adults (43%) are overweight and 890 million (16%) are obese (2022)
Key gains and gaps	**State: Obesity is linked to at least 13 cancer types** • 4.5% of cancer deaths globally are attributable to excess body fat **Plan: Inadequate policy uptake and limited participation in WHO Acceleration Plan to Stop Obesity** • Most countries slow to implement system-level measures, with obesity policies existing in many HICs but lacking in LMICs • 34 countries with above-average obesity prevalence are participating in WHO Acceleration Plan to Stop Obesity **Outcomes: Overweight and obesity are rising sharply in all regions, most steeply in LMICs; childhood obesity has quadrupled** • Increase in overweight prevalence from 31% (2010) to 43% (2022), projected to be 1 billion people living with obesity globally by 2030 • LMICs are experiencing the most pronounced increase in obesity rates • Childhood obesity has quadrupled from 8% in 1990 to 20% in 2022 • No country has fully halted the rise in obesity prevalence; no country is on track to meet the global target of halting the rise by 2030 **Barriers and threats:** • Commercial determinants with coordinated industry opposition to fiscal and regulatory policies • Obesity policies deprioritized because obesity framed as individual rather than structural challenge
Progress status	**Worsening trend**

Table 8. Status snapshot: lack of physical activity

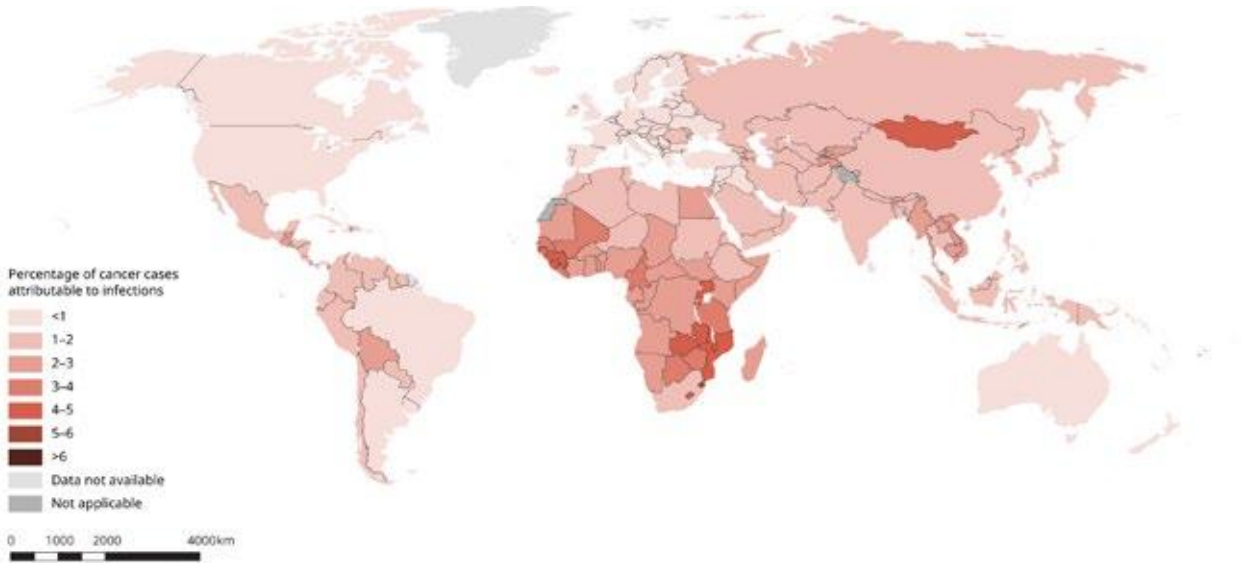
Indicator status	**GCMF indicator (core):** prevalence of insufficient physical activity • GCMF indicator (core): prevalence of insufficient physical activity • Prevalence among adults rose to 31.3% in 2022 (1.8 billion adults do not meet WHO's recommended 150 minutes of moderate-intensity activity per week)
Key gains and key gaps	**State: Physical inactivity contributes to more than seven types of cancer** • Physical activity is linked to reduced cancer incidence and recurrence • Physical inactivity is associated with more than 250 000 cancer cases each year (1.2% of total burden) **Plan: Limited uptake or implementation** • Fewer than half of countries have a current, costed, and funded national physical activity policy • Less than 30% have implemented all the recommended GAPPA policy actions • Only 42% of countries have implemented media campaigns to improve physical activity **Outcomes: Very few countries are on track to achieve targets** • 80% of adolescents are insufficiently active **Barriers and threats: Creating healthy environments takes time, resources and sustained political commitments** • Structural environments often promote inactivity; reversing it requires cross-sectoral changes that go beyond the health ministry's authority.
Progress status	**Worsening trend**

3.1.4 Infections: status and progress

Status overview
Infections remain a leading cause of preventable cancers, predominantly affecting the poorest countries and communities.

Infections remain a major contributor to the global cancer burden, accounting for a substantial proportion of preventable cases, particularly where infectious diseases are endemic and health system capacity for prevention is limited. According to a recent global analysis of modifiable risk factors, infections were responsible for approximately 10% of new cancer cases worldwide in 2022, decreasing from approximately 16% in 2008 *(54, 117)*. Yet, infections remain second only to tobacco as a modifiable cause of cancer incidence, and particularly driving cancers such as stomach and cervical cancer which are often closely linked to specific pathogens (e.g. *H. pylori* and human papillomavirus). There is substantial geographic variation with the highest ASIRs of infection-associated cancers seen in sub-Saharan Africa and eastern Asia (Fig. 38).

Fig. 38. Percentage of cancer cases estimated to be attributable to infections, 2022



Notes: H. pylori, human papillomavirus (HPV), hepatitis B virus (HBV), hepatitis C virus (HCV), and Epstein-Barr virus (EBV) are the five primary infectious agents driving the burden.

Implementation progress

Uptake of effective vaccines and risk reduction strategies has been too slow, resulting in millions of avoidable deaths.

WHO-recommended immunization strategies have been pivotal: HPV vaccination for girls aged 9–14 and universal HBV infant immunization with a birth dose within 24 hours followed by 2–3 additional doses are highly cost-effective cancer prevention measures *(93, 118)*. Significant strides have been achieved since vaccines became available.

Hepatitis B vaccination, introduced in 1982, has curbed liver cancer risks *(119)*. HPV vaccines targeting high-risk types *(120)* have been accessible since 2006, with WHO prequalifying five variants (bivalent, quadrivalent, 9-valent) for a single dose to be administered to 9–14 years old girls, leading to broad adoption and reduced incidence of HPV-related cancers (Table 9) (see also section 4.2.1).

Table 9. List of HPV vaccines prequalified by WHO by May 2026

Date of Prequalification	20 May 2009	8 July 2009	9 February 2018	14 October 2021	2 August 2024
Vaccine type	Human papillomavirus (Quadrivalent)	Human papillomavirus (Bivalent)	Human papillomavirus (9-valent)	Human papillomavirus (Bivalent)	Human papillomavirus (Bivalent)
HPV types	HPV 6, 11, 16, 18	HPV 16, 18	HPV 6, 11, 16, 18, 31, 33, 45, 52, 58	HPV 16, 18	HPV 16, 18
Commercial Name	Gardasil	Cervarix	Gardasil 9	Cecolin®	Walrinvax®
No. of doses	1	1	1	1	1
Manufacturer	Merck Sharp & Dohme LLC	GlaxoSmithKline Biologicals SA	Merck Sharp & Dohme LLC	Xiamen Innovax Biotech Co. Ltd.	Yuxi Zerun Biotechnology Co., Ltd

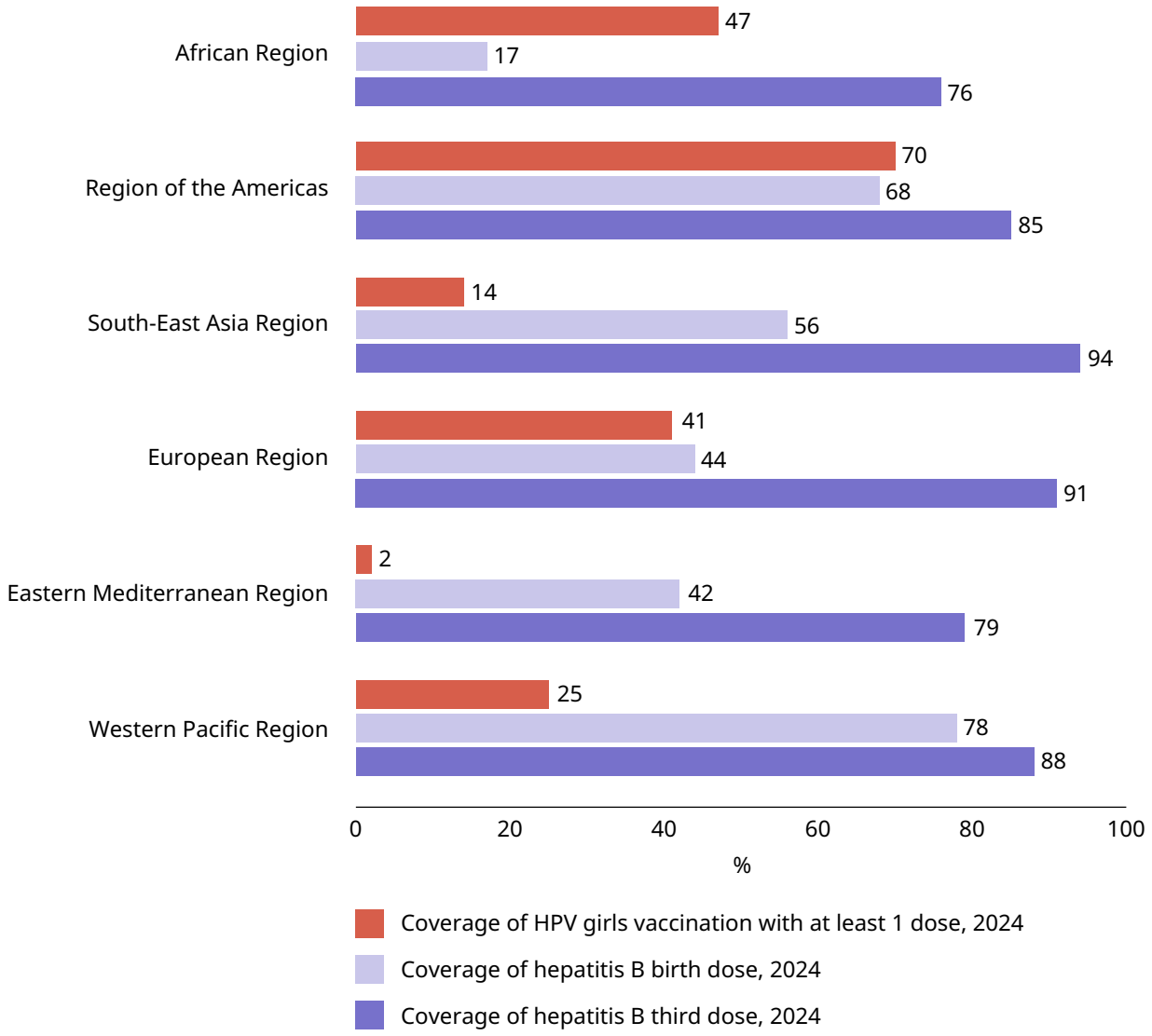
Gaps persist in low-coverage regions (Fig. 39). Vaccination coverage remains uneven: as of March 2026, 165 countries (85% of WHO Member States) have integrated HPV vaccination for girls aged 9–14 into national schedules (see section 4.2.1) *(121)*.

> *HPV vaccination for girls aged 9–14 is a highly cost-effective cancer prevention measure*

Meeting Hepatitis B vaccination 2030 targets to cut new chronic infections by 95% and deaths by 65% could avert 2.1 million cancer cases *(119, 122)*. This WHO Best Buy has proven cost-effective, particularly in high-prevalence areas *(93)*. As of May 2026, 115 countries provide universal hepatitis B birth-dose vaccination, yet just 45% of infants globally receiving it within 24 hours of birth and despite 38 countries bearing 80% of the HBV/HCV burden (Fig. 39) *(123)*. In 2024, the global prevalence of chronic HBV infection among children aged under 5 years was estimated at 0.6% *(124).* The WHO African Region, with a prevalence of 1.4%, remains far from the 2030 target of 0.1% and continues to face the greatest burden.

Although vaccination is not currently available for *H. pylori*, improved water sanitation has reduced prevalence. Additionally, eradication therapy has been being evaluated in randomised clinical trials with pooled data demonstrating that among healthy *H. pylori*–positive individuals without gastric cancer at baseline, there was a 36% relative risk reduction for future gastric cancer and a 22% reduction in the relative risk of mortality from gastric cancer *(125).* No country has, as yet, instituted a national population-based programme to screen for and treat *H. pylori* although there have been some regional programmes.

Fig. 39. Percentage coverage of HPV vaccination of girls with at least 1 dose, hepatitis B birth-dose and hepatitis B infant vaccination, by WHO region



Monitoring progress

WHO targets aim for 90% HPV vaccination coverage among girls by age 15 (as part of the Global Strategy for cervical cancer elimination); ≥90% infant and birth-dose hepatitis B vaccination coverage by 2030 to help eliminate cervical cancer and viral hepatitis (see WHO Global health sector strategy on viral hepatitis); and, for HIV/AIDS, to achieve SDG 3.3 to end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases by 2030.

Table 10. Status snapshot: infection-associated cancers

Indicator status	**GCMF indicator (core):** HPV vaccine coverage (partial or full series) • Population-weighted programme coverage is 31% (for at least one dose), far below the level necessary to meet the target of 90% of girls to be fully vaccinated with the HPV vaccination by age 15 **GCMF indicator (optional):** Inclusion of HPV vaccination in national vaccination programme • 165 countries (85%) of WHO Member States have included HPV vaccination in their national schedule (June 2026) **GCMF indicator (optional):** HPV prevalence • Limited data: population prevalence of HPV is estimated around 10%, far higher than the targeted population prevalence of less than 1% **GCMF indicator (optional):** Hepatitis B vaccine coverage (partial or full series) • Population-weighted global vaccination coverage at 31% **GCMF indicator (optional):** Hepatitis B virus (HBV) prevalence • Global prevalence of chronic HBV infection among children aged under 5 years estimated at 0.6% with target of 0.1% **GCMF indicator (optional):** HIV prevalence (adults 15–49 years old) • 0.7% in adults aged 15–49
Key gains and gaps	**State: Infectious risk factors contribute to multiple cancer types** • Associated with approximately 10% of new cancer cases worldwide in 2022 (decreased from 16% in 2008) **Plan: Broad adoption into national vaccination schedules, but implementation falling far short of target, with significant regional gaps** • Significant regional gaps in coverage (HPV coverage: Eastern Mediterranean (2%), South-East Asia (14%), Western Pacific (25%)) **Outcomes:** • Infection-related cancers decreased from 16% in 2008 to 10% in 2022 • Prevalence generally decreasing **Barriers and threats:** • Continuing substantial improvement in antiretroviral therapy coverage uncertain post-2023 funding cuts • HIV-associated cancers (Kaposi sarcoma, cervical, lymphomas) disproportionately affect sub-Saharan Africa
Progress status	**Partial progress**

Box 10. Climate change, air pollution and cancer

Air pollution, exacerbated by climate change, is a significant carcinogen responsible for multiple cancer types and a substantial number of deaths *(126)*. The mechanism through which it affects people is when fine particulate matter (PM2.5) penetrates deep into alveoli, triggering chronic inflammation, oxidative stress, and DNA damage. There is a substantial increased lung cancer risk per every 10 μg/m^3 PM2.5 rise *(127)*.

Air pollution accounted for 2.4% of all new cancers globally and 4.1% in East Asia *(54)*. Beyond lung cancer, emerging evidence links air pollutants to other malignancies. For example, PM10/NO_2 elevate stomach cancer risk via systemic translocation and gut microbiome disruption, whereas head and neck cancers show 5-year lagged PM2.5 associations *(128)*.

Climate change indirectly amplifies air pollution exposures by intensifying wildfires, heatwaves, and ozone formation, each worsening respiratory carcinogenesis. Wildfire smoke PM2.5 exposure correlates with higher lung cancer odds. For example, individuals exposed to wildfires over the previous decade are found to have a 5% higher relative incidence of lung cancer and a 10% higher relative incidence of brain tumours compared to unexposed populations *(129)*. Extreme heat can additionally increase treatment toxicity and infection vulnerability for people being treated with immunosuppressive systemic therapy.

Mitigation through stricter air quality standards, as outlined in the WHO PM2.5 guideline of 5 μg/m^3 *(130)* could avert millions of cancer deaths in the mid-term. WHO's recommended indicator is annual mean PM2.5 concentration in line with the Updated road map for an enhanced global response to the adverse health effects of air pollution *(131)*. Stronger advocacy and international collaboration for integrated climate-health policies is needed to reach the target, as pollution control represents a high-impact, equitable strategy to reduce the cancer burden and improve health broadly.

Box 11. Classifying carcinogens: understanding hazard vs risk

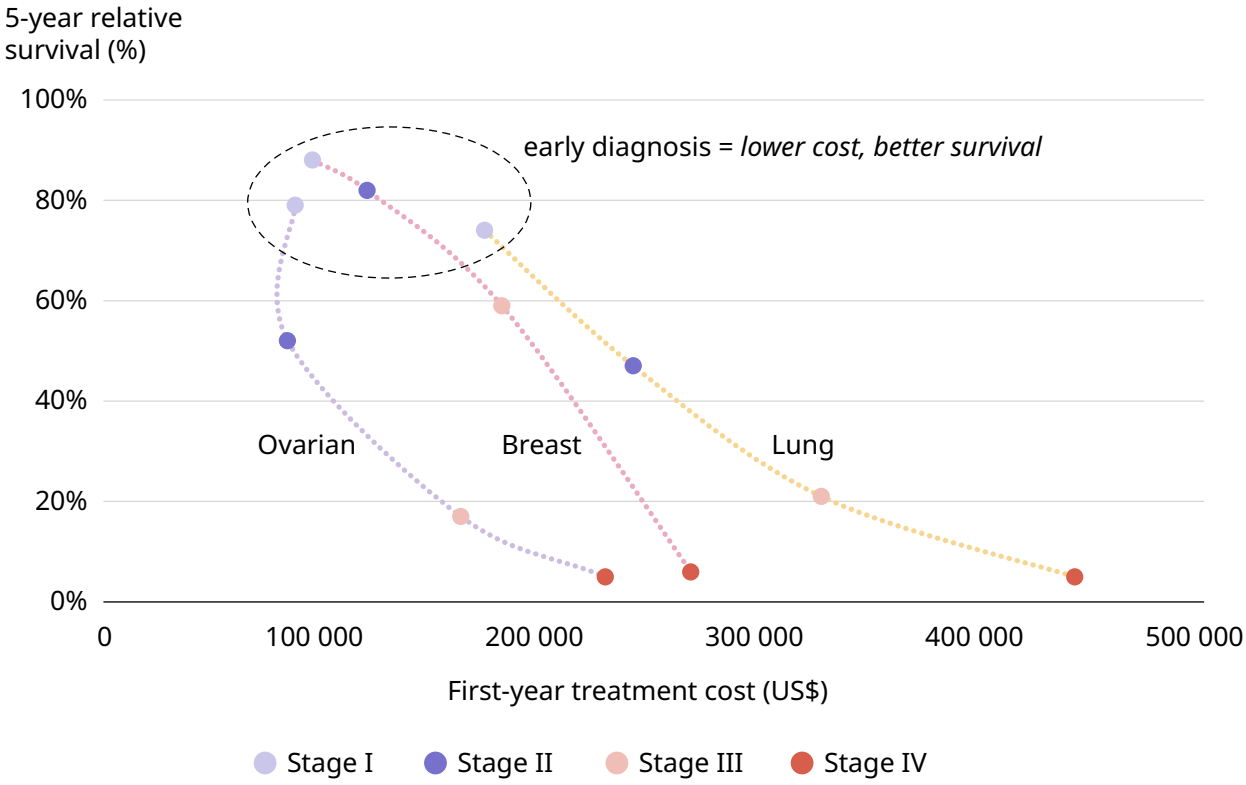
A hazard refers to the innate capacity of an agent to cause cancer under any circumstance, whereas risk estimates the actual probability of cancer occurring based on the specific level and duration of exposure in a real-world context. IARC Monographs evaluate the strength of scientific evidence that an agent is capable of causing cancer (hazard) and assigns a grade according to the evaluates the strength of scientific evidence. This classification does not assess the risk to an individual that depends on whether their exposure is sufficient to trigger the disease.

The difference between hazard (does it cause cancer?) and risk (how many cancers does it cause?) can be understood by examining tobacco and processed meat. Both are classified as group 1 carcinogens and known to contribute to the cancer burden. Nearly 1 in 2 people will be harmed by smoking including 1 in 6 who will develop lung cancer. In comparison, comparing exposure to processed meat every day with those who eat none, approximately 1 in 100 to 200 people who eat 50 g of processed meat every day will result in one additional case of colorectal cancer *(132)*.

3.2 Early detection

When cancer develops, detecting and diagnosing it at an early stage allows for less complex, less expensive treatments that result in better patient outcomes and cost-savings for the health systems. Strategies that ensure early cancer detection, prompt diagnosis, and timely referral for treatment are therefore essential components of effective cancer control *(133)* (Fig. 40).

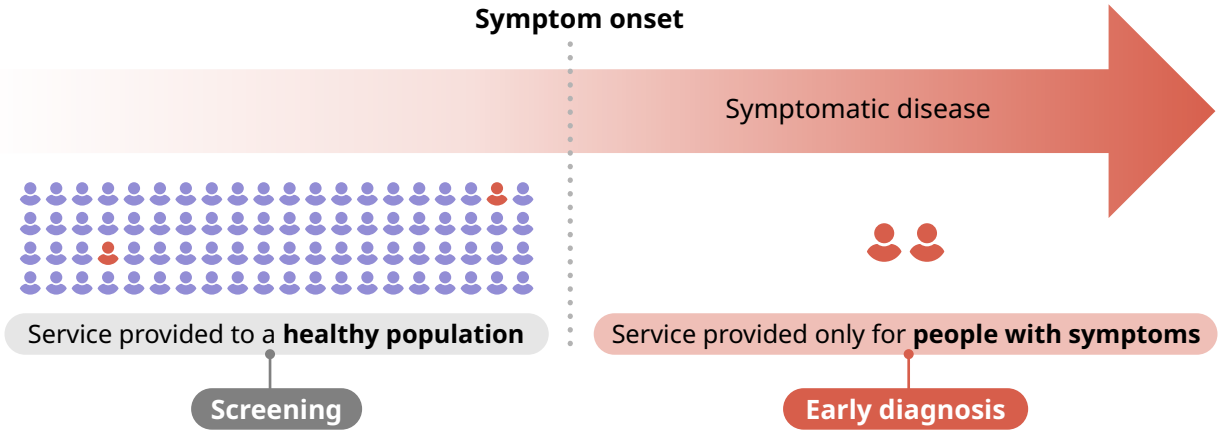
Fig. 40. Cost of cancer care and survival in relation to stage of diagnosis *(134, 135)*



Cost estimates reflect data from the United States health care system; absolute values differ across countries and health systems. The directional stage gradient – greater costs and lower survival with advancing stage – is consistent across published international literature. Costs shown are approximate; figures are presented to indicate relative magnitude, not precise expenditure data.

There are two distinct strategies for cancer early detection: early diagnosis and screening (Fig. 41) *(136)*.

Fig. 41. Distinction between cancer early diagnosis and screening



Source: Adapted from Screening programmes: a short guide. Increase effectiveness, maximize benefits and minimize harm 2020. WHO Regional Office for Europe *(136).*

Early diagnosis refers to the process of detecting cancer in people who are already experiencing symptoms, with the goal of identifying the disease at the earliest possible stage and linking patients promptly to treatment. Early diagnosis is relevant across all cancer types and hinges on boosting symptom awareness among communities and health care providers, improving accessibility of clinical evaluation and diagnostics, and reducing delays in referral and treatment initiation. In HICs with advanced screening programmes and high participation, not more than 5–8% of all cancers are detected through screening *(137, 138)*.

The core steps of early diagnosis include (i) awareness of symptoms and health-seeking behaviour, (ii) timely clinical assessment and accurate diagnosis, and (iii) access to effective treatment including supportive care, all of which reduce the proportion of advanced-stage diagnoses and improve survival outcomes. When successful, time from symptom onset to treatment initiation can be reduced and cancer survival can be increased by 5–10% – a difference that is even greater and benefits larger populations than most available cancer therapies *(139)*.

By contrast, screening involves administering tests or procedures to apparently healthy, asymptomatic individuals in a defined target group to detect pre-clinical cancer or its precursor lesions before symptoms arise. WHO guidance emphasizes that screening programmes require significant system capacity, including community mobilization either through systematic invitations (more effective) or highly visible campaigns, quality assurance, diagnostic follow-up, and treatment for those with positive results *(136, 140)*.

A limited number of cancers are amenable to screening. Screening programmes should only be undertaken when a) their effectiveness has been demonstrated, b) resources (workforce, equipment etc) are sufficient for screening without diverting from early diagnosis strategies, c) the facilities exist to confirm diagnosis,

> *National screening programmes should balance benefits against potential harms*

provide treatment and follow-up and d) when prevalence is high enough to justify the effort and cost of screening – and should be implemented only where their effectiveness has been demonstrated, resources are sufficient to achieve high coverage, and necessary infrastructure exists. National screening programmes should balance benefits against potential harms, that include overdiagnosis (screening tests detecting those cancers that would never cause any symptoms or death, even if left untreated), overtreatment, psychological harms and harms associated with invasive diagnostic techniques (Fig. 42).

> *Cervical cancer screening programmes should be implemented in all countries*

Screening for breast cancer, cervical cancer, colon cancer, oral cancer (among regular consumers of tobacco and alcohol) and lung cancer (among heavy smokers) and prostate cancer has demonstrated reduction of mortality from the respective cancer when delivered in quality-assured, organized, population-based screening programmes in HICs *(141–144)*. Cervical cancer screening programmes should be implemented in all countries, in line with WHO Global Strategy for the elimination of cervical cancer *(145)*.

Fig. 42. Risks associated with cancer screening programmes

Cancer type	Estimated overdiagnosis	Screening modality
Breast	++	Mammography
Prostate	+++	Prostate-specific antigen
Lung	+	Computed tomography scan
Melanoma	+++	Skin surveillance
Kidney	+++	Incidental detection on abdominal computed tomography
Thyroid	++++	Screening ultrasound or incidental detection

Notes: Amount of overdiagnosis (+) 0-20%, (++) 20-40%; (+++) 50-100%; (++++) >100%

3.2.1 Early diagnosis strategies: status and progress

Status overview
Although most cancers can be detected through primary care pathways, a large percentage are only identified when advanced and/or emergency symptoms occur.

For early diagnosis to improve cancer outcomes, it must be linked with access to prompt and effective treatment. Delayed evaluation of cancer-related symptoms can result in emergency presentations and associated with higher excess mortality rates, with ratios in one setting ranging from 4.0 (lung) to 20.8 (prostate) *(146)*. The risk of death from any cause within the first year after cancer diagnosis is lowest when the cancer is detected through symptomatic pathways in primary care compared to other routes.

As a result of poor early diagnosis pathways, late-stage diagnosis is still the norm in many countries, even for cancers that can be detected early. In a recent study of 2.4 million women with breast cancer from 81 countries: high proportions of metastatic disease at diagnosis were observed in sub-Saharan African countries where 5.6% to 30.6% of women had distant metastasis at breast cancer diagnosis (Fig. 43) *(147)*. In HICs, early-stage, node-negative cancers comprised over 40% of breast and cervical cancers, but less than 20% of ovarian cancers. By contrast, in LMICs, these proportions were generally below 20% for all three cancers *(148)*.

Access to diagnostics, especially for childhood cancer, is mostly in central Uganda which ultimately means that many children are lost due to cancer, as they either will be diagnosed late in urban health facilities or they will die without knowing that they had cancer.

Moses Echodu, person with lived experience of cancer, Uganda

From my point of view, access to cancer diagnostics is still a major challenge, especially for young adults in rural areas. The lack of experience and limited diagnostic tools can lead to misdiagnosis at the beginning, which wastes critical time while the disease is progressing. Also, the need to travel to urban areas like Cairo adds another burden, including distance, cost of housing, and long waiting periods until reaching a final diagnosis. In addition, I believe that doctors who are not specialized in oncology should be trained to suspect cancer in cases of unexplained symptoms and to request the required investigations early. All of these factors together do not only delay diagnosis and treatment, but also negatively affect the patient's physical and mental state, which makes the situation more difficult

Taha Mostafa, person with lived experience of cancer, Egypt

Fig. 43. Percentage of cases by stage at diagnosis for breast cancer, 2000–2018

African Region

34.6%

Mean Stage I or II (range: 14.3-57.4%)

Below WHO/GBCI target (≥60%)

Stage	Mean	Country range
Stage I	2.1%	0.0-6.7%
Stage II	17.8%	6.3-44.8%
Stage III	26.4%	11.7-39.6%
Stage IV	10.1%	2.1-22.9%
Unknown	43.6%	10.5-73.9%

European Region

76.1%

Mean Stage I or II (range: 57.0-85.5%)

Meets WHO/GBCI target

Stage	Mean	Country range
Stage I	35.4%	14.2-47.3%
Stage II	35.7%	29.0-46.0%
Stage III	15.4%	8.2-25.3%
Stage IV	7.1%	4.1-13.7%
Unknown	6.8%	0.1-27.0%

Region of the Americas

72.4%

Mean Stage I or II (range: 52.4-90.0%)

Meets WHO/GBCI target

Stage	Mean	Country range
Stage I	35.3%	6.7-65.0%
Stage II	31.9%	25.0-41.7%
Stage III	16.8%	10.0-22.9%
Stage IV	6.3%	0.0-12.5%
Unknown	19.3%	0.9-37.7%

Eastern Mediterranean Region

59.9%

Stage I or II (Oman)

Marginally below GBCI target

Stage	Mean	Country
Stage I	21.2%	Oman
Stage II	37.4%	Oman
Stage III	24.2%	Oman
Stage IV	15.1%	Oman
Unknown	2.1%	Oman

Western Pacific Region

70.5%

Mean Stage I or II (range: 58.7–82.3%)

Meets WHO/GBCI target

Stage	Value	Country range
Stage I	25.2%	4.8-43.0%
Stage II	34.7%	25.2-43.3%
Stage III	15.1%	12.1-18.3%
Stage IV	8.9%	4.6-12.2%
Unknown	20.1%	5.5-32.7%

South-East Asia Region

Status
Insufficient TNM data to assess GBCI target

Source: (147).

Box 12. Cancer and misinformation: newly diagnosed patients particularly susceptible

Misinformation about cancer proliferates rapidly on social media and online platforms, undermining trust in evidence-based treatments and delaying care. Data from a national survey in the United States of America show that more than 30% of popular cancer-related posts contain misinformation *(149)*. It often overstates weak evidence or promotes unproven therapies. Very often, these posts are also harmful, garnering significantly more engagement compared to factual content *(150)*.

Newly diagnosed cancer patients are particularly susceptible, with 93% exposed to misinformation via family, friends, or algorithms, even passively *(151)*. Common myths, like vitamins curing cancer or avoiding sugar, lead patients to rarely discuss them with oncologists, potentially eroding doctor-patient trust and adherence to standard therapies.

Exposure to misinformation also correlates with harmful behaviours that can persist even after receipt of accurate information. Data show that 76% of breast cancer survivors encountered misleading risk information, increasing anxiety and avoidance of proven screenings like mammograms *(152)*. Misinformation thrives on loss aversion, amplifying fears of "missing natural cures" over statistical gains from conventional care, disproportionately affecting low-health-literacy groups and LICs.

Countering misinformation requires different approaches – from media literacy interventions, through proactive physician screening for myths, to reliance on trusted sources like WHO, IARC (including through its Codes Against Cancer) *(153, 154)* and international evidence-based cancer agencies. Combating misinformation can mitigate impacts, preserving informed decision-making in cancer control.

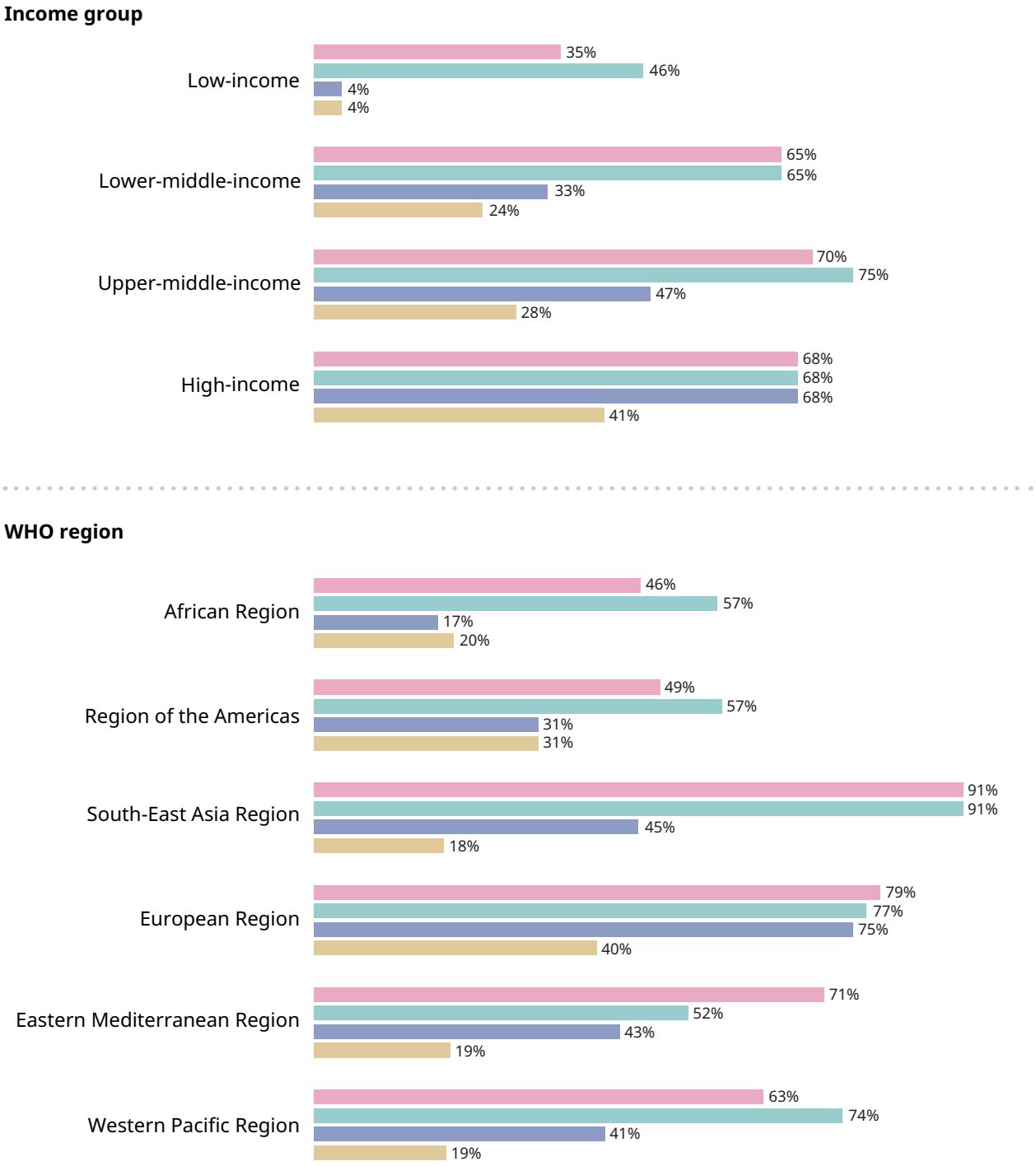
Implementation progress

Cancer early diagnosis strategies remain insufficiently prioritized in cancer policies and incompletely implemented.

According to the 2023 WHO Assessing national capacity for the prevention and control of NCDs, 63 % of countries reported early detection programmes or guidelines for breast cancer integrated at the primary care level, while only 44 % and 27 % of countries reported similar programmes for colon cancer and childhood cancers, respectively (Fig. 44) *(155)*.

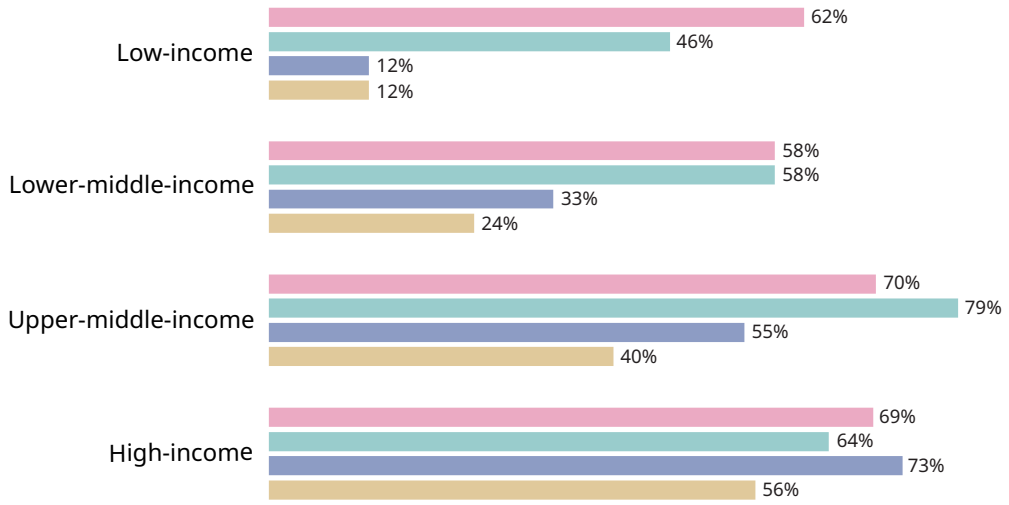
Fig. 44. Early diagnosis strategy implementation: Percentage of countries with (a) early detection programmes in primary health care and (b) clearly defined referral system for suspected cancer cases, by WHO region and income group, 2023

a. Early detection programmes in primary health care

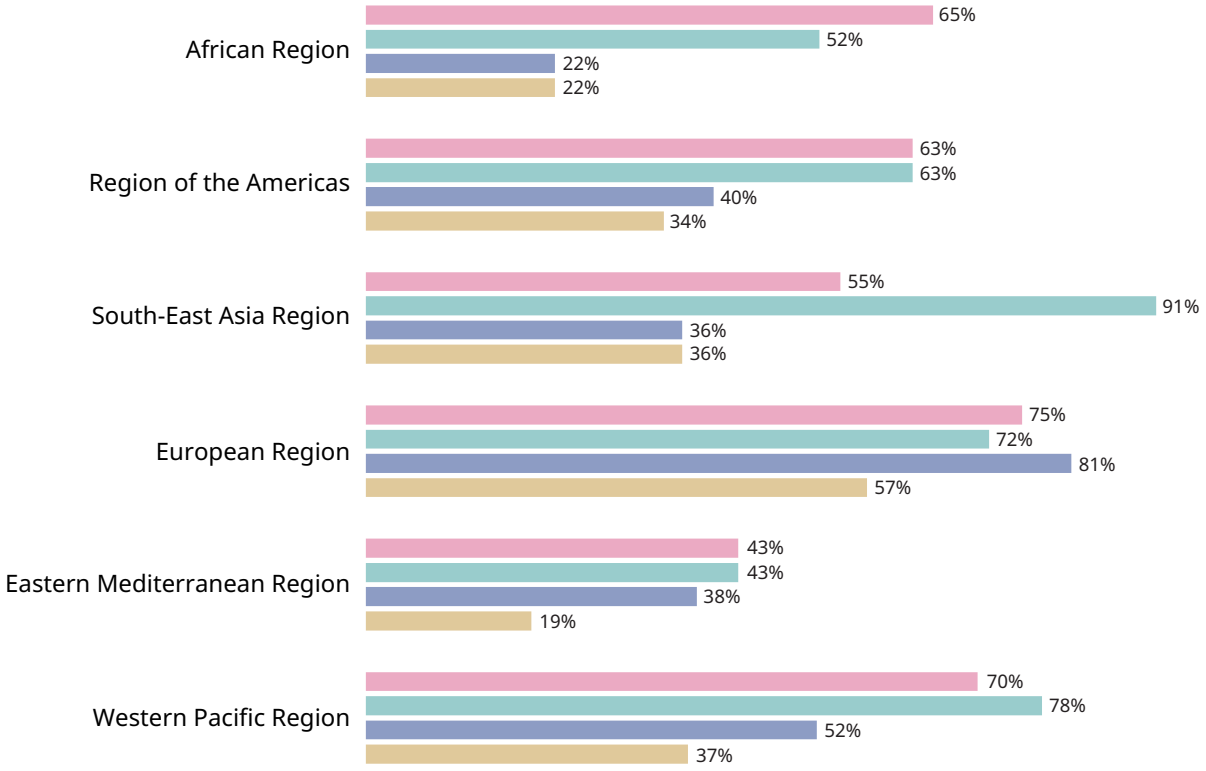


b. Clearly defined referral system for suspected cancer cases

Income group



WHO region



Breast cancer Cervical cancer Colon cancer Childhood cancers

Clearly defined referral systems from primary care to secondary and tertiary care for suspected cancer cases were more common – reported by around two-thirds of countries for cervical and breast cancers – though there are significant variations in readiness across cancer types and health systems *(155)*.

Within NCCPs, early detection strategies for breast and cervical cancer were included in approximately 90% of plans recently reviewed, indicating broad recognition of this component as part of national cancer control efforts. However, only a minority explicitly outline structured early diagnosis pathways, especially outside of high-income settings, and fewer still define measurable time-bound targets or detailed implementation frameworks *(8)*.

Explicit targets or benchmarks to improve timely cancer diagnosis have been emerging although evidence of impact is inconclusive. Within the European context, 13 out of 28 countries surveyed reported having national waiting-time targets for suspected cancer diagnosis and fast-track diagnostic pathways, and 18 have implemented formal fast-track diagnostic pathways to streamline referral and diagnostic processes – mechanisms that effectively operationalize performance targets for timely diagnosis *(156)*.

Monitoring progress

Table 11. Status snapshot: late diagnosis: loss to follow-up

Indicator status	**GCMF indicator (core)**: Early stage at diagnosis • 91% of HICs have >60% of breast cancer cases diagnosed in stage I and II compared to 28% of LMICs with available data (limited data for other cancers) **GCMF indicator (optional):** Referral and back-referral system to secondary/tertiary care levels • 23% of countries have a referral policy for cervical, breast, colon and childhood cancers.
Key gains and gaps	**State: Referral systems promote earlier detection** **Plan: Few NCCPs include structured pathways for early detection** • 90% of NCCPs include early detection for breast/cervical, but few have structured pathways with measurable targets • Among select cancer types, childhood cancer has lowest inclusion for early detection strategies at primary care level **Outcomes: Late-stage diagnosis is the norm in LMICs** • Up to 30.6% metastatic breast cancer at diagnosis in sub-Saharan Africa **Barriers and threats: Misinformation is a threat** • 93% of newly diagnosed patients exposed to cancer misinformation
Progress status	**Insufficient progress**

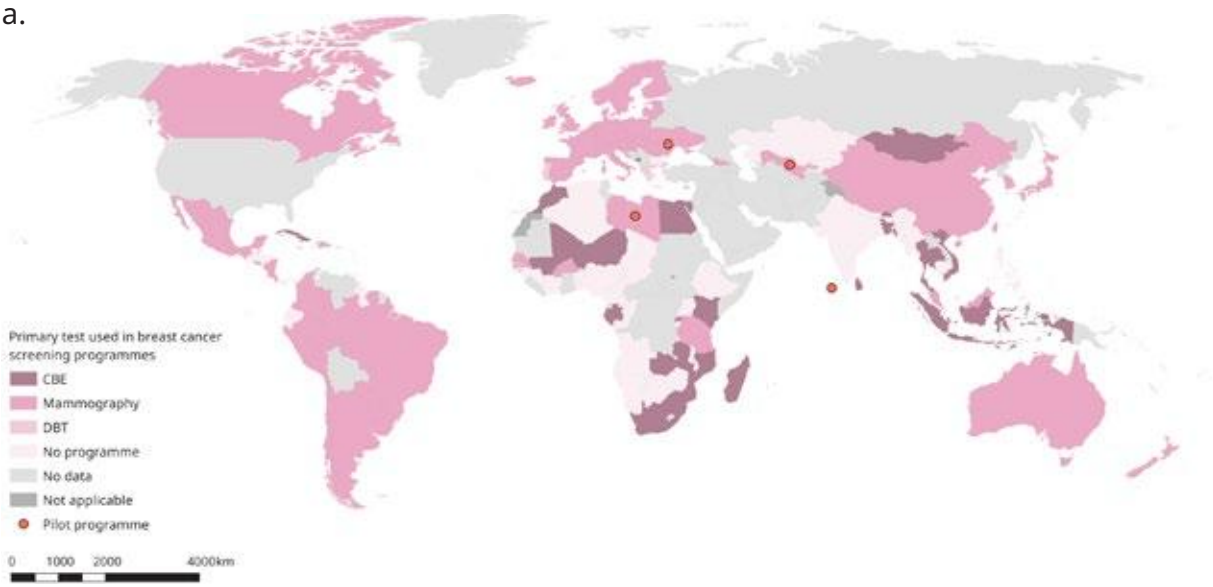
3.2.2 Cancer screening: status and progress

Status overview
Although screening strategies for common cancers are increasingly available, organized screening programmes with high participation rates are not yet widely implemented.

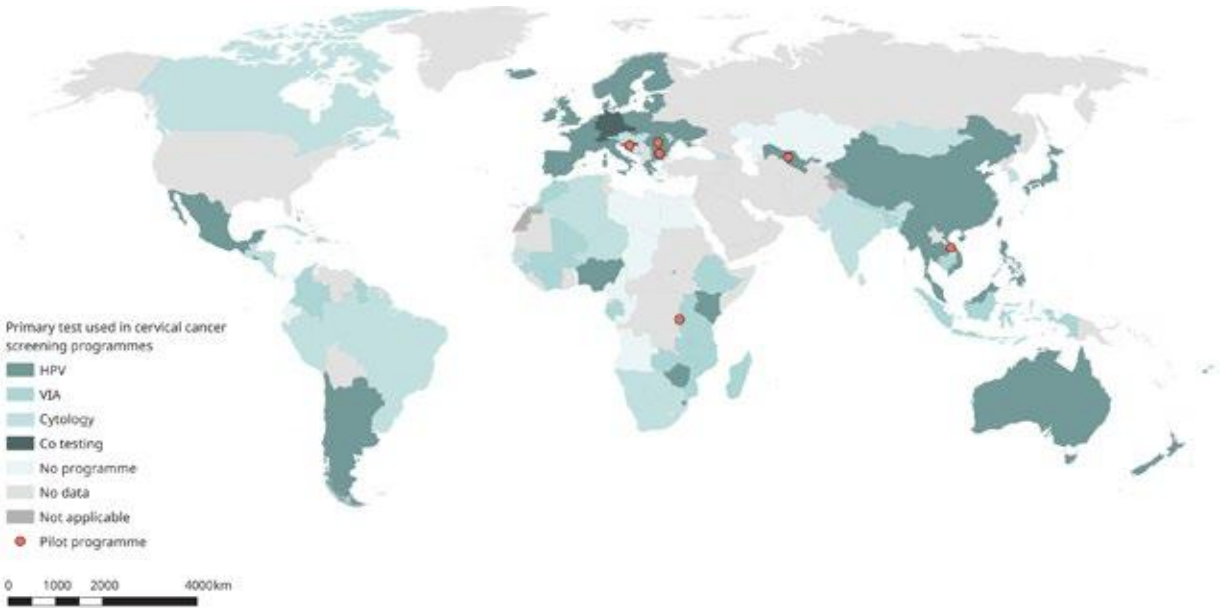
Data collected through WHO and IARC's CanScreen5 project in 130 countries show areas of progress in screening programme availability and implementation strategies and heterogeneity in performance (Fig. 45) *(157)*.

Fig. 45. Status of implementation of a) breast, b) cervical and c) colorectal cancer screening programmes and screening tests, globally, 2026

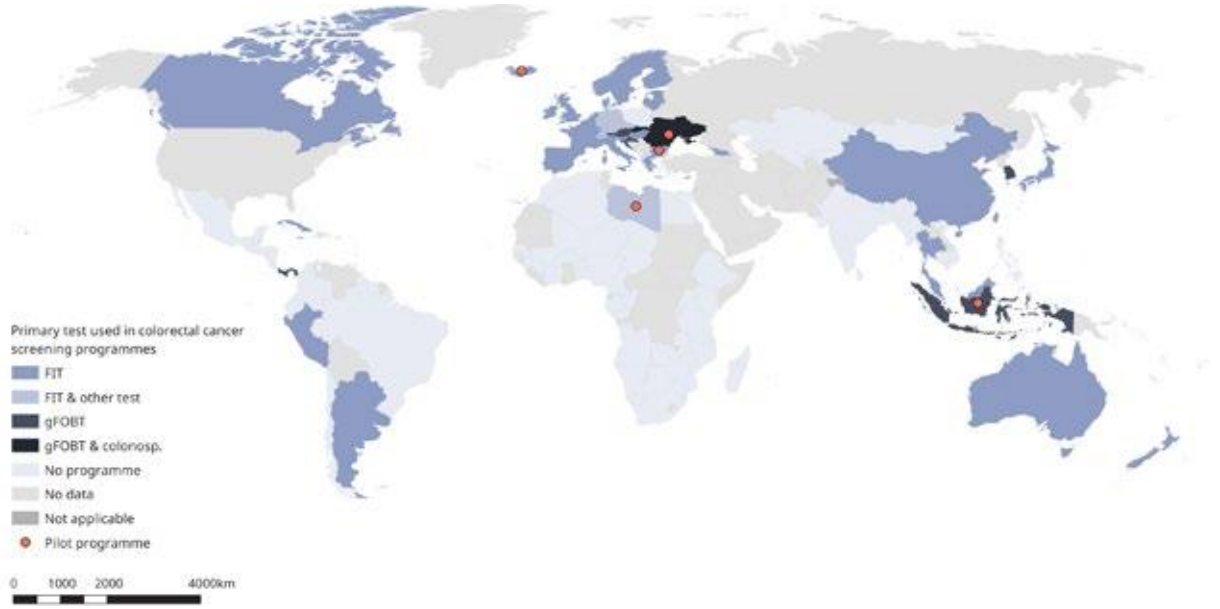
a.



b.



c.



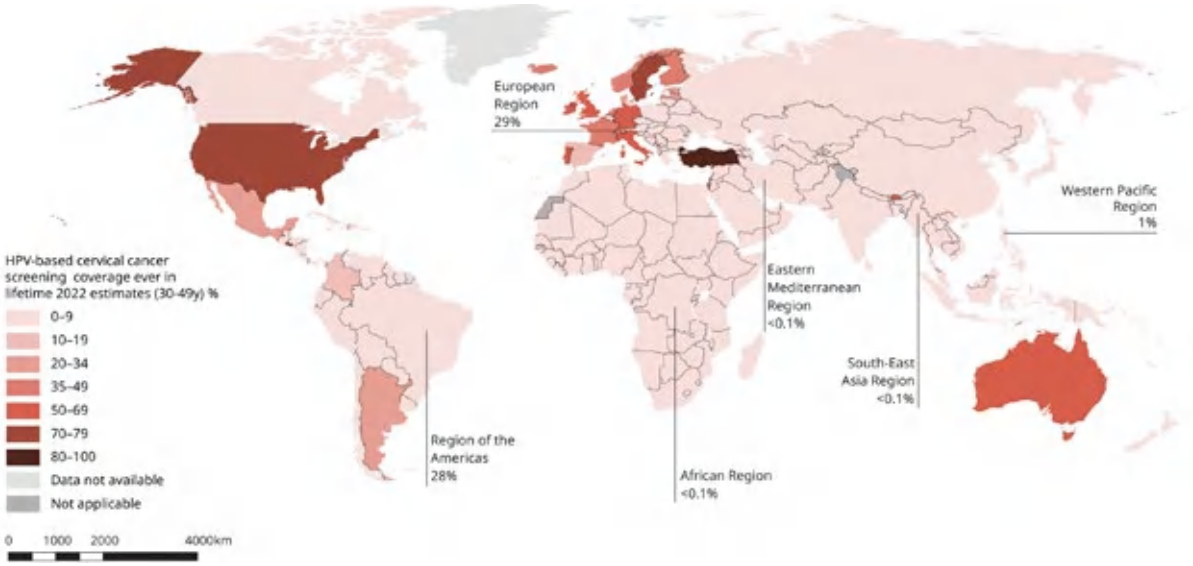
CBE: clinical breast exam; DBT: digital breast tomosynthesis (3D mammography); FIT: faecal immunochemical test; gFOBT: guaiac faecal occult blood test;VIA: visual inspection with acetic acid.

For breast cancer screening, 45 countries report no screening programme, while five countries (Libya, Maldives, Republic of Moldova, Uzbekistan, and Viet Nam) report the implementation of a pilot programme currently on-going. Cervical cancer screening programmes are more widely implemented globally yet still have substantial deficits in access and coverage *(157)*.

Globally, progress towards the WHO's target of 70% screening coverage by 2030 remains of-track (see section 4.2.1). According to WHO global cervical cancer screening coverage estimates for 2022, among women aged 30–49 years, 19% had been screened within the previous year, 35% had been screened within the previous 5 years and 38% had been ever screened using any screening method (cytology, VIA or HPV). Inequities were significant depending on country income, with 5-year coverage lowest in LMICs (26%), compared to HICs (74%) using any screening method *(158)*.

Global estimates for HPV-based screening coverage indicated that 7% of women aged 30–39 years had ever been screened (ranging from 33% in HICs to 2% in LMICs) (Fig. 46). In the past five years, 60 countries achieved coverage over 70% with any screening method, and 5 specifically with HPV testing *(158)*. As governments continue to implement and scale-up HPV testing, HPV-based screening coverage is expected to increase in the coming years.

Fig. 46. HPV-based cervical cancer screening participation rates, 2022



Colorectal and lung cancer screening shows the lowest level of global implementation. Of the 130 participating countries, 78 report no colorectal cancer screening programme and pilot programmes are reported in five countries. Screening coverage varies widely across countries and programme settings, particularly in colorectal cancer. Coverage ranges from below 5–10% in early stage or pilot programmes to approximately 60–70% in more mature, organized programmes. These observed ranges reflect substantial differences in programme maturity, organization, and data completeness *(157)*.

Many countries have yet to fully recover screening uptake lost during the COVID-19 pandemic, underscoring persistent challenges even in well-resourced settings *(159)*. Additionally, screening coverage alone does not reflect programme effectiveness; many programmes lack sufficient referral completion with high loss to follow-up rates and other quality issues, particularly in LMICs contexts.

Implementation progress

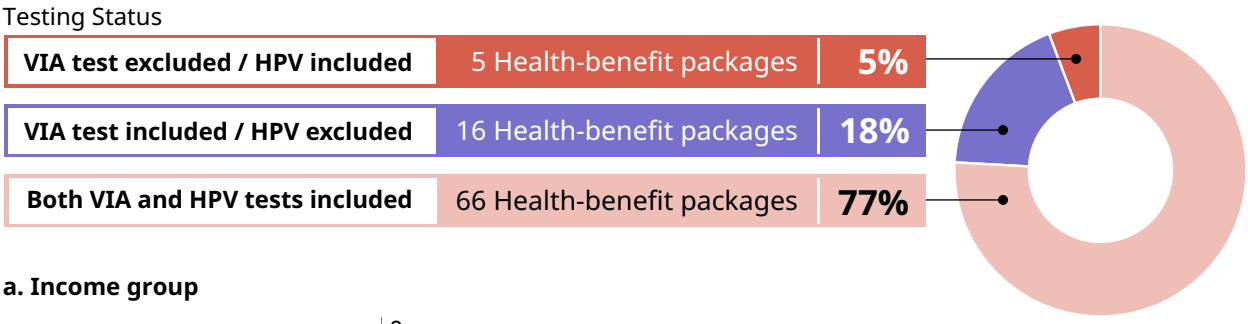
Although an increasing number of countries are strengthening their cancer screening programmes, major global gaps in coverage remain.

While global data are not available to analyse time-trends, evidence from some countries show steady progress. Overall, improvements in screening coverage take time and sustained investments, often increasing coverage at less than 5% per year *(160)*. Population time trend analysis of colorectal cancer screening programme coverage across 14 countries found eight countries showing a significant downward trend in incidence and mortality rates among screening-targeted populations *(161)*.

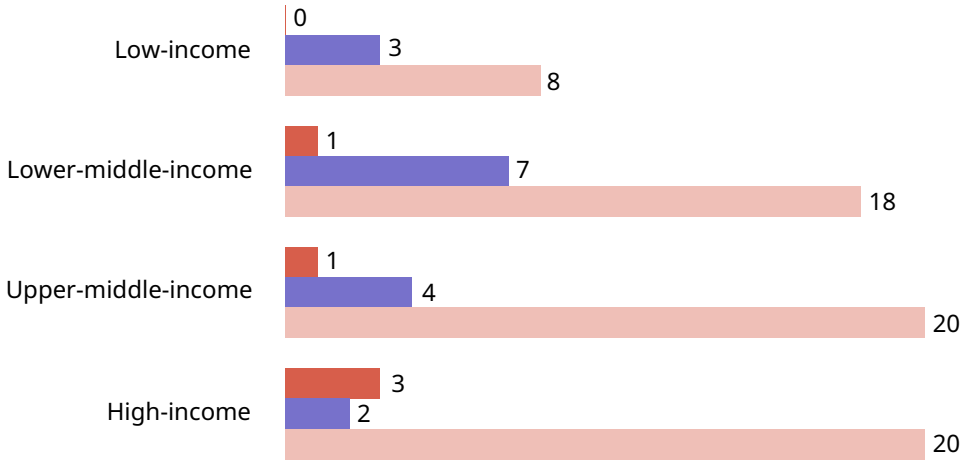
To ensure equitable access to quality-assured services across the screening care continuum, the organization of programmes is of paramount importance *(162)*. A primary determinant of screening participation at the national and community level is public sector financing for cancer services, including in the national health benefit package (Fig. 47) *(11)*. Cervical cancer screening, as the most cost-effective screening programme, has the highest proportional inclusion in health benefit packages. Compared to the other interventions included in the survey, screening for colorectal cancer was less likely to be included in health benefit packages. Only 44% of the respondents in the LIC group as compared 89% in HICs reported including colorectal screening in their health benefit packages.

Fig. 47. Financial coverage for HPV test in health benefit package, by a) income group and b) WHO region

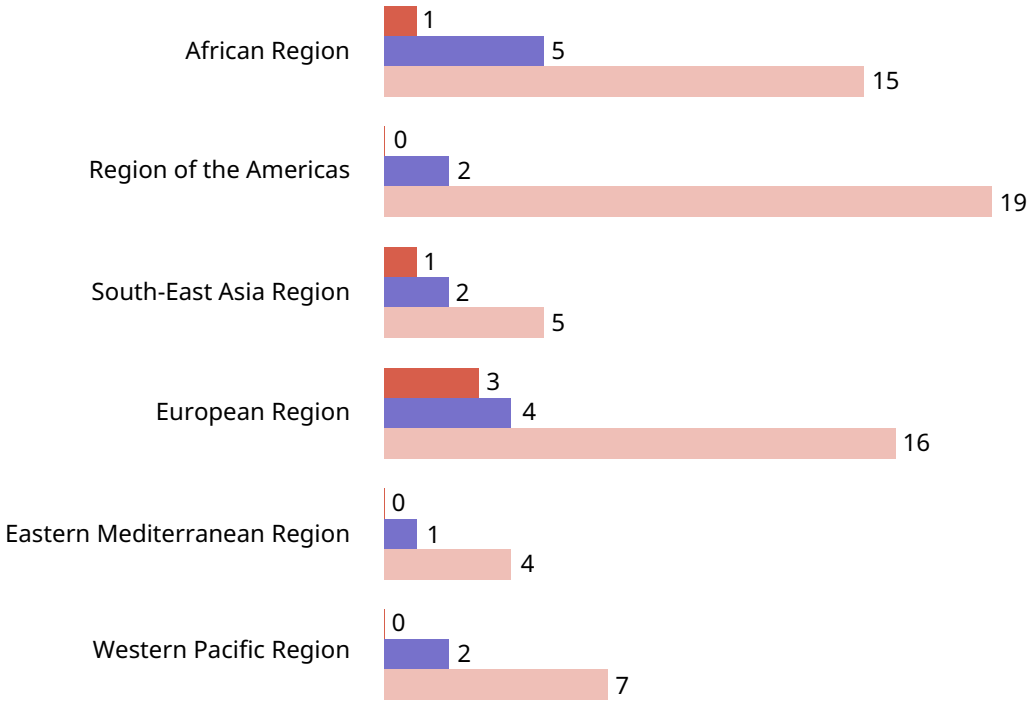
Global responses



a. Income group



b. WHO region



HPV: human papilloma virus; VIA: visual inspection with acetic acid.

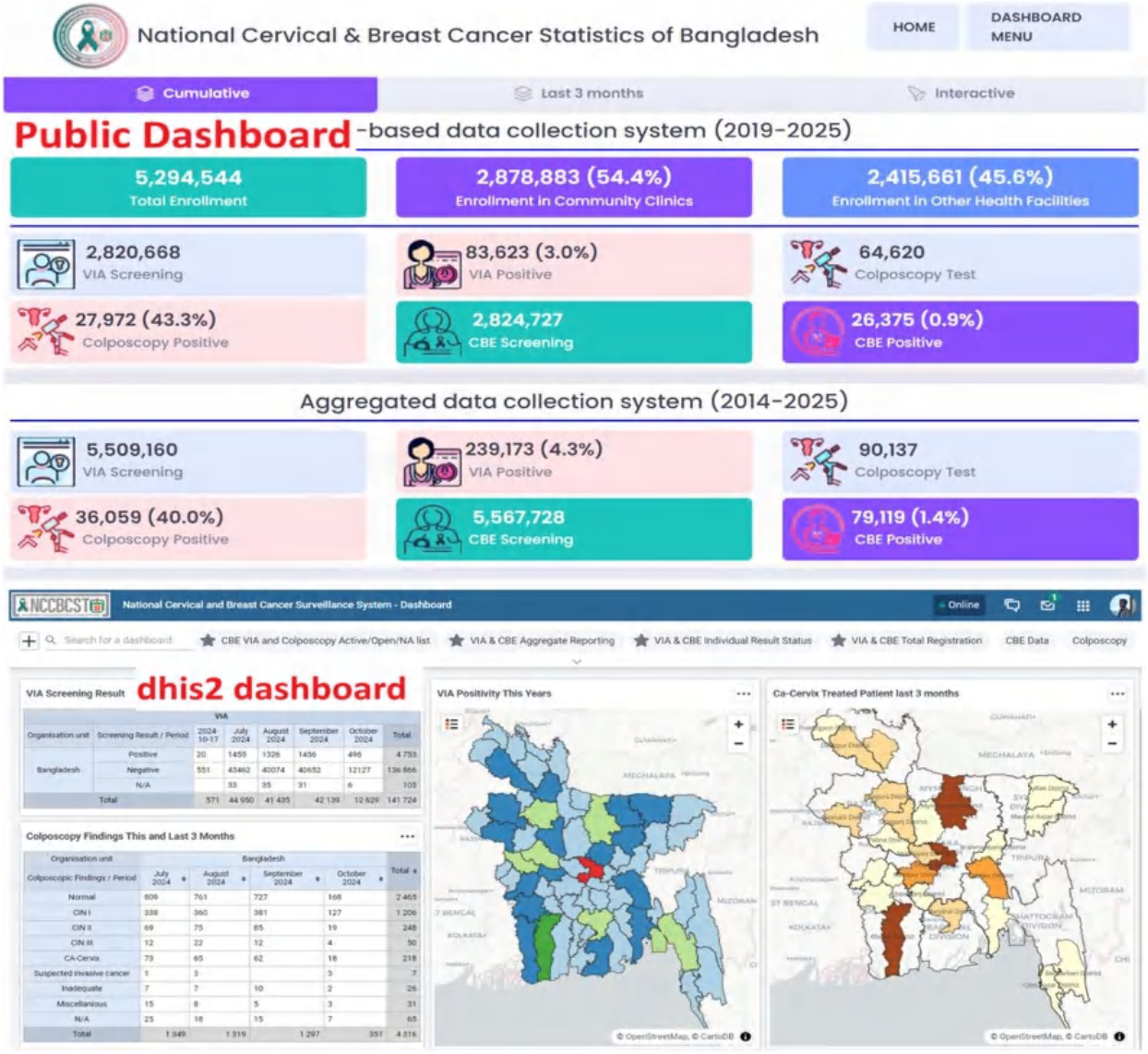
Evidence shows that organized screening programmes with structured systems across the full screening pathway are critical to improving participation, coverage, and follow-up care. A systematic review of 69 studies found that programmatic elements such as call–recall systems (e.g. telephone, email or SMS alerts, and scheduled appointments) establish referral pathways for diagnosis and treatment, enabling equitable access and continuity across the entire screening pathway significantly increase screening participation and completion compared with opportunistic approaches *(163)*.

Loss of follow-up after a positive cancer screening test in LMICs is quantitatively substantial: studies report that 4 to 75% of women with positive cervical screening results do not complete recommended follow-up visits or rescreening, with some settings showing only 23% adherence at follow-up and others reporting nearly 50% non-return rates in large cohorts *(164)*. Quantitative analyses also show that in some programmes only 27% of women returned for follow-up at one year, and rates dropped further over time where follow-up adherence was assessed longitudinally *(165)*. Similar loss to follow-up rates exist for other cancer screening programmes *(166)*.

These high loss-to-follow-up figures are driven by factors such as financial and transportation barriers, low awareness of the need for continued care, missing appointments, long distances to facilities, low education, social pressures, inadequate peer-to-peer support, and lack of precancer treatment availability at primary care. In order to improve cancer screening programmes, significant financial investment and sustained policy implementation are needed to train the workforce, purchase appropriate technologies, strengthen data systems, incorporate digital health and innovations.

An integrated health information system (Fig. 48) that can link at least the screening facilities and the diagnostic facilities is extremely important to manage a complex public health initiative as a screening programme and should be linked to routine programme monitoring to improve performance *(167)*.

Fig. 48. Screenshots from the dashboard of the e-health information system used to manage cervical screening programme in Bangladesh



Source: Ashrafun Nessa, Professor, Bangladesh Medical University, Dhaka, Bangladesh.

Monitoring progress

Table 12. Status snapshot: cervical cancer screening programme

Indicator status	**GCMF indicator (core):** Cervical cancer screening coverage with high performance testing (target: 70% by 2030) • Ever in lifetime: 7% HPV-based screening coverage globally among women aged 30–40 years (33% in HICs vs 2% in LMICs) **GCMF indicator (optional)**: Cervical cancer screening coverage (any test) • 38% of women aged 30–49 globally (target: 70% by 2030) • 60 countries achieved >70% coverage with any method (past 5 years) **GCMF indicator (optional)**: Availability of HPV testing (including high-performing tests) • 87 countries recommend HPV testing as primary screening test **GCMF indicator (optional):** Cervical cancer screening positivity rate • Limited data available • Available estimates from multi-country studies suggest HPV DNA positivity of 10–20%, rising to 20–64% in women living with HIV *(141)* **GCMF indicator (optional):** Appropriate diagnostic evaluation following abnormal screening test • Limited data available, with available single-country estimates, significant loss to follow-up established, particularly in countries with weak health systems **GCMF indicator (optional):** Pre-invasive cervical disease treatment among women aged 30–49 years • Limited data available; link to diagnosis and treatment known to range with significant loss to follow-up rates **GCMF indicator (optional):** Existence of national screening programmes for cancers (including cervical cancer) • 155 countries have national screening programmes for cancer (including cervical cancer) **GCMF indicator (optional):** Proportion of women aged 50–69 years undergoing screening mammography per year • Limited data available for LMICs with estimate of approximately 23% *(168)* • Approximately 54% for OECD countries (2021) *(160)* **GCMF indicator (optional):** Availability of ablative and excisional treatments for cervical cancer • Limited data available

Key gains and gaps	**State: Cervical cancer screening programmes have different population health benefits** • Cervical cancer screening is a priority for all governments as part of the global strategy toward the elimination of cervical cancer Plan: screening remains a cancer policy priority • More than 75% have national screening programmes but financial coverage of all screening types in health benefit packages remains low • Availability of HPV tests varies widely by income group **Outcomes:** • **HPV-based screening coverage is critically low, particularly in LMICs** • Limited availability of ablative treatment in primary care in most LMICs • High loss to follow up after positive screening is a major gap: 41–69% of women with positive cervical screening do not complete follow-up **Barriers and threats:** • Absence of functional downstream diagnostic and treatment pathways to act on screen-positive results • Systematic under-uptake of screening among disadvantaged population • Limited facilitated, transparent market entry and regulatory oversight for emerging screening technologies
Progress status	**Insufficient progress**

3.2.3 Diagnosis and staging: status and progress

Status overview

Major global deficits in access to cancer diagnostics are threatening the capacity for timely detection and accurate staging of cancer, which is a requirement for determining appropriate treatment.

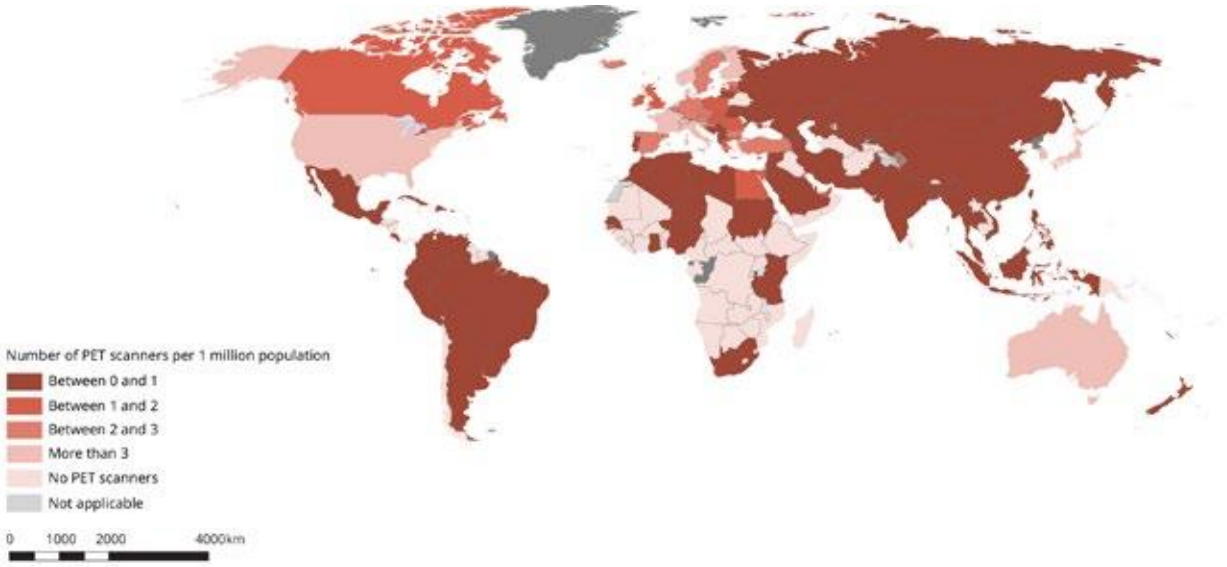
Box 13. Steps in a cancer diagnosis along the patient pathway

There is a wide variety of diagnostic tests required to detect, confirm, and characterize the extent of cancer presence. These include laboratory analyses of blood, urine, tissue, or cell samples; biopsies followed by pathology diagnosis; and various imaging modalities such as ultrasound that visualize internal body organs to assess the extent of cancer spread. Rapid advances in technology are also providing opportunities to increase diagnostic testing more widely through the point-of-care and/or use of mobile testing equipment. Together, these diagnostic tools form an integrated approach to diagnosing cancer accurately and efficiently, facilitating timely and appropriate treatment initiation.

Nearly 47% of the world's population has little to no access to basic diagnostic services (pathology and diagnostic imaging), according to the 2021 Lancet Commission on Diagnostics, with primary care settings in LMICs particularly underserved *(169)*. A global shortfall of diagnostic workforce, including pathology professionals as well as an insufficient number or poorly maintained equipment are major barriers to effective national diagnostic capacity.

There are substantial shortages in equipment and workforce particularly in LMICs with 2021 Lancet Oncology Commission on Medical Imaging and Nuclear Medicine finding that millions of cancer deaths could be avoided between 2020 and 2030 by scaling up imaging (Fig. 49) *(170)*. Equipment capital costs can be significant barrier to accessible tests and even when available, there are significant constraints to optimal use include lack of availability of the workforce and maintenance of technologies.

Fig. 49. Availability of positron emission tomography (PET) from IAEA IMAGINE database, 2026



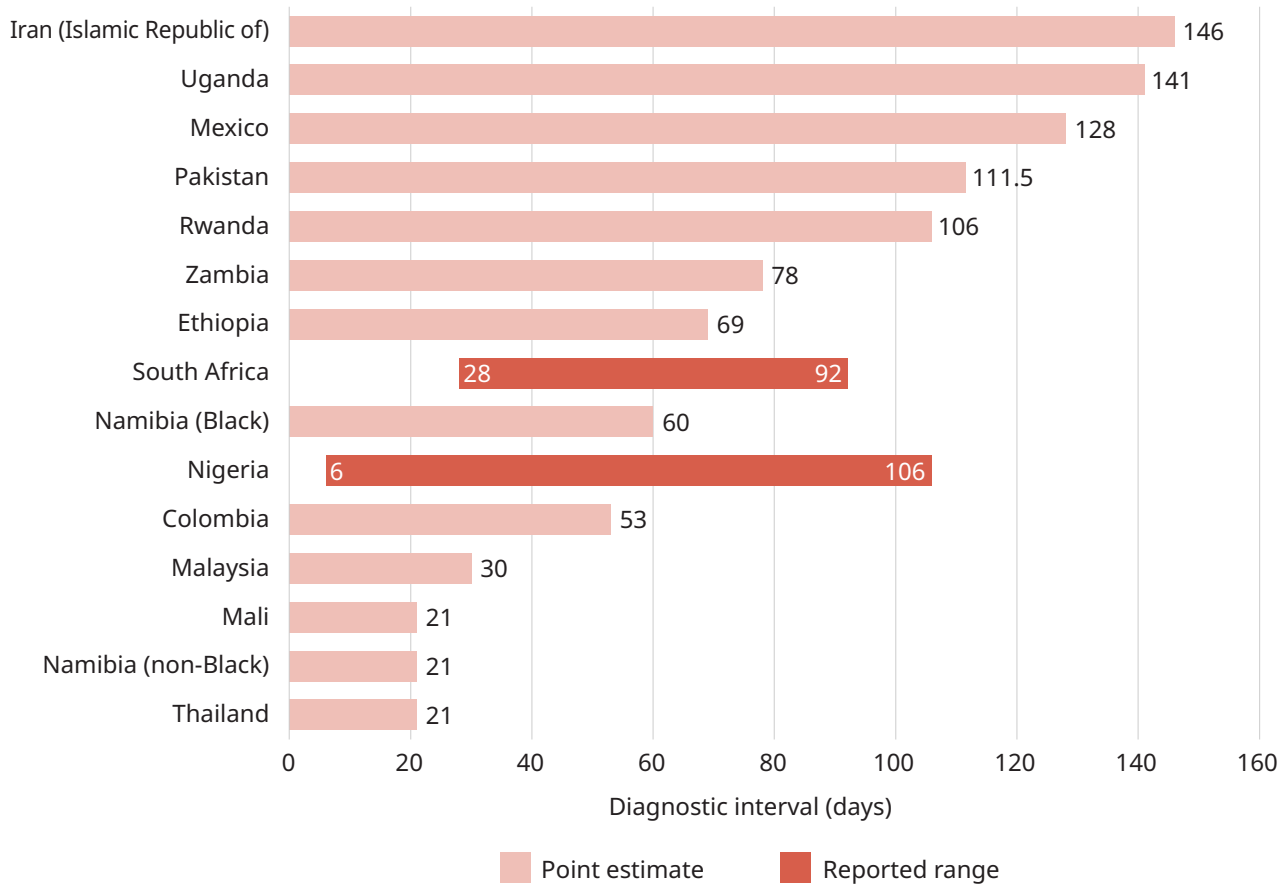
Source: (171).

Available workforce and infrastructure for pathology and laboratory medicines is greatly insufficient to meet the current burden of cancer and has been further constrained by added workflow demands linked to targeted therapies. An analysis of WHO's National Health Workforce Accounts Data Platform reveals that minimal growth in workforce density (per 10 000 population) for medical and pathology laboratory technicians and scientists with only 55–60% of countries reporting increases *(172)*. Prior studies have shown sub-Saharan Africa has roughly one pathologist per 1 million people (approximately 50 times less than the ratio in HICs), and many laboratories in LMICs are not accredited or in the public sector *(173)*. Further deficits in pathology capacity are not well established.

Data from PBCRs can inform diagnostic and pathology capacity *(174).* Low percent microscopic verification (e.g. <70%) implies that a substantial proportion of cases are being recorded on clinical or radiological grounds alone, potentially pathology services are inaccessible, unaffordable, of uncertain quality, or geographically distant. Moderate or high death certificates only (e.g. >5%) can point to weak primary care and/or limited diagnostic access with a segment of the population accessing care only when symptomatic and advanced. Several sub-Saharan African registries have microscopic verification ranges of 50–80% and death certificate only rates of 5–10%, plus high percent of "unknown stage", reflecting systems where pathology is not reaching most patients and clinical diagnosis is fragmented *(147)*.

The consequence of inadequate diagnostic capacity is often late stage of diagnosis. Time duration to initiate treatment – a major prognostic determinant for cancer outcome – is determined by three intervals: time from symptom onset to initial contact with health system (patient interval) then time to diagnostic confirmation including staging (diagnostic interval) and time from referral to initiate treatment (treatment interval). The diagnostic interval is generally the longest and determined by diagnostic capabilities – pathology infrastructure and diagnostic imaging – that require investments in technologies and workforce. High-performing health systems have low median number of days between cancer diagnosis and treatment referral: HICs typically initiate treatment within 2–4 weeks; in LMICs delays of 2–6 months are common (Fig. 50) *(175)*.

Fig. 50. Median time between cancer diagnosis and treatment initiation in days (breast cancer)



Notes: Pakistan value of 111.5 days reflects the mean as reported. Namibia data are disaggregated by population group as reported in the source study.

Box 14. The potential and limitations of AI for cancer diagnostics

Artificial intelligence (AI) is rapidly advancing cancer diagnostics across imaging, pathology, and screening domains by enhancing detection accuracy, standardizing interpretations, and supporting early diagnosis and clinical decision-making. AI-assisted imaging systems are being integrated into mammography and radiology workflows, with large trials reporting reductions in later diagnoses and improvements in early cancer detection (Table 13). In pathology, AI algorithms have demonstrated high performance in tissue classification and grading (such as prostate Gleason scoring and cytology interpretation), improving diagnostic consistency and reducing inter-observer variability. Emerging tools also include portable AI-powered devices for early detection in resource-limited settings and risk-stratification models for personalized early detection. Despite promising results, challenges remain around clinical validation, governance, regulatory approvals, integration into workflows, and ensuring equitable access globally. For additional examples of AI and cancer, see section 4.2.4 below.

Table 13. Emerging applications for artificial intelligence and cancer diagnostics

Application area	Key peer-reviewed findings
Digital pathology – overall diagnostic accuracy	AI applied to whole-slide images in digital pathology shows high performance with mean sensitivity ~96.3 % and specificity ~93.3 % across multiple diseases, including cancer, though many studies have bias concerns *(176).*
Lung cancer imaging diagnostics	Meta-analysis of AI models for lung cancer imaging found pooled sensitivity and specificity ~0.86–0.87, demonstrating strong potential for supportive detection of nodules and classification tasks *(177).*
Lung cancer AI diagnostic performance	Meta-analysis shows AI significantly improves diagnostic accuracy in lung cancer detection compared with conventional methods in aggregated studies, supporting use of machine learning tools in clinical workflows *(178).*
Prostate cancer digital pathology	Deep learning models in prostate cancer digital pathology achieved AUC up to ~0.99 for cancer detection and classification, indicating very high performance in histologic analysis *(179).*
Cervical cancer pathology diagnosis	Systematic review reports AI can distinguish normal vs cancerous cervical pathology with accuracy 92–98%, highlighting strong diagnostic potential in gynaecological cancers *(180).*
Automated cancer diagnosis models	A broad systematic review of deep learning models in cancer diagnosis documents widespread application across tumour types, summarizing architectures and diagnostic performance improvements *(181).*
Breast cancer pathology diagnosis review	Systematic literature review shows AI enhances breast cancer diagnostic accuracy in pathology and reduces detection errors with conventional methods *(182).*

Implementation progress

Diagnostic imaging is not included as a priority in most national cancer control plans.

Diagnostic capacity is increasingly seen as a core aspect of effective cancer control, but significant gaps remain in how this is translated into policy and implementation. Diagnostic cancer services are among the least covered cancer services in health benefit packages. Diagnosis through immunohistochemical staining was included by most of the countries globally (60%), but certain regions are least likely to cover such services. Countries in the African Region were the least likely to use immunohistochemical staining to diagnose acute lymphoblastic leukaemia (31%) and CT/PET scan for metastatic cervical cancer (28%) *(11)*.

The 2024 Global review of NCCPs highlights that although many plans include early detection, diagnosis and screening strategies, only about 44% explicitly address these aspects with defined strategies, with formal goals and measurable indicators being less common compared with other domains like prevention or data systems *(8)*.

Persistent weaknesses in laboratory and pathology infrastructure planning and workforce training within health policies indicate that while diagnostic services are mentioned, dedicated resources and actionable implementation frameworks are often lacking, particularly in lower-resource settings, leading to suboptimal identification of tumour type and inappropriate treatment plans *(183–185)* (Fig. *51*).

This shortfall is particularly salient in light of the World Health Assembly's 2021 resolution on strengthening access to diagnostics (WHA74.8), which calls on Member States to integrate affordable, quality diagnostics into national health benefit packages and health systems as a cornerstone of UHC. Global programmes of work are being developed to implement the resolution and to fully implement IAEA's Rays of Hope Initiative that includes access to diagnostic imaging (see section 3.3.2) (Box 15).

Fig. 51. Suboptimal identification of tumour type and inappropriate treatment plans

40–51%

of metastatic colorectal cancer patients received guideline-aligned biomarker (KRAS/NRAS/BRAF/MSI) testing across US community and academic practices (2013–2017)

25%

of cancer stage fields recorded in the Philippine national hospital registry (60 021 patients, 2017–2022)

(est) 30%

of newly diagnosed lymphoma cases in Botswana reclassified at US reference centre; discordant diagnosis associated with substantially reduced survival

Monitoring progress

Table 14. Status snapshot: late diagnosis – delays in diagnostic work-up (staging)

Indicator status	**GCMF indicator (core):** Timeliness of referral and completion of diagnostic evaluation among individuals with suspicious findings for cancer • Limited data; HICs generally range from 2–4 weeks; LMICs delays of 2–6 months **GCMF indicator (core)**: Median time between cancer diagnosis (treatment referral) and treatment initiation, in days • Limited data; ranges between 20 and 50 days for the main cancer groups **GCMF indicator (core):** Biopsy-based cancer diagnosis • Limited data available; based on microscopic verification data from well-functioning population-based registries, around 80–99% in HICs; low-resource settings proportion can be below 60% **GCMF indicator (optional):** appropriate diagnosis and staging for breast cancer • Limited data available **GCMF indicator (optional):** loss-to-follow-up, among people diagnosed with cancer • Limited data available

Key gains and gaps	**State: Appropriate diagnostic tests are required for all people diagnosed with cancer** • Diagnostic technologies absent in large percentage of countries, most critical gaps in Africa **Plan: Insufficient priority in cancer control** • Only 44% of NCCPs address diagnosis/staging with defined strategies and measurable indicators • Diagnostic imaging included in cancer health benefit packages: lowest covered cancer service type **Outcomes: Lack of capacity leads to late diagnosis** • 47% of world population has little to no access to basic diagnostic services leading to delays in receiving cancer diagnosis and initiating cancer treatment **Barriers and threats: Ability to evaluate and scale-up emerging technologies** • Substantial innovation in cancer diagnostics, though limited ability to evaluate utility of technologies across different settings • Inadequate financing remains primary barrier
Progress status	**Insufficient progress**

3.3 Treatment

Treatment modalities for cancer are used alone or in combination to optimize outcomes. Treatments are designed to kill cancer cells, directly or indirectly, through different mechanisms and at various disease stages, with the goal of curing or controlling cancerous cells, prolonging survival, and/or improving QoL. Together, they form the foundation of most cancer treatment protocols worldwide, with advances in each area contributing to significant improvements in cancer control.

Surgery is the oldest and most common cancer treatment, typically used to remove localized tumours. It aims to excise cancerous tissue completely and is often curative when the disease is detected early. Surgical techniques have evolved from extensive radical to more precise procedures (such as de-escalation strategies) and to include minimally invasive and robot-assisted approaches, which reduce complications and enhance recovery.

Radiotherapy uses high-energy ionizing radiation to destroy cancer cells by damaging their DNA, preventing replication and inducing cell death. A substantial proportion of cancer patients can receive radiotherapy, either as a primary treatment or in conjunction with surgery and chemotherapy. Advances such as stereotactic radiotherapy allow precise delivery of radiation to tumours while reducing impacts on healthy tissue. Radiotherapy is particularly effective for localized and radiosensitive tumours and can be used preoperatively to shrink tumours, postoperatively to eradicate residual disease or in the palliative care setting to relieve pain and improve QoL.

Systemic therapy involves administration of medicines that kill or inhibit the growth of rapidly dividing cancer cells directly or indirectly. Such cancer treatments circulate throughout

the body to target malignant cells wherever they may be, which is essential for reducing recurrence risk or complexity of other therapies in earlier stages and for managing metastatic disease. The most common types include cytotoxic chemotherapy, which kills rapidly dividing cells; hormonal (endocrine) therapy, which blocks or lowers hormones that drive certain cancers such as breast and prostate cancer; targeted therapy, which interferes with specific molecular pathways involved in tumour growth; and immunotherapy, including immune checkpoint inhibitors, which enhance the body's immune response against cancer cells. More recently, advances in precision oncology have enabled biomarker-guided treatment selection, antibody–drug conjugates, and cellular therapies, expanding the scope and complexity of systemic treatment.

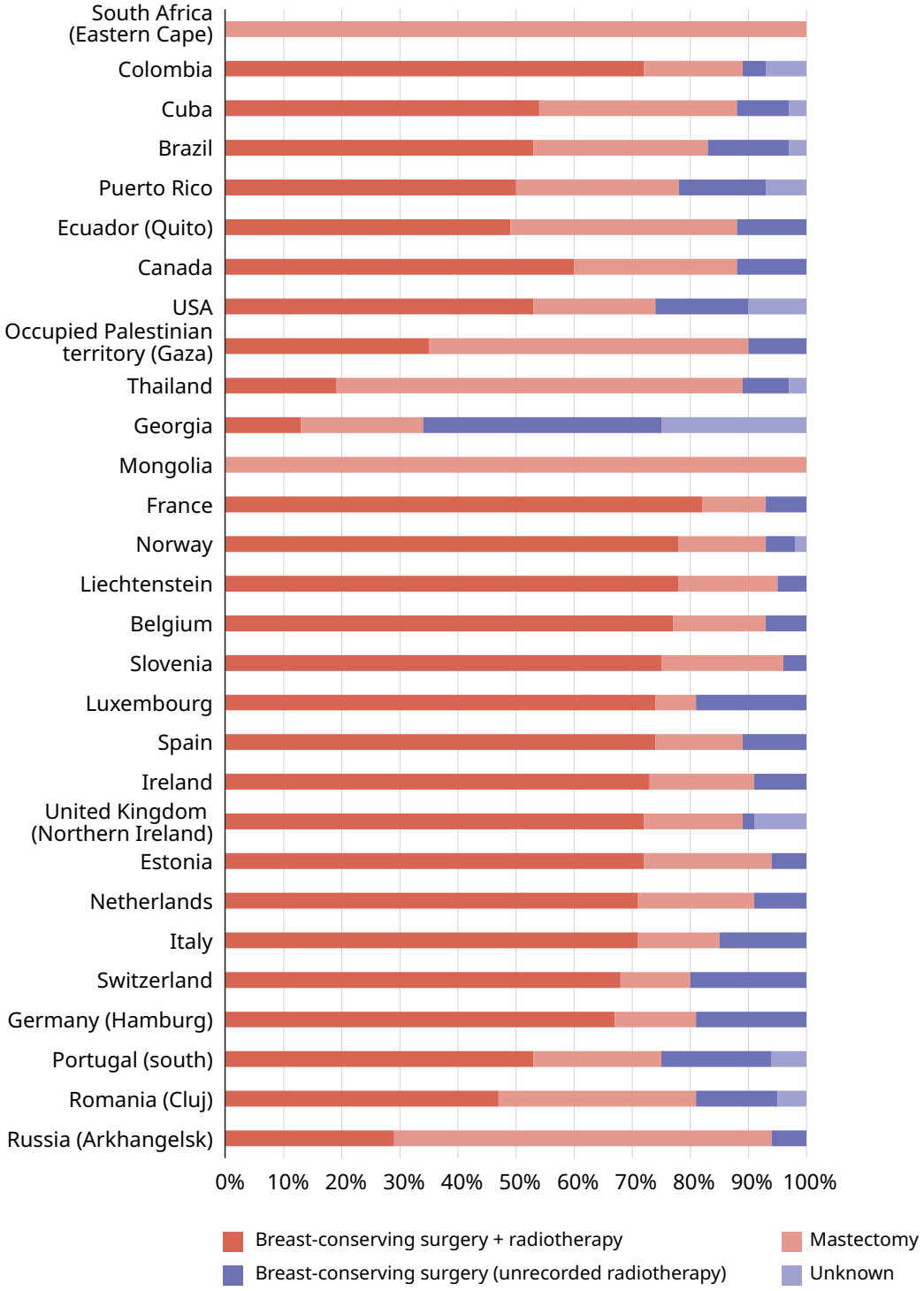
3.3.1 Cancer surgery: status and progress

> Status overview
> **High-quality surgical services are required for optimal outcomes, but availability of surgical services is limited.**

In 2015 it was estimated that 80% of people diagnosed with cancer require surgical care, making it the most used treatment modality for cancer *(186, 187)*. Global data show major gaps in availability of cancer treatment interventions. Surgical care, for example, is unavailable to most of the world population in any form with 4.2 billion people lacking access to safe and timely basic surgical care. Even in HICs, there is significant variations in the quantity of cancer surgical care delivered that can impact QoL and treatment completion (Fig. 52).

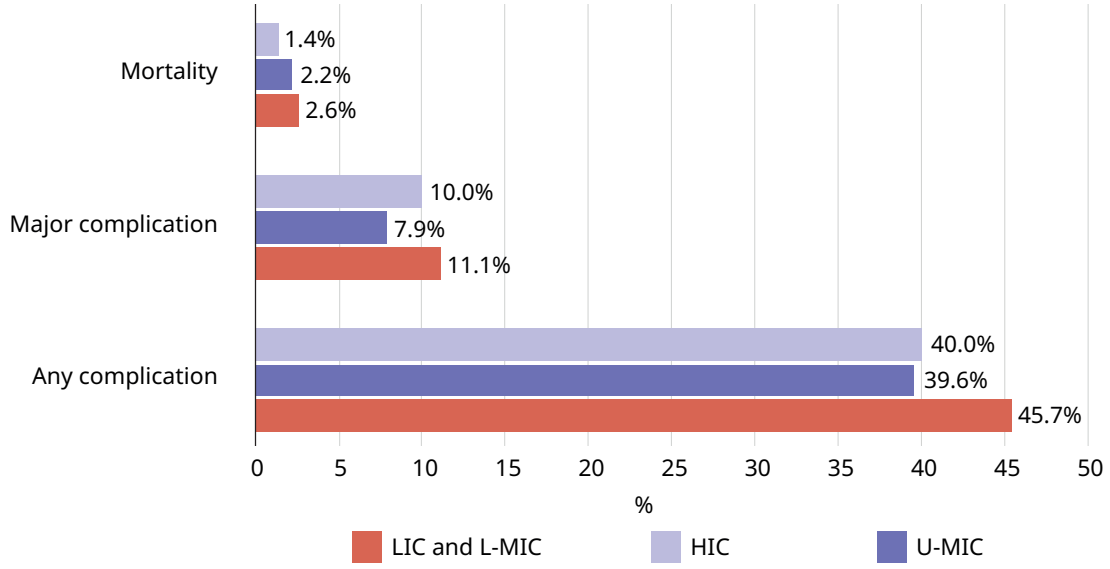
Factors that contribute to the delivery of low-quality surgical care include inadequate pre-service training, unavailable specialty training, inequitable service models (leading to over-centralization of care not accessible to rural populations), lack of availability of – or suboptimal adherence to – national treatment guidelines, and insufficient continuous professional training (see also section). GlobalSurg3 – a large multicentre, prospective cohort study in 82 countries – found that 30-day postoperative mortality after colorectal cancer surgery was approximately two-times higher in lower-middle and low-income settings compared with high-income countries, even though major complication rates were similar (Fig. 53). Inability to rescue from complications and less specialist surgical support contribute to worse outcomes *(188, 189)* (see also section 4.3.2).

Fig. 52. Percentage of women receiving highest standard of breast cancer surgical care as measured by early stage cases receiving breast-conserving surgery plus radiotherapy, 2015–2018



Source: (148).

Fig. 53. Post-operative mortality, major complications and any complication rates after cancer surgery (breast, colorectal and gastric cancers) from GlobalSurg 3 observational study, by income group, 2018–2019



Implementation progress

Although cancer surgical services are among the most cost-effective interventions, they are not being sufficiently included in national cancer control plans or health benefit packages.

Inclusion rates of surgical management for breast, lung and cervical cancer in public-sector health benefit packages improved with wealth, but patterns varied: LICs showed the largest deficits in covered services, with lung surgery at just 19%, 56% for cervical and 63% for breast; L-MICs prioritized cervical (70%) over breast (65%) and lung (54%); U-MICs equalized breast and cervical at 83% but lagged on lung (72%); and HICs led overall, with lung surgery highest (96%), breast at 93%, and cervical lowest at 89% *(11)*. Data on other critical cancer surgery specialities like neurosurgery and orthopaedic oncology are lacking.

Over the past decade, health policy for surgical care has increasingly been formalized through the development of national surgical, obstetric and anaesthesia plans (NSOAPs), which are also policy levers for cancer. Following the endorsement of surgical system strengthening through the World Health Assembly Resolution WHA68.15 on Strengthening Emergency and Essential Surgical Care and Anaesthesia, many countries – particularly LMICs – began developing national plans: more than 40 countries are now in different stages of the NSOAP process *(190)*. Cancer care has increasingly been incorporated into these policies because surgery is central to oncology treatment.

Progress has been possible through different global mechanisms. WHO's Global patient safety action plan (2021–2030) and Safe Surgery Saves Lives initiative have facilitated adoption of national patient safety plans and policies in more than 50 countries. The WHO Surgical safety checklist, implemented in over 100 countries, has reduced surgical mortality by up to 37% in through standardized checks for infection prevention, safe anaesthesia, and teamwork *(191, 192)*.

Monitoring progress

Table 15. Status snapshot: poor surgical quality and access

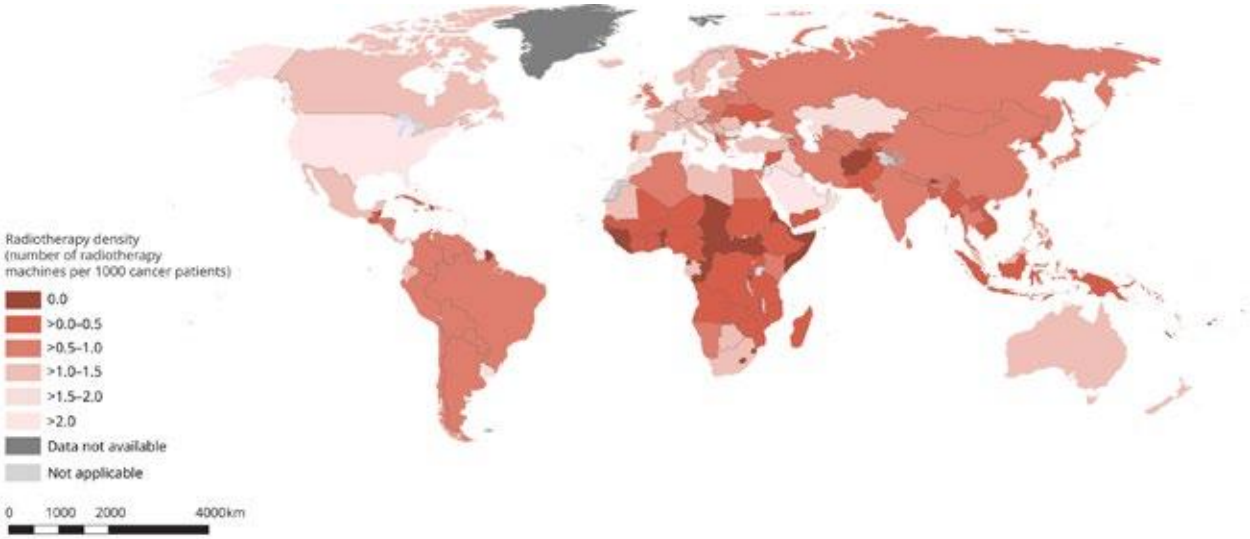
Indicator status	**GCMF indicator (optional)**: Postoperative mortality (at 90 days) • Limited data available; multi-country studies with 30-day postoperative mortality approximately two-times higher in lower-middle and low-income countries compared with HICs
Key gains and gaps	**State: Surgery is the most commonly used cancer treatment modality (80%)** **Plan: increased existence of various national policies and plans** • Existence of NSOAPs: >40 countries in different stages of NSOAP process • WHO Safe surgery checklist: 4000+ facilities in 100+ countries – reduces mortality up to 47%, complications by 36% • Yet, inequitable inclusion of surgical management for breast, lung and cervical cancer in public-sector health benefit packages **Outcomes: Survival associated with surgical capabilities** • Higher post-operative mortality and worse stage-specific survival **Barriers and threats: Risk to pivot towards high-cost technologies and against improved workforce competencies** • Inadequate number of trained surgical workforce • Surgery not adequately financed with focus on recent technological innovations
Progress status	**Partial progress (limited data)**

3.3.2 Radiotherapy: status and progress

Status overview
Global inequities in radiotherapy are substantial, although with some evidence of recent improvements.

Global radiotherapy coverage reveals stark disparities. While HICs have adequate technology and service coverage, most LMICs face severe shortages. Megavoltage radiotherapy capacity in LMICs has grown in absolute terms over the past decade with 45% increase in total units in Africa between 2012 and 2020 to approximately 430 units total *(193)*. However, relative coverage has barely improved because cancer incidence rose 32% over the same period. Using records from the IAEA Directory of Radiotherapy Centres (DIRAC) database and comparing radiotherapy density per 1000 cancer patients, there has been an increase in density in 109 countries, no change in 37 countries and decrease in 41 countries, comparing 2020 and 2026 analyses *(10)*. Notably, 23 LMICs with populations exceeding one million lack any active radiation facilities, leaving approximately 197 million people without local access to this critical cancer treatment *(194, 195)* (Fig. 54).

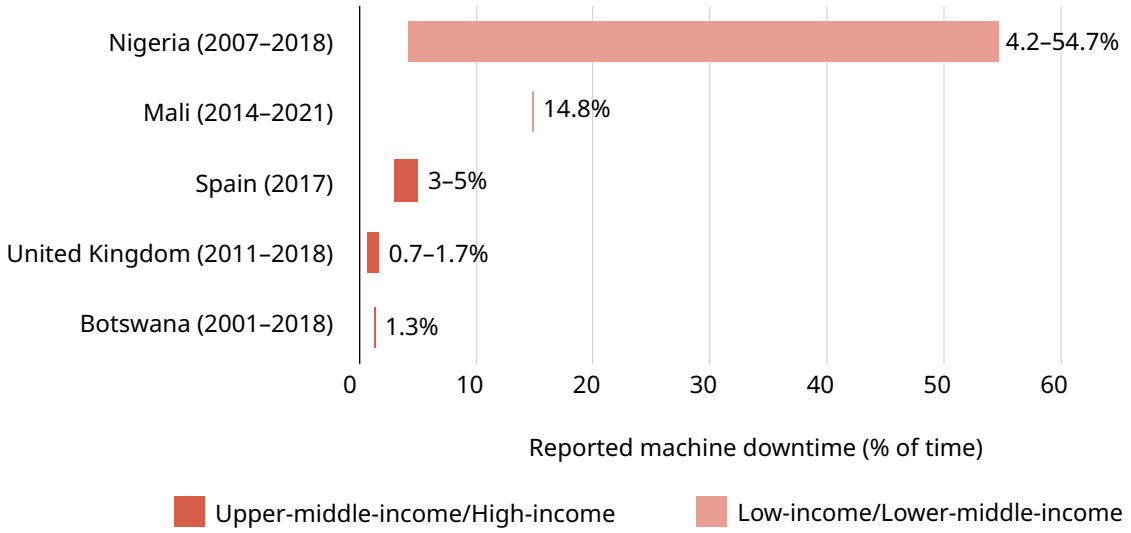
Fig. 54. Availability of radiotherapy machines from IAEA DIRAC database, 2026



Source: (194).

Radiotherapy equipment functionality represents a significant constraint on effective coverage of services, particularly in LMICs (Fig. 55). Publications from the International Atomic Energy Agency (IAEA) highlight that maintaining high equipment uptime is essential to ensure reliable access to treatment; a typical operational benchmark assumes approximately 250 treatment days per year, with machine availability ideally exceeding 95% uptime *(196)*. However, when unscheduled downtime reaches around 100 days per year, effective machine availability can fall to about 60%, substantially reducing treatment capacity, contributing to delays in care and failing to complete treatment *(197–199)*. Limited local maintenance expertise, high costs of service contracts (often 8–15% of the machine's purchase price annually), and delays in importing spare parts or technical support are cited as major contributors to downtime in resource-constrained settings.

Fig. 55. Comparison of radiotherapy downtime from select studies, 2007–2021



Source: data from select facilities (Spain *(197)*: 1 centre, 3 machines; United Kingdom of Great Britain and Northern Ireland *(198)*: 1 centre, 6 machines; Botswana *(198)*: 1 centre, 1 machine; Nigeria *(198)*: 5 centres, 6 machines; Mali *(199)*: 1 centre, 1 machine including replacement).

Access within countries is also determined by proximity to centres. Geospatial analyses estimate that 76% of the global population has access to radiotherapy within 120 minutes of travel, but coverage drops sharply by income level: only 17% in LICs versus 93% in high-income ones, with one-third of countries – especially in Africa – lacking any facilities *(200)*. Paediatric cases are may be further deprioritized or rendered suboptimal because they demand intensive ancillary resources including dedicated paediatric anaesthesia care and significantly longer daily time allocations per session, with centralization of services limiting access *(201)*.

Implementation progress
Radiotherapy is being increasingly prioritized for capital investments including through IAEA initiatives, but access to services and policy prioritization are lagging.

Radiotherapy policy is increasingly addressed within both national health financing frameworks and cancer-specific strategies, though coverage remains uneven globally. A global survey by WHO found that radiotherapy remains the least re-imbursed treatment service in national health benefit packages at only 19–25% of LICs *(11)*. At the strategic planning level, the global review of NCCPs found important gaps remain in treatment planning and financing, with approximately 50% of NCCPs lacking explicit radiotherapy strategies *(8)* (Table 16).

Prioritization of radiotherapy within NCCPs was associated with the availability of radiotherapy machines. Again, substantial variation exists across regions and income groups in the extent to which specific radiotherapy elements are incorporated into NCCPs *(202)*. Progress is being achieved through IAEA's Rays of Hope initiative (Box 15).

Together, these findings suggest that while radiotherapy is increasingly recognized within national health policies and benefit packages, substantial policy gaps persist in ensuring its systematic inclusion in national cancer strategies and financing frameworks. Continued efforts are therefore required to strengthen the inclusion of radiotherapy in future NCCP revisions, supported by comprehensive policy-level planning and implementation, to enable the expansion of equitable global access to radiation therapy *(203)*.

Monitoring progress

Table 16. Status snapshot: inaccessible radiotherapy

Indicator status	**GCMF indicator (optional)**: Average radiotherapy downtime, in days per month • Limited data; available data from LMICs with estimated % downtime ranges from 15%–50%
Key gains and gaps	**State: Radiotherapy is a critical modality for curative and palliative cancer care** **Plan: Insufficient prioritization** • 50% of NCCPs lack explicit radiotherapy strategies • Only 19–25% of LICs have reimbursement of radiotherapy in national health benefit packages **Outcomes: Most people still lack access to radiotherapy** • Geographic accessibility for: 76% of global population live within 120-min travel time (HICs: 93%; LICs: 17%) • At least 23 LMICs have no active radiotherapy facility • 109 countries have an increase in radiotherapy density per cancer patient comparing 2020 with 2026 while 41 have had a decrease **Barriers and threats: Managing technology with sustainable capacity** • Lack of maintenance contracts contributes to poorly functioning machines • Promising new technologies in the pipeline may be constrained by workforce capacities and sustainable implementation
Progress status	**Insufficient progress**

Box 15. Rays of Hope: International Atomic Energy Agency

Providing even a single radiotherapy machine in a country has the potential to save many lives and relieve symptoms. Through its Rays of Hope initiative, launched in 2022, the International Atomic Energy Agency (IAEA) is building partnerships with governments, international financial institutions and the private sector to help bridge the gap in access to medical imaging and radiotherapy services *(204)*.

Over 100 countries have joined Rays of Hope, and the initiative has raised more than US$ 100 million from donors and partners. By integrating various elements such as radiation safety legislation, quality control, guidance, training and equipment into a cohesive set of interventions, Rays of Hope seeks to maximize impact through sustainable projects tailored to the specific needs of each country *(205)*.

More than 90 items of diagnostic and treatment equipment have been procured for low- and middle-income countries, including 10 linear accelerators and 55 mammography machines, and 18 Anchor Centres have trained more than 700 oncology professionals in the safe use of radiation medicine – a network that, as of June 2026, has expanded to 20 Anchor Centres spanning Africa, Asia and the Pacific, Europe, and Latin America and the Caribbean *(206)*. Concrete examples of impact include the procurement of 32 mammography units for 19 countries in Latin America and the Caribbean, which when fully installed will provide screening services for up to 250 000 women each year; support to Indonesia to develop a national roadmap for scaling up radiotherapy and nuclear medicine services, informing its National Cancer Control Plan 2024–2034; and the delivery of two linear accelerators, a brachytherapy machine, CT-simulator and dosimetry equipment, alongside long-term training and refresher courses for radiotherapy and medical imaging professionals in Malawi *(207)*.

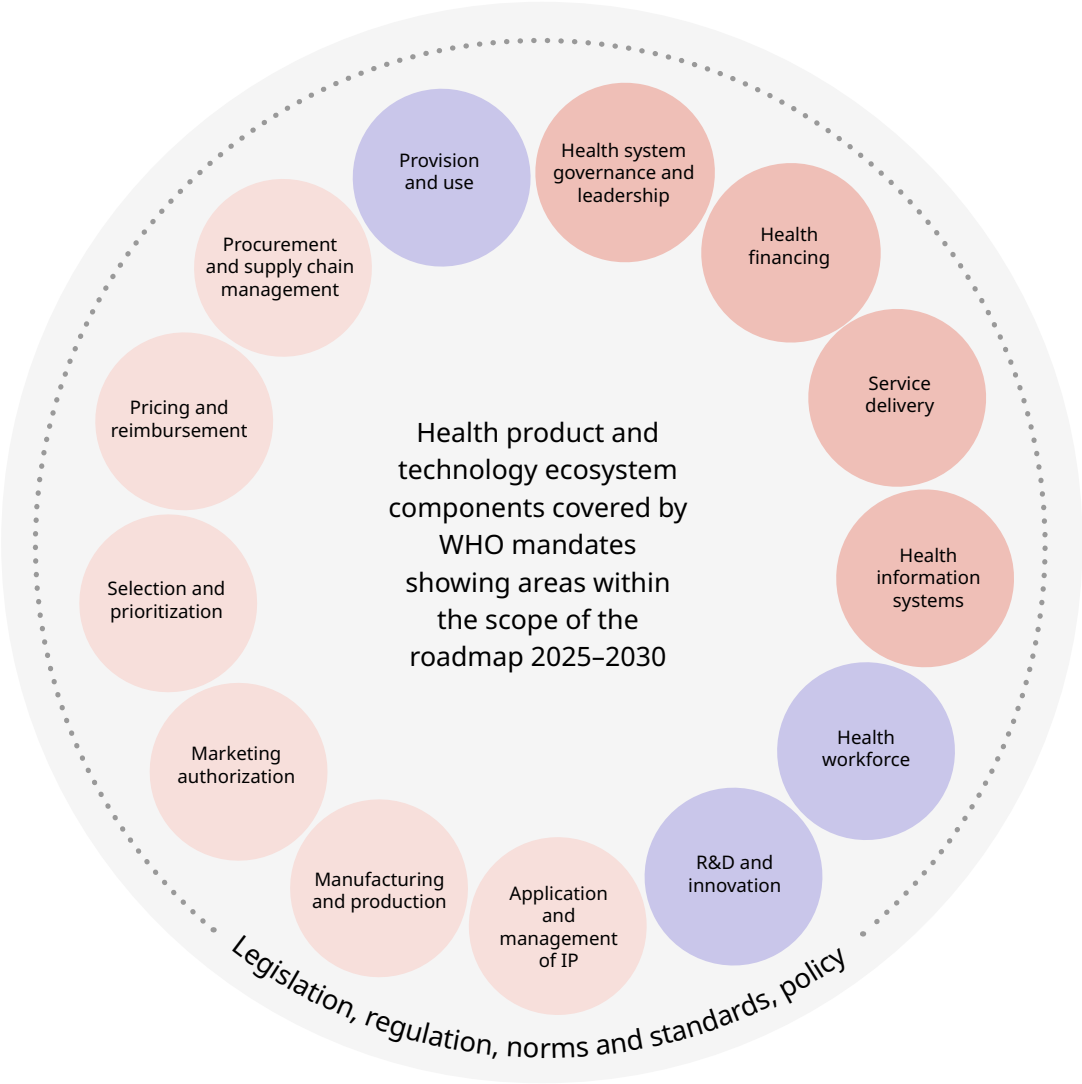
3.3.3 Systemic therapy: status and progress

Status overview

Millions of people affected by cancer do not have access to systemic therapy, even low-cost, off patent. With the pace of innovation, there are likely to be worsening inequalities in access.

Access to cancer medicines remains highly unequal globally when examined across the pharmaceutical value chain (see Fig. 56 and sections 4.2.5 and 4.3.3). There is an increasing number of cancer medicines on WHO's essential medicines list (EML) that should be available in functioning health systems. However, the translation of global recommendations into improved access remains incomplete. While WHO recommendations are reflected to varying degrees in national essential medicines lists, patient access also depends on their incorporation into publicly funded UHC benefit packages, as well as on effective procurement and supply systems *(208)*. Further, the state of access at national levels are impacted by global market dynamics including pricing and intellectual property (see section 4.3.3).

Fig. 56. Value chain perspective on access to systemic therapy



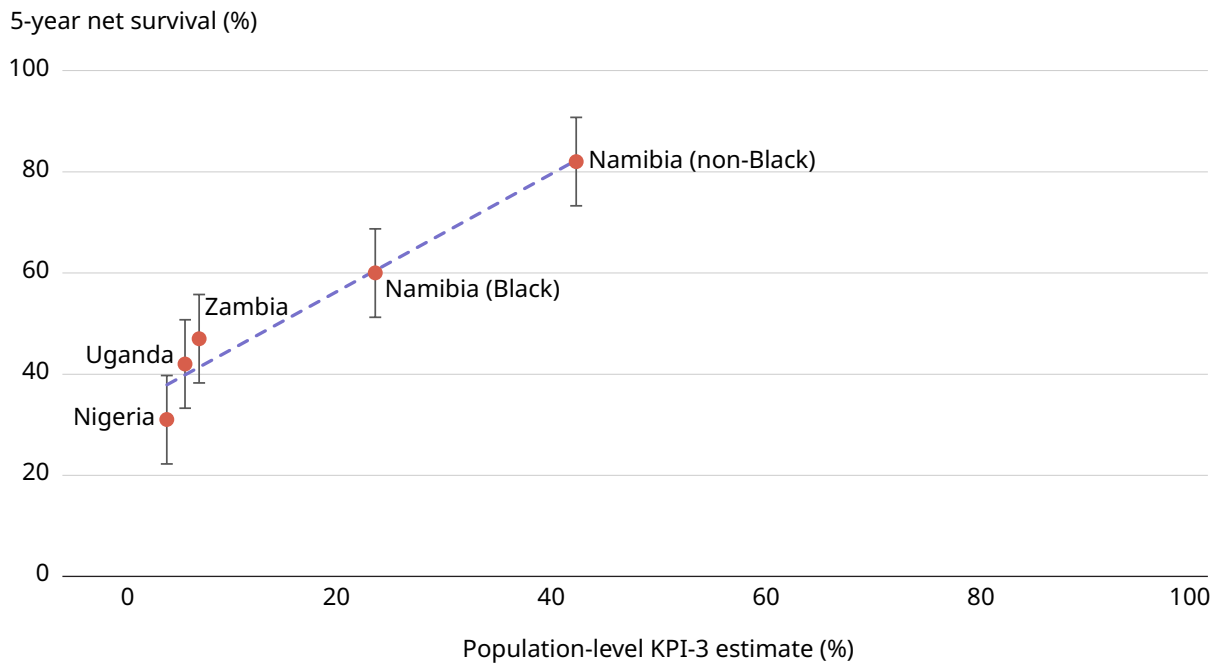
- Within the scope of the roadmap 2025–2030
- Jointly within the scope of the roadmap 2025–2030 and other WHO frameworks
- Outside the scope of the roadmap 2025–2030

Source: (209).

Major reports on clinical accessibility, such as the ESMO Global Consortium Study in 2023 covering 126 countries, underscore that many countries still lack consistent supply of WHO EML-listed essential cancer medicines, and essential antineoplastic therapies remain out of reach for most patients in low- and lower-middle-income countries despite international efforts to expand access *(210)*. A global survey of oncologists across 82 countries validated that the most impactful cancer medicines of public health value are on WHO's EML, yet availability of the top 20 priority cancer medicines, as reported by health professionals, ranged from only 9–54% of countries in low-income and lower-middle-income settings, compared with 68–94% in HICs *(211)*. Comparing trends over time including results from ESMO studies and national essential medicines list (NEML) reviews limited progress has been achieved: modest increases in NEML antineoplastics listing but essentially no substantial changes in formulary availability and affordability *(212)*.

Additional studies have evaluated affordability, financial toxicity and supply-chain disruptions as major barriers to access. Treatment abandonment and incomplete therapy are common, with severe consequences for survival (Fig. 57) *(213, 214)*. Surveys indicate that patients in lower-income settings frequently face large OOP costs for cancer treatment. In one international survey, 13–68% of oncologists in low- and lower-middle-income countries reported that patients faced a risk of catastrophic health expenditure when accessing commonly used priority cancer medicines *(211)*. In upper-middle-income countries, access can be delayed and substantial OOP costs can additionally arise when reimbursement lists lag behind regulatory approvals.

Fig. 57. Treatment completion rates for breast cancer from ABC-DO study



Source: (214).

Even among high-income health systems, coverage varies considerably; an analysis across OECD countries found variable regulatory approval timelines; of a sample of indications with high clinical benefit in breast and lung cancer, reimbursement ranged from 31% to 100% *(215)*. Spending on innovative cancer medicines is rising sharply, with widening differences in access and pricing across countries *(216)*.

Supply chain and service delivery deficits further exacerbate delivering systemic therapy, particularly in LMICs, such as inadequate maintenance of equipment needed to re-constitute systemic therapy in aseptic and safe settings, inappropriate disposal of cytotoxic medicines in environmentally sound manner, and poor management of systemic therapy toxicities (see section 3.4.1) *(217)*. Hospital infrastructure must be routinely maintained and updated to include infusion suites and chemotherapy chairs to avoid overcrowding and congested infusion spaces that interfere with safe delivery and increase workload.

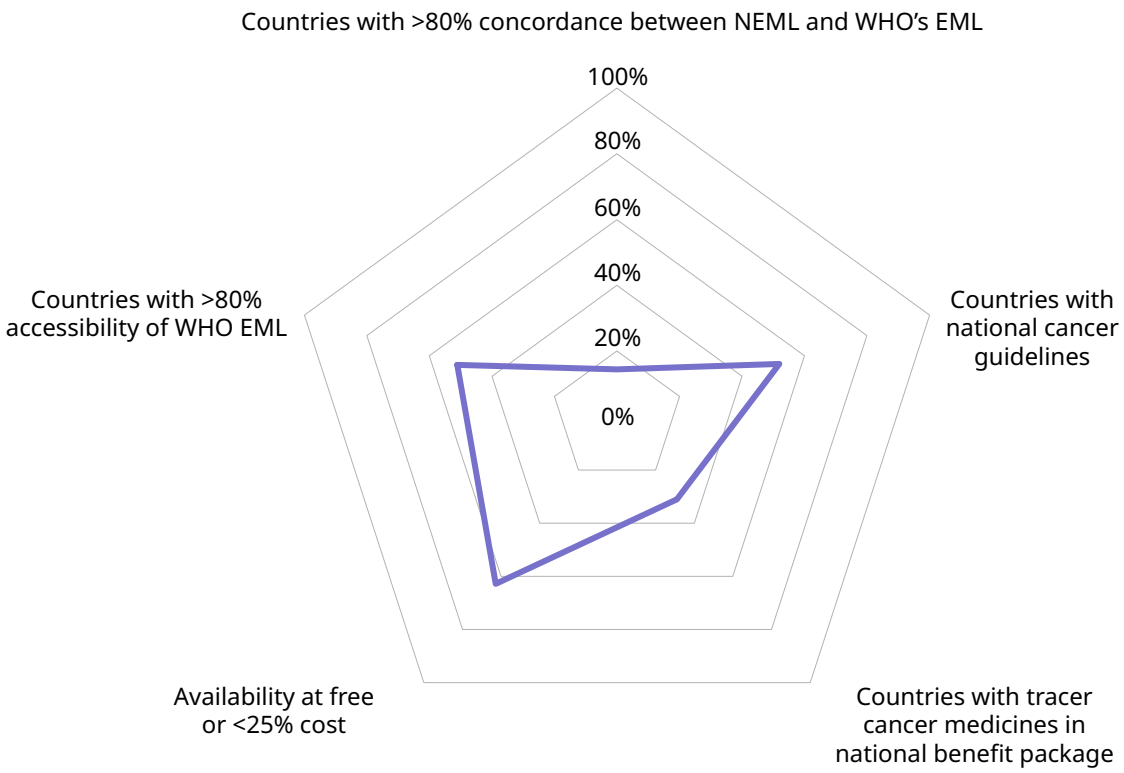
Implementation progress

Cancer policy interventions to improve access to systemic therapy remain limited in scope and lack appropriate health system investments.

Improving access to cancer medicines requires a coherent, system-level policy architecture that aligns supply-side instruments with financing commitments. At its foundation, governments need to focus on three coherent policy levers for cancer medicines for prioritizing high-value cancer medicines: (i) coverage entitlements, including health benefit packages and aligned with NCCPs, (ii) national treatment standards and (iii) NEMLs. These must be linked to mechanisms for contextualized, value-informed priority-setting, regulatory capabilities and effective pricing approaches (Fig. 58) (see section 4.3.3).

Using available national policies and survey data, there are substantial gaps in access to cancer medicines including inadequate inclusion in and poor coherency between national EMLs and national health benefit packages (Fig. 58) Analysis of the WHO Global Essential Medicines database shows an income gradient in the composition of NEMLs for cancer *(218)*. Across 118 countries with available data, the median country lists 28 of the 50 antineoplastics on the WHO Model List of Essential Medicines and four medicines outside it, indicating that WHO's EML and NEMLs function as a meaningful policy anchors, particularly for basic cytotoxic and hormonal therapies across all income levels (Table 17).

Fig. 58. Access to cancer medicines across the value chain and evidence of policy coherence in national policies: inclusion of WHO EML medicines in national EML *(218)* from 2015–2026; guideline availability *(155)*; inclusion of cancer medicines in health benefit packages in 2021 *(11)*; survey data of availability and accessibility from ESMO survey in 2023 (*210, 219*) using threshold of 80%



Access relies on public sector financing. Currently, HICs are nearly four times more likely to cover all essential oncology medicines in health benefit packages compared to low- and lower-middle-income countries *(11)*. Of the anticancer medicines on WHO' EML, availability in LMICs is consistently lower than in HICs. Inclusion of targeted therapies and immunotherapy in national health benefit packages is even more limited. Fewer than half of LMICs sufficiently reimburse erlotinib and nivolumab, both on the WHO EML in 2021 *(11)*.

Public financing of cancer medicines should be aligned with coherent national policy instruments, including NCCPs, national guidelines and NEMLs. Only a quarter (26%) of NCCPs reference NEML, and less comprehensive NCCPs are associated with inadequate budget planning and policies to protect against catastrophic health expenditure *(220)*.

The majority of NEML do not comprehensively include WHO's EML products and are not consistently linked to national treatment guidelines (Fig. 58). In 2023, only 51% of countries globally reporting having cancer treatment guidelines implemented in at least half of treating facilities *(155)*. This fragmentation has important consequences: without alignment between NCCPs, national treatment guidelines, NEMLs and funded health benefit packages, national cancer priorities may not translate into equitable access to essential cancer medicines.

Table 17. Median (min–max) antineoplastics on national EMLs (2015–2026), by World Bank income group, classified by 50 anti-neoplastics on WHO's EML and up to 76 anti-neoplastics not on WHO's EML *(218)*

Income group	N countries	# Medicines on WHO EML (median, min–max)	# Medicines not on WHO EML (median, min–max)
Low-income	21	**27** (5–36)	**1** (0–5)
Lower-middle-income	35	**25** (4–44)	**3** (0–11)
Upper-middle-income	36	**28** (4–44)	**6** (0–39)
High-income	26	**32** (2–48)	**14** (0–74)
All included countries	**118**	**28 (2–48)**	**4 (0–74)**

A second tier of access policy concerns regulatory capacity, procurement and pricing approaches and supply-chain failures that collectively undermine the coherent policies (see section 4.3.3).

Decision thresholds should consider costs and cost-effectiveness along the full cancer care pathway and, when successful, can materially influence access by deprioritizing low-value technologies and promoting high-value ones in national benefit packages *(221)*. Many LMICs lack HTA mechanisms or the institutional capacity to assess cancer medicine effectiveness and can lead to long times for regulatory approvals, although some have piloted innovative approaches *(222)*.

Regulatory capacities are needed to decide on publicly-funded coverage or reimbursement of new cancer medicines according to relative therapeutic benefit, medical necessity and budget impact *(223)*. Without regulatory oversight, particularly in LMICs, cancer medicines are purchased through unauthorized pathways, increasing the likelihood of substandard and falsified products. Reviewing WHO Medical product alerts list from 2013 to 2026, cancer medicines – the most frequently NCD medicine triggering notifications – have featured in at least six alerts with a pattern that indicates a clear shift over this period from falsified cytotoxics toward high-value targeted therapies and immunotherapy agents *(224)*.

On pricing, large percentages of purchasers are not optimizing the use of quality-assured generic and biosimilar medicines, including enabling early market entry, using multiple policies to achieve lower prices through greater market competition, and maximizing uptake and public confidence, resulting in long delays and higher prices *(225)* (please see section 4.3.3).

Poor forecasting and supply planning leads to shortages and stockouts. A US Pharmacopeia analysis found that seven of the 20 essential cancer medicines analysed are three to five times more likely to be in shortage than the average medicine, driven by the structural vulnerabilities of low-priced generic sterile injectables manufactured in geographically concentrated facilities *(226, 227)*. Multiple well documented crises – such as the shutdown of a single producer that failed inspection triggering shortages in cisplatin or production of suspected substandard asparaginase leading to death – reveal the vulnerability of the global and national supply chains in cancer medicine *(228, 229)*. With failure rates from 14–24% in one study from four countries in sub-Saharan Africa, the ultimate harm is suffered by the recipient of the cancer medicines *(228–230)*.

Effective policy requires moving from cancer medicine policies to implementation using comprehensive, complementary strategies (such as bulk purchasing, price transparency measures, and Trade-Related Aspects of Intellectual Property Rights (TRIPS) flexibilities as appropriate) to form a coherent policy toolkit (*231*) that, when combined with functional NEMLs, treatment standards aligned with resource-stratified guidelines, and sufficiently financed NCCPs health policies inclusive of cancer, can close the access gap between high-income and lower-income settings and improve treatment for all.

Monitoring progress

Table 18. Status snapshot: inaccessible systemic therapy

Indicator status	**For access to cancer medicines:** **GCMF indicator (core)**: Availability of essential medicines for cancer management • Limited data from facility assessments; 20 prioritized cancer medicines, reported by health professionals, ranged from only 9–54% of LICs and L-MICs, compared with 68–94% in HICs **GCMF indicator (core)**: General government health expenditure on cancer medicines • Limited data available; expenditure per capita range from US$ <0.2 per capita to >200 per capita; contributing to 20–90% of total cancer expenditure (see section 4.3.3) **For comprehensive treatment:** **GCMF indicator (core)**: Treatment completion rate • Limited data; available data from select studies and select cancer types report treatment completion rates from less than 5% to 70% in LMICs **GCMF indicator (core)**: Availability of cancer multidisciplinary team for comprehensive cancer management at the facility • Limited data available
Key gains and gaps	State: **Essential medicines remain generally unavailable globally** Plan: **Lack of policy coherence** • Minority of countries have medicines listed consistently across health policies: health benefit package, NEML, national treatment standards • Of 50 analysed anti-cancer medicines in WHO's EML, only 28 (median) appear in NEMLs; only 14% of NEML are >80% concordant with WHO's EML • Policies enabling generic/biosimilar access are inadequate, particularly in most LMICs Outcomes: **Persistent and severe access gap** • Data from ESMO survey demonstrated only about half of surveyed countries report WHO's EML medicines always accessible • LMIC patients face catastrophic OOP for commonly used oncology medicines • 7 of 20 essential cancer medicines 3–5 time more likely to be in shortage than average medicine in one study • Falsified cancer medicines: shifting toward high-value targeted therapies and immunotherapy Barriers and threats: **Risk of worsening access gap with pace of innovative products** • Sustainable financing and access must be linked to clinical benefit with programmes that prioritize according to health system feasibility to deliver innovative products • Supply-side failures must be addressed: regulatory weakness, supply chain fragility, stockouts of essential medicines, pharmacovigilance, and gaps in workforce
Progress status	**Insufficient/minimal progress**

Box 16. Cancer and antimicrobial resistance

By turning manageable infections into life-threatening complications, the escalating threat of antibiotic-resistant pathogens is compromising the transformative gains made through advances in cancer care over the past decades *(232, 233)*. Hospitalized cancer patients face 1.5–2 times higher antimicrobial resistance rates for key pathogens, such as *Escherichia coli*, *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa*, compared to non-cancer patients, significantly worsening treatment outcomes and survival *(234)*. A multinational study across Europe found that cancer patients had more than 60% higher odds of multidrug-resistant infections, directly linked to increased 30-day mortality rates of up to 40% *(235)*.

Cancer patients' vulnerability to infections stems from profound immunosuppression caused by the malignancy itself and intensified by treatments like chemotherapy and bone marrow transplants. Approximately 1 in 5 cancer patients requires antibiotics during their treatment journey, with pneumonia and sepsis being the leading causes of intensive care admissions. Evidence from Surveillance, Epidemiology and End Results (SEER)-Medicare data shows that infections contribute to 15–20% of excess mortality in older cancer patients, often delaying or interrupting curative therapies and prolonging hospital stays by 5–10 days on average *(236)*.

Antibiotics are indispensable for enabling cancer treatments to proceed safely, yet rising antimicrobial resistance, driven by overuse and hospital transmission, threatens their reliability. Prudent stewardship, including rapid diagnostics like PCR-based pathogen identification and de-escalation protocols, has reduced antimicrobial resistance incidence significantly in pilot oncology trials *(237)*. Strengthening infection prevention, stewardship of antimicrobials and improvements in prescribing patterns are urgently needed to protect vulnerable patients, preserve antibiotic efficacy, and sustain hard-won progress in cancer survival.

3.4 Supportive, palliative care and survivorship care

Palliative and supportive care should be delivered by a multidisciplinary team to help people living with and beyond cancer to live as well as possible, for as long as possible, and to support families and caregivers, during illness and, when needed, through bereavement.

> *Palliative and supportive care should be integrated early, starting from diagnosis*

Palliative and supportive care should be integrated early in the course of illness, starting from diagnosis, rather than being reserved – as can be the case with palliative care in particular – for patients who can no longer be cured or who are approaching the end of life. Early integration of palliative care alongside active cancer-directed treatment is supported by strong evidence and aligned with WHO guidance.

I am Garen's mom. My name is Shaghig, the mother of a one-of-a-kind soul: brave, kind, and radiant. Garen was diagnosed with retinoblastoma at just 40 days old. Then, he battled rhabdomyosarcoma at age five, and later osteosarcoma with metastasis to the lungs at fourteen. Because of a genetic mutation he carried from birth, cancer was the unwanted companion that walked with him for 18 long years. Despite everything, Garen lived with unshakable faith and the gentlest, most loving heart. He smiled through his pain, gave strength to those around him, and never gave up – not even when the suffering became unbearable.

As his mother, I had to endure every step of that journey beside him. I had to be strong for him, even when I was breaking inside. And yet, even within this unimaginable reality, we were blessed. We had access to palliative care – real palliative care – not just symptom control, but deep, compassionate support.

In those final days, palliative care gave us what nothing else could. The support we received from Balsam-The Lebanese Center for Palliative Care at home made all the difference. It allowed us to say goodbye without regret. It allowed Garen to remain himself – a brave, noble soul, not just a cancer patient, until his very last breath.

Palliative care is too often misunderstood. It's seen as giving up. But for us, it was the opposite. It was choosing life and humanity until the very end. Palliative care is not a luxury. It is a necessity, a lifeline. It is love – structured, skilled, and sacred.

Shaghig Hudaverdian, who lost her son Garen to cancer, Lebanon

Neve is my third of four daughters. She was a mischievous, loving, energetic child, often on the move. She loved her family, her friends, school and the park. Neve was a healthy child until the age of seven; in July 2020, she was diagnosed with an aggressive brain tumour. At the age of 10, Neve died, leaving a profound absence in our lives.

Our experience of children's palliative care began several months after Neve's cancer diagnosis. Whilst she continued to receive chemotherapy, she had been referred to our local hospice for more support with her symptoms. Sadly, only a few weeks later, it became clear that the treatment was not working; her cancer was still growing. As a team, we were all in agreement; it was in Neve's best interests to stop active cancer treatment. Our focus needed to be on making the most of the time she had left.

Life with a seriously unwell child often felt chaotic and overwhelming. For over two years, Neve needed round the clock care with medication, personal care and managing complex symptoms like pain and seizures. Whilst it never felt like enough, the at-home support we had from carers and nurses became a lifeline for us all.

Palliative care was at the heart of Neve's care. Our initial referral was to the incredible outreach nurses at our local hospice. Alongside this hospice care, we were supported at home by our local children's community nursing team and social care team. These various teams collaborated to provide the palliative care that Neve needed. It doesn't feel dramatic to say that they held us all together, as a family.

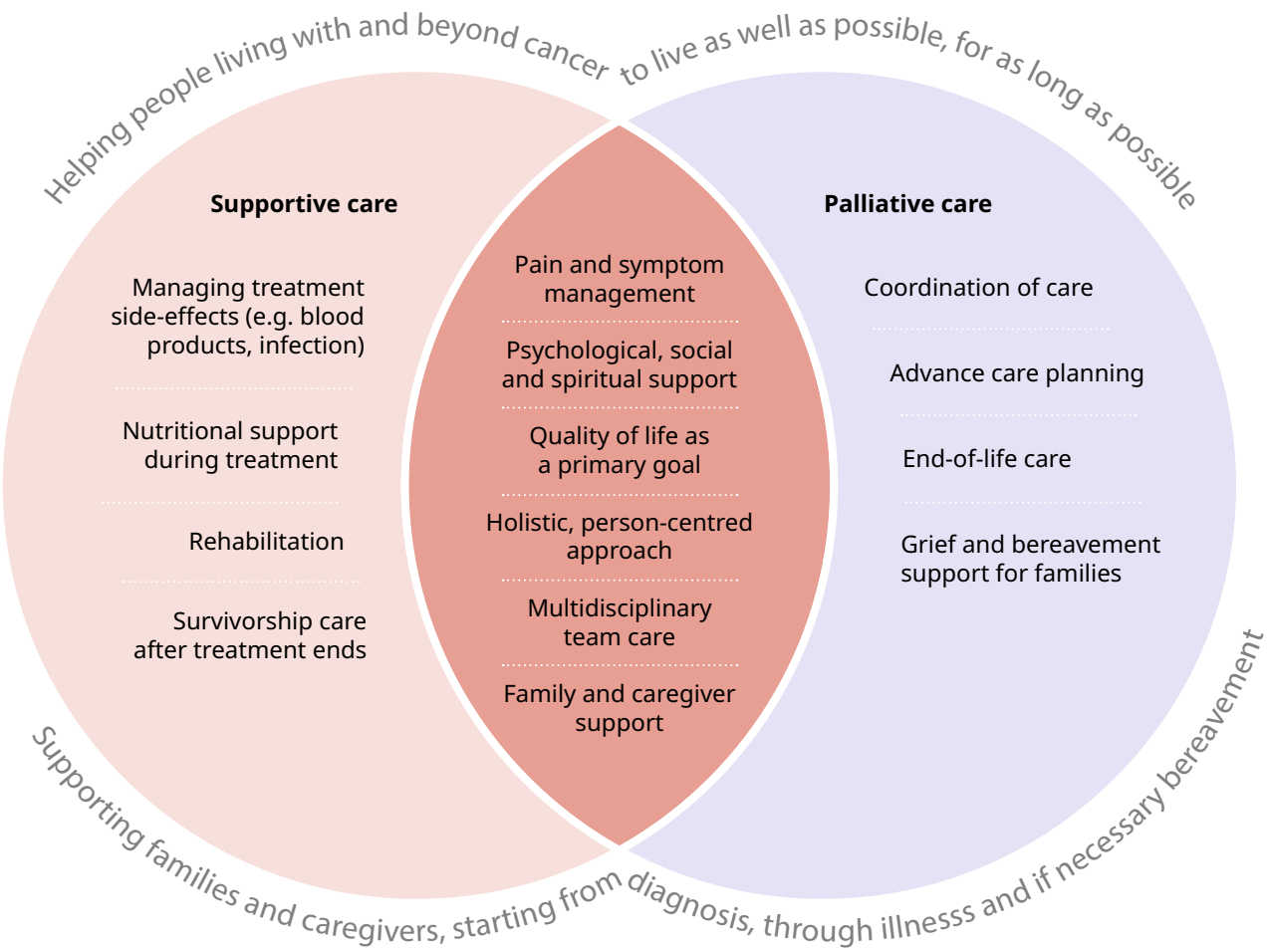
Palliative care helped us focus on realistic goals and hopes. These revolved around reducing and easing her suffering. Once I understood that my child was going to die from her cancer, her palliative care referral was the best thing that could have happened.

Emily Tammam, who lost her daughter Neve to cancer, United Kingdom

> ***In those final days, palliative care gave us what nothing else could***
>
> Shaghig Hudaverdian, Garen's mom

Supportive care focuses on helping patients prevent and manage the effects of cancer and its treatment, maintain function and support recovery and survivorship (Fig. 59). Palliative care includes support with communication about prognosis and goals of care, advance care planning, and care through the dying process and bereavement – elements that extend beyond the traditional scope of supportive care. Supportive care also extends into survivorship and rehabilitation in ways that palliative care typically does not.

Fig. 59. Supportive care and palliative care in cancer



3.4.1 Supportive and palliative care: status and progress

Status overview
Substantial gaps in access to – including availability of – palliative and supportive care leaving millions diagnosed with cancer to experience preventable suffering.

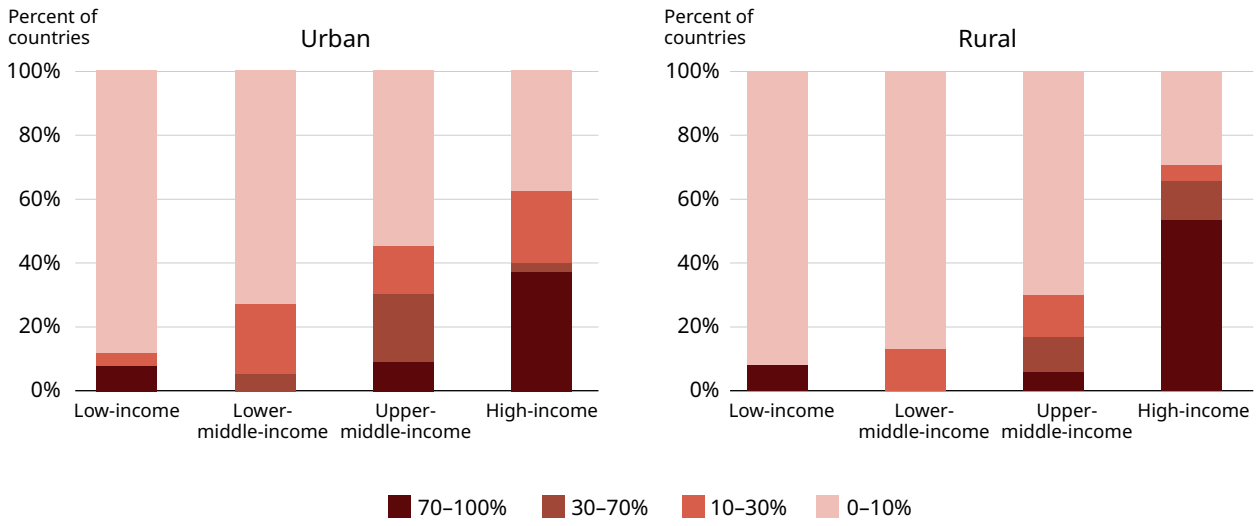
An estimated 73.5 million people needed palliative care in 2021, but as of 2025 only 14% of them received it *(238)*. For children, 98% of those needing palliative care live in LMICs with almost half of them living in Africa *(239)*. Cancer (28%) is the largest single indication for palliative care followed by HIV (22%) and stroke (14%), and the vast majority of people with advanced or terminal illness require palliative care *(240)*. Globally, in 2023, palliative care was reported as being generally available (reaching at least 50% of patients in need) in a community- or home-based care setting by 43% of countries and in a primary health care setting by 42% of countries. Palliative care was most commonly available in both settings among HICs (60–80%) compared to LICs being more generally available in a primary health care setting only 26% and community- or home-based care setting in 11% *(155)*.

Data from the Lancet Commission on global access to palliative care and pain relief *(239)* reveal that global palliative care need increased by 74% between 1990 and 2021, with population growth accounting for only half of that increase. Cancer is a growing cause of need for all country income groups, doubling from 8.5 million people in 1990 to 16.6 million in 2021, and increasing from 51% to 61% in LMICs over the period. The decedent burden increased by 35%, whereas palliative care need in non-decedents more than doubled, accounting for 63% of the global need by 2021.

Global access to morphine for medical use remains profoundly unequal (Fig. 60) *(241–245)*, with WHO reporting many people with serious health conditions are "left behind in pain" *(246)*. High stockout rates in many health systems further reflect poor coverage of palliative and pain-relief services. Despite morphine being low-cost and included on WHO's EML since 1977, its global distribution does not meet medical need *(241–245, 247)*.

Poor access and stockouts leaving patients without adequate pain control and highlighting systemic weaknesses in procurement, regulation, and supply-chain management.

Fig. 60. Immediate-release oral morphine availability in urban and rural areas, by income group



Current access to supportive care remains highly inconsistent worldwide with gaps in pain management, anti-nausea therapies, psychosocial support, and rehabilitation (see section 4.3.2) due to workforce shortages, lack of training, and unequal health system investment – resulting in many patients not receiving essential supportive interventions alongside curative treatment or palliation.

Nutrition is a critical determinant of cancer outcomes: malnutrition at diagnosis is independently associated with poorer overall survival, reduced treatment tolerance, and more frequent complications, particularly in childhood cancer, where it drives treatment interruptions and greater toxicity *(248)*.

Implementation progress

Uptake and implementation of WHO guidance and Member State commitments remains slow.

Key initiatives driving progress in palliative care include WHO's 2014 World Health Assembly Resolution (WHA67.19), which called for all Member States to integrate palliative care into national health systems, as well as the WHO Palliative care guidance *(249)*, including the WHO Global palliative care reference package for UHC, which supports countries to standardize essential medicines, health worker training, and service delivery *(250)*. Other initiatives, such as the Global Atlas of Palliative Care, the St. Jude Global Palliative Care Program, the Lancet Commissions on global access to palliative care and pain relief, have also enhanced evidence, awareness raising and concrete action in countries.

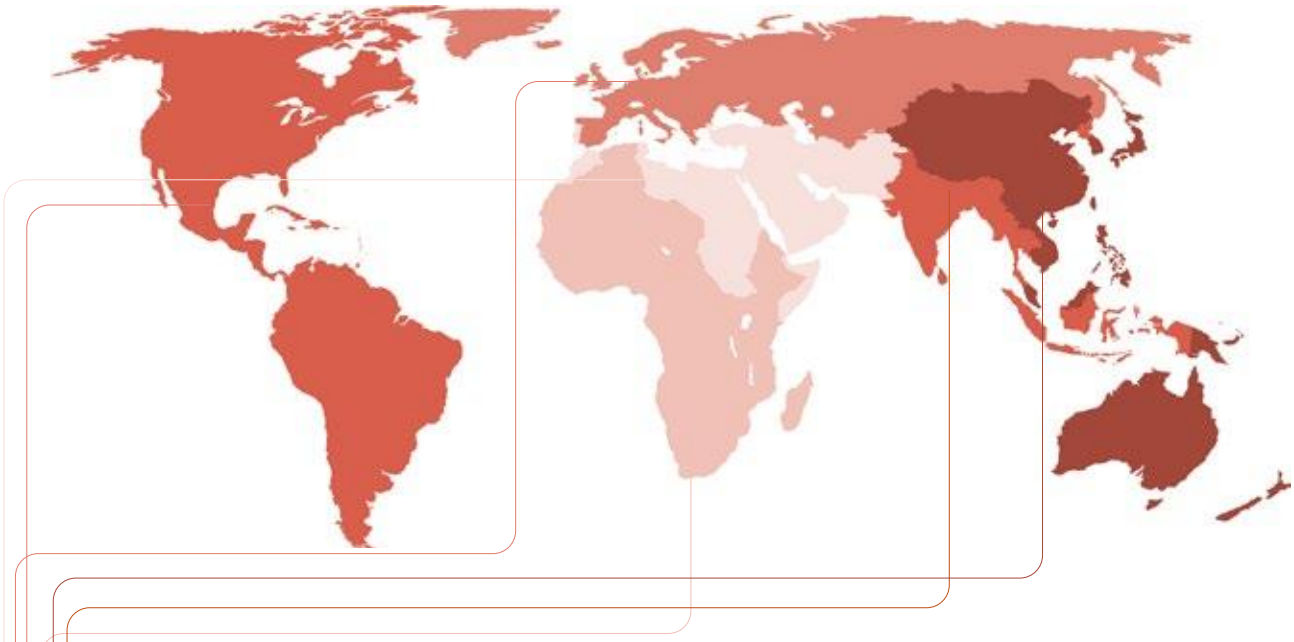
Recent estimates suggest that specialized palliative care services are operating worldwide serving around 10.4 million patients – an increase compared with previous years but still covering only a small proportion of global need *(238)*. Significant disparities persist between and within regions, with many countries having only localized services or limited integration into the wider health system. In many LMICs, there is still little or no palliative care service activity, limited enabling policies and often confined to specialized institutions or urban centres, without systematic integration across levels of care (Fig. 61) *(238)*.

Surveys of WHO Member States indicate that while 69% of governments reported some level of funding or policy support for palliative care in 2023, fewer have integrated palliative care fully into national health systems *(83, 93)*. Key policy challenges include inadequate training of health professionals, limited inclusion of palliative care in national health plans, lack of political leadership, and regulatory barriers to accessing controlled medicines for pain relief *(251)*. Even when proposed policy actions are included in NCCPs, evidence has shown no significant improvement in access to care, measured by morphine consumption *(252)*.

Similarly, supportive oncology services – such as psychosocial care, nutrition support, rehabilitation, and symptom management – are often underfunded and poorly embedded in NCCPs, especially in LMICs. Only 43% of national health benefit packages include home-based palliative care and 46% include psychological, social, and spiritual care *(11)*. Inclusion of psychological, social, and spiritual care, including bereavement support, was similarly among the least covered services (46% globally) with the greater inequities between HICs (70%) and LMICs (32–45%).

Fig. 61. Inclusion of palliative care services in national health strategies (including in health policies), by income group and WHO regions

Group	# Services	% of total	# Patients receiving PC	Total need for PC	% Need met
Income group					
Low-income	405	1.20%	53 865	7 488 000	0.72%
Lower-middle-income	1504	4.46%	281 248	25 240 000	1.11%
Upper-middle-income	7539	22.36%	2 239 083	26 002 000	8.61%
High-income	24 272	72.98%	7 864 128	14 722 000	53.42%
Total	**33 720**	**100.00%**	**10 438 324**	**73 453 000**	**14.21%**



Group	# Services	% of total	# Patients receiving PC	Total need for PC	% Need met
Regions					
Africa	827	2.45%	151 769	18 956 000	0.80%
Americas	11 085	32.87%	3 528 972	9 196 000	38.38%
South-East Asia	2742	8.13%	716 364	10 663 000	6.72%
European	11 350	33.66%	3 666 127	10 731 000	34.07%
Eastern Mediterranean	234	0.69%	58 626	2 272 000	2.58%
Western Pacific	7482	22.19%	2 326 746	21 636 000	10.75%
Total	**33 720**	**100.00%**	**10 438 324**	**73 453 000**	**14.21%**

Monitoring progress

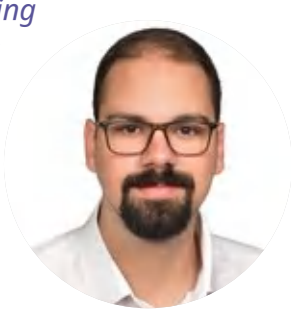
Table 19. Status snapshot: pain management and palliative care access

Indicator status	**GCMF indicator (core):** Availability of palliative care and end-of-life support services • Commonly available in HICs (60–80%) for primary care and community- or home-based services compared to low availability in LICs (11–26%) **GCMF indicator (optional)**: Morphine stock out rate • Limited available data
Key gains and gaps	**State: Substantial unmet need and limited coverage in many LMICs** • Cancer palliative care need: doubled from 8.5 million (1990) to 16.6 million (2021). 98% of children needing palliative care live in LMICs; half in Africa **Plan: Poor inclusion in cancer-related policies** • 69% of governments dedicate funding for palliative care • Only 43% of countries report home-based palliative care services included in health benefit packages **Outcomes: Morphine access insufficient and inequitable** • 73.5 million people need palliative care/year; only 14% receive it **Barriers and threats:** • Continued inadequate political prioritization and health service integration because of perceived low importance, and low commercial value • Misinformation and stigma among health planners, providers and families regarding the importance of palliative and supportive care
Progress status	**Insufficient progress**

3.4.2 Survivorship care and rehabilitation: status and progress

Status overview
Survivorship care and rehabilitation services are not accessible to most people globally.
Stakeholders often focus primarily on survival metrics, viewing survivorship care, such as rehabilitation, as secondary.

The journey did not end when chemotherapy did; it started there. Many people view the final dose of treatment as a finish line, but for me, it was the starting block. I realized early on that surviving is not just a medical milestone; it is a lifelong process of resilience and self-discovery. It is the act of rebuilding a life while carrying the weight of everything you've endured. When I was diagnosed at sixteen, I quickly learned that the crushing weight I felt wasn't just the physical toll of the disease; it was the stigma of a community that reflexively linked cancer with an immediate sentence of death. I saw it in the eyes of others, a look that suggested my story was already written. In that moment, I made a promise to myself: if I survived, I wouldn't just live; I would speak. I would turn my pain into a purpose that could break that silence. For me, the real healing began when I started sharing my story within my community. Noticing the difference I made by normalizing the idea of having cancer and, more importantly, surviving it, allowed my recovery to take root. This transition from patient to advocate wasn't just a choice; it was a necessity. Healing meant holding the hands of those still suffering and ensuring their voices reached beyond the walls of the clinic. I realized that my recovery included a responsibility to fight for equity, turning a personal struggle into a collective mission.



Amr Derak-Sebaii, survivor of cancer, Syrian Arab Republic/Romania

Survivorship care in cancer encompasses the comprehensive medical, psychological, social, and rehabilitative support provided to individuals after completion of initial cancer treatment, including (i) monitoring for recurrence, (ii) managing late and chronic treatment effects, and (iii) providing sustained services including psychosocial support, health promotion and lifestyle guidance. Survivorship care should anticipate late effects of treatments and address them beforehand when possible.

Survivorship, they tell you, is a gift. And it is. But it is also a terrain that no one draws a map for, full of questions your doctors do not anticipate, effects your friends cannot see, and losses that do not show up in any scan. My friends could not understand why I could not take folic acid when they could, why the cold hit my body differently, why I tired so easily while they kept going. To them, I looked fine. Treatment was over. So when I struggled, they assumed I was being dramatic. In Nigeria, we have a word for it, "forming," being unnecessarily difficult, seeking attention, exaggerating. I was not forming. I was living in an after that had never been explained to me, carrying side-effects that were invisible to everyone around me because no one had taught me, or them, what survivorship actually looks like from the inside.

Adekemi Oyewusi, survivor of cancer, Nigeria

For people living with and beyond cancer, survivorship encompasses physical recovery, psychological adjustment, return to meaningful activity, and the navigation of a health system that often does not have the structures to support continued care once active treatment ends.

Current access to survivorship services shows substantial global disparities: structured survivorship care and related research are mainly concentrated in HICs. An international survey of survivorship care across 37 countries found that survivorship services are deficient globally with gaps reported between HICs in reproductive health (29% vs 17%), genetic counselling/support (40% vs 20%), and identifying/managing distress (39% vs 26%) and long-term pain (66% vs 48%) *(253)*.

Box 17. Survivorship care and rehabilitation for cancer

Cancer survivorship care addresses the health and well-being of individuals from diagnosis through the remainder of life, encompassing monitoring for recurrence, management of long-term and late effects of treatment, psychosocial support, and coordination of care across providers. It aims to optimize QoL, functional status and social participation.

Rehabilitation for cancer survivors is a key component in the management of the disease and the complications related to its treatment. It is an essential health strategy to support people in achieving and maintaining optimal levels of functioning, independence, and QoL. Interventions for cancer rehabilitation help to lessen the side-effects of cancer and its treatment, such as physical, cognitive, and psychological problems. Specific interventions for rehabilitation address, for example, pain, fatigue, cognitive functions, oedema, motor and movement functions and thus help to restore functioning and support cancer survivors to become and stay as independent as possible. Furthermore, interventions for rehabilitation aim to support cancer survivors to re-engage in meaningful activities, such as education, vocation and social life *(238, 251, 254–259)*.

The most prevalent concerns among cancer survivors include fatigue – reported by up to 40% of patients years after treatment – as well as pain, cognitive impairment ("chemobrain"), sexual dysfunction, lymphoedema, and long-term cardiotoxicity from treatment. Psychological impacts are substantial: anxiety and depression affect between 20% and 40% of survivors, yet psycho-oncology services are inaccessible in most countries and particularly inadequate in many LMICs *(62, 260)*.

Fertility preservation is a key priority for people affected by cancer with nearly 70% of treatments carrying gonadotoxic risks *(261)*. Global data on access to reproductive care as part of cancer are limited. Studies have shown that fertility preservation services varies substantially, with most eligible people not receiving counselling and many regions lacking referral pathways, trained specialists, or coverage for procedures such as oocyte or sperm cryopreservation (Fig. 62) *(262)*.

Fig. 62. Fertility preservation, by income group

High-income countries

(est)60% have national cancer guidelines mentioning fertility preservation

(est)30–50% have state/national insurance coverage for fertility preservation

72% of National Cancer Institute-designated cancer centres have fertility preservation programme

≤50% of eligible patients still receive timely counselling

Low- and middle-income countries

(est)18% have any formal oncofertility care pathway

<5% have public funding or insurance coverage for fertility preservation

Minimal laboratory infrastructure for ovarian tissue or embryo cryopreservation

Major gaps in training, equipment, and referral networks

Sources: (263–265).

In 2021, 2.6 billion people were estimated have health conditions that would benefit from rehabilitation *(266)*. The demand for rehabilitation services exceeds availability, leaving a large unmet need. The current workforce of physicians, nurses and skilled rehabilitation professionals is inadequate to serve the needs of the population in most countries *(267)*. HICs were identified to have workforces several times larger than LMICs contributing to utilization of rehabilitation services *(267)*.

Despite evidence for rehabilitation to be included as standard cancer care *(268)*, the availability of programmes has been poor worldwide. In LMICs, more than 50% of people do not receive the rehabilitation they require in 2019 *(269)*. Even in HICs, specialized rehabilitation programmes do not consistently reach people in need *(270)*.

Access to rehabilitation services has improved been substantial in the past decade, though little is known about rehabilitations services in cancer *(271)*. In Australia, for example, the number of oncology rehabilitation programmes increased 88% from 31 programmes in 2015 to 76 programmes in 2024 *(272)*. Cancer survivorship care must therefore be reframed from a clinical afterthought to a core component of comprehensive cancer services, informed by priorities of affected populations and measured through patient experience data.

Implementation progress

Defining core services for survivorship care and rehabilitation is the starting point. An increasing number of countries are implementing the WHO Rehabilitation 2030 agenda, but greater efforts are needed.

Policies to improve access to survivorship care are increasingly being incorporated into national cancer strategies, but implementation remains limited, inadequately financing and uneven. Approximately 52% NCCPs reviewed in 2023 included structured follow-up pathways, rehabilitation services, psychosocial support, or return-to-work programmes, but where policies exist, they are rarely backed by measurable targets or monitoring systems *(8)*. As a result, survivorship care remains fragmented, with large gaps between policy intent and real-world access.

Relating to scaling of rehabilitation services, the WHO Rehabilitation 2030 initiative has played a significant role in raising the profile of rehabilitation in the global health agenda. More than 80 countries have been supported in their journey to strengthen rehabilitation services. WHO's Package of rehabilitation interventions for cancer integrates evidence-based interventions to address the physical, cognitive, and psychosocial effects of cancer and its treatments *(273)*. It aims to promote universal access to multidisciplinary rehabilitation, improving survivorship outcomes globally.

Table 20. Status snapshot: care of people affected by cancer in survivorship

Indicator status	**GCMF indicator (optional/core)**: Cancer survivor counselling on fertility and reproductive health • Limited data; available data suggest deficits globally with more significant lack of access in LMICs where 20% have pathways for oncofertility
Key gains and gaps	**State: Among the largest gaps between policy and access in cancer control, in spite of importance to people affected by cancer** **Plan: Most NCCPs lack structured follow-up pathways, rehabilitation or return-to-work programmes** Only 52% of NCCPs included strategies that addressed post-treatment follow-up care **Outcomes:** • Substantial gaps in survivorship care services with most being inaccessible to >50% of cancer patients • Of people diagnosed with cancer in LMICs, >50% do receive essential rehabilitative services **Barriers and threats:** • Lack of prioritization and inclusion in health benefit packages • Insufficient general availability of workforce competencies required for survivorship care
Progress status	**Insufficient progress**

4 What drives success, what slows our progress: global alignment and systemic challenges

Section 4 explores the factors that drive success and the systemic gaps that are slowing further progress in cancer prevention and control.

A solid foundation for evaluating success is using standardized metrics to track progress; in 2026, WHO is releasing the Global Cancer Monitoring and Evaluation Framework that will facilitate progress monitoring.[11] A key driver in improving cancer control is global leadership, when it is translated into integrated action; this is what the WHO and partners are working to deliver through WHO's cancer initiatives.

At national level, implementing what has been planned is a persistent challenge; financing and workforce shortages both contribute. At individual and community level, the pathway is filled with persistent barriers.

4.1 Monitoring and evaluating our progress together

4.1.1 A framework for alignment

Effective cancer control requires a robust monitoring and evaluation (M&E) framework because this is what ensures strategic goals are converted into measurable results and informed decision-making. The upcoming WHO Global Cancer Monitoring and Evaluation Framework offers health planners an opportunity to better understand the maturity and readiness of their health system, through systematic analysis of success and systemic gaps in workforce, diagnostics, medicines, financing, and data systems. This means cancer prevention and control priorities can be tailored to context and investments optimized for greatest impact.

> *New M&E framework offers health planners an opportunity to optimize investments for greatest impact*

Although normative guidance has been developed before, measurement approaches have historically been fragmented across countries. The development of more harmonized global monitoring efforts by WHO signals progress toward a shared M&E architecture, which integrates WHO cancer initiatives such as the Global Breast Cancer Initiative and the Cervical Cancer Elimination Initiative and global declarations like the Union for International Cancer Control's World Cancer Declaration. Standardized metrics (Table 21) enable benchmarking and improving tracking of cancer premature mortality as part of SDG target 3.4 on NCDs and the post-SDG agenda.

[11] WHO Global Cancer Monitoring and Evaluation Framework is to be launched in Q3 2026.

Facilitating comparability of information across place and time makes it easier – at global level and at national level – to evidence impact, understand which measures are working most effectively, and spot problems if progress stalls. Implementing a prioritized core indicator set within a national M&E framework enables routine performance review, course correction, and transparent reporting. Population-level mortality reductions typically take years to materialize, because of long disease latency and the gradual scale up of services. An effective M&E framework must therefore be explicitly linked to continuous learning and accountability, ensuring that data inform policy adaptation, resource allocation, and sustained political commitment over the long term.

Table 21. Priority core and optional indicators to inform upcoming WHO Global Cancer Monitoring and Evaluation Framework

	Core indicators	Optional indicators
System determinants	**Governance** • Existence of a national cancer prevention and control plan • Existence of national clinical guidelines **Financing and access** • Cancer services inclusion in national benefits package • Total expenditure on cancer medicines **Health workforce** • Availability of trained health care professionals **Medicines and technologies** • Availability of essential medicines • Availability of palliative care and end-of-life support services	**Governance** • Referral and back-referral system to secondary/tertiary care levels • Existence of national screening programme for cancers (including cervical cancer) **Financing and access** • Inclusion of HPV vaccination in national vaccination programme **Health workforce** • Availability of cancer multidiscliplinary team **Medicines and technologies** • Morphine stock out rate • Availability of ablative and excisions treatments for cervical cancer • Average radiotherapy down time, in days per month • Availability of HPV tests [including high-performing tests] **Health information systems** • Availability of quality cancer surveillance system (includes population-based registry coverage)

Service delivery	• **Pre-invasive cervical disease treatment** **Diagnosis** • Timeliness of referral for cancer diagnostic evaluation • Early stage at diagnosis • Biopsy-based cancer diagnosis • Appropriate diagnosis and staging of breast cancer **Treatment and care** • Median time between cancer diagnosis and treatment initiation, in days • Treatment completion rate	**Primary prevention – vaccination, awareness** • HBV vaccination coverage • HPV vaccination coverage **Secondary prevention – screening** • Cervical cancer screening coverage with any test • Cervical cancer screening coverage with high-performance test • Cervical cancer screening positivity rate • Proportion of women aged 50–69 years undergoing screening mammography per year **Diagnosis** • Appropriate diagnostic evaluation following abnormal screening test **Treatment and care** • Pre-invasive cervical disease treatment • Timeliness of breast cancer treatment following suspicious findings on clinical breast assessment (within three months of index assessment visit) • Cancer survivor counselling on fertility and reproductive health before the start of systemic therapy • Loss to follow up, among people with cancer
Risk factors	**Behavioural risk factors prevalence** • Current tobacco use prevalence • Obesity prevalence • Per capita alcohol consumption • Prevalence of insufficient physical activity • Prevalence of inadequate fruit and vegetable consumption • Annual mean PM2.5 concentration	**Oncogenic viral risk factors prevalence** • HIV prevalence • HPV prevalence • Hepatitis B prevalence
Population level outcomes & impacts	**Incidence, prevalence** • Cancer incidence **Mortality and survival** • Cancer-specific mortality rate • Overall cancer survival	**Incidence, prevalence** • Cancer prevalence **Mortality and survival** • Disease-free cancer survival • All-cause mortality rate, among people with cancer • Post-operative mortality (at 90 days) **Financial protection and quality of life** • Out-of-pocket spending

4.1.2 Ensuring a people-centred focus

A people-centred approach should not be viewed as a service delivery refinement, but as a strategic driver of national and global cancer agendas. When cancer control is explicitly anchored in the needs, voices and preferences of people affected by cancer, it becomes more responsive, sustainable, and capable of driving systemic transformation for improved outcomes worldwide.

> *A people-centred approach should be viewed not as a service delivery refinement, but as a strategic driver of cancer agendas*

This is because placing individuals, families, and communities at the centre reframes cancer control around equity, dignity, and lived experience, ensuring that policies respond to real barriers such as late diagnosis, financial hardship, stigma, and fragmented care. By elevating access, quality, and financial protection as core system goals, a people-centred agenda shapes investments in cancer.

A people-centred agenda sets priorities and drives implementation so that technical interventions can achieve the goals that matter most to people affected by cancer. It is therefore important that metrics are informed by a people-centred approach to cancer care, grounded in the WHO Framework on integrated, people-centred health services, the WHO Framework for meaningful engagement of people living with NCDs, and mental health and neurological conditions, and the mandate from World Health Assembly resolution on social participation for UHC, health and well-being (WHA 77.2).

People-centred approaches prioritize shared decision-making, social participation and a sustained committed to co-creation and meaningful involvement.

> *The meaningful participation of individuals with lived experience of health conditions provides powerful expertise and narratives critical to shaping inclusive and equitable health policies, programmes and services.*
>
> Dr Tedros Adhanom Ghebreyesus, Director-General,
> World Health Organization

In 2002, while I was pregnant with my third child, I heard the words that changed my life forever: "You have chronic myeloid leukaemia. It is a blood cancer". At that moment, my world collapsed. I felt alone, powerless, and overwhelmed by fear.

The doctors told me I had only three years to live. Three years... and no treatment available in my country that time, no patient association, no psychological or moral support. Everything was centralized, far, complicated, and out of reach.

I kept asking myself: What am I supposed to do with these three years? Prepare my husband for my death? Prepare my children? Leave my dreams behind? Accept that my life was ending? And abandon everything? My heart was heavy with sadness, denial, anger, and a deep feeling of injustice. But one day, something shifted. I told myself: If I have three years, then I must fight. There must be a solution. And if there is no solution, perhaps I will have to invent one.

I spent more than four months searching. The only treatment available was in Spain. To obtain it, I had to travel more than 1500 kilometres. Many patients could not even begin this journey. They simply abandoned treatment, not because they wanted to, but because the system made it impossible. When I finally held that first box of treatment in my hands, I felt proud. I thought, "I saved ME". I wanted to show it to my doctor. But everything changed when I entered the hospital waiting room and saw other patients who did not have access to the same treatment. At that moment, my pride turned to responsibility. I understood that treatment abandonment was not a personal decision, it was the result of poverty, distance, lack of transport, lack of housing, lack of understanding, and overwhelming fear.

Many patients simply could not afford the long and expensive journey to receive care. They were suffering in silence and isolation. That day, my mission became clear: I could not keep this treatment only for myself. I had to help others. I had to fight so that no patient would be forced to abandon therapy because of the system. I began advocating for access to medicine, speaking to the media, launching petitions, and raising awareness. After two years, the treatment was finally made available in Morocco.

But access to treatment was not enough. Patients were still abandoning their therapy because they lived far from oncology centres, had no place to stay, or could not pay for transport. These realities motivated me to create an association devoted to support, education, and advocacy and build something even bigger: a house for patients and their families, a safe place where they could sleep, eat, receive support, and continue their treatment with dignity. This house, Dar AMAL, became a refuge, a place of peace and hope, created to prevent treatment abandonment and to restore dignity to those fighting cancer.

My diagnosis, which once felt like the end of my life, became the beginning of a lifelong commitment: ensuring that no patient feels alone, powerless, or without hope. Today, my message is simple and universal: Treatment abandonment is not an individual failure, it is a system failure. When we remove barriers, provide support, and decentralize care, we save lives. Every patient deserves the right to be treated, to be supported, and to live with dignity.

Bahija Goumi, person with lived experience of cancer, Morocco

4.1.3 Indicator-informed risk management: helping planners to prioritize

Priority indicators within a national cancer M&E framework can inform a practical risk matrix that anticipates barriers and guides mitigation.

For example, indicators such as stage at diagnosis, treatment delays, medicine stock-outs, radiotherapy downtime, and workforce vacancies highlight high-probability, high-impact risks to survival and mortality targets. Embedding these into a likelihood-by-impact matrix helps planners prioritize corrective actions and align mitigation with evidence-based, context-appropriate interventions (e.g. strengthening early diagnosis pathways, pooled procurement, task-sharing, or regional diagnostic hubs). Regularly updating the matrix ensures investments remain targeted and responsive to system constraints.

This type of matrix, using a set of prioritized indicators, supports national planners in linking measurable system weaknesses to prioritized mitigation strategies, improving readiness while protecting long-term survival gains (Table 22).

Table 22. Indicator-informed risk management for national and global planning

Priority indicator	Identified risk	Likelihood	Impact on outcomes	Risk level*	Example mitigation strategy (evidence-based)
≥60% late-stage (III–IV) diagnosis	Weak screening and referral pathways	High	High (↑ mortality)	Severe	Scale early diagnosis programmes; standard referral protocols; community awareness campaigns
Median treatment start >60 days	Surgical/ oncology capacity bottlenecks	Medium–High	High	High	Expand surgical sessions; task-sharing; fast-track pathways
≥3 essential oncology drug stock-outs/ year	Supply chain and procurement gaps	High	High	Severe	Pooled procurement; framework contracts; stock monitoring dashboards
Radiotherapy downtime >20%	Equipment ageing and maintenance gaps	Medium	High	High	Preventive maintenance contracts; phased equipment replacement
>25% oncology workforce vacancy	Human resources for health shortages	Medium	Medium–High	High	Incentivized recruitment; in-service oncology training; regional rotation models

* Risk level derived from combined likelihood × impact scoring.

4.2 Global leadership, translated into integrated action

4.2.1 Strong global leadership

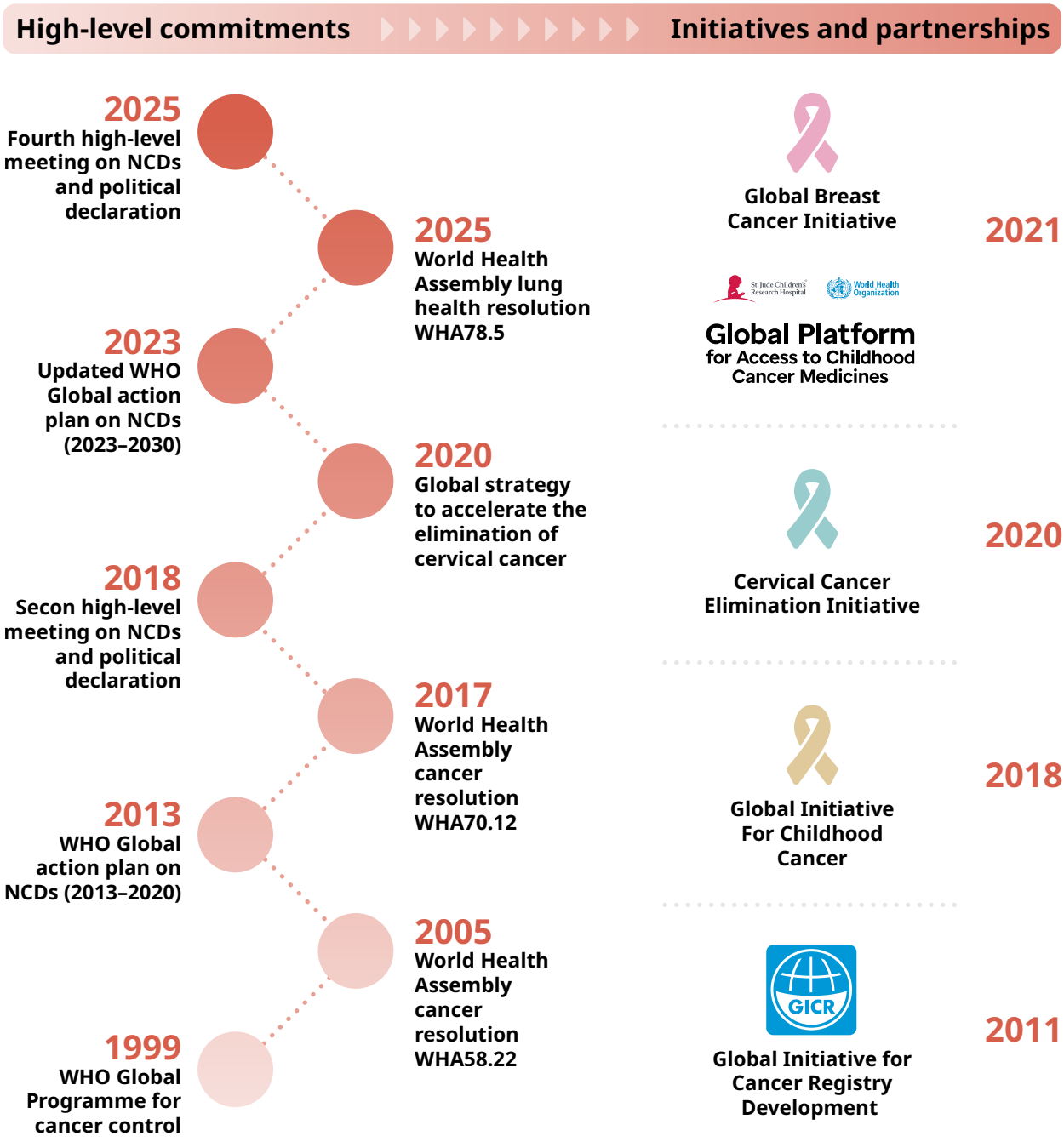
A key driver behind our successes in cancer control has been strong global leadership, which has strengthened markedly in recent years.

The adoption of the World Health Assembly Resolution on cancer control in 2017 (WHA 70.12) launched a renewed global agenda, founded on accelerated implementation, multi-sectoral commitments and a focus on specific cancers to strengthen broader health systems.

In response, working alongside strategic partners, WHO launched three cancer initiatives that are now being implemented in more than 100 countries, and has produced more than 30 guidance documents, tools and training assets across the cancer continuum (Fig. 63).

This visible global leadership has resulted in harmonized global standards, mobilized technical assistance, and fostered capacity building in LMICs where the burden is rising most rapidly.

Fig. 63. Accelerating WHO commitments and initiatives on cancer



WHO's global cancer initiatives

WHO's global cancer initiatives translate commitment into action, targeting high-burden cancers with ambitious, tailored strategies that are driving measurable progress.

> *WHO's global cancer initiatives translate commitment into action*

The Global Initiative for Childhood Cancer, launched in 2018, aims to achieve at least 60% survival for children with cancer by 2030 through its Cure*All* approach, which emphasizes early diagnosis, affordable treatments, and strengthened paediatric oncology networks worldwide (Box 18). Action on this is also supported by the work of the Global Platform for Access to Childhood Cancer Medicines, launched in 2021 to provide equitable procurement and distribution of essential childhood cancer medicines; this is a joint venture between WHO and St. Jude Children's Research Hospital, implemented with support from the United Nations Children's Fund (UNCEF) and the Strategic Fund of the Pan American Health Organization (Box 19).

The Global Cervical Cancer Elimination Initiative set the groundbreaking 90–70–90 targets – 90% HPV vaccination coverage, 70% screening, and 90% treatment access by 2030 – to eliminate cervical cancer as a public health problem. The initiative has helped drive progress in vaccine procurement, screening and treatment innovations and policy advocacy (Box 20).

The Global Breast Cancer Initiative pursues three targets by 2040: early stage at diagnosis in 60% of cases, timely diagnosis within 60 days of presentation at a health facility and treatment completion for more than 80% of breast cancer patients focusing on resource-stratified implementation strategies and integrated approaches to close equity gaps (Box 21).

The Global Initiative for Cancer Registries provides the data foundation for WHO and other cancer initiatives, enabling monitoring of implementation and progress in the global cancer agenda (see section 4.2.2). WHO's cancer initiatives are also synergistic with the flagship Rays of Hope initiative launched by the International Atomic Energy Agency in 2022 (Box 15) (see section 3.3.2).

Box 18. The Global Initiative for Childhood Cancer (GICC): overview and implementation progress

WHO, St. Jude Children's Research Hospital, International Society of Paediatric Oncology (SIOP), Childhood Cancer International (CCI) and other global partners launched GICC in 2018 to fight the global inequities in the diagnosis and treatment of childhood cancer. Five-year net survival of children and adolescents diagnosed with cancer had reached an encouraging 80% in HICs, yet survival in LMICs had made minimal progress *(274)*. With 400 000 new cancer cases globally each year, approximately 90% of which occur in LMICs *(275)*, an urgent global response was needed.

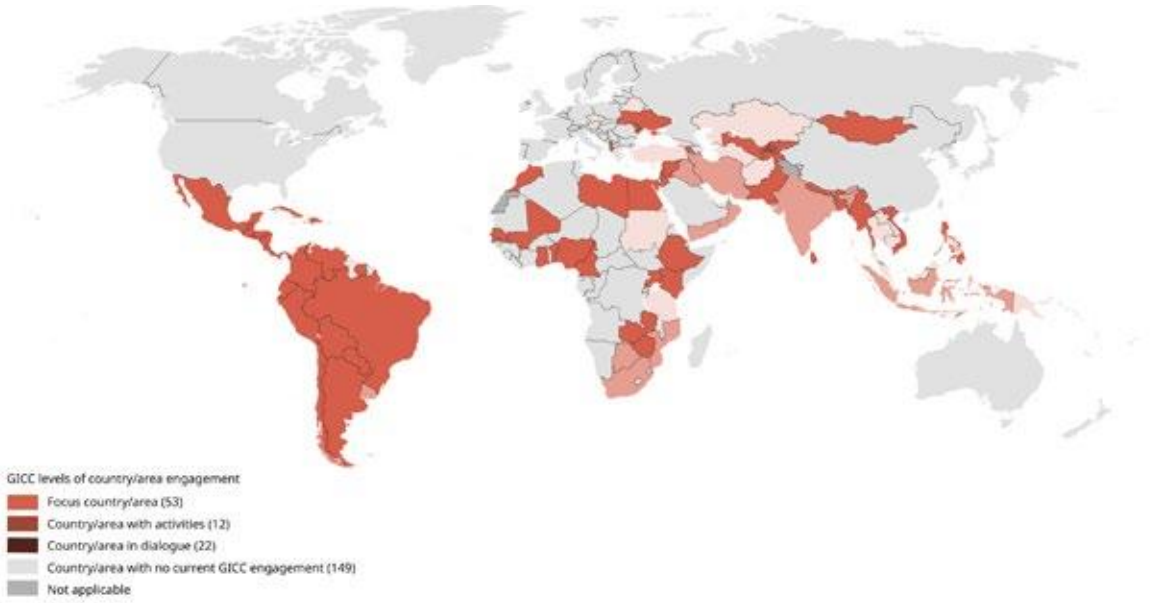
GICC's goal is to increase countries' capacity to provide quality services for children with cancer, raising their survival rate globally to at least 60% by 2030, while averting one million deaths and reducing suffering for all children with cancer. GICC focuses on six index cancers – acute lymphoblastic leukaemia, Burkitt lymphoma, Hodgkin lymphoma, retinoblastoma, Wilms tumour (or nephroblastoma), and low-grade glioma – all chosen as tracers for childhood cancer control programmes due to their incidence worldwide and high curability with evidence-based treatments. Improving care for children affected by these six index cancers, which represent 50–60% of childhood cancers globally, can significantly advance comprehensive childhood cancer services and strengthen health systems *(276)*.

The GICC operational strategy is structured around four key pillars and three cross-cutting enablers, summarized by the acronym Cure*All*, which collectively guide countries in implementing effective childhood cancer control strategies (Fig. 64). The Cure*All* framework supports integrated action across service capacity building, early diagnosis, access to necessary medicines and technologies, workforce strengthening, data collection, and advocacy to reduce disparities and improve QoL and outcomes for children with cancer worldwide.

Fig. 64. Cure*All* pillars and enablers

Since its launch in 10 initial focus countries, GICC has expanded through strong multisectoral partnerships involving governments, WHO, UN agencies and global partners. By 2025, the initiative had reached 53 focus countries, supporting the integration of childhood cancer into national cancer control strategies in over 50 countries and contributing to improved care for more than 500 000 children and their families (Fig. 65). That growing global momentum was further bolstered by recognition of the GICC target in the Political Declaration of the Fourth United Nations High-Level Meeting on NCDs and Mental Health, adopted by the United Nations General Assembly (2025) *(219)*.

Fig. 65. Global Initiative for Childhood Cancer implementation progress, 2026



In May 2026, WHO released the first five-year survival estimates for lymphoid leukaemia *(20)*. Although the estimates indicate overall improvement in global childhood cancer survival between 2000 and 2021, the pace of progress has been uneven, particularly for adolescents aged 15–19 years (see section 2.2.2). GICC partners continue to work with governments and other non-state actors to strengthen health systems, including by providing educational materials, capacity building opportunities and clinical standards, driven to close the survival gap worldwide and reduce suffering for all children affected by cancer.

Box 19. Global Platform for Access to Childhood Cancer Medicines: overview and implementation progress

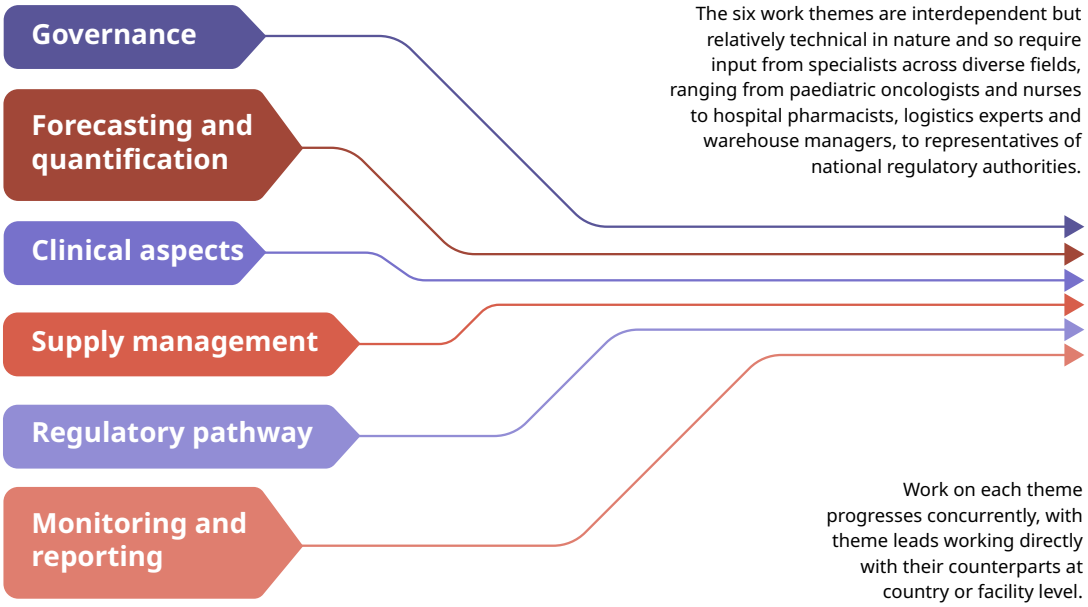
The Global Platform for Access to Childhood Cancer Medicines (Global Platform) is an innovative, multilateral collaboration designed to improve access to cancer medicines for children in LMICs; it was set up when it became clear that lack of access to medicines was a barrier to achieving the GICC target of increasing children's survival rates and reducing suffering (see Box 18) *(277)*.

Access to cancer medicines remains highly unequal globally (see section 4.2.5 and 4.3.3), severely affecting paediatric treatment: more than 40% of essential childhood cancer medicines are not regularly accessible in hospitals across LMICs *(278)*; families often spend over 40% of household income on treatment; and one in six cancer medicines tested in African countries were sub-standard (see section 3.3.3).

Conceived in 2021 by WHO and St. Jude Children's Research Hospital, the Global Platform is a co-created investment in health systems for cancer control, based on a multi-million commitment by St. Jude and implemented in partnership with UNICEF and the Pan American Health Organization Strategic Fund.

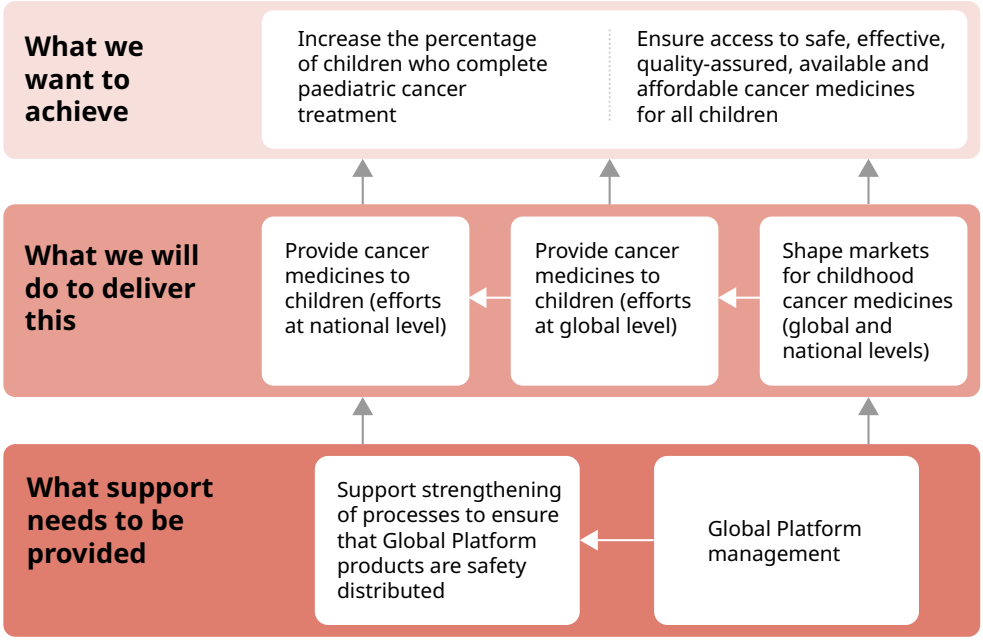
Through participation in the Global Platform, countries are supported to prepare their health systems and facilities to safely and effectively receive, distribute, store and administer cancer medicines. This involves working with countries across at least six interdependent work themes: governance, forecasting and quantification, clinical aspects, supply management, regulatory pathway, and monitoring and reporting (Fig. 66). Implementation activities are organized at country level through an inclusive national governance mechanism, led by the Ministry of Health, which includes representation from hospital facilities, civil society, and national regulatory and procurement authorities. This is accompanied by a comprehensive monitoring, evaluation and learning plan in alignment with wider approaches to improving access (see section 4.1).

Fig. 66. The interdependent work themes of Global Platform country implementation



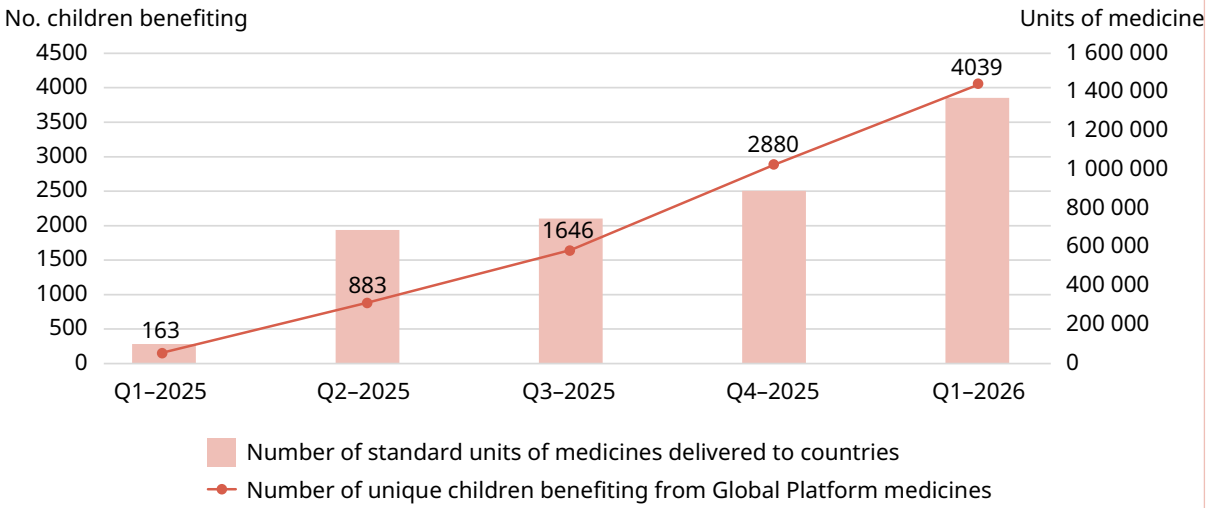
The Global Platform also drives global efforts, such as pooled international procurement, limited to products approved by stringent regulatory authorities, so that countries can have long-term access to affordable, quality-assured medicines. To help ensure that efforts are sustainable, the Global Platform adopts market shaping interventions designed to address foundational barriers: the fragile supply of quality medicines, and fragmented, inconsistent demand. This is reflected in the Global Platform theory of change (Fig. 67).

Fig. 67. Global Platform theory of change



The Global Platform's efforts are already showing results. From February 2025, the first shipments of essential childhood cancer medicines started to reach health facilities in the pilot cohort of six countries – Ecuador, Jordan, Mongolia, Nepal, Uzbekistan and Zambia. By March 2026, close to 1.4 million standard units of medicine had been delivered, helping build inventories in countries at central and facility levels to mitigate potential stockouts; and most importantly, more than 4000 children had benefited from medicines supplied by the Global Platform (Fig. 68).

Fig. 68. Progress in supplying cancer medicines to participating countries and number of unique children benefiting, 2025–2026



Source: Global Platform quarterly monitoring and evaluation reports 2026.

Work with a second cohort of a further six countries is already well underway (El Salvador, Ghana, Republic of Moldova, Pakistan, Senegal, Sri Lanka). The Republic of Moldova received its first shipment in February 2026, and medicines are expected to be delivered to the remaining countries later in 2026. With plans to expand operations to additional countries in 2026, the Global Platform will ultimately be providing medicines to treat around 120 000 children with cancer in LMICs over the next five to seven years.

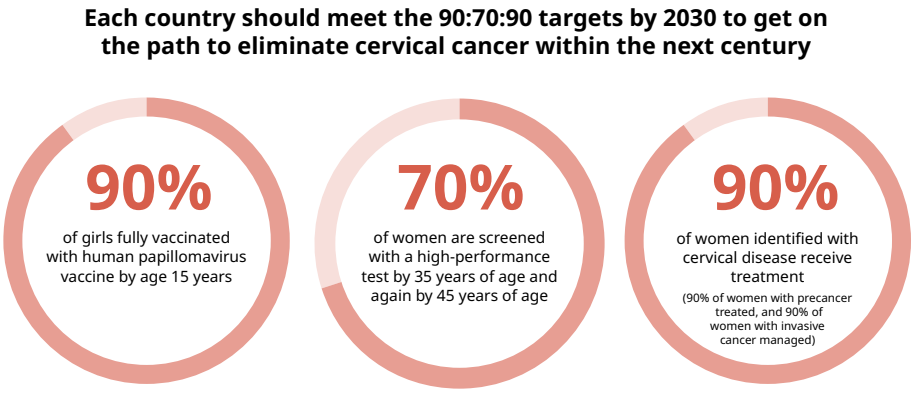
These efforts are designed to be catalytic, driving additional investments by ministries of health in diagnostics, supportive care, and health financing reforms. For example, since receiving its first shipment, Nepal has established a national guarantee for free cancer treatment for all children up to age 14 years, while Ecuador has approved the inclusion of three critical formulations in its national essential medicines list. These transformational changes at the national level demonstrate the synergistic effects of the Global Platform's approach. Another example is Global Platform experts contributing to WHO's Global Accelerator for Paediatric Formulations network (GAP-f), including the release in 2025 of six new target product profiles for child-friendly formulations of essential cancer medicines *(279)*.

Through these efforts, WHO and partners of the Global Platform will continue to progress together toward their shared vision of permanently changing the landscape for access to childhood cancer medicines worldwide.

Box 20. The Cervical Cancer Elimination Initiative: overview and implementation progress

In 2024, more than 600 000 women were diagnosed with cervical cancer and approximately 280 000 died from it, with nearly 94% of deaths occurring in LMICs. The Global strategy to accelerate the elimination of cervical cancer was launched in 2020, responding to the WHO Director-General's call to all governments and partners to commit to a world where cervical cancer is eliminated as a public health threat (*145*). The global strategy set an elimination threshold of fewer than 4 cervical cancer cases per 100 000 women-years. For countries to advance towards cervical cancer elimination, they need to deliver on the three pillars of the global strategy (vaccination, screening and treatment) and achieve the 90–70–90 targets by 2030 (Fig. 69).

Fig. 69. Target and core pillars of cervical cancer elimination



Target: reach 90% HPV vaccination coverage

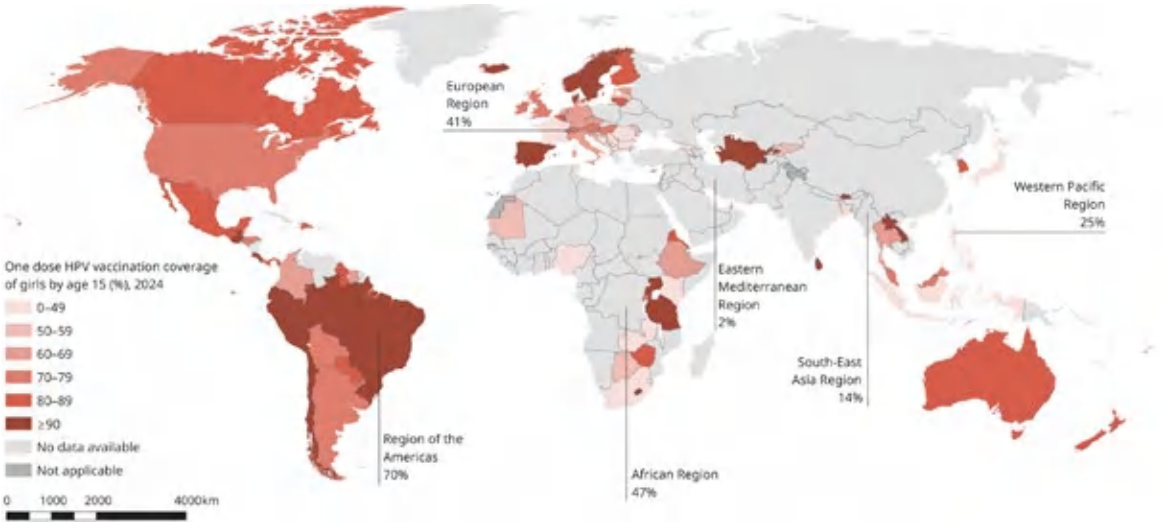
As of June 2026, 165 Member States (85%) had introduced HPV-vaccination for girls in the target age range of 9 to 14 years into their national immunization schedule (see section 3.1.4) (*121*). Of those, around half of these countries have also extended vaccination to include boys, mostly in high- and upper-middle income countries. Four WHO regions, have achieved introduction in at least 90% of countries, while introduction remains lower in the African Region 77% and the Eastern Mediterranean Region 49%.

But although countries have shown willingness to adopt HPV vaccination into their immunization schedules, implementation has remained a challenge. The introduction of an alternative to the recommended 2-dose HPV vaccination schedule – the off-label single-dose for girls and boys between 9 and 20 years – has therefore been a key additional facilitator for achievement of the target. This one-dose schedule has already been adopted into vaccination schedules by 91 countries (equalling 56% of all HPV vaccination programmes globally).

Despite these advances in policy adoption and programme design, global coverage remained low, with only 31% of girls vaccinated with at least one dose in 2024 (Fig. 70).

HPV vaccination coverage varied markedly by region ranging from 70% in the Region of the Americas to 2% coverage in the Eastern Mediterranean Region (*121*).

Fig. 70. HPV vaccination first dose coverage of females by age 15, by country, 2024

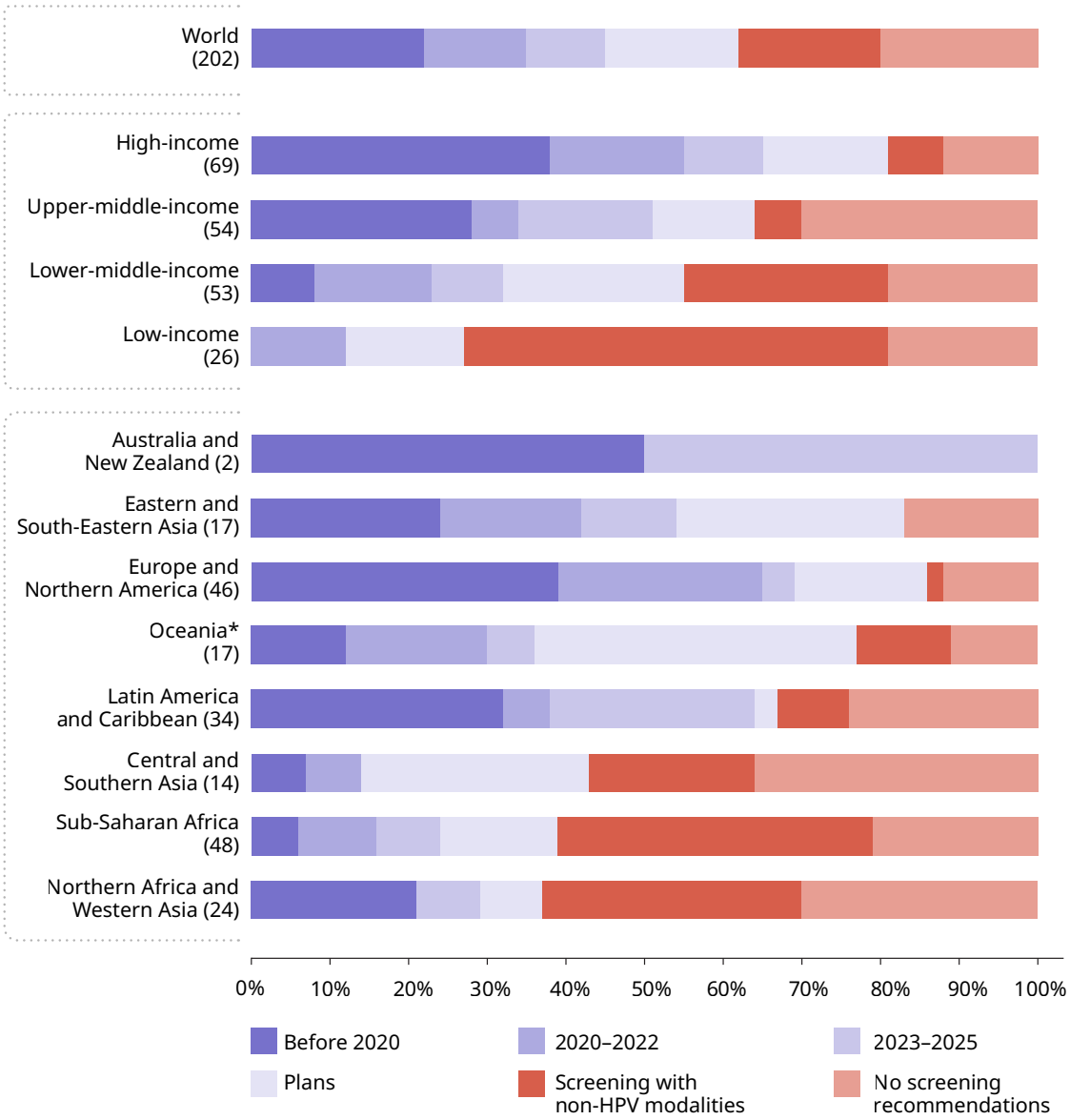


Target: reach 70% screening coverage

In 2026, WHO updated the guidelines on cervical cancer screening and treatment, recommending the use of a high-performance HPV test as the primary screening method rather than VIA or cytology, including the option of performing HPV testing on provider or self-collected samples and providing recommendations for the use of HPV DNA genotyping (*280*).

As of July 2025, 155 (80%) Member States had national cervical cancer screening guidelines including 97 (75%) of 130 LMICs. HPV testing has been adopted as the primary screening method, in official guidelines or recommendations, in 87 (45%) Member States. Of these, 33 countries have adopted HPV testing on self-collected samples as the primary option for all women and a further 10 have included self-collection as a strategy to reach underserved or non-respondent populations (see section 3.2.2) (Fig. 71) (*158*).

Fig. 71. Proportion of cervical cancer programmes that adopted HPV-based primary screening, by income group and SDG region, up to July 2025



* Excluding Australia and New Zealand

Target: reach 90% treatment of women with cervical disease

Data on treatment coverage for women with cervical abnormalities (pre-invasive lesions or abnormalities as well as invasive cancer) is scarce. However, available evidence suggests that ensuring timely access to treatment remains a major challenge for achieving the third pillar of the global strategy (see sections 3.2.2, 3.3.2).

Progress is being made through the increasing availability of treatment technologies, particularly thermal ablation devices. Thermal ablation devices are now available in 112 countries, including more than 70% in the African and the Americas regions, 64% of countries in South-East Asia region and between 40–50% of countries in the other three WHO regions, as reported by the main manufacturers in the global market (*281*).[12]

Country support and global advocacy

With support from Member States and international partners, the Cervical Cancer Elimination Initiative has supported more than 20 countries to strengthen the systems and capacities required for large-scale implementation of cervical cancer programmes. This has included improving access to HPV testing and treatment through facilitating procurement pathways, strengthening health workforce capacity, providing support for laboratory quality assurance, reinforcing data collection, monitoring and evaluation systems, and supporting the development and update of national cervical cancer screening and treatment guidelines aligned with WHO recommendations.

In 2025, Member States adopted resolution WHA78.8 designating 17 November as World Cervical Cancer Elimination Day *(282),* the first global health day dedicated to the elimination of a cancer. Building on an annual Day of Action observed since 2020, this milestone reflects sustained global momentum. It provides a platform to raise awareness, mobilize political commitment, and accelerate implementation of the global strategy, while enabling countries to align efforts and strengthen accountability for progress toward the 90–70–90 targets.

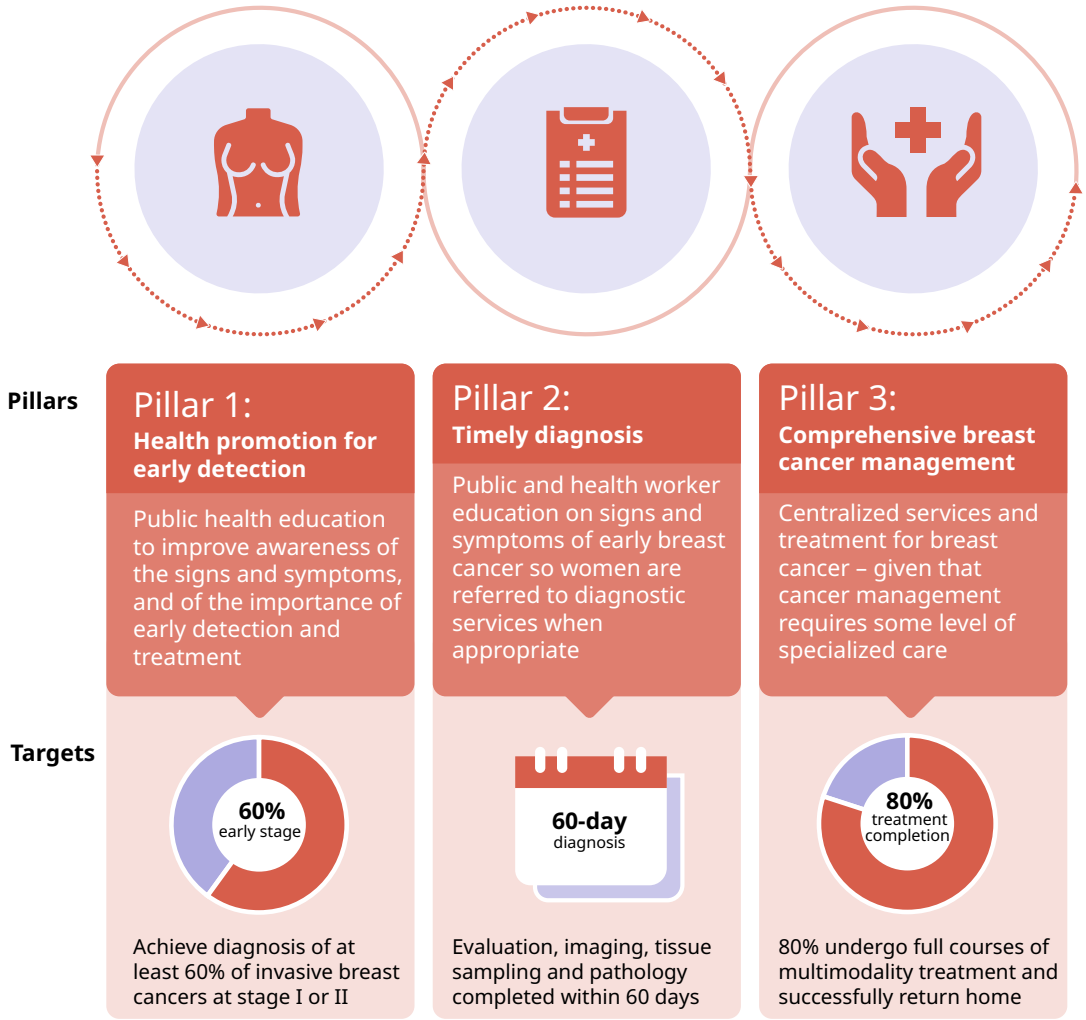
Countries across all WHO regions have increasingly used this day to advance delivery across the three pillars, translating commitments into action through the launch and scale-up of HPV vaccination campaigns, national and subnational screening initiatives, and efforts to expand access to treatment services, particularly in underserved settings. The day has also supported policy dialogue and coordination among governments and partners, while public-facing activities such as community outreach and landmark illuminations in the colour teal, the international colour of the cervical cancer elimination – have contributed to increased awareness generate public engagement and encourage uptake of services.

[12] Communication exchange with manufacturers.

Box 21. WHO Global Breast Cancer Initiative (GBCI)

Launched in 2021 with the objective of reducing breast cancer by 2.5% per year by 2040 and saving 2.5 million lives, the Global Breast Cancer Initiative (GBCI) organizes its activities around three main operational pillars: promoting early detection; ensuring a timely diagnosis; and enabling multimodality treatment completion for at least 80% of patients with breast cancer (Fig. 72). There are specific key performance indicators for each pillar.

Fig. 72. Global Breast Cancer Initiative pillars



Since the GBCI Implementation framework was launched in 2023 *(283)*, many governments have committed to align their efforts towards the GBCI targets and to implementing GBCI priorities *(34)*. The three pillars have proved to be cost-effective and are among the WHO's NCD Best Buys. However, to date, only a few HICs have achieved GBCI targets.

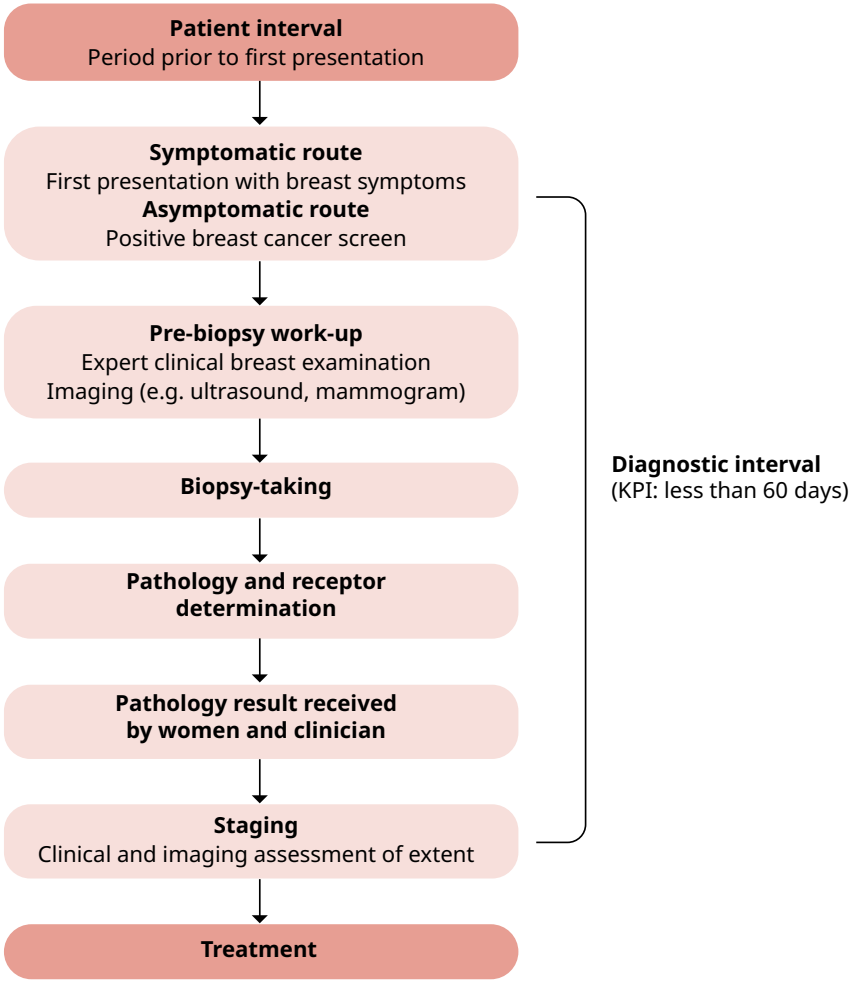
Target: early diagnosis of at least 60% of invasive breast cancers at stage I or II

The GBCI global target is for at least 60% of all new breast cancers being diagnosed at stage I or II, when curative treatment is most effective, best tolerated and least costly (see sections 3.2 and 3.2.2). For well-resourced settings, WHO recommends screening of women at average risk of breast cancer every two years between age 50 and 69. Stage at diagnosis refers to the anatomical extent of the disease at the time of diagnosis based on clinical examination, imaging, tissue sampling and laboratory studies such as histopathology and immunohistochemistry. Ideally, it should be recorded and reported by PBCRs for all new breast cancer cases using the Tumour-Node-Metastasis (TNM) classification (Fig. 73).

Data from a recent global systematic review for 81 countries (2000–2018) indicate that the proportion of breast cancer cases with distant metastasis at diagnosis varies by continent, ranging from 43–86% in Africa to 0–6% in North America (see section 3.2.2) *(147)*.

Target: timely diagnosis within 60 days of presentation at a health facility

Fig. 73. Diagnostic pathway



Pillar II aims to shorten the diagnostic interval, i.e. reduce the time from first presentation to any level of the health system to obtaining a confirmatory diagnosis of breast cancer to less than 60 days in all women to ensure that they have the best survival prospects. For asymptomatic women detected at breast cancer screening, the diagnostic interval starts on the screening date. For the majority of women (i.e. those diagnosed with symptomatic disease), the diagnostic interval commences on the date a woman first presents with breast symptoms to any level of the health system. It will include: a referral for diagnostic imaging, tissue sampling, histopathological examination including receptor (ER, PR and HER2) determination and staging. Delays in completing diagnostic and staging work-ups are common in lower-resource setting, resulting in substantially inferior survival (see section 3.2.1).

Target: multimodality treatment completion for at least 80% of patients

Treatment completion without delays reflects the accessibility of the health system. It is a complex indicator to measure given the multiple variables that inform treatment indication though it can provide operational insights into programme performance *(34, 284)*.

Systemic challenges to global leadership

While cancer control has increasingly attracted efforts from global actors and WHO initiatives have driven positive changes, there has been uneven global progress. A huge gap persists and is widening in some strategic areas between and within countries. Amid rising geopolitical tensions and financial pressures, multilateralism is under threat – yet it remains indispensable for equitable, rules-based, and collective global action on cancer (Box 22).

Incoherence in the contributions of global actors, coupled with the broad, comprehensive nature of investments needed in cancer, are creating challenges for LMIC governments. For example, a government may purchase capital equipment, such as a new linear accelerator through a loan, but also need global actors to contribute to improving diagnostic capacity, a trained workforce, and a sustainable financing strategy to reduce OOP payment and improve data systems *(23)*.

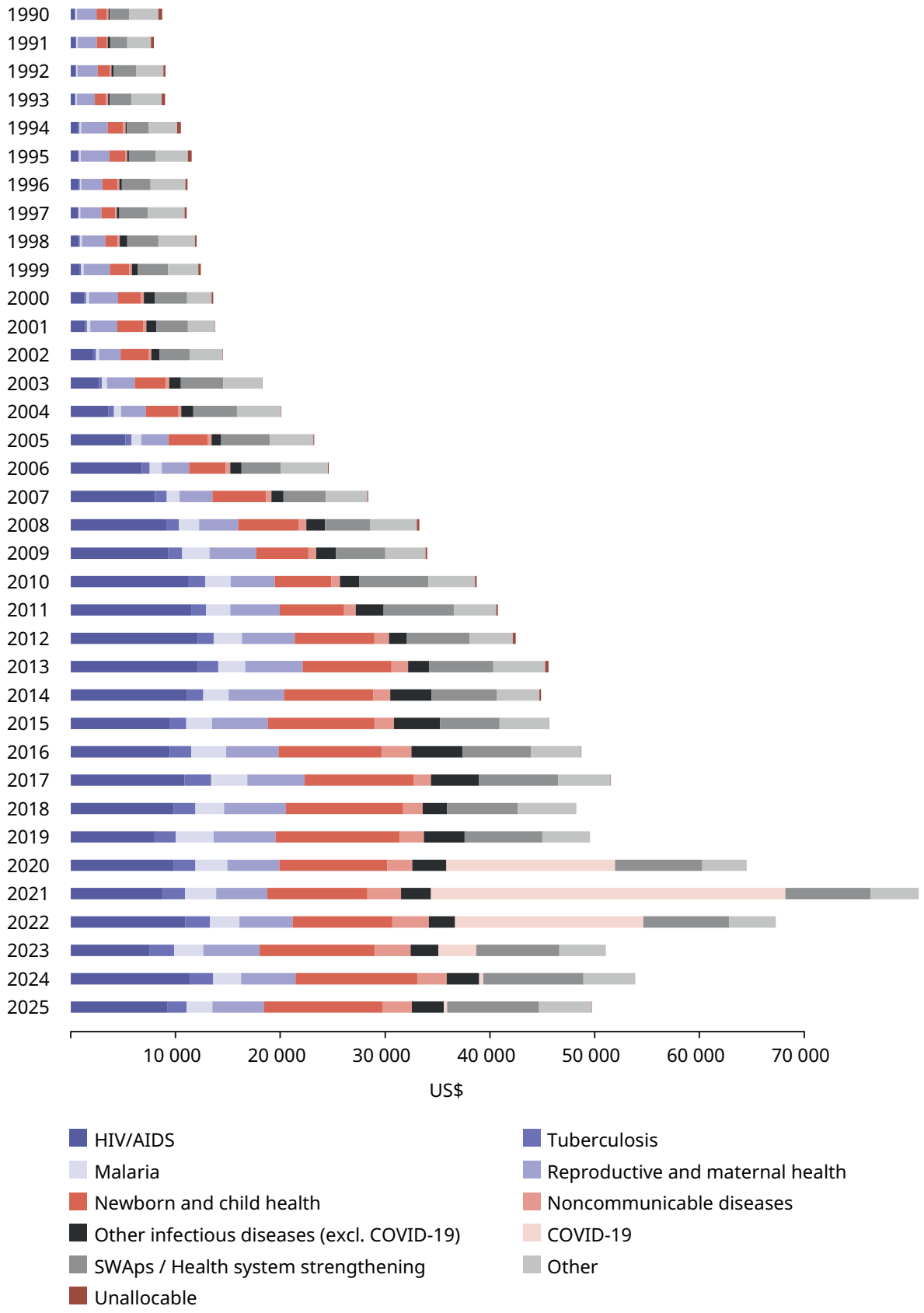
Within the broad health landscape, many key actors have not fully engaged with or contributed to the cancer agenda. On financing, global overseas development assistance for health reached historic highs during the COVID-19 pandemic; gross official development assistance for medical research and basic health were estimated at around US$ 20–22 billion. However, despite overall growth in health overseas development assistance, funding targeting non-communicable diseases including cancer remains a very small proportion of total health aid (Fig. 74) *(285)*. Recent political trends point toward further short-term reductions in overseas development assistance.

Box 22. Sustained investment in multilateralism remains essential to global cancer control efforts

Multilateralism – that is, rules-based cooperation among countries through institutionalized mechanisms – remains essential to global cancer control. Going beyond broad international collaboration, multilateralism provides legitimacy, equity in decision-making, and sustained commitments including through formal governance processes such as the World Health Assembly. In cancer, this has enabled shared norms (e.g. International Classification of Diseases (ICD), essential medicines standards), treaties like the Framework Convention on Tobacco Control, and coordinated target-setting. WHO has shown how multilateralism can deliver measurable impact with the Cervical Cancer Elimination Initiative, as a successful example combining global targets, pooled procurement, norms and standards, regulatory harmonization, and collective accountability across agencies and Member States.

Looking ahead, effective cancer control will continue to depend on strengthening multilateral solidarity even – or perhaps especially – amid geopolitical and financial pressures. WHO's unique role in convening governments, setting norms, shaping markets, and supporting countries technically positions WHO at the centre of equitable global action on challenges ranging from early detection and treatment standards to integrating cancer care in humanitarian settings. Applying multilateral principles to broader cancer priorities can reduce fragmentation, improve access, and ensure that vulnerable populations, including refugees and displaced communities, are not left behind. Sustained investment in WHO and the UN system is therefore critical to maintaining trust, fairness, and accountability in global cancer efforts.

Fig. 74. Trends in overseas development assistance for NCDs, 1990–2025



Historical analysis estimated that NCDs accounted for roughly 0.2–0.3% of health-related development assistance in earlier periods (e.g. 2018 data), far below the burden of disease posed by NCDs globally *(286)*. More recent health financing analyses suggest that development assistance for NCDs – including cancer – averaged roughly US$ 300–400 million per year, with about half of that coming from official development assistance sources and the remainder from philanthropy and other partners.

The health portfolios of multilateral development banks (MDB) have grown in recent years – for example, health accounted for 7.3% of the Asian Development Bank's portfolio in 2022, up from 1.5% in 2016 – and MDB lending to health infrastructure and systems has expanded. However, these figures refer to health broadly, not cancer specifically. There are exceptions, project examples, such as an approximate US$ 90 million loan from the Islamic Development Bank to expand oncology services in Uzbekistan, that show MDB support for cancer as a drive of health system strengthening *(287)*.

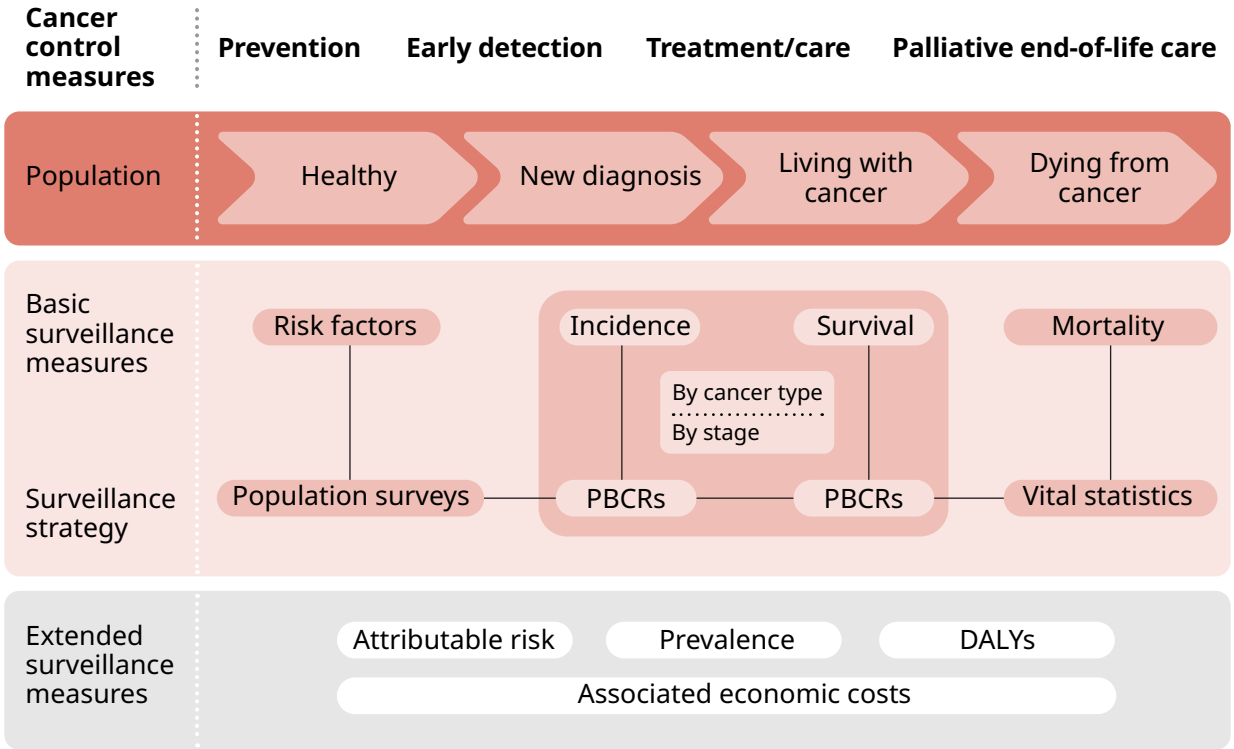
Successful global leadership in cancer will require more integration among global initiatives and coordination of priorities and investment among different global, national and local actors. Project-based approaches must be linked to a national strategy and sustainability plan, particularly in cancer because of inter-dependencies along the cancer continuum.

4.2.2 Improving cancer surveillance: local data to global estimates

Addressing the challenge of the increasing cancer burden requires integration of cancer control programmes within national health planning. Central to this effort is the deployment of routine surveillance systems capable of tracking the delivery and impact of specific interventions. High-quality, population-based data is essential for cancer surveillance and is increasingly urgent for assessing the ongoing scale-up of WHO's three signature cancer initiative.

Alongside risk factors, effective monitoring relies on three complementary metrics: incidence, survival, and mortality (Fig. 75). While cause-specific mortality data are the definitive indicator of population health progress, weak civil registration and vital statistics (CRVS) systems remain a significant structural barrier, with only 1 in 4 countries reporting high-quality cause-of-death data *(288)*.

Fig. 75. Measures and strategies for cancer surveillance at the national level



DALYs: disability-adjusted life years; PBCRs: population-based cancer registries.

Source: (289).

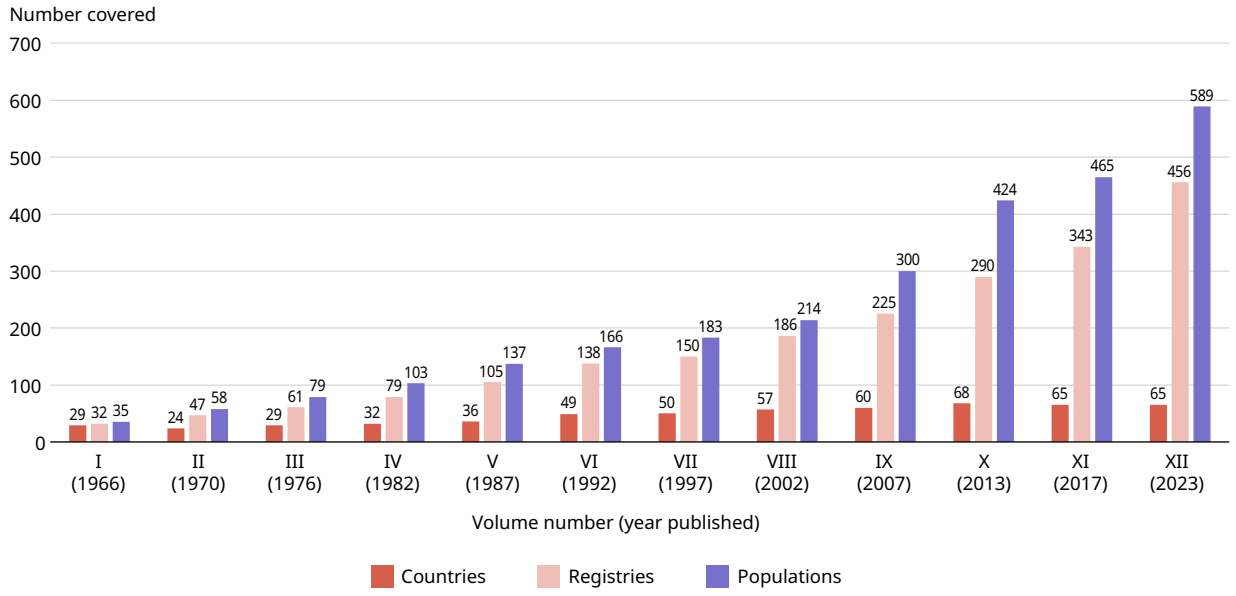
PBCRs are the critical foundation for developing, monitoring, and evaluating NCCPs. Operating as continuous systems of data collection, validation, and analysis, PBCRs adhere to rigorous international standards to ensure global comparability. On this basis, they provide critical data on incidence and survival by cancer type and stage (from which mortality estimates can be derived). PBCR therefore deliver a vital evidence base required by policymakers and to inform all cancer stakeholders, including by identifying subnational variations in incidence, tracking the stage of disease at diagnosis, and benchmarking cancer survival.

While comprehensive national PBCRs may represent an ideal standard, their implementation is resource-intensive, particularly in highly populated countries, and, in such contexts, the strategic requirements for planning and monitoring national programmes can be effectively met through a network of subnational "sentinel" registries. A controlled, phased expansion of these subnational PBCRs ensures representative national data while optimizing resource allocation and curbing overall costs *(290)*.

IARC and International Association of Cancer Registries preside over the Cancer Incidence in Five Continents (CI5) series, as the definitive reference source for statistics on the incidence of cancer across different populations worldwide and a means to track long-term trends (Fig. 76). The quinquennial publication is also a benchmark of the quality of incidence data, given there are strict criteria for completeness, accuracy, and comparability of data as part of the data evaluation. Finally, it is the foundation for broader global estimates, including IARC's GLOBOCAN database. IARC's national estimates of the cancer burden are hosted on the

Global Cancer Observatory *(5)* and a basis for the cancer burden (see section 2). It is critical that those utilizing the data recognize that such estimates rely fundamentally on the data collected by PBCRs. Building national capacity and local infrastructure for data production, analysis, and interpretation is therefore an essential strategic priority. When countries see their own local surveillance systems – including PBCRs and CRVS – directly driving global health metrics, it serves as a powerful catalyst for sustained national investment.

Fig. 76. Progress in PBCR coverage, 1966 to 2023



Source: (291).

While the historical development of cancer registration has been gradual (Fig. 77), the number of high-quality PBCRs has expanded with each volume of CI5 over the last half century. Yet profound global disparities persist; unlike most high-income regions, many Member States across Africa, Asia, Latin America, and Oceania continue to experience severe data inequity. This is characterized by fragmented, poor-quality, or entirely absent incidence data, which fundamentally hinders effective public health planning.

To decisively address this global inequity, IARC established the Global Initiative for Cancer Registry Development (GICR). Operating as a global, multi-stakeholder partnership, the GICR is designed to accelerate the availability of high-quality cancer registry data in transitioning countries. Through six strategic IARC regional hubs and affiliated centres of expertise, the initiative partners directly with local health authorities to deliver specialized training, conduct collaborative research, and strengthen regional surveillance networks. The GICR is successfully strengthening existing registries and catalysing the establishment of new PBCR in transitioning regions via this country-led, sustainable model (Box 23).

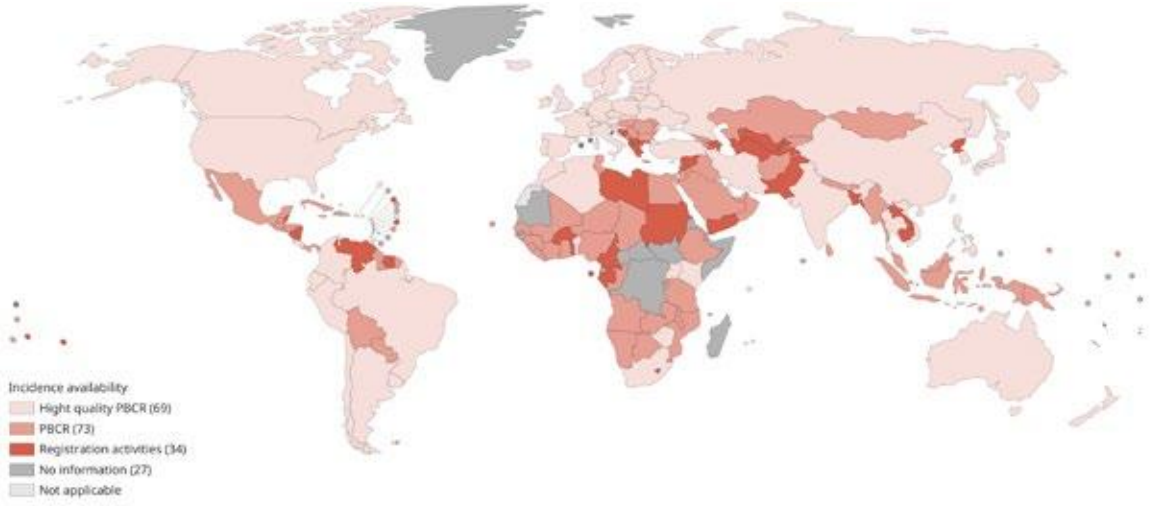
Box 23. The Global Initiative for Cancer Registry Development: overview and implementation progress

In direct response to the escalating global cancer burden and deepening inequities in health outcomes, a consortium of leading international and national agencies launched the Global Initiative for Cancer Registry Development (GICR) in 2012. Led by IARC, the GICR serves as the premier global strategy to strengthen national cancer data systems, ultimately aiming to save lives through evidence-based cancer control.

Operating as an implementation and capacity-building programme, the GICR provides critical technical guidance, training, and support to LMICs. It functions through a highly effective decentralized model, anchored by IARC-designated regional hubs and centres of expertise.

Addressing the global coverage gap. A core premise of the GICR is the indispensable role that PBCRs play in generating the evidence required to plan and monitor national cancer control actions. Despite growing recognition of this imperative, a substantial gap in PBCR coverage persists (Fig. 77). Availability and quality of cancer surveillance systems is also an important indicator in the Global Cancer Monitoring Framework (see section 4.1.1). While HICs have robust PBCR networks over the past five decades, progress across LMICs remains profoundly uneven.

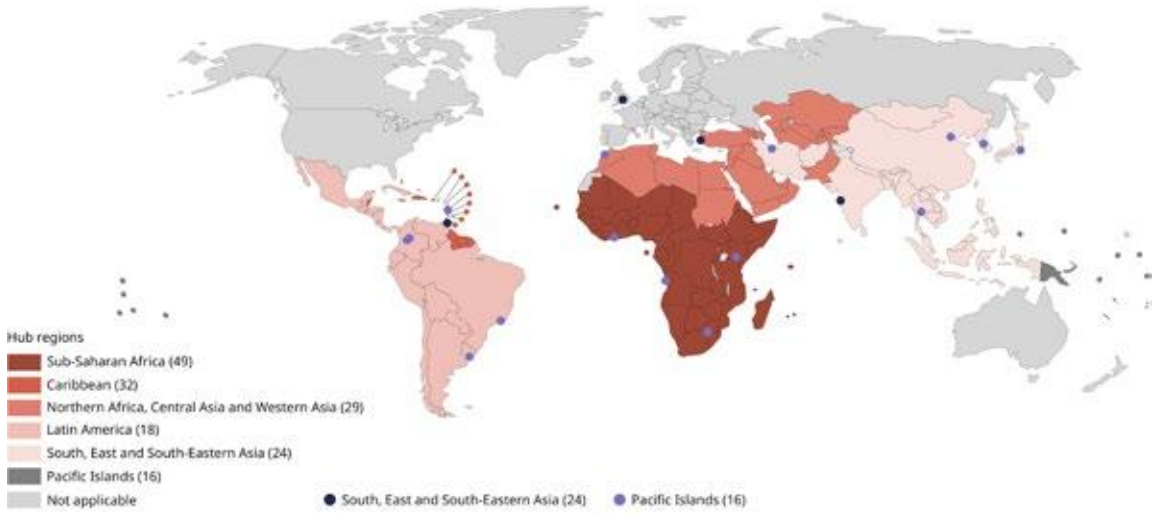
Fig. 77. PBCR registry status, 2025



Source: (291).

By assisting transitioning Member States in building their capacity to collect, synthesize, and disseminate local cancer data, the GICR drives systemic health care improvements. This localized data informs robust NCCPs, which translate directly into improved health, economic, and social outcomes in 2026. Today, GICR activities span 169 countries, covering over 85% of the global population (Fig. 78).

Fig. 78. Areas of coverage by the IARC GICR regional hubs and centres



Strategic objectives: Focused primarily on supporting LMICs, the long-term strategic goals of the GICR include:

- **Expanding infrastructure:** Establishing high-quality PBCRs in an additional 50 countries by 2035.
- **Empowering policy:** Generating robust, localized evidence to design, inform, and monitor NCCPs.
- **Enhancing precision:** Improving the accuracy of cancer burden estimates at national, regional, and global levels.

To achieve these objectives, the GICR connects PBCRs requiring technical support with international organizations equipped to provide it. This collaborative framework is organized into distinct strategic domains:

A. Coordinated global action and partnerships

The GICR provides a unified framework to coordinate support from global stakeholders to PBCRs worldwide. An International Association of Cancer Registries secretariat oversees the programme's governance and fiduciary responsibilities while providing baseline technical assistance. A critical outcome of this coordination is the development of joint action plans that leverage the collective resources of global partners.

This unified approach has successfully catalysed the creation of "global public goods" – open-access resources designed to benefit registries everywhere. Notable examples include the GICR E-Learning Series, offering free, multilingual, self-paced training, and digital health tools that enable PBCRs to capture data at the source using the District Health Information Software 2 (DHIS2). Furthermore, a standardized GICR evaluation and monitoring framework has been deployed to support rigorous registry performance assessments.

B. Decentralized regional support and capacity building

A cornerstone of the GICR model is its distributed network of regional reference centres. These entities collaborate with IARC to accelerate the sustainable expansion of high-quality PBCRs by documenting effective strategies that local stakeholders can adapt to strengthen their own health systems.

To fulfil this mission, IARC established six **regional hubs for cancer registration**, providing targeted technical guidance and strategic leadership across Africa, Asia, Latin America, the Caribbean, and the Pacific Islands. Recognizing that this ambitious mandate requires diverse and specialized expertise, IARC also integrated **GICR centres of expertise**, which augment the hubs by contributing specialized staff and advanced competencies.

Working collaboratively, the regional hubs and centres of expertise deliver structured support across four complementary areas:

1. Technical training
2. Targeted consultancies to registries
3. Research promotion and support
4. Regional network development

A key innovation accelerating country-level capacity building is the establishment of GICRNet. This network of IARC-certified trainers, drawn directly from the hub regions, assists in delivering localized courses, developing culturally relevant educational resources, and providing ongoing, peer-to-peer mentorship to developing PBCRs.

Systemic challenges in global cancer data

Progress on global cancer surveillance has been substantial but is still inadequate to enables evidence-based public health programmes or to monitor global progress.

The absence of a global monitoring framework, deficits in routine monitoring of core indicators and reliable source of cancer surveillance data has fragmented the global discourse and limited progress monitoring (see section 4.1). Weak cancer surveillance systems have contributed to the exclusion of cancer from indicators in the global health agenda, though this has improved with the Fourth UN Political Declaration that recognizes targets for cervical and childhood cancers. The WHO Global Cancer Monitoring Framework (see section 4.1) is expected to also bring coherence and consensus to the global cancer health agenda, guide national policy makers and inform public health priorities in the next decade.

This Status Report, alongside coordinated efforts like the Union of International Cancer Control's (UICC's) World Cancer Declaration *(292)*, will be a mechanism for routine monitoring of the Global Cancer Monitoring Framework. Success will be determined by support to national registrars to strengthen and invest in national data systems and to promote global reporting. GICR is thus a priority for global and national stakeholders.

Progress will also require methodological alignment between different international agencies reporting registry data (e.g. survival) that are informed by national data that have been evaluated for quality. Working with partners, WHO, particularly through IARC, is committed to strengthening global cancer surveillance, reflected in the release of the global comparable estimates on cancer that are founded on GCMF core indicators and released in this report.

4.2.3 Opportunities for integration into the global health agenda

Cancer has become far better included and integrated into the global health agenda and high-level political fora, creating unprecedented policy windows and opportunities for accelerated action (Table 23). Cancer's political profile has been amplified by high-level commitments in United Nations fora. The 2011, 2014 and 2025 UN High-Level Meetings on NCDs established voluntary targets, including cancer as a priority. Building on the global action plan for the prevention and control of NCDs 2013–2030, the 2017 WHA resolution (WHA70.12) "Cancer prevention and control in the context of an integrated approach" was unanimously adopted by Member States – co-sponsored by 18 nations and supported by 44 during debates.

The primary cancer-related targets to which governments have committed are linked to SDGs through (i) reducing premature mortality from NCDs including cancer (target 3.4) and (ii) UHC: including through use of cervical cancer screening coverage rates contributing to the composite indicator. The 2025 United Nations General Assembly Political Declaration on NCDs renewed these pledges and included specific reference to the Global Initiative for Childhood Cancer target to improve survival, a historic moment for the cancer community.

Importantly, it is being recognized that cancer is also critical to achieving other global commitments on access to medicines, equity in health services, workforce optimization and other health pillars. The 2024 United Nations General Assembly Summit of the Future further highlighted cancer in health system resilience pledges, with over 190 Member States endorsing accelerated NCD action.

Multiple inter-governmental agencies and supra-governmental bodies have elevated cancer, including the G20 health track. For example: the 2021 Italian G20 Summit where leaders committed to UHC expansion, including oncology services; 2023 Indian G20 Declaration endorsing WHO's cancer initiatives amid NCD focus; and 2025 G20 under South African presidency including equitable access commitments; the Commonwealth health agenda and Europe's Beating Cancer Plan among many others.

Prevention is the topic we talk about and do almost nothing. This is a global problem. The availability of diagnostics in LMICs is also way under what needs it to be. We have to work on that.

Peter Kapitein, person with lived experience of cancer

Table 23. Timeline of major global commitments to cancer

Year	Organization/event	Declaration/resolution	Key focus areas
2000	UN (Millennium Summit)	Millennium Development Goals (MDGs)	No direct cancer focus, but recognition of health-related goals, which influenced later NCD strategies
2005	World Health Assembly	Resolution WHA58.22	First World Health Assembly cancer resolution. Urged Member States to strengthen cancer control and integrate into health systems
2011	UN General Assembly	High-Level Meeting on NCDs and Political Declaration	Acknowledged cancer as a major global health issue and called for national and international action
2013	WHO	WHO Global action plan on NCDs (2013–2020)	Target to reduce premature mortality from NCDs, including cancer, by 25% by 2025
2017	World Health Assembly	Resolution WHA70.12	Emphasized equitable access to cancer care, affordable medicines, and the importance of palliative care
2018	UN General Assembly	Third High-Level Meeting on NCDs and Political Declaration	Reaffirmed commitments to tackle cancer and integrate cancer care into UHC
2020	WHO	Global strategy to accelerate the elimination of cervical cancer	First global commitment to eliminate a type of cancer, with targets for HPV vaccination and screening

Year	Organization/event	Declaration/resolution	Key focus areas
2023	WHO	Updated WHO Global action plan on NCDs (2023–2030)	Extended timeline to 2030; aligned with SDG 3 goals for reducing cancer mortality and ensuring equitable access to care
2025	World Health Assembly	Resolution WHA78.5 on integrated lung health	Calls for integrated strategies linking lung health with broader efforts on NCDs and climate resilience
2025	UN General Assembly	Fourth High-Level Meeting on NCDs and Mental Health: Political Declaration	Affirmed GICC target to improve survival; additional targets on access to medicines

Systemic challenges in leveraging policy windows and opportunities

The two primary challenges to leverage policy opportunities are: limited implementation and limited integration. Policy implementation has been inadequate because of systemic, financial, and political barriers (Fig. 79).

Fig. 79. Challenges to leveraging cancer-related policy commitments

1 Challenge
Policy implementation barriers

Capacity constraints
Health systems lack oncology workforce, infrastructure and cancer-specific capacities to deliver on high-level pledges.

Financing gap
Political commitments are not adequately linked to domestic spending increases; competing priorities divert resources.

Political time horizon mismatch
Cancer investments require 1–2 decades before population-level outcomes improve – well beyond most political cycles.

2 Challenge
Fragmentation of cancer control

Siloed cancer-type strategies
National strategies for breast, cervical, colorectal, childhood, and lung cancers operate in isolation rather than as an integrated programme.

Inefficient shared capacities
Pathology, imaging, surgery and radiotherapy investments are duplicated rather than integrated, weakening efficiency and learning.

Conflicting global actors
Governments face competing priorities from different global actors, with minimal cross-pollination between programmatic areas.

3 Challenge
Weak accountability and monitoring

Fragmented data platforms
Vertical cancer programmes generate separate registries, preventing a unified picture of cancer burden, access gaps, and system performance.

Limited progress visibility
Weak accountability and insufficient integration into health systems undermine progress and reduce political visibility for cancer investments.

Indicator gaps
Improved indicator tracking – including through the WHO Global Cancer Monitoring Framework – is needed to generate short-term wins and link investments to policy commitments.

Cross-cutting consequence for people affected by cancer
Fragmentation translates directly into uneven access and disjointed care pathways. People affected by cancer experience inconsistent diagnosis, treatment and follow-up as a result of siloed systems, competing priorities, and weak accountability – disproportionately affecting those in low- and middle-income settings.

First, while high-level pledges signal global intent, countries face capacity constraints in cancer-specific health system capacities (e.g. shortage of the oncology workforce). Second, political commitments have not been adequately linked to increased domestic spending on cancer, often because of alternate competing priorities. Finally, weak accountability, limited monitoring, and insufficient integration into health systems undermine progress. Investments in cancer can take one to two decades before outcomes are improved at a population-level. This time horizon exceeds common political cycles.

Regarding integration, the cancer agenda remains fragmented both internally and with other programmatic areas and health system agendas. Cancer control efforts are too often organized around individual cancer types or risk factors in isolation, rather than as part of a coherent, integrated approach. Governments may see conflicting priorities pushed by different global actors, with minimal cross-pollination. At a national level, ministries may introduce national strategies for breast, cervical, colorectal, childhood, and/or lung cancers,

without promoting integrated investments that offer efficiencies in shared capacities such as pathology, imaging, surgery, radiotherapy. This fragmentation weakens impact and compromises efficient resource allocation and reforms across programmes.

Fragmentation also translates into uneven access and disjointed care pathways for people affected by cancer. Building more integrated cancer control, anchored in common platforms for surveillance, and care, helps national stakeholders use resources more efficiently, close inequities, and ensure that advances in one area accelerate progress across the entire cancer continuum.

Finally, vertical services in cancer may further fragment information systems, making it harder to generate a unified picture of cancer burden, access gaps, and system performance. Improved indicator tracking, including through the WHO Global Cancer Monitoring Framework, can provide better mechanisms, offer short-term wins and greater political visibility for investments linked to policy commitments.

4.2.4 Robust civil society, global advocacy and governance

Particularly over the past decade, civil society has driven and elevated cancer control in the global agenda, transforming cancer from a neglected issue into public health priority.

A key driver has been the growth of large, coordinated global networks such as the UICC, which unites over 1200 member organizations worldwide and convenes major events like the World Cancer Leaders' Summit, where civil society organization, NGOs, and health professionals jointly push for progress and commitments. As reflected in the launch of WHO's Campaign to Amplify the Voices of People Affected by Cancer, WHO and civil society organizations are increasingly focused on orienting the cancer agenda around the needs and perspectives of people affected by cancer including caregivers *(293)*.

Concrete examples show how this advocacy has led directly to policy changes. From UICC's World Cancer Declaration, St. Jude Global Alliance advocacy for catastrophic diseases in children, ABC Global Charter 2025–2030, the International Cancer Control Partnership focus on NCCPs, sustained, coordinated civil society action is turning global commitments into concrete national policies and improved access to cancer services.

> *Over the past few decades, the global health system has grown significantly in scope and scale*

Over the past few decades, the global health system has grown significantly in scope and scale, marked by increased financing, more complex and interconnected health challenges, and a broader, more diverse range of actors operating within the system *(294)*. Traditionally, cancer control has not been robustly present in the global health architecture with the exception of actors in tobacco control (Fig. 80) *(294)*. Recently, cancer actors have become more prominent, particularly implementing partners and more successful public–private partnerships (Box 24).

Fig. 80. Network mapping of global health actors by type

Initiatives

Cancer-specific initiatives
A small number of cancers with dedicated global platforms

No integrated platform for other cancers
Higher-burden cancers and cross-cutting capabilities (surgery, radiotherapy, pathology)

Actors

Normative bodies
Guidance, standards, surveillance

No implementing capacity
Few global bodies equipped to deliver cancer services at country level

Crowded periphery
Many partners, competing priorities

Financing

Development assistance
Inadequate share relative to burden

No pooled financing mechanism
No sustained, multi-donor instrument aligned to national cancer plans

Other sources
Philanthropy, lending, donations – project-based

One critical advancement in cancer actors has been the emergence of successful implementing partners assisting governments to address and build clinical and policy capacities. These organizations are situating offices near the centres and agencies they are supporting, moving beyond the short-term visits that marked cancer technical support in previous decades.

One critical advancement has been the emergence of implementing partners

Box 24. The power of public–private partnerships to advance cancer control

Public–private partnerships can harness complementary strengths from diverse stakeholders to accelerate progress against cancer. Private sector entities, including pharmaceutical companies,can provide technical, scientific and strategic resources at scale. Non–governmental organizations and public sector bodies can contribute essential insights into health system delivery, national cancer control planning and advocacy networks that ensure solutions are people-centred and contextually relevant.

Public–private partnerships need to be transparent, guided by the public interest, protected from undue influence, and subject to robust conflict-of-interest management mechanisms. But when united by a shared commitment to global cancer control, these partnerships enable scalable and sustainable interventions across the full cancer care pathway. Positive examples include collaborative funding for community-based education and prevention initiatives, integration of screening and early detection services into national programmes, application of AI to optimize health workforce utilization, and support for local stakeholders to enhance care delivery efficiency within their specific settings.

Such collaborations are also critical for innovation in diagnostics and treatment, ensuring research programmes are designed with patient journeys at their core. Beyond clinical advancements, public–private partnerships can drive social innovation and improved access to cancer services by addressing persistent inequities, particularly for individuals from lower socioeconomic backgrounds and minority groups as seen in the experiences of stakeholders like City Cancer Challenge Foundation *(295)*.

Systemic challenges in global advocacy and governance

Global cancer advocacy has grown substantially in influence but remains fragmented, with many actors focused on specific disease areas rather than shared, system-wide solutions that benefit all people affected by cancer. At the global level, the absence of united advocacy and current fragmented governance has limited the political urgency and financing that cancer receives compared with other health agendas that have more coordinated coalitions. Different alliances and NGOs champion different metrics (survival, incidence, specific technologies) and different policy frames (rights-based, economic, innovation-driven), which can confuse policymakers and dilute the pressure for coherent NCCPs and universal coverage of core services.

Individual cancer communities often work in parallel, each with their own campaigns, messaging, and funding appeals. This leads to competition for attention and resources rather than a unified push for a stronger, more comprehensive cancer agenda aligned with global health priorities.

The way forward is to focus on common platforms bringing together diverse cancer actors in a unified manner, under the banners of solidarity and multilateralism and around a concise set of shared priorities, focused on integrating cancer into broader UHC and NCD agendas. Cancer-specific priorities should retain visibility, particularly for programmes with

strategic impact like childhood cancer and shared messaging can remain for collaboration, coordinated mobilization and aligned implementation. If successful and centred on the lived experience of millions of people affected by cancer, the cancer community will emerge with greater influence on global financing, market dynamics, and research and development agendas and most importantly lead to improved access and outcomes.

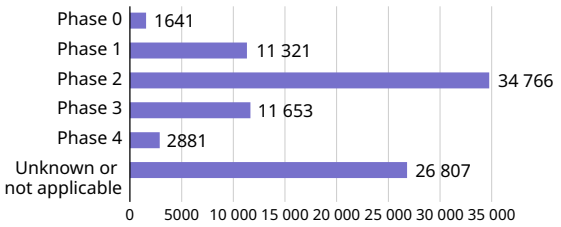
4.2.5 Advancements in cancer innovation and market access

Cancer has benefited from one of the most robust ecosystems of research and innovation. Over the past decade, cancer research has accelerated dramatically, with global scientific output on cancer rising from 11% of PubMed publications in 2005 to 16–18% by 2025 *(296)* This has largely been driven by breakthroughs in immunotherapy, precision medicine, and genomics.

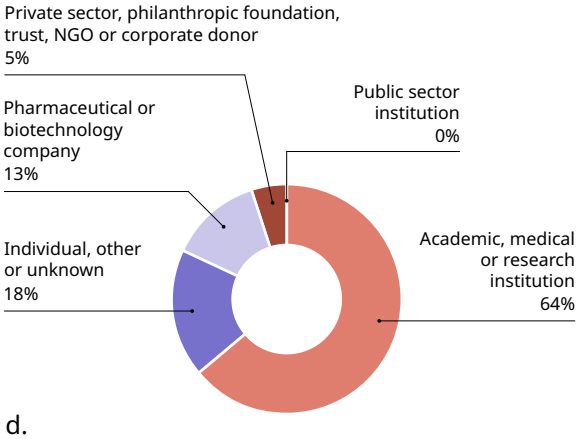
The clinical trials landscape has substantially expanded. Trends show that annual registrations increased at a mean rate of 7.3% between 2005 and 2021. There have been more than 110 000 clinical trials on cancer since 1999 *(297)* (Fig. 81).

Fig. 81. International Clinical Trials Registry Platform distribution of cancer clinical trials, by a) trial phase, b) primary sponsor and c) intervention type, 2025

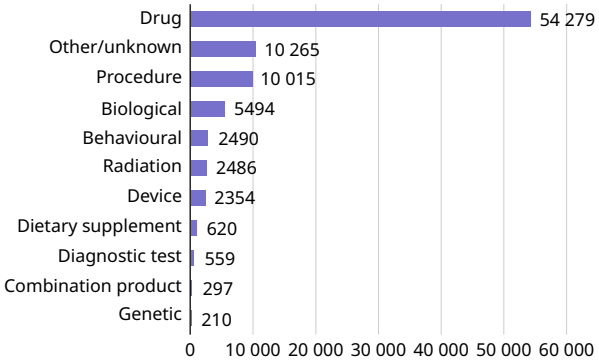
a. Phase of trials (interventional only)



b. Primary sponsor



c. Intervention type of trials

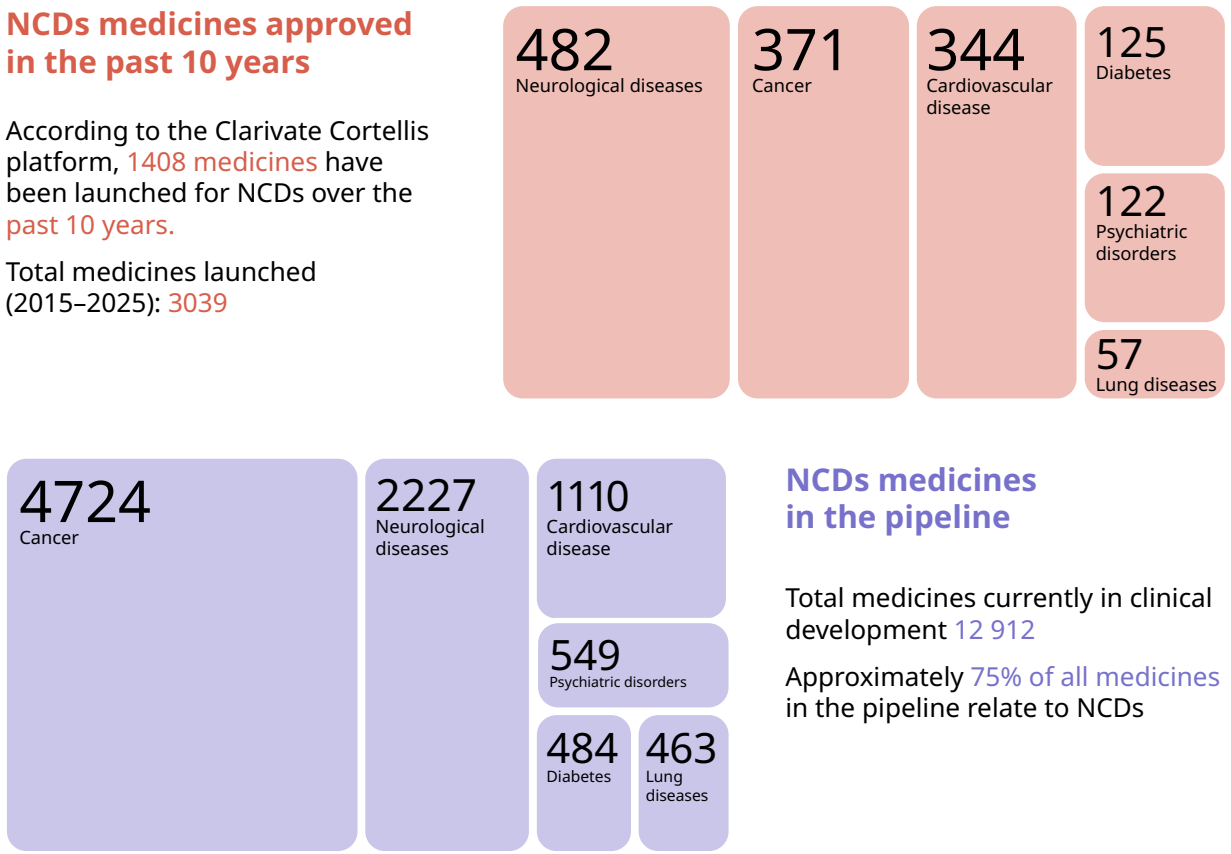


d.

Category/Income group	All trials	Cases per 100k	Deaths per 100k	All trials per prevalence unit	All trials per mortality unit
Low-income	206	136	49	1.51	4.20
Lower-middle-income	7578	259	70	29.26	108.26
Upper-middle-income	25 631	746	160	34.37	160.19
High-income	82 288	2027	238	40.60	345.75

In addition, according to International Federation of Pharmaceutical Manufacturers and Associations, over 1400 medicines approved for NCDs in the past 10 years (2005–2025), 371 (27%) were cancer medicines and of the further 9600 NCD medicines in the pipeline (at different stage of development), 4724 (49%) relate to cancer (Fig. 82) *(298)*.

Fig. 82. Pipeline of cancer medicines, 2025



NCDs: noncommunicable disease.

These advancements have directly bolstered global control and contributed to the reduction in cancer mortality in many countries. Immunotherapy, particularly immune checkpoint inhibitors like PD-1/PD-L1 blockers, has transformed outcomes: pembrolizumab and nivolumab approvals expanded from melanoma in 2014 to over 20 indications by 2025, boosting 5-year survival in advanced non-small cell lung cancer from 5–10% pre-2015 to 20–30% today across trials *(299)*. Antibody-drug conjugates (ADCs) represent another rapidly expanding therapeutic class, with 15 FDA-approved agents and an investigational pipeline spanning more than 100 active clinical candidates and 49% year-on-year increase *(300, 301)*. AI and multi-omics have enhanced early detection linked to increased precision treatments.

Therapeutic vaccines, including with mRNA technologies, are offering a promising approach to treat people already diagnosed with cancer. Precision diagnostic panels and genomic sequencing such as with liquid biopsy, are offering new, promising ways to detect cancer early, to define treatment cohorts who will most benefit from therapy and to offer more accurate ways to monitor for recurrence *(302)*.

Box 25. Examples of 10 current and future pro-equity cancer innovations

1. Health promotion: integrated, structural interventions upstream; personalized risk communication downstream
2. Prevention: single-dose HPV vaccination; therapies to treat obesity; polygenic risk scores for personalized prevention interventions
3. Screening: multi-cancer early detection; AI-assisted screening; liquid biopsies
4. Diagnosis: genomic profiling; point-of-care diagnostics
5. Surgical care: de-escalation, organ-preserving approaches; pre-habilitation programmes
6. Systemic therapy: optimal dosing, duration and formulations; oral therapies including KRAS inhibitors
7. Radiotherapy: FLASH radiotherapy; AI-based contouring and planning
8. Palliative, supportive care and rehabilitation: early integration into care; peer-to-peer networks; return-to-work programmes
9. Financing: outcomes-based and risk-sharing agreements; value-based frameworks
10. Workforce: organizational innovations to address burnout and migration

The future of advances in cancer research and technology is even more appealing. Ahead lies the prospect of exciting new advances for cancer control – advances like personalized cancer vaccines, liquid and synthetic biopsies, injectable cancer treatments that can be delivered in minutes (unlike the intravenous infusions currently used, that can take up to an hour), innovative technologies in digital health including decision-making aids, freeing up time for affected persons and professionals.

In this regard and aiming to better connect treatment development with the patient's expectations, preferences and values, there is an increasing call to include the lived experience from the early development of new medicinal products. At current, a minority of cancer clinical trials include QoL as primary or secondary endpoints (see section 4.3.3). Patient experience data (PED), like patient reported outcomes, patient preference studies, symptom scales, or data collected through patient engagement activities, are important contributors, from development through regulatory assessment to post-marketing activities *(303)*. Inclusion of such perspectives will drive how value is measured – moving beyond survival or surrogate outcomes to the primary importance of QoL *(304)*.

Box 26. AI for cancer prevention and control: responsible adoption to avoid exacerbating inequalities

Despite the significant potential of AI to revolutionize aspects of cancer control and the health system generally over the years ahead, substantial challenges persist.

First, many claims are being made about the use of AI in cancer without sufficient proof of concept; to realize its promise, AI must become part of evidence-based medicine, not replace it. Operationally, the application of AI in cancer care raises serious questions about data privacy risks in health records, algorithmic biases from poor training data, accuracy, reliability issues in diverse settings, and unresolved ethical questions around accountability for AI errors.

These challenges highlight the importance of ensuring responsible adoption of AI, with a focus on prioritizing transparency, equity, and human oversight. These important protections are necessary if we are to realise AI's potential without exacerbating inequalities, as has happened all too often with other cancer innovations. Some emerging domains for AI in cancer are presented in Table 24 below; see also Box 14 on the potential and limitations of AI for cancer diagnostics.

Table 24. Emerging domains for AI in cancer control

Domain	Proposed AI-driven enhancement (example)
Medicine development	Predicting optimal protein structure.
Earlier cancer detection	Generating algorithms using routine patient records to predict cancer risk and to interpret patterns across health, environmental, and behavioural data *(305)*.
Diagnostic imaging	Analysing rapidly images such as MRIs, CT scans, and ultrasounds to detect subtle tumours potentially missed by human reviewers and, thereby, reducing invasive biopsies and wait times *(306)*.
Personalized treatment planning	Performing and interpreting genomic sequencing, biomarker analysis, crucial for precision oncology *(307)*.
Tailored treatment	Optimizing radiation dosing, supporting precision surgery, and forecasting therapy responses to enable tailored plans that minimize side-effects while maximizing efficacy *(308)*.

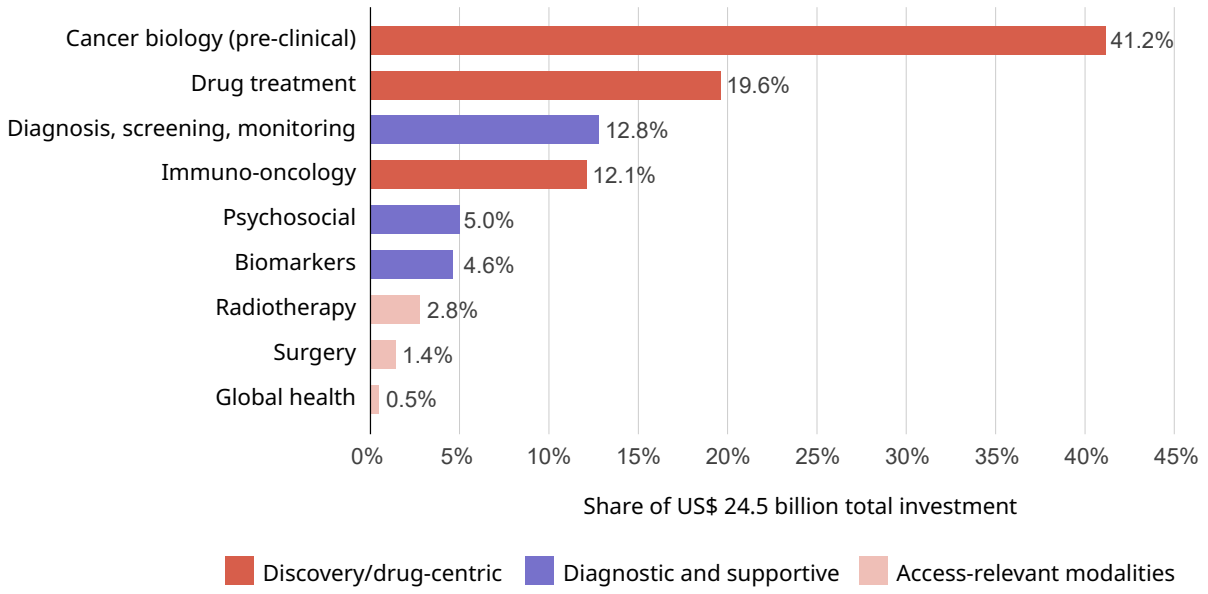
Systemic challenges in balancing cancer research and technologies and essential services

Despite an estimated US$ 252 billion in oncology medicine spending in 2024, there is no structured mechanism to inform cancer research and development priorities; downstream, there is no integrated global platform that links product development with regulatory process and access in a comparable way across countries, creating a structural barrier to planning and accountability *(80)*.

> *Our analysis found only 206 cancer trials based in LICs compared to more than 80 000 trials in HICs*

Innovations in cancer are advancing at unprecedented and blistering speed, positioning cancer treatments as a leading segment in global prescription medicine *(80)*. Globally, it is estimated that approximately US$ 20–50 billion are invested each year into cancer research and development *(309)*. A substantial proportion of these investments come from government agencies and philanthropic organizations *(310)*. Yet, only a small proportion of cancer research and development (R&D) and clinical trials are based in LMICs. For example, global trial diversity has improved modestly, with LMIC sites rising from 10% to 18% participation, though 90% of trials remain high-income level based where only 36% of all incident cases occur *(311)*. Global R&D is increasingly concentrated in high-cost modalities such cell and gene therapies and AI-enabled technologies, with hundreds of new oncology indications and patents approved in recent decades (Fig. 83) *(312)*.

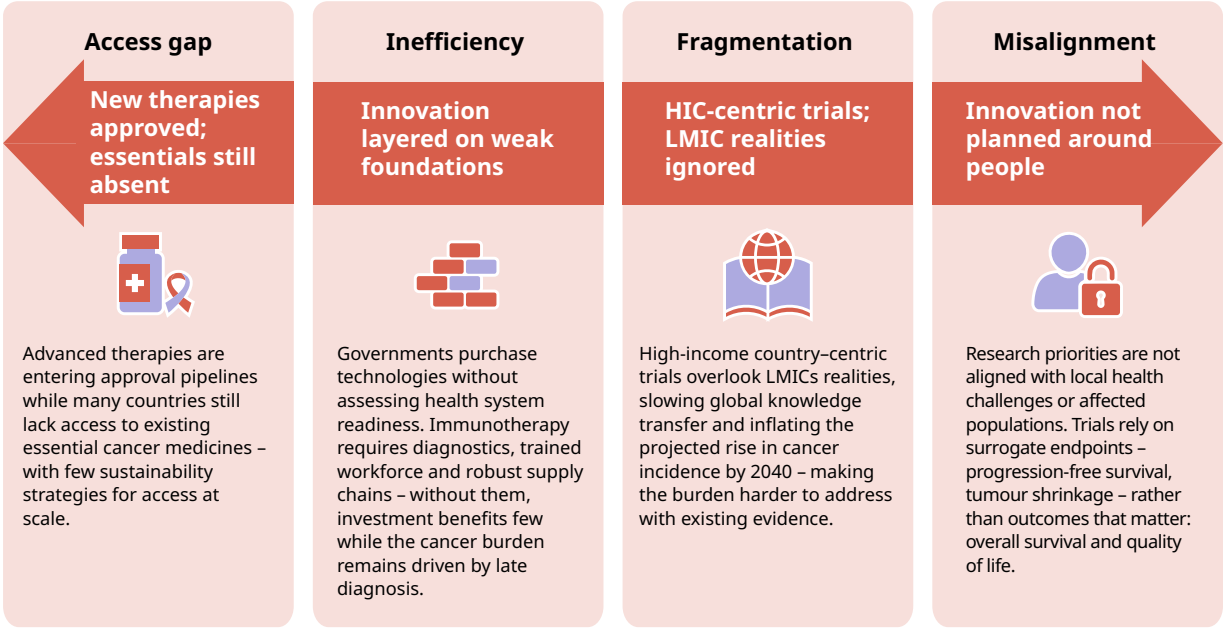
Fig. 83. Global cancer research and development investment, by cross-cutting theme, 2016–2020



A profound dissonance exists between the pace of cancer innovation and equitable access to it. Funding, private-sector investment and scientific prestige favour frontier innovation, while political and financial commitment to primary health care and universal access to essential

cancer medicines remains inadequate – leaving the majority of people with cancer without benefit from many advances (Fig. 84).

Fig. 84. The Innovation–Access dissonance in cancer product innovation



First, advanced therapies are being approved, yet many countries still lack access to existing essential therapies and there are very few sustainability strategies to enable access at scale.

Second, gaps in health system capabilities are driving inefficient resource allocation: governments may be inclined to procure innovative technologies without first ensuring foundational health system elements are in place. Immunotherapy, for example, can only be delivered safely where appropriate diagnostics, a trained workforce and robust supply chains exist. Innovation layered onto weak foundations benefits few people.

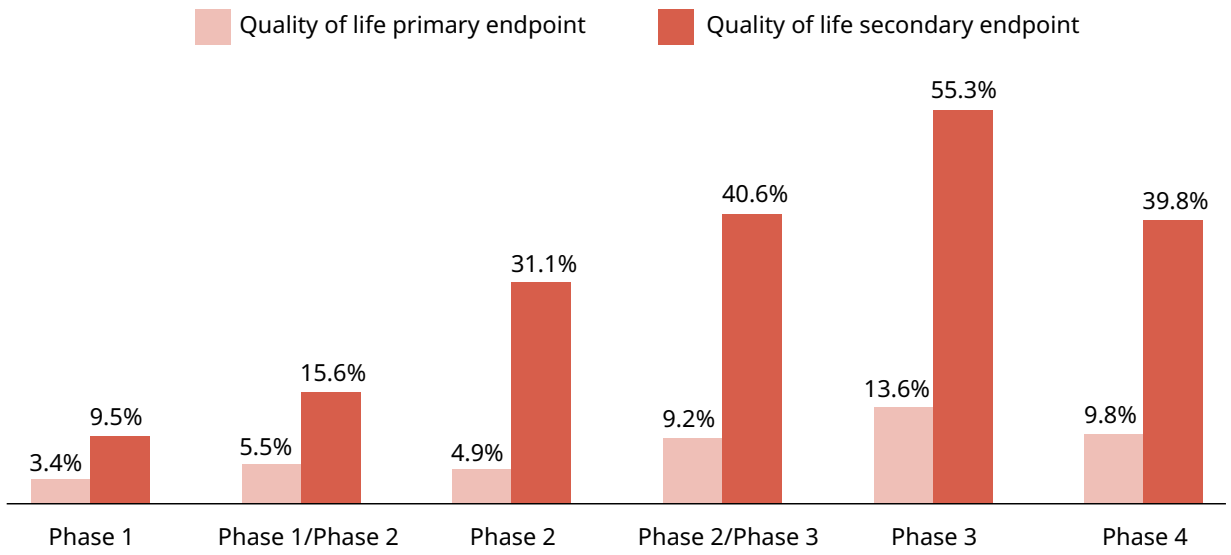
Third, it perpetuates fragmented progress: trials concentrated in HICs overlook LMIC realities, slowing global knowledge transfer and reinforcing the projected rise in cancer incidence – estimated to reach 35 million new cases annually by 2050. An analysis of the distribution of trials identified 7578 trials in LMICs, compared to 25 631 in U-MICs, 82 288 trials in HICs, and just 206 in LICs *(297)*.

Finally, innovation is not planned around people. Improving cancer care requires aligning research priorities with local health challenges and priorities of affected populations. This includes how success in clinical trials is measured and how value is determined. Many trials continue to rely on surrogate endpoints – such as progression-free survival or tumour shrinkage instead of outcomes that matter most to people diagnosed with cancer, like overall survival or QoL *(313)* (Fig. 85).

> *Many countries still lack access to existing essential therapies*

Surrogate gains do not reliably or consistently translate to meaningful benefit: only about five out of 26 oncology products approved on surrogate endpoints showed improved overall survival in later studies *(314)*. Only approximately 37% of registered trials in the International Clinical Trials Registry Platform (ICTRP) include QoL-related endpoint in either their primary or secondary outcome registrations in 2026 with an estimated 7% registering QoL as a primary endpoint *(315)*. There is no clear evidence of progress in including QoL as a registered endpoint in the past decades.

Fig. 85. The inclusion of quality of life as an endpoint in clinical trials, 2026



The way forward is to strengthen engagement of people with lived experience of cancer in trial design and outcome selection, designing innovation around value around their priorities. WHO's Global action plan for clinical trial ecosystem strengthening *(316)* provides the roadmap for how to improve access to clinical trials, particularly in LMICs, and by extension, how to augment research priorities that are particularly relevant in settings with weaker health systems (e.g. dose optimization, de-escalations protocols).

4.3 National transition from strategies to implementation

4.3.1 The starting point for success: national cancer control plans and other cancer-related policies

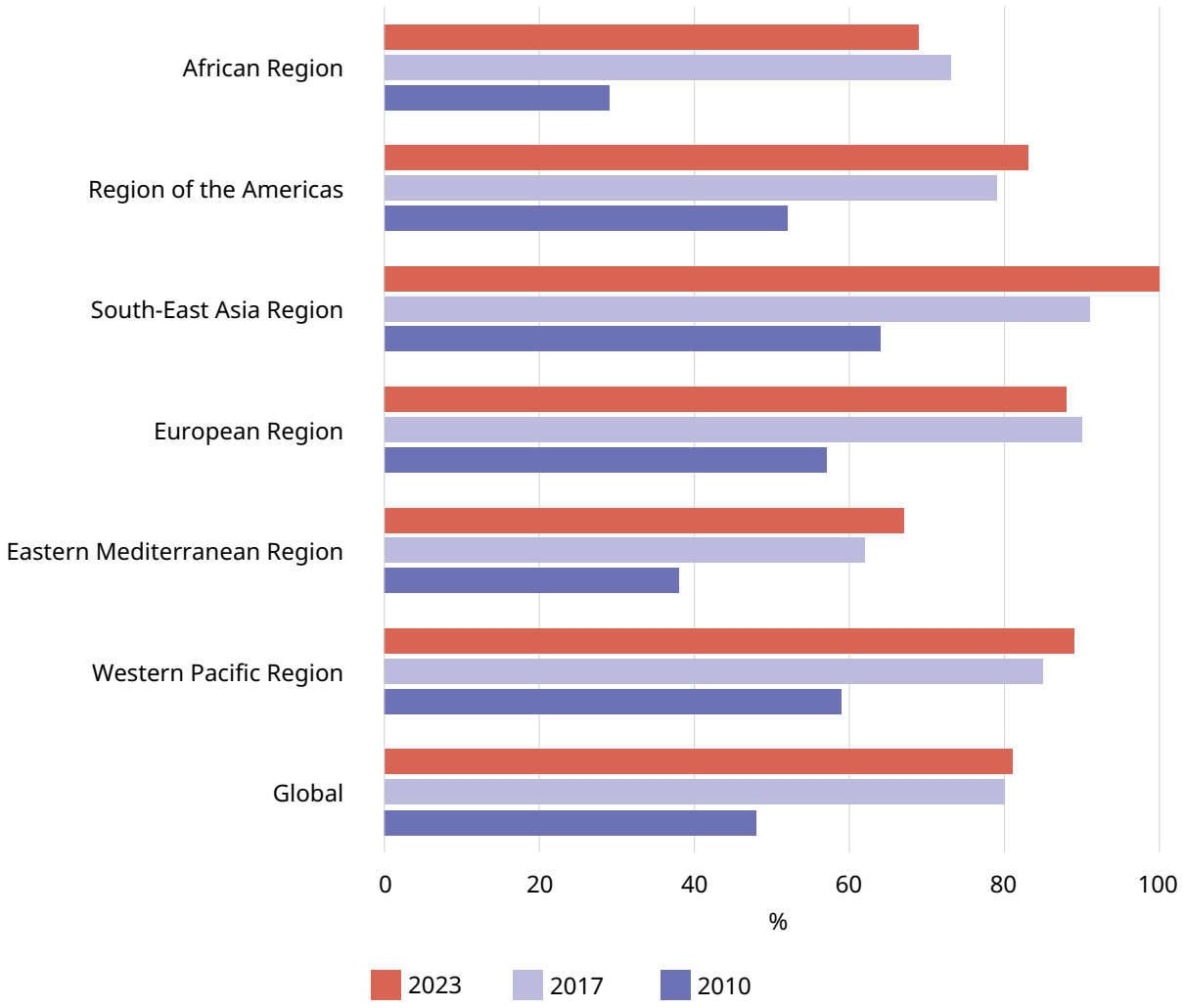
National cancer control plans (NCCPs) provide the cornerstone framework through which governments address cancer systematically and comprehensively (Table 25). In 2005 and 2017, World Health Assembly resolutions committed governments to develop, implement and periodically update NCCPs as the foundation of effective cancer control (Fig. 86).

Table 25. Value of national cancer control plans

Domain	Justification
Strategic planning and integration	Provides structured approach to prevention and control and to integrate activities into overall national health systems, national health plans, UHC benefit packages and NCD strategies, among others
Political commitment and action	Secures high-level political support, shifting cancer control from a "goal" to an actionable, resource-supported strategy
Data-driven decision-making	Strengthens and utilizes cancer surveillance data, ensuring interventions are targeted, evidence-based, and capable of reducing premature mortality and improving survival
Resource coordination and sustainability	Identifies funding gaps and provides mechanisms for resource mobilization and domestic resource commitments
Resilience and equity	Promotes system resilience during health system shocks and ensures equitable access to care including protection of vulnerable population

Two recent reviews performed by the International Cancer Control Partnership with WHO assessed national plans of more than 150 countries (both NCCPs and NCD plans) against selected domains *(8, 252)* (Table 26).

Fig. 86. Number of countries with cancer-related policy over time according to responses to WHO NCD Country Capacity Surveys



Source: (155).

The initial 2018 review concluded that NCCPs as standalone government documents have important strategic value to ensure cancer policies are comprehensive and coherent *(252)*. It also defined critical domains of deficiencies in core aspects of NCCPs for which concerted attention was made by ICCP, WHO and other partners *(317)*. The second review showed significant progress in select domains, such as governance, financing or monitoring and evaluation (Table 26) *(8)*.

Table 26. Global national cancer control plan evolution, 2018 to 2024

Policy (domain)	2018 status	2024 status
Inclusion of financing strategies (governance and financing)	7%	27%
Evidence-based recommendations (prevention and early detection/ diagnosis and treatment/palliative care and survivorship)	Low (implicit)	23%
Targets and timelines specificity (prevention and early detection/ diagnosis and treatment/palliative care and survivorship)	General intent	Significant progress (alignment with SMART criteria)
Health equity focus (equity and resilience)	Implicit/general	Only one-third include specific focus

Integrating cancer into health benefit packages

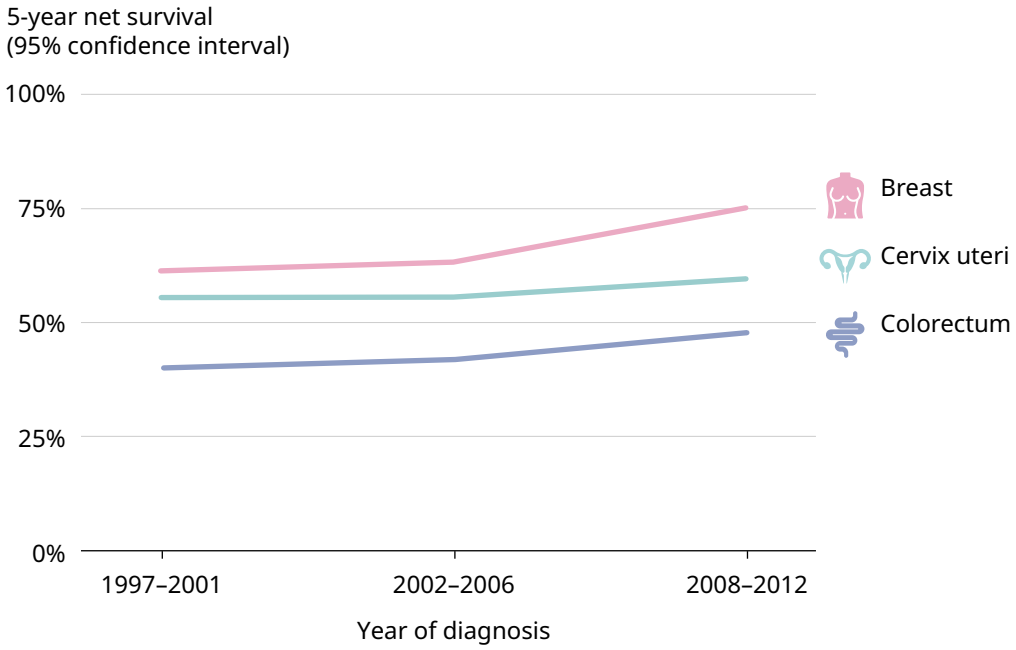
Successfully implemented NCCPs are a useful and necessary starting point, but not sufficient for effective national cancer control programmes. Cancer must be prioritized in other strategic national health policies and decisions including, for example, health benefit packages and cancer-related legislation. There are governments that have successfully included cancer in health benefit packages, demonstrating feasibility (Table 27). Yet, in a survey conducted by WHO, only 28% of countries included comprehensive cancer control in their health benefit package *(11)* (see section 3).

Table 27. Examples of countries' progressive realization toward universal health coverage for cancer services

Country/ programme	Cancer service expansion	Population coverage impact	Financial protection component
India (Karnataka, Ayushman Bharat Arogya Karnataka)	Oncology procedures increased six fold (medical, radiation, surgical) under state health scheme	~60 000 new authorizations with expanded access to cancer treatment *(318)*	Treatment approvals covered under scheme, reducing OOP spending
Indonesia (National Cervical Cancer Commitment)	Scaling HPV screening and treatment, workforce upskilling, diagnostic expansion	Targets 75% screening among women aged 30–69 by 2030 with nationwide rollout *(319)*	Government strategy includes strengthened access to preventive and curative services with workforce scale-up
Ghana (Mahama Cares Programme)	National health insurance extended financial support for NCDs including cancer	NHIS covers ~56% of population (2025); new fund supports cancer treatment costs *(320)*	Financial protection for cancer medication and treatment support *(321)*

When done successfully, reducing financial hardship can improve early diagnosis, expand treatment access, and increase five-year net survival. In Thailand, this translated to improvements of female breast (from 61% to 75%), cervix uteri (55% to 60%), and colorectal (40% to 48%) cancer survival *(322)* (Fig. 87).

Fig. 87. Improvements in 5-year net survival of multiple cancers after universal health coverage implementation in Thailand, 1997 to 2012



Cancer policies are most robust when linked to a legislatively mandated strategy or dedicated national cancer laws that create binding legal frameworks. Governments are passing national cancer acts that establish legal mandates for coordination, services, and accountability in cancer control *(323)*. Governments have also adopted laws which promote social protections and address discrimination or rights of cancer survivors, but these remain relatively few (see section 4.4).

> *28% of countries include comprehensive cancer control in their health benefit package*

Systemic challenges in national strategies

Financing, implementation and monitoring of NCCPs remain critical systemic gaps. The 2025 NCCP review by ICCP with WHO revealed that only 27% of NCCP have dedicated financing mechanisms, 56% include monitoring indicators with data sources, and just 21% detail evaluation responsibilities *(8)*.

Plans set ambitious targets but ignore execution barriers along the continuum. The disconnect between plan development and national rollout stems from factors such as insufficient comprehensiveness, weak governance and inadequate budgets to execute plans. For instance, while 90% of NCCPs prioritize early detection for breast and cervical cancers, only 50% address radiotherapy and reference WHO's EML, highlighting failures to

link screening to treatment *(8)*. The gains from early detection cannot be realized without parallel investment in treatment capacity and other services along the continuum.

Problems with plan priorities

NCCPs are not sufficiently person-centred, missing an opportunity to ensure that the needs, preferences, and values of individuals are central to cancer control efforts.

> *Plans set ambitious targets, but ignore execution barriers*

Just 18% of all NCCPs include strategies to address social determinants of health, such as employment, insurance, education, transportation, housing, and environmental changes – areas consistently raised as priorities by people affected by cancer *(8)*.

Plans do too little to integrate action on inequity barriers. An analysis of NCCPs in the Americas, for example, found that equity was not sufficiently integrated in those NCCPs: 17 documents defined inequity as a problem, mainly related to difficulties in access to care, and although 25 countries had designed equitable interventions, none had dedicated a budget for implementation *(324)*.

Plan priorities are often biased toward hospital-centric models that overload specialized centres with late-stage cases that could have been detected and managed earlier. Meanwhile, people in rural or poor communities face long travel distances and indirect costs that delay or prevent care.

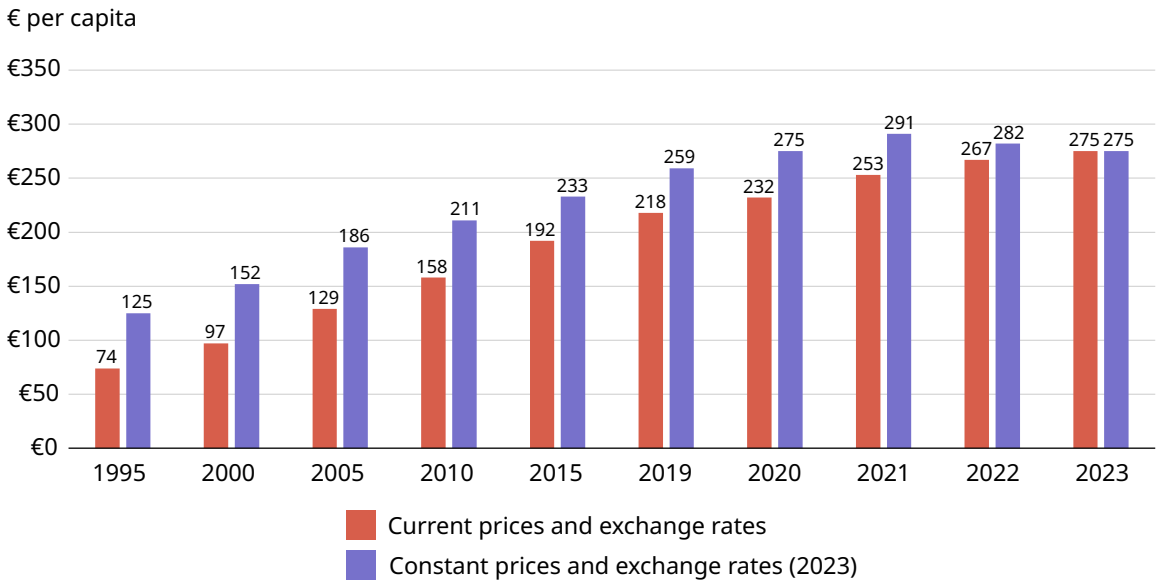
Insufficient financing for cancer control

Financing for cancer control and other NCDs is disproportionately low when considering the current and escalating burden of disease, particularly in LMICs (Fig. 89) (see section 2.4). For the countries with the weakest health systems, the largest proportion of NCD financing remains OOP payments, leading to personal financial hardship *(325)* (see section 4.4.1). Across African countries reporting NCD-specific expenditure between 2018 and 2023, general government expenditure on NCDs is hovering around 40% of health budgets *(325)*; in roughly half (20 of 40), private expenditure has risen over the observation period, including several with already-high baseline OOP burdens (Fig. 88a) *(326)*.

Meanwhile, total cancer care expenditure per person diagnosed has increased substantially (20–50%) over the past 25 years (Fig. 89) with a primary driver being purchasing of cancer medicines (see section 4.3.3) *(79)*. Even when cancer services are included in national health benefit packages, OOP expenses can remain high (Fig. 88b) *(11, 15)*.

Fig. 88. National expenditure data on cancer demonstrating (a) trends in direct costs per capita in Europe (1995–2023), and (b) frequency of catastrophic health expenditure (2018–2024) *(15)* compared against the proportion of cancer services covered under UHC (2020–2021) *(11)*

a.



b.

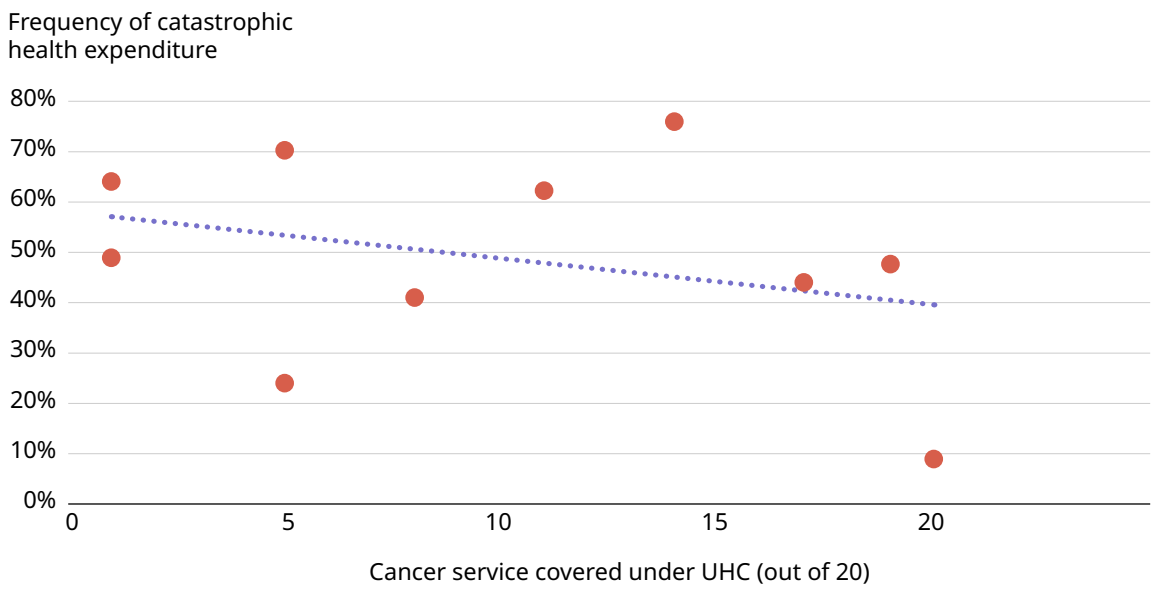
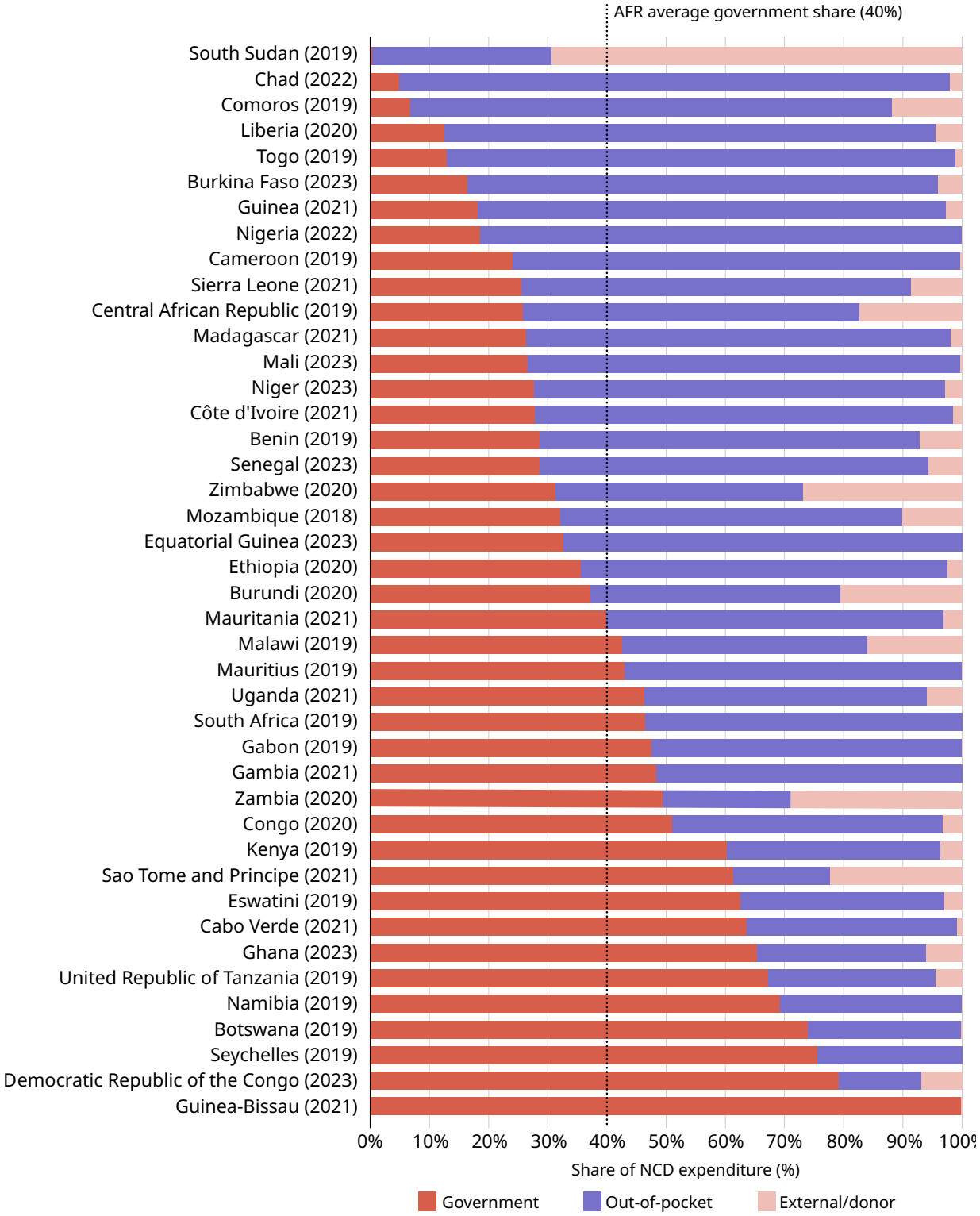


Fig. 89. NCD financing mix in African countries: share of total NCD expenditure by source in WHO Global Health Expenditure Database



Source: WHO GHED disease-coded expenditure (DIS.4 = NCDs).

Incremental extensions, such as scaling diagnostic access for breast cancer, can build on existing resources; however, dedicated financing for infrastructure, such as a cancer centre or new radiotherapy machine, are required to drive progress in cancer coverage and necessitate substantial capital and recurrent investments. Strategic purchasing and public–private partnerships can unlock uncatalogued external support from philanthropies and HICs, while integrating cancer into UHC packages maximizes population benefit and financial protection.

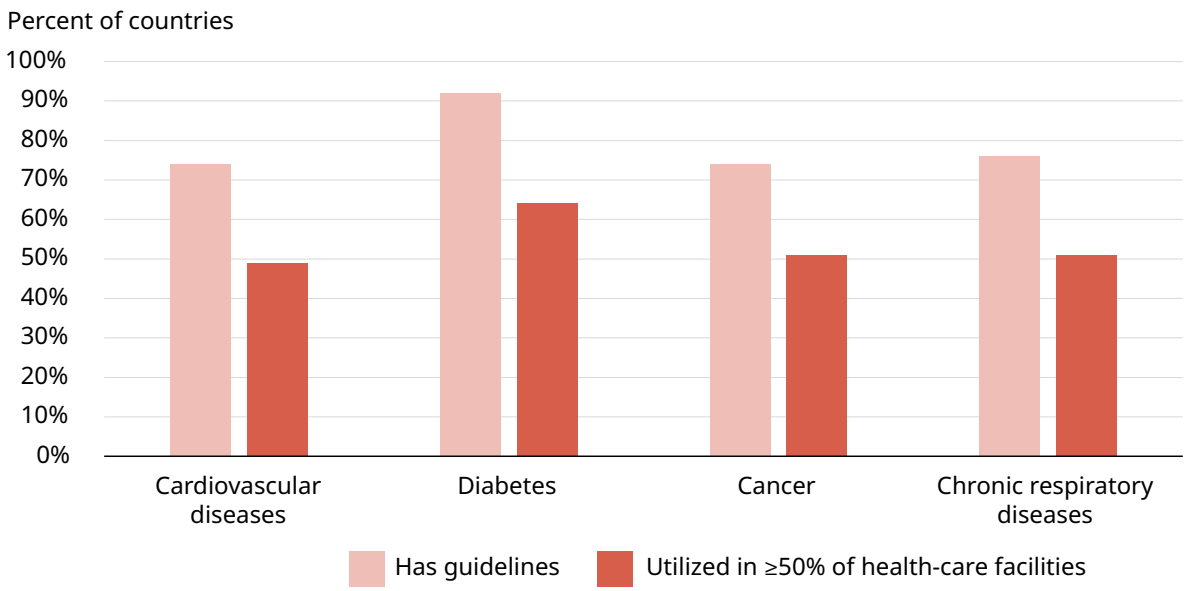
The WHO Academy Course and WHO/IARC prioritization tool are technical resources that can guide sustainable scale-up *(327, 328)*. Planners, health ministries, and finance authorities – with support from WHO – must collaborate on investment cases highlighting cost-effectiveness, ensuring pooled pre-financing (public or private) prioritizes the poorest and mitigates catastrophic costs.

Poor allocative and technical efficiencies

Greater efficiency is ever more important to help meet rising demand for increasingly complex cancer services while managing cost pressures and making systems more equitable and sustainable *(329)*.

Allocative inefficiencies in cancer care are common in which resources are not matched to population needs, such as overinvesting in high-cost therapies while only populations lack access to cancer early detection services *(330)*. Technical inefficiencies are also common when available resources are underused or mismanaged, for example, idle radiotherapy machines or inconsistent cancer medicine supply chains reduce treatment effectiveness. These inefficiencies are impacted by the absence of or failure to adhere to national guidelines, which were reported as absent in nearly 50% of countries in 2023 (Fig. 90) *(198)*. National guidelines are a well-established tool to improve efficiencies while also increasing survival (see section 3.3) *(331)*.

Fig. 90. Availability of national guidelines or treatment standards (2023)



Global UHC monitoring shows that progress towards effective coverage of NCD services, including cancer, lags behind of that for infectious diseases and maternal and child health. At the same time, a substantial proportion of the world's population remains inadequately protected from high out-of-pocket payments for NCD care.

> *Within weeks of beginning treatment at a private specialist hospital in Lagos, the costs began to compound in ways no salary could absorb. Consultation fees, diagnostic scans, chemotherapy cycles, and prescription medications; procured at a high cost. My monthly out-of-pocket medical expenditure exceeded my take-home pay by a factor of three.*
>
> Dozie Akwarandu, person with lived experience of cancer, Nigeria

National progress monitor

Table 28. Progress in NCCP and other cancer-related policies

Indicator status	**GCMF indicator:** Existence of a national cancer prevention and control plan • Substantial increase in dedicated national cancer control plans from 50% in 2010 to 73% (2023) **GCMF indicator:** Existence of national evidence-based guidelines for cancer prevention and control • 73% of countries have cancer guidelines; of those, 70% are utilized in at least 50% of facilities (2023) **GCMF indicator**: Cancer services inclusion in national essential benefits package • Only 28% of countries included comprehensive cancer control in their health benefit packages (2020) **GCMF indicator:** General government health expenditure on cancer medicines • Limited data available; expenditure per capita range from US$ <0.2 per capita to >200 per capita; contributing to 20–90% of total cancer expenditure (see sections 3.3.3, 4.3.3) **GCMF indicator**: Proportion of patients paying out of pocket for cancer treatment • Limited data available; catastrophic health expenditure prevalence from cancer approximately 50–60% globally (see section 4.4.1)
Progress status	**Insufficient progress**

4.3.2 Optimizing the workforce for cancer control

A skilled and well-distributed cancer workforce is the cornerstone of cancer control efforts, performing four essential and interdependent functions:

i) delivering early diagnosis and screening programmes

ii) administering, monitoring, and adjusting cancer therapies;

iii) providing clinical, psychological, and social support to patients and caregivers throughout the cancer journey;

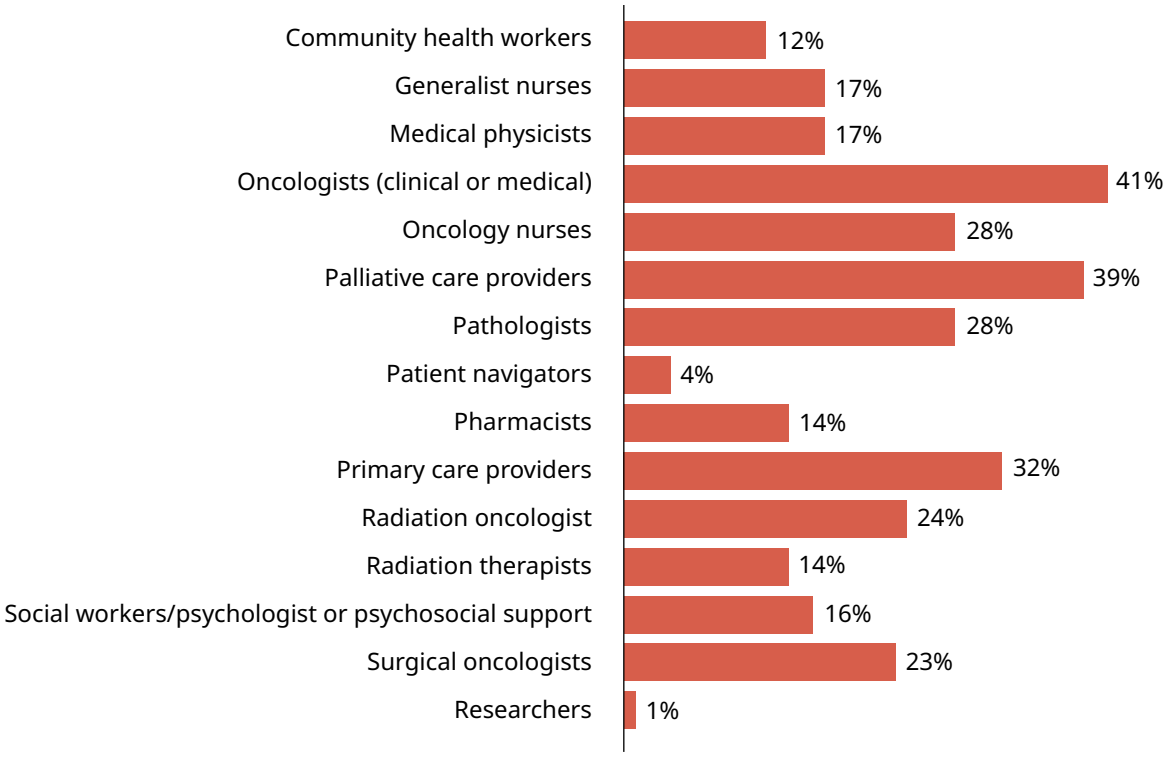
iv) conducting the research that continuously advances cancer outcomes.

The primary systemic challenges to the cancer workforce are insufficient workforce supply, low retention, high attrition, and increasing burnout. Cancer workforce challenges are compounded by the complex nature of cancer management, which means that workforce gaps in certain specialities impact the quality-of-care patients receive at certain stages of their treatment.

Optimized team-based performance: multidisciplinary teams

Because of the complex nature of cancer management, a range of adequately trained health professionals are needed to deliver high-quality care – from detecting symptoms in primary care to providing specialized treatment services, as reflected in NCCPs *(8)* (Fig. 91). Inter-disciplinary care including multidisciplinary teams are now well-established mechanisms of improving care. Multidisciplinary team-based care is a well-established model for improving patient outcomes, with evidence demonstrating increased overall survival, increasing overall survival by 11 months in one meta-analysis across all cancer times *(332)*. Contributing factors include significantly shorter time from diagnosis to treatment initiation, higher rates of complete staging, greater adherence to evidence-based guidelines, and improved patient QoL *(332)*. Yet global uptake remains uneven, constrained by specialist workforce shortages and health system capacity limitations in LMICs.

Fig. 91. Composition of health workforce detailed in National Cancer Control Plans



Simultaneously, in-service training, such as Continuing Medical Education, is critical to bridge the "data explosion" in oncology. Targeted in-service education can improve quality of care including by augmenting clinician confidence in prescribing complex therapies and are increasingly accessible through online platforms and established long-term institutional partnerships *(333)*.

Systemic challenges with workforce for cancer

The workforce for cancer has recently been described by a Lancet Oncology Commission as being in "crisis" *(334)*. Workforce deficits are substantial and driven by brain drain in LMICs, burnout, and budget cuts. Approximately 45% NCCPs reviewed in 2023 included strategies related to cancer workforce hiring for career development to specifically ensure adequate health service delivery, increased from a similar analysis in 2018 *(8, 252)*.

Insufficient workforce supply

Poor facility maintenance, overstretched staff, and insensitive handling of advanced cancer cases can make patients and caregivers feel neglected or humiliated, leading families to take patients home and abandon treatment.

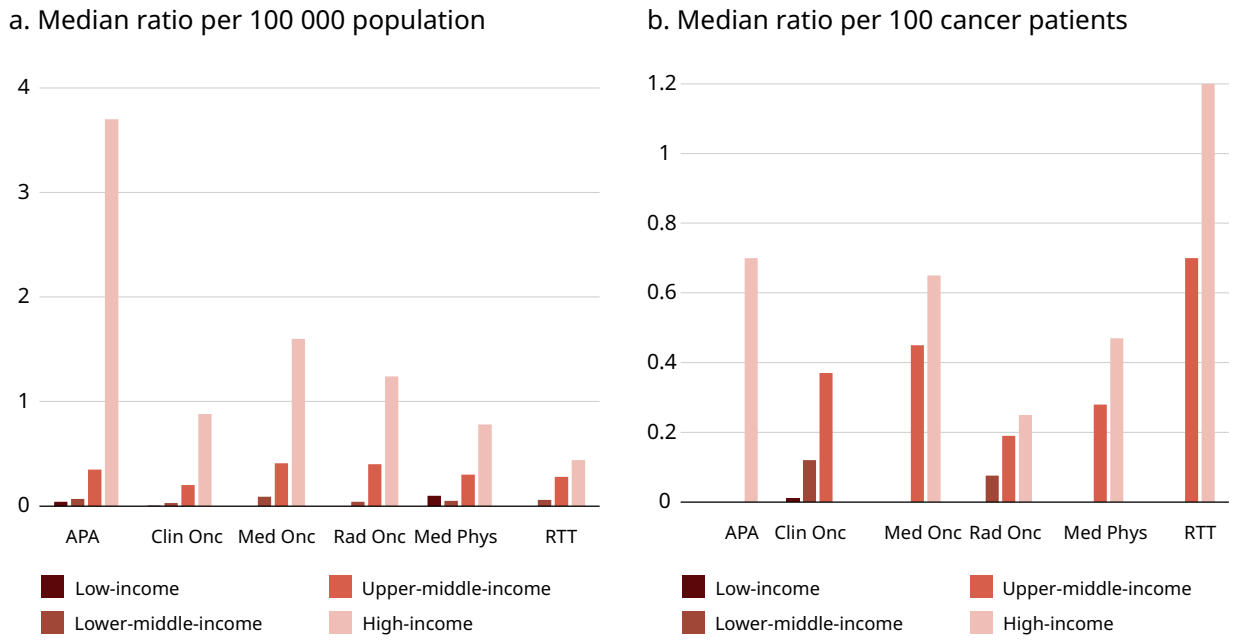
Muktar Abubakar, patient advocate, Nigeria

Global deficits in the total number of trained oncology-related providers and limitations in the core competencies of the available workforce are substantial (Fig. 92) *(335)*. In LMICs, oncology workforce density is much lower than in HICs, leading to overburdened facilities, treatment delays of 4–12 months, and abandonment rates up to 50% for treatable cancers like childhood leukaemia *(336)*.

For example, there is a substantial shortage of radiation oncologists *(337)*. The primary care workforce is strained and under-trained for cancer-related competencies: early detection services are inadequately incorporated into routine services due to factors such as untrained community health workers *(8)*.

Deficits in speciality providers further adds access challenges. Accurate interpretation of histopathology, which guides treatment decisions, relies on the presence of adequately trained anatomical pathologists. Absence of sufficiently trained pathologists delays care and contributes to inappropriate therapy (see section 3.2.1). There is a substantial and persistent shortage of providers in radiation oncology *(337)*. The International Gynaecological Oncology Surgical Outcomes Collaborative multi-country study reported that in LMICs, 50% of gynaecological oncology procedures were performed by junior or non-subspecialty trained surgeons, and these providers had approximately three times higher major morbidity rates compared with specialist surgeons, indicating that lack of specialized training adversely affects patient outcomes *(338)*. Similarly, prescription of systemic therapy has been performed by providers not accredited to deliver such services *(334)*.

Fig. 92. Workforce density variations in core cancer occupations between countries, by income group. Distribution of the estimated median ratios of health providers per 100 000 population (a) and per 100 cancer patients (b).



APA, anatomic pathologist; Clin Onc, clinical oncologist; Med Onc, medical oncologist; Med Phys, medical physicist; Rad Onc, radiation oncologist; RTT, radiation therapy technician.

An insufficient number of cancer health professionals implies greater workloads and less time for in-service training for available professionals, and service provision by untrained professionals. As a result, inadequate workforce compromises quality of cancer care across all levels of the cancer workforce: primary care providers lack protocols for early detection, specialists face challenges because of rapidly evolving fields and the increasingly, highly specialized nature of cancer care. In sub-Saharan Africa, a very low percentage of medical curricula include oncology modules *(339)*. There is limited or no postgraduate training in palliative care *(340)*.

Poor workforce retention

Retention of trained oncologists is a compounding crisis. In one study from the USA, 21% of oncologists practising in 2015 had left clinical care entirely by 2022, with approximately 5% transitioning to industry roles *(341)*. In LMICs, retention is compounded by "brain drain" – the migration of highly trained specialists from low-resource settings to high-income nations. One survey from Nigeria found a turnover intent among all surveyed participants, creating a “reverse subsidy” of bearing training costs *(341)*. Given the length and cost of oncology training – typically 8–10 years post-medical school – reducing the attrition of 20–40% of oncology providers is priority to augment workforce availability, particularly in LMICs. Related challenges exist in HICs. In one study from the USA, 21% of oncologists practising in 2015 had left clinical care entirely by 2022, with approximately 5% transitioning to industry roles *(342)*. Attrition within rural areas also compounds access to care.

Finally, the cancer workforce is also subjected to unique stressors and has experienced higher rates of burnout. Burnout – defined by the WHO as a syndrome of chronic, unmanaged workplace stress characterized by emotional exhaustion, depersonalization, and reduced efficacy – has reached crisis levels in oncology. An estimated 49–59% of oncologists in select HICs reported burnout symptoms in the past years, increased over the past decade and representing one of the highest rates recorded among any medical specialty *(343, 344)*.

The workforce in cancer is particularly susceptible to burnout because of the high workload, chronic stress of complex, life-altering decisions, additional bureaucracy for treatment approvals and salary expectations. Burnout was directly linked to medical error, reduced patient satisfaction, and – critically – accelerated attrition. The cost of burnout-related professional turnover in oncology is extremely high, creating a powerful economic and clinical opportunity for targeted intervention.

An optimized cancer workforce requires a labour market approach, evaluating broad policy levers. Unfortunately, there is limited evidence of evidence-based workforce optimization strategies in cancer *(338)*. Role delegation may offer a plausible efficiency solution and has been trialled for select services; a few studies have supported its safety and efficacy. For example, data have shown nurse-led cancer screening and treatment interventions can achieve similar levels of care while improving access *(345–348)*. However, given the value impact of specialized, training in cancer, role delegation should only be considered in limited contexts.

Other important strategies include improving productivity, decreasing inequities, strengthening mentorship and succession planning, strengthening education and training (such as continuous professional development), improving the diversity of cancer workforce with evidence of benefitting care for minoritized communities, providing, competitive salaries and compensation including removing the gender pay gap, and investing in technology to improve working conditions and efficiency of the workforce *(334, 349)*. Better data and more reliable forecasting are needed to improve workforce planning and strengthen the case for investing in human capital.

National progress monitor

Table 29. Progress in workforce for cancer control

Indicator status	**GCMF indicator:** Availability of trained health care professionals • Limited data from health workforce accounts; available studies workforce gaps of 2–5x between HICs and LMICs • Workforce experiencing relatively high burnout and attrition **GCMF indicator (core)**: Availability of cancer multidisciplinary team for comprehensive cancer management at the facility • Limited data available (see section 3.3.3)
Progress status	**Minimal progress**

4.3.3 Access to cancer medicines and technologies, focusing on prioritization and sustainability

Innovations in cancer medicines and technologies have contributed significantly to improvements in cancer outcomes over the past two decades *(211)*. This progress has been driven by substantial investments in cancer research and development (see section 4.2.5), by prioritizing products offering value for money and by focusing on sustainable financing.

There is emerging evidence of select essential cancer medicines being increasingly financed and accessed. Over the past decade, the availability gap of WHO essential cancer medicines has narrowed among countries with different income levels. Between 2012–2022 in a study of 40 countries, consumption of WHO's EML cancer medicines (in defined daily doses) had an average annual growth rate of 16.8% for middle-income countries compared with 1.8% in HICs. By 2022, annual consumption of WHO essential cancer medicines showed no significant difference between HICs and middle-income countries *(350)*. Expenditure on WHO's EML cancer medicines had an average growth rate with an annual growth rate of 8.96% in middle-income countries, compared with -0.06% – a finding that may have also be impacted by relative increases in disease burden, improving access and/or prescribing of innovative medicines. Both consumption and expenditure on innovative medicines not on WHO's EML are rising rapidly, with HICs spending nearly substantially more than MIC on this category of products *(350)*. Data on sustainable financing are less evident.

Cancer medicines represent a fast-growing segment of pharmaceutical expenditure worldwide. Global spending on cancer medicines is estimated to have reached US$ 252 billion in 2024 and is projected to exceed US$ 441 billion by 2029 – driven by increasing total number of new diagnoses, and also by structural features of modern cancer care: escalating launch prices, complex therapeutics with relatively high production costs, expanded treatment duration, and the proliferation of multi-agent regimens *(80)* (Table 30).

Table 30. Mean monthly costs at initial FDA approval of cancer medicines, inflated to 2025, US$

Typology	Before 1990	1991–1995	1996–2000	2001–2005	2006–2010	2011–2016
Monoclonal antibody	–	–	US$ 6565 (n=2)	US$ 19 703 (n=3)	US$ 19 639 (n=2)	US$ 27 123 (n=11)
Monoclonal antibody conjugated	–	–	US$ 7863 (n=1)	US$ 2134 (n=2)	–	US$ 21 018 (n=2)
Small molecule	US$ 749 (n=25)	US$ 2115 (n=14)	US$ 3241 (n=22)	US$ 8365 (n=14)	US$ 11 021 (n=17)	US$ 14 633 (n=35)

Note: Inflated from 2014 to 2025 US$ using the US CPI-U all-items index.

Increasing government expenditures on cancer technologies can have substantial public health impact when investments are guided by value for money. Because every additional dollar spent on a cancer technology carries an opportunity cost – forgone investment in

another intervention with its own health return – the public health impact of increased expenditure depends on whether the technologies purchased offer greater value than the alternatives displaced. Benchmarking – the systematic comparison of expenditure and outcomes against reference values – can complement prioritization by providing reference ranges against which stakeholders can assess expenditure patters and potentially improve efficiency (Table 31).

Table 31. Benchmarking annual expenditure on cancer medicines (US$) per patient, by income group

Expenditure threshold	1% total HE	2% total HE	3% total HE	4% total HE	5% total HE
LIC	US$ 1073 (805–1341)	US$ 2012 (1610–2683)	US$ 3085 (2280–4024)	US$ 4024 (3085–5499)	US$ 5097 (3890–6841)
LMIC	US$ 2147 (1476–3488)	US$ 4293 (2951–6975)	US$ 6439 (4427–10 329)	US$ 8585 (5768–13 817)	US$ 10 731 (7243–17 304)
U-MIC	US$ 4158 (2549–6036)	US$ 8317 (5097–12207)	US$ 12 609 (7646–18 243)	US$ 16 768 (10 061–24 280)	US$ 20 926 (12 609–30 316)
HIC	US$ 10 866 (6305–19 549)	US$ 21 865 (12 609–39 170)	US$ 32 194 (18 914–58 755)	US$ 43 596 (25 219–78 474)	US$ 54 462 (31 523–98 058)

HE: health expenditure. Numbers represent median US$ in 2025, with interquartile ranges in parentheses.
Source: (351).

Systemic challenges to accessing cancer medicines

Access to cancer health products remains constrained by lack of clarity on products offering value for money, unsustainable and/or inadequate financing and fragmented supply, linked to broader market dynamics and challenges along the value chain (see section 3.3.3) (Box 27).

Box 27. Cancer medicines value chain faces significant challenges from a global perspective

Research and development: High expenses, long timelines, substantial failure rates, limited clinical trial availability, lack of prioritization of certain cancer types and therapeutic formulations *(297)*.

Manufacturing: API production concentrated in a limited number of countries (e.g. China, India), sterile production complexities for biologics, low margins on generics, and quality control issues.

Regulatory approval: Divergent global standards delay market entry, limited HTA capacity or inputs, expedited pathways risking safety oversights or unequal access.

Distribution and logistics: Cold-chain vulnerabilities, poor infrastructure and gaps in rural/low-resource areas exacerbate stockouts.

Procurement and pricing: Opaque tender processes, aggressive price negotiations eroding generic supply, and reimbursement delays hinder affordability, especially in public sectors.

Access: Inequitable insurance coverage, high OOP costs, and fragmented health systems leave the majority of cancer patients in LMICs without essential medicines.

Market failures in cancer medicines are evident. Over 25 years since one of the most impactful, "game-changing" targeted therapies in cancer was developed – trastuzumab – still only a minority of the global population has access without financial hardship because of stagnation in NEML uptake, inadequate domestic financing, and absence of a delivery infrastructure for HER-2 testing and/or treatment (Table 32).

Table 32. Access to trastuzumab – overview of access

Domain	Challenge(s)
Policy inclusion	Only 62% of health benefit packages *(11)* and 44% of NEMLs include trastuzumab *(218)*. Inclusion in NEMLs not consistently linked to inclusion in health benefit packages or national treatment standards *(352)*.
Regulatory approval	Lack of regulatory harmonization including for biosimilars, limited uptake of WHO pre-qualification *(353)*.
Diagnostic capacity	Lack of specialized pathologists or reagents to confirm which HER2 testing with only 50% of surveyed labs in one sub-Saharan Africa study having ability *(354)*.
Pricing	80% price variation depending on supplier and purchaser *(355)*.
Clinical access and affordability	40–60% of LMIC hospitals and clinicians report routine access without substantial OOP payments *(210, 211)*.

Purchasers of cancer medicines and technologies must deal with the complexity of increasing budget impact driven in-part by variable or uncertain clinical value, rising prices and unreliable constrained supply.

Incomplete value assessments

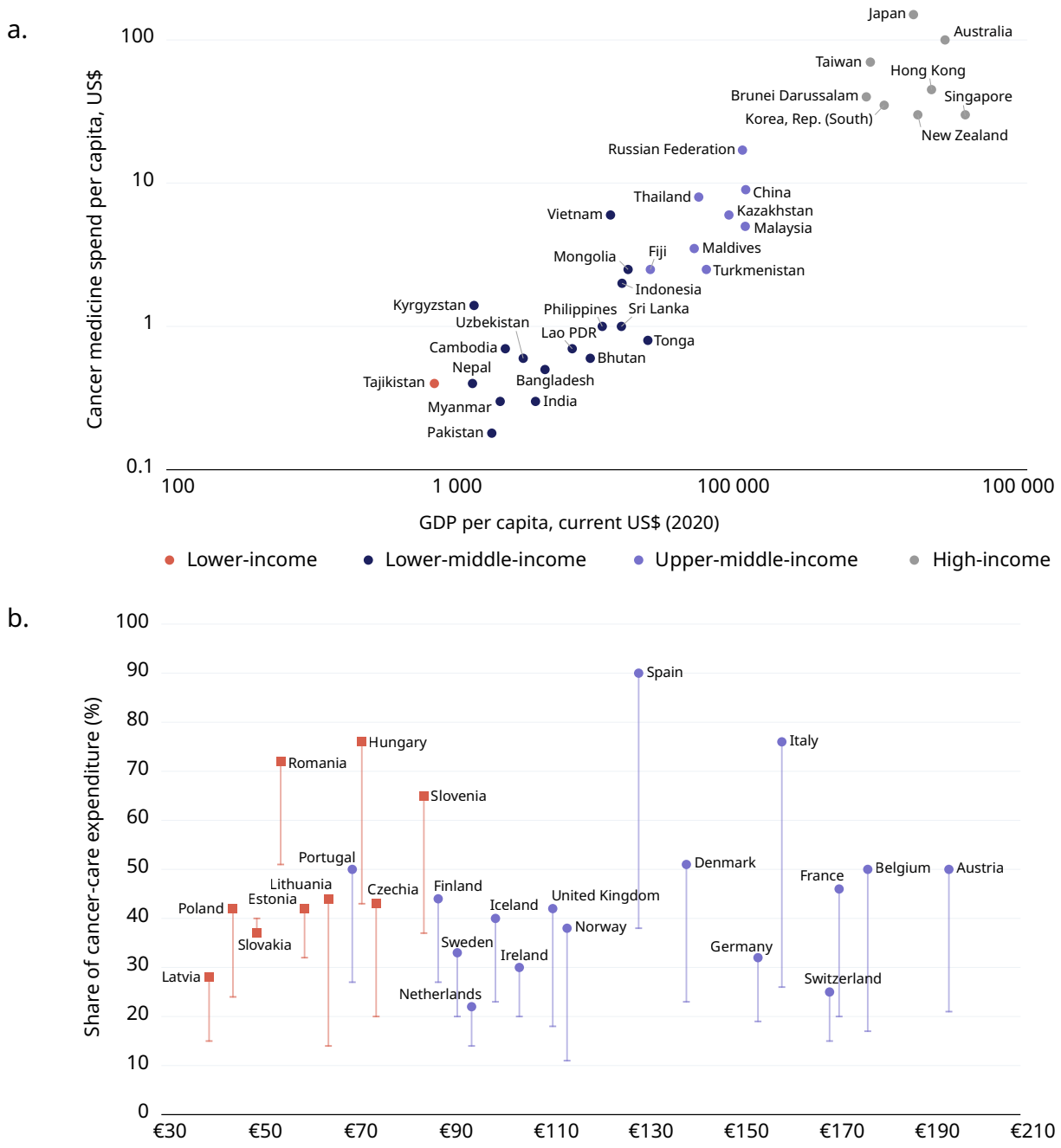
Rational use of cancer medicines is threatened by an inadequate evidence base upon which regulatory approvals and pricing decisions are made. Regulatory agencies worldwide have increasingly approved cancer medicines on the basis of surrogate endpoints rather than on the outcomes that matter most to patients: overall survival and QoL *(356)*. A retrospective analysis of FDA approvals based on immature survival data found that only approximately one-third of cancer medicines approved over two decades demonstrated improved overall survival *(357)*. Without convergence around a coherent, person-centred framework for value assessment, national systems face the difficult task of making coverage and pricing decisions without the evidence needed to do so.

Rising prices

The annual treatment cost of newly launched oncology medicines has increased substantially, reaching a median of US$ 260 000 in 2022 compared with US$ 63 534 a decade earlier *(358).* Compounding this per-unit escalation is increasingly lines of therapy and a growing proportion of regimens involve combination therapy. The concentration of cancer expenditure on high-cost health products creates a precarious "crowding-out" effect that can compromise the holistic nature of oncology care (Fig. 93a) *(359).*

When a disproportionate share of the budget is consumed by advanced health technologies, facilities often face a "zero-sum" reality where essential but less "profitable" services, such as psychosocial support, are underfunded (Fig. 93b) *(79)*. It heightens financial toxicity for individuals and increases the facility's vulnerability to supply chain disruptions or sudden price increases, potentially leading to "treatment interruptions" or abandonment if the procurement of high-cost therapies becomes unsustainable.

Fig. 93. Government expenditure on cancer medicines: (a) benchmarked against GDP per capita, 2020 *(359)*, and (b) proportional increases in per capita expenditure on cancer medicines, 2014–2023 *(79)*



Note: Per-capita expenditure refers to 2023 values. Arrows indicate the change in the share of cancer expenditure attributable to medicines between 2014 and 2023. Values based on list prices that can lead to overestimation of true expenditure. Per-capita expenditure refers to 2023 price levels and exchange rates. Bulgaria, Croatia, Greece and Luxembourg excluded because of data quality.

Supply fragility

Oncology has been disproportionately affected by shortages: approximately 90% of US cancer hospital systems reported anti-cancer medicine shortages in 2024 *(360)*, with similar reports globally *(210, 211, 226)*. Off-patent essential medicines were most likely to be unavailable, because their low price creates no economic incentive for manufacturers to maintain robust production capacity, invest in quality assurance, or hold buffer stocks.

In addition to shortages, stockouts can occur in LMICs because of fragmented systems with undependable forecasting, unreliable suppliers, poor inventory control, and third-party distributors *(361)* (see section 3.3.3). The result is a dual failure: purchasers pay more for the cancer medicines and still face lack of availability therapies. The paradox of shortages in US$ 2/vial medicines while US$ 200 000/year novel therapies dominate oncology budgets reflects a system in which market signals have been systematically distorted.

The entry of generic and biosimilar medicines constitutes a major mechanism for expanding access. Data from predominantly HICs have shown biosimilars for oncology account for a median of about 85% of units sold within the first five years *(362)*. However, lengthy approvals, non-transparent purchasing, non-inclusion in clinical practice or insurance schemes can block uptake, even for generic or biosimilar medicines that could significantly improve access and reduce costs. Patent thickets, evergreening, and product-hopping strategies by originator manufacturers further delay biosimilar market entry. On the clinical side, only 26% of oncology clinicians surveyed in one analysis could provide a satisfactory definition of a biosimilar *(363)*. These structural failures carry enormous costs with one study estimating that biosimilar uptake through 2024 generated US$ 13–66 billion in savings to the USA system *(364)*.

Over-reliance on humanitarian donations

While humanitarian donation programmes have provided life-saving cancer medicines to patients who would otherwise have no access, an over-reliance on them carries the risk of dependency on a model that is vulnerable to discontinuation, donor priorities, and limited coverage, and that may delay the structural investments needed for genuinely sustainable access. Donations are not a mid- or long-term solution *(365)*.

National progress monitor

Shifting this dynamic involves intentionally guiding market dynamics, based on existing and emerging global consensus. WHO has provided a range of normative guidance and assets. including in cancer, directly relevant to each of the challenges described above (Fig. 94).

Crucially, better management of access is needed. Innovation itself should optimally reduce the total cost of treatment per patient: precision medicines that identify and treat only responsive populations, curative or disease-modifying regimens that reduce the need for multiple lines of therapy, and improved predictive biomarkers that avoid ineffective treatment should, if deployed within fair pricing frameworks, decrease per-patient expenditure – converting the current dynamic in which innovation drives cost escalation into one in which innovation drives both better outcomes and system sustainability. The WHO EML expert committee has also noted the importance of providing comprehensive information on treatment trade-offs while exploring clinical strategies such as dose optimization, vial sharing, and longer administration intervals to expand access to oncology therapeutics *(366)*.

Fig. 94. WHO activities to increase access to cancer medicines

Supporting
20+
countries

Deliver
2+ million
medicines in 2025

Released first ever cancer **target product profiles***, landscape of clinical trials (WHA75.8) including evaluation of endpoints

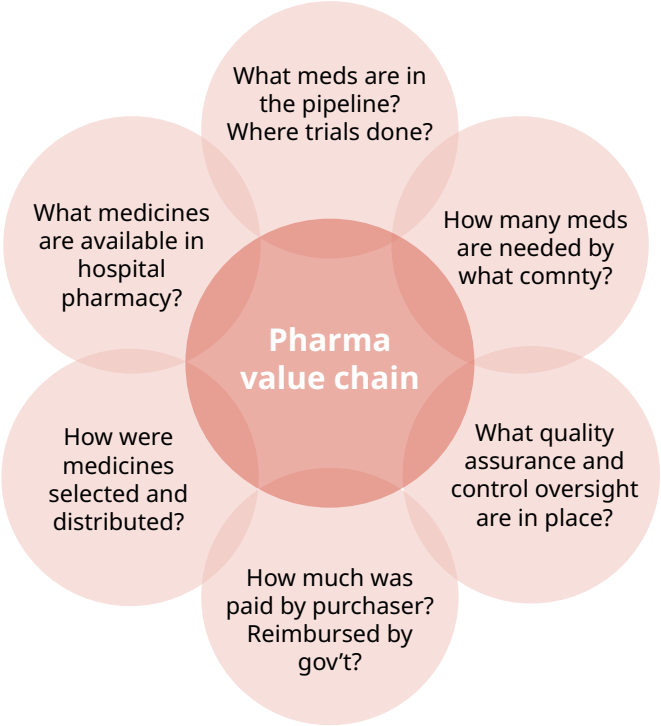
Developed **forecasting** tools in cancer and supply child readiness checklist SOPs*

Expanding **WHO prequalification** and collaborative registration procedure for additional cancer products

Offered tools to governments on **prioritization*** and pricing linked to WHO technical report (2018) and WHA72.8

Guide **selection** (WHO's EML), **diagnostics** (EDL) **prescribing*** (clinical guidance)

**Partnership with St. Jude Children's Research Hospital including through Global Platform for Access to Childhood Cancer Medicines.*



Clinical trials, particularly from LMICs, are evaluating adapting therapies to local conditions in ways that improve outcomes while reducing health system requirements and toxicities. For example, data from India and east Africa identified treatment approaches for lymphoma found context-appropriate regimens using rituximab to improve survival while managing costs *(367, 368)*.

Table 33. Progress in access to cancer medicines

Indicator status	**GCMF indicator (core)**: Availability of essential medicines for cancer management • Limited data from facility assessments; 20 prioritized cancer medicines, reported by health professionals, ranged from only 9–54% of LICs and lower-middle-income countries, compared with 68–94% in HICs (see section 3.3.3) **GCMF indicator (core)**: General government health expenditure on cancer medicines • Limited data available; expenditure per capita range from US$ <0.2 per capita to >200 per capita; contributing to 20–90% of total cancer expenditure (see sections 4.3.1, 3.3.3)
Progress status	**Minimal progress**

4.4 Individual and community level priorities

Global and national advancements and challenges in cancer control ultimately manifest, for better or for worse, in the lived experiences of individuals affected by cancer (see section 2.5). But the relationship is bidirectional, in that the lived experiences of individuals experiencing cancer, if not adequately heeded, also constitute barriers to global and national progress.

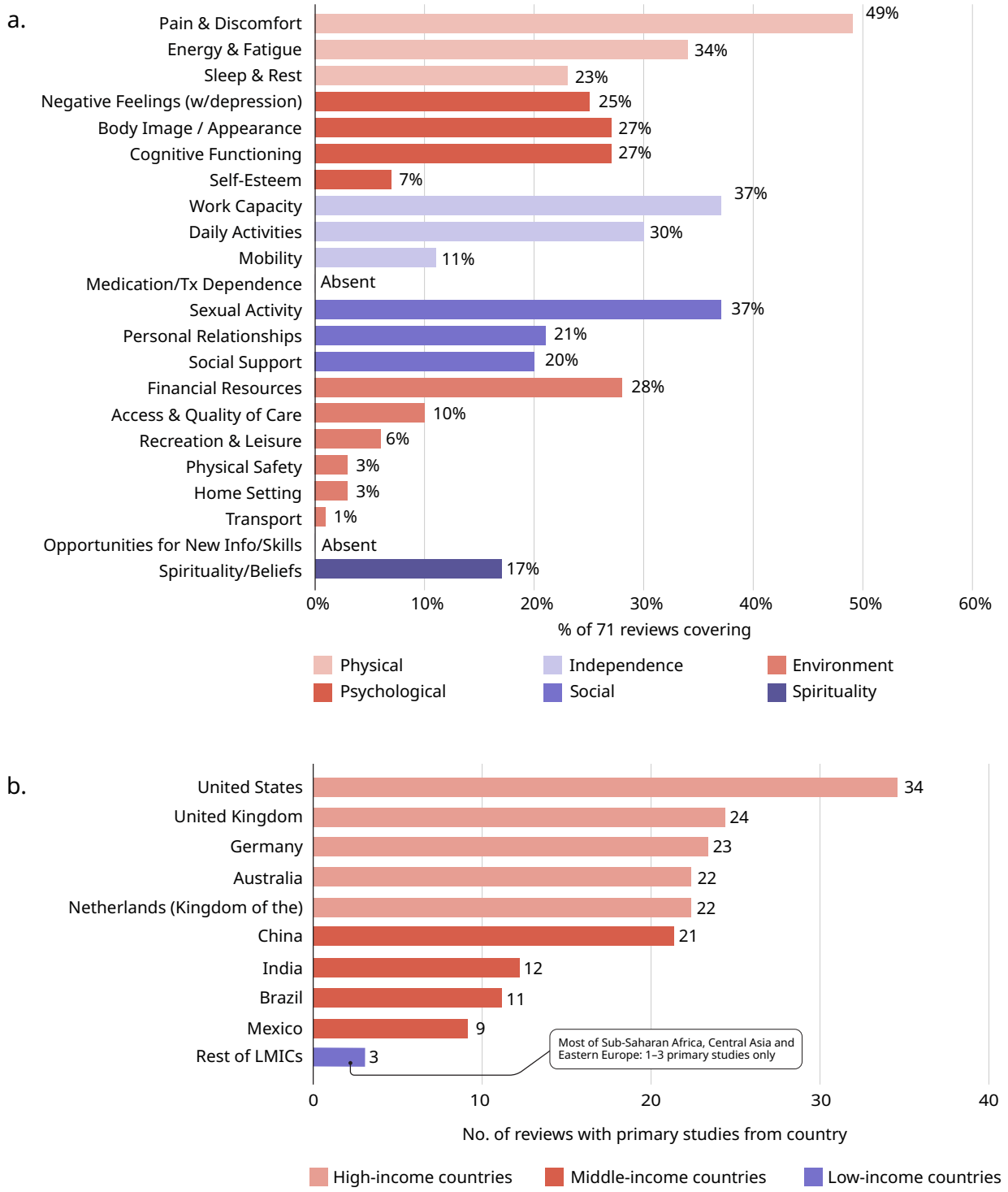
In 2024, WHO convened people affected by cancer and undertook a global consultation to understand what the greatest needs, preferences and needs of those with lived experience are. They developed and endorsed the consolidated statement of cancer care priorities (see Annex).

> *Treatment abandonment is rarely a matter of choice, but rather the result of a pathway filled with barriers.*
>
> Mohamed Belkadi, patient advocate, Morocco

4.4.1 Addressing domains impacted by a cancer diagnosis

A scoping review conducted by WHO revealed the broad range of domains impacted by a cancer diagnosis according to WHO QoL domains, each contributing to personal, social and financial hardships (Fig. 95) (see section 2.5 on capturing the lived experience of people affected by cancer).

Fig. 95. Quality of life domains impacted by a cancer diagnosis from: a) a scoping review and (b) availability of data[13]



Note: Percentages denominator = 71 reviews (per chart). 'Absent' = facet not covered by any review.

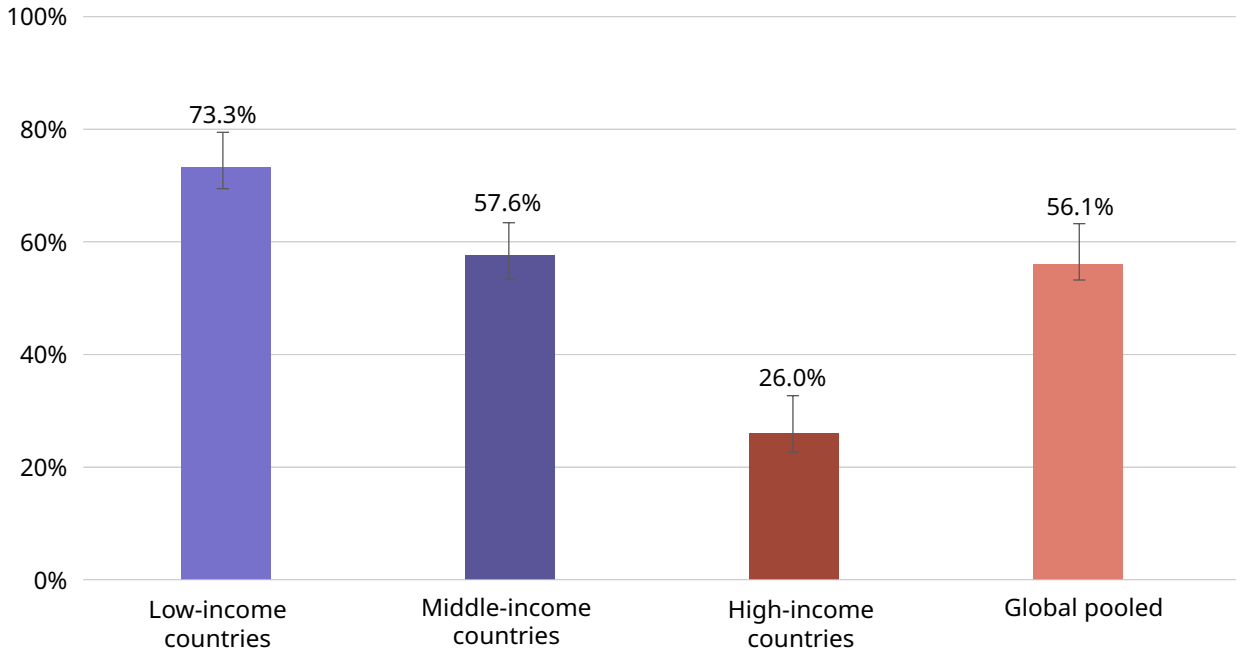
[13] WHO data, pending publication.

Financial hardship

Financial hardship stands out as a primary barrier to cancer care for individuals *(369)*. OOP payments for the direct and indirect (e.g. lost wages) costs of care, caregiving responsibilities and lost employment push households into poverty, with more than half of LMICs affected families abandoning care in one study (Fig. 96) *(15)*.

> *Financial hardship stands out as a primary barrier to cancer care for individuals*

Fig. 96. Catastrophic health expenditure on cancer from 2025 systematic review and meta-analysis of published studies, by income



Even in insured settings, copays and indirect costs (e.g. nutrition, childcare) create hesitation, leading to non-adherence. Geographic and transportation struggles isolate rural or remote patients, requiring days-long journeys to urban centres to receive pathology or radiotherapy services. This incurs high costs per trip and results in months of delays or missed follow-ups.

People living with cancer and their unpaid carers often need to stop working or take a significant time away from work for treatment and rehabilitation. This often leads to loss of income, opportunities for promotion or unemployment.

Our experience showed that the fight was not only against cancer itself, but also against a health system that did not support us from the very beginning. There was no clear pathway or single point of care to take responsibility for the case and guide us, as if the family had to find its way alone during its most critical moments. The delay began at the first line of care, where early signs of leukaemia were overlooked despite being evident.

As a mother, I was highly attentive to every detail, yet my child was initially misdiagnosed. After the diagnosis was confirmed, my child's paediatrician told me: "Your child was the last I would expect to have leukaemia because you are very attentive to your children," as if the disease were linked to the level of parental care rather than its medical nature. The most difficult part was not the mistake itself, but the lack of listening. I was told directly that I was "imagining things" and should return home. It was only my persistence that led to further testing, which confirmed the disease within hours. This experience taught me that the most critical gaps in the system are not only in equipment or treatment, but in awareness, professional humility, and listening to parents who live with constant fear and uncertainty. No mother should ever be forced to prove her fear in order to save her child.

Cancer treatment is by nature financially demanding. In our case, even reaching a correct diagnosis required travelling outside the country for multiple consultations in expensive hospitals, in a journey filled with anxiety and uncertainty. After the diagnosis, we returned and began treatment through a specialized children's cancer charity that provides care free of charge and follows up on the child's case comprehensively.

However, the financial burden extended far beyond medication and treatment. The organization providing care was located in a different province, which forced us to leave our home and relocate during the early phase of treatment, as leukaemia requires close access to the treatment centre. This sudden change made our entire life revolve around treatment. We had to rent a home at a high cost. Although our financial situation was relatively manageable, my husband had to stop working completely, and all our savings were spent within the first year, on housing and basic living expenses.

During this period, I witnessed families living below the poverty line who were unable to afford even a room to stay in, some sleeping on the ground in front of hospitals in extremely harsh conditions, with no adequate support. These scenes are unforgettable and reveal the true burden of the disease on families. After returning home later, the financial burden did not decrease, as we continued travelling every one to two weeks for treatment and necessary tests, with journeys lasting several hours.

Personally, my life came to a complete halt. I stopped seeing friends and avoided going out due to fear of infection, staying almost entirely at home. I had to completely restructure family life to protect my child, especially with my husband's work requiring exposure outside the home. As a mother and primary caregiver, I carried most of the emotional and physical responsibility alone This role as a woman and mother became a full-time, unrecognized burden.

My younger child, only one year old at the time, grew up isolated with his brother and had no interaction with other children, which affected his early social development. I also experienced severe emotional breakdowns, including moments of anger and deep emotional exhaustion, especially during treatment resistance or intense fear in my child. There were times when I felt complete collapse when facing the possibility of relapse and ongoing fear for the future. This experience placed an immense burden on me as a mother, balancing caregiving, protecting my child's life, and trying to remain emotionally stable under continuous fear and uncertainty.

This situation created immense emotional and physical pressure on the entire family, especially on parents, and the greatest burden was on me as a mother caring for a child with cancer and a younger sibling at the same time. This experience taught me that cancer does not only consume health, but completely reshapes a family's life financially, daily, and emotionally.

Batoula Abdeen, mother of a child with cancer, Syrian Arab Republic

Personal and social barriers

Psychosocial burden further impedes access (see section 2.5). Fear, depression, and family pressures lead to substantial treatment refusal rates, while discrimination (e.g. against elderly or marginalized groups) erodes engagement. Gender disparities hit women hardest, balancing caregiving with appointments amid mobility limits *(370)*. Discrimination and mistrust compound issues for people with disability, indigenous or migrant patients. Communication breakdowns between affected families and providers (e.g. use of inaccessible medical language, insufficient discussion time) further garners mistrust and a reluctance to engage.

Peer-to-peer support can completement formal health services and extend care, particularly where psychosocial and supportive care services remain limited or unevenly available. By connecting people affected by cancer with others who share similar lived experiences, peer support can help reduce isolation, improve emotional well-being, increase understanding of treatment and care, and support navigation of complex health systems *(371)*.

4.4.2 Overcoming stigma and misinformation

A cancer diagnosis carries a myriad of misconceptions, stigma and stereotypes that may be the result of misinformation, fear or lack of knowledge about the disease.

Misconceptions about causes of cancer translates into suboptimal care *(372)*. Harmful effects of treatment can reduce a person's ability to work or perform ordinary bodily functions, including infertility, triggering judgement and negative attitudes towards people living with cancer. These experiences can bring shame and guilt, affecting the self-image and mental health of people living with cancer, often also creating barriers for them to avail of early screening services or to seek medical help, leading to community exclusion and isolation.

> *Social stigma also plays a subtle but significant role, leading some patients to withdraw silently from treatment.*
>
> Mohamed Belkadi, patient advocate, Morocco

4.4.3 Leveraging power of social protections

Given these various and often intersecting challenges, people affected by cancer require social protections, which are often not available and better inclusion in national cancer strategies and programme governance. Only 22% of NCCPs have governance structures inclusive of people affected by cancer *(8)*.

Currently, 48% of the global population are without any kind of social protection, 40% are not covered by a health protection scheme, 66% of the working-age population are not legally entitled to sickness benefits and 61% or 146 million people with severe disability do not receive any disability benefit *(373)*. People affected by cancer should be legally protected

> *48% of the global population are without any kind of social protection; 66% of the working age population are not legally entitled to sickness benefits*

by international and national human rights treaties, which virtually all countries have adopted, including the right to health, the right to social security in the event of sickness or disability, or the right to an adequate standard of living (Box 28).

Box 28. How countries have amended laws to improve social protection of cancer patients and carers

Family leave for parents to care for children living with cancer in Chile and Mexico

Chile's SANNA Law (Law No. 21,063), which took effect in 2018 and was driven by advocacy from "Oncomamás", a group of mothers of children with cancer, establishes a paid insurance scheme allowing both the father and the mother up to three months of paid work leave each to accompany children facing serious illnesses such as cancer, organ transplant, terminal illness, or a serious accident with risk of death. To qualify, parents must have a child experiencing a serious health condition as defined under Article 7 of the law, including cancer under treatment, with the leave subsidy funded through Chile's health insurance system (FONASA or ISAPRE) rather than the employer.

In 2019, the Mexican Department of Labor and Social Welfare issued a decree amending the Social Security Law of Mexico, the State Workers' Security and Social Services Institute Law and the Federal Labor Law granting a new leave of absence for parents whose children under the age of 16 years old are diagnosed with cancer. The decree allows parents of children up to 16 years old to avail of carer's leave for up to 28 days to take care of their children during critical treatments and periods of hospitalization. Parents may avail of this leave for as many times as necessary over a maximum of three years. During this time, availing parents receive 60% of their last consolidated salary and access social security benefits.

Parliamentary action on the right to be forgotten in insurance in Belgium

In 2019, a law establishing the right to be forgotten in insurance was introduced in Belgium. This law modified the country's insurance regulation and prohibited insurance companies from taking into account applicants' cancer pathologies after 10 years from completion of successful treatment without a relapse. Subsequently, a Royal Decree was enacted complementing the law and providing a reference table to account for reduced periods for different types of cancers. Currently, for certain types of cancers such as breast cancer where the tumour is confined to the original tissue, the right to be forgotten is immediately enforceable without any waiting period.

In 2022, the law was further amended to lower the period from 10 to 8 years and 5 years where the cancer diagnosis was made before 21 years old. The new law provided that the period is further reduced to 5 years. The law also grants persons living with cancer a guaranteed income insurance that secures full or partial compensation for the reduction or loss of professional income due to incapacity to work. In January 2025, parliament approved a proposal to extend the right to be forgotten to travel insurance; to require insurers to inform their customers of the right to be forgotten and to remove the requirement to disclose cancer history altogether.

5 A future we choose together: better capabilities, better protections, better value

5.1 Redefining success: ending cancer's identity crisis

Throughout this report, it is strikingly clear that, in 2026, the global cancer story remains one of profound inequity. The gap is no longer principally a gap in knowledge; it is a gap between what we know and what we do, and between what is promised and what is delivered.

Governments increasingly endorse NCCPs and adopt EMLs, but too many remain unimplemented, adopted on paper yet undelivered in clinics. Investment in technological innovation has surged, but the returns have been narrowly distributed, focusing on shrinking tumours rather than easing suffering. The social innovations and human capital that are needed to translate medicines into outcomes remain chronically underfunded. Treatment receives the attention and the financing; survivorship receives neither. The cancer community itself has grown more fragmented, even as the evidence makes clear that cooperation across disciplines, sectors, and borders is the single greatest determinant of success.

> *The gap is no longer principally a gap in knowledge; it is a gap between what we know and what we do*

Closing these gaps requires more than additional resources: it requires us to redefine what success in cancer control actually means. For too long, the cancer agenda has been caught in an identity crisis, pulled between the pursuit of cure and the practice of care, between technological ambition and human need (Box 29). A renewed global agenda must value care as highly as cure, recognizing that most people diagnosed with cancer will live with the disease rather than be cured of it. And it must work actively to promote health, to offer the social protections that enable people to put recommendations into practice in their own lives, and to reduce the stigma that still deters people from seeking care and isolates those who receive a diagnosis.

Box 29. Understanding the future we face: asking the right questions

Shaping the future we want starts with asking the right questions to reflect on what we know about the future we face:

How will our approach to cancer diagnosis change and what will change as a result?

Our approach to diagnosing cancer may change, from waiting for symptoms and taking tissue samples, to predicting dynamic cancer risks, using blood tests to detect evidence of cancer, and utilizing AI-enhanced imaging and diagnostics to detect and classify cancer. Innovations in cancer diagnostics, including biosensors, can plausibly deliver continuous risk assessment from healthy populations, shifting paradigms from "find and treat" to "predict and prevent", while more rapidly detecting treatment responses and decreasing overtreatment.

Accordingly, the two defining questions are: how will we define and classify cancer? Novel detection methods for cancer may also substantially increase overdiagnosed cancers and detection of tumours with unknown primary. Indolent cancers, like certain prostate cancers, are now being managed through active surveillance. Will this be considered for other cancer types? How do we evaluate advanced diagnostic tests in low-resourced settings? Cancer diagnoses will become increasingly defined and treated based on specific subtypes with precision medicines. As specificity increases, how can we ensure technologies for diagnosis and treatment work the same everywhere and ensure fairness?

How can we build capacity and resilience in cancer care?

Capacity and resilience in the coming decades mean designing systems that can survive crises, include stockpiling, workforce redundancies (such as training community health workers for cancer screening or palliative care), contingencies for reliable power sources, or mobile diagnostic units. Best practices for resilience in cancer have not been defined to date – during the COVID-19 pandemic, only a limited number of organizational and social innovations were developed and implemented, in spite of the substantial disruption to services.

With a cancer workforce under strain, the challenge is clear: how do we train millions of new cancer workers globally while ensuring every district has basic surgery and chemotherapy capacity, even during pandemics, natural disasters, or conflicts? Practical, scalable workforce models are needed that balance the complexity and increasingly specialized nature of cancer care with comprehensive capacity building programmes along the cancer continuum. But what are they? Can cancer systems learn how to leverage telemedicine, AI-augmented support, and other technological advancements?

How do we transform the experience of cancer and protect people?

The cancer experience must transform from fear and isolation to manageable disease with preserved dignity and protection from social, emotional and financial harm. Each person affected by cancer deserves a personalized care plan addressing that individual's physical, emotional, financial, and social needs throughout their journey. Affected persons also should receive protections: universal coverage for costs of care, guaranteed access to survivorship and palliative care regardless of condition, and legal protections against discrimination. Gradually, with people receiving progressively higher number of lines of therapy, cancer is being made into a "chronic condition" with longer-term treatment horizons.

The challenge is ensuring dignity during vulnerability: how do we prevent financial ruin from cancer costs, guarantee fertility preservation for young patients, and ensure every survivor has access to psychosocial support? True protection requires investment in people and services. How will governments invest to eliminate cancer-associated poverty and create systems where patients survive and thrive, maintaining work, family roles, and community participation throughout and beyond treatment?

How do we integrate cancer with other global health agendas?

The cancer community must continue to elevate cancer-related outcomes and targets into major health agenda priorities – UHC, NCDs, health system resilience, primary health care or equity – rather than a siloed specialty. In the next two decades, every national UHC roadmap should include cancer coverage targets as proof of system maturity, every emergency response plan should guarantee essential cancer medicines and treatment continuity, climate health strategies should address cancer risks from air pollution and heatwaves, and equity agendas should prioritize underserved populations, such as people with disabilities, rural communities, and low-income and other marginalized groups.

Integration means shared infrastructure: pathology laboratories serving broader NCD screening and infectious disease diagnostics, palliative care platforms supporting dementia and injury patients, and digital health systems tracking cancer alongside HIV, tuberculosis, and maternal health indicators. The challenge is leadership and governance: how do we engage partners in the health sector and beyond? How will we make governments equally accountable for cancer outcomes as they are for child mortality or vaccination coverage? How will we successfully integrate the cancer agenda – internally and externally – toward stronger health systems?

5.2 Three shifts: better capabilities, better protections, better value

The future of cancer control is still being written: it will be shaped by the choices we make together in defining what we value, what we measure, whom we listen to, and what we are willing to finance. This report is an invitation to make those choices together, and to make them in a way that will deliver better outcomes for us all.

> *The future of cancer control will be shaped by defining what we value, what we measure, whom we listen to, and what we are willing to finance*

We know that a better future is achievable, because we are already moving toward it: WHO's global initiatives are demonstrating that coordinated, equity-focused action at scale produces measurable results. Our direction of travel is right; the challenge lies in accelerating our progress, broadening our perspective, and sustaining our success.

What this requires is three shifts (Fig. 97):

Better capabilities. The foundation for the change we need is stronger governance and financing, anchored in serious investment in human resources. Plans without people are not plans; medicines lists without prescribers, pathologists, surgeons, oncologists, and community health workers are inventories, not strong health systems.

Better protections. Every person should be better protected from the harms of cancer across the full continuum: from primary prevention, through early detection, equitable access to diagnosis and treatment, palliative care that honours dignity, and the supports that allow return to work and community after a diagnosis. Effective protection must be an ongoing experience, not a temporary state.

Better value. We must measure what matters by moving beyond process indicators to the outcomes actually experienced by people with cancer: survival, function and QoL. A person-centred cancer agenda, shaped by lived experience, will deliver more health per unit of investment, and a more just distribution of that health.

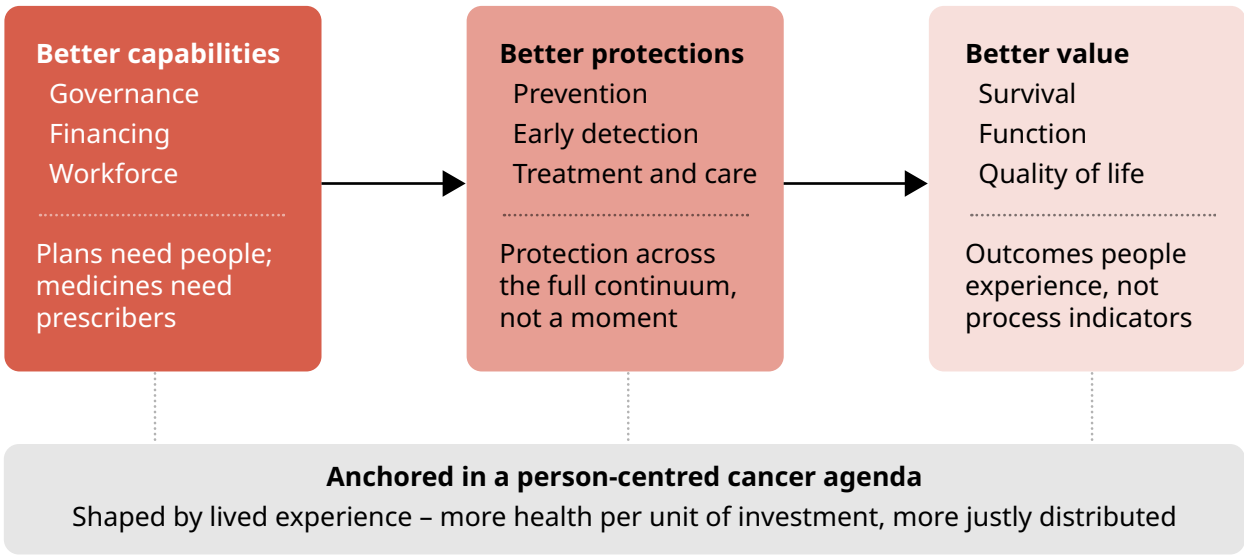
These shifts are simple, but built of complex interactions that require us all to act in concert: we need all stakeholders to play their part.

Box 30. Approach to development of strategic shifts and recommendations

The three shifts and seven recommendations were developed through a structured, evidence-informed process designed to consolidate existing global mandates into a coherent forward agenda for cancer prevention and control. A systematic synthesis was undertaken of: a) the normative and political foundations of Member States mandates, including resolutions and decisions of the World Health Assembly; b) the WHO global strategies and action plans, including IARC, global cancer initiatives and relevant strategies on risk factors (e.g. tobacco control) and health system strengthening (e.g. access to health products); c) WHO normative guidelines, technical packages, and the WHO Model Lists of Essential Medicines and Essential In Vitro Diagnostics; and d) peer-reviewed and grey literature including from partner organizations. Documents were screened for relevance and extracted into a structured matrix, linked to prioritization related to the ongoing development of WHO Global Cancer Monitoring Framework, and alignment of each mandate to its scope, target population and implementation status. Based on this, convergent themes, persistent gaps and emerging priorities were distilled into candidate shifts and recommendations.

Candidate formulations were refined through a sequenced consultation process comprising: a primary expert consultation, complemented by multiple bilateral and small-group contributions; a primary internal WHO review with related cross-unit dialogues; a primary consultation with WHO regional offices to ensure relevance across diverse epidemiological, health system and resource contexts; a primary Member State briefing with national focal points, including managers of national cancer control programmes; and a primary partner consultation with non-State actors in official relations with WHO and partner UN agencies. A distinct set of consultations were organized with an informal network of people with lived experience of cancer. Four criteria were applied throughout: feasibility and implementability across health systems; equity, gender and human rights; resource and cost implications. Feedback was reviewed by the Secretariat and incorporated to strengthen the equity orientation and implementation feasibility of the final formulations, with particular attention to practicality in settings with constrained cancer service capacity. The three shifts and seven recommendations therefore reflect both the existing body of WHO mandates endorsed by Member States and the consolidated technical judgement of a broad expert and institutional constituency.

Fig. 97. Three strategic shifts for cancer control



These shifts are simple, but built of complex interactions that require us all to act in concert: we need all stakeholders to play their part

5.3 Seven recommendations: shared actions for a shared future

To help all stakeholders recognize their role in helping achieve this shared vision, and better understand the roles of others, WHO has developed seven recommendations that will allow us, together, to achieve these three shifts (see section 5.2), with key actions identified for each stakeholder group.

SHIFT 1: Better capabilities
Recommendation 1: Embed cancer control within health system strengthening and UHC using NCCPs as the catalyst for strategic action
Vision: Cancer control is fully integrated into national health systems through institutionalized planning and linked to sustainable financing.

What different stakeholders need to do to achieve this vision:

Governments:

a. Institutionalize cyclical cancer planning processes (formulation, implementation and monitoring of NCCPs) within national health strategies and UHC roadmaps.

b. Strengthen national cancer control programmes and multisectoral committees involving health, finance, social protection, labour and other sectors.

c. Align with the UN High-Level Declaration on NCDs, strengthen implementation of strategies to reduce modifiable risk factors.

d. Integrate essential cancer services into health benefit packages with progressive expansion of coverage, using the primary health care approach.

e. Complete NCCP costing linked to priority setting; aligning funding requirements with national health budgets planning.

f. Progressively expand health benefit packages to include essential cancer services including technologies across all care levels.

g. Adopt or strengthen national cancer legislation to create binding legal mandates for coordination, accountability and sustained financing beyond political cycles.

International organizations and partners:

a. Align funding and technical support with country-owned NCCPs and UHC strategies, avoiding parallel planning or financing processes or incoherent priorities.

b. Promote cross-country learning on integrated approaches to cancer within health system strengthening.

c. Support capacity-building for ministries of health to lead multisectoral cancer agendas.

Civil society:

a. Participate in national planning platforms, bringing patient and community perspectives into situation assessments and prioritization processes.

b. Monitor NCCP implementation progress, holding governments accountable through independent public reporting.

c. Advocate for explicit inclusion of cancer in health system and UHC reforms, and monitor whether underserved populations, including persons with disabilities and other marginalized groups, are reached.

d. Advocate for explicit equity targets within NCCPs that reach vulnerable communities including rural areas, low-income communities and persons with disabilities.

Academic institutions:

a. Generate implementation and health systems research that identifies effective, context-appropriate models for delivering cancer services as part of broader system strengthening.

b. Develop methods for routine assessment and monitoring of cancer service capacity, quality, equity and financial protection.

c. Conduct regular, independent evaluations of NCCP effectiveness and identify cost-effective interventions to address service gaps.

Private sector:

a. Align corporate health programmes and philanthropy with NCCPs, focusing on sustainable system strengthening rather than isolated projects.

b. Engage in public–private partnerships that expand equitable access to essential cancer services.

c. Participate in public–private partnerships that strengthen NCCP implementation capacity including workforce, supply chains and digital systems.

WHO will continue to:

a. Provide normative guidance and tools that support integration of cancer into UHC and health system strengthening.

b. Offer technical assistance for cyclical planning, costing and prioritization of cancer interventions in national health strategies.

c. Convene partners to align support behind nationally led cancer control plans including through the WHO Academy course on National Cancer Control Planning for Programme Managers.

d. Facilitate global learning and peer exchange on effective NCCP implementation models, including through the WHO Academy course.

e. Provide technical guidance and training for the application of WHO and IARC tools for NCCP costing, implementation planning and monitoring frameworks.

SHIFT 1: Better capabilities
Recommendation 2: Strengthen health system capacities for comprehensive, integrated cancer service delivery
Vision: Every cancer intervention is built on strong foundations of sustainable financing, high-quality care, reliable access to innovative technologies and trained health workforce.

What different stakeholders need to do to achieve this vision:

Governments:

a. Establish sustainable cancer financing through earmarked taxes on tobacco, alcohol and sugar-sweetened beverages.

b. Develop national essential cancer medicines lists aligned with WHO's EML, with guaranteed procurement and integration into UHC benefit packages.

c. Ensure affordability and sustainability through prioritization, effective pricing approaches and effective prescribing.

d. Implement structured multidisciplinary team care models and develop national treatment guidelines.

e. Invest in cancer workforce training and monitor working conditions.

Civil society:

a. Advocate for affordable cancer medicines, transparent procurement processes and equitable workforce distribution to underserved areas.

b. Partner with ministries to strengthen community health worker training in cancer early detection and referral.

c. Hold governments accountable for delivering quality cancer services through citizen monitoring and public reporting.

Academic institutions:

a. Conduct implementation research to identify best practices for cancer service delivery in resource-constrained settings.

b. Provide technical assistance for essential medicines selection, quantification and supply chain optimization.

c. Establish training hubs for cancer workforce development, emphasizing efficient models of capacity building.

Private sector:

a. Ensure stable supply of quality-assured essential cancer products through predictable pricing and supply commitments.

b. Support workforce development through training programmes, fellowships and clinical rotation opportunities.

c. Invest in diagnostic and digital health infrastructure that serves essential cancer services across multiple disease areas.

WHO will continue to:

a. Provide model lists, technical specifications and procurement guidance for essential cancer medicines and technologies.

b. Provide training in tools and capacity building in development and implementation of national treatment standards that allow governments to prioritize cost-effective, resource appropriate interventions.

c. Support governments to develop cancer workforce strategies aligned with national health workforce plans, including addressing burnout through structural working condition reforms.

SHIFT 2: Better protections
Recommendation 3: Include people with lived experience in all cancer-related decision-making
Vision: People affected by cancer – those diagnosed, survivors, caregivers and families – are recognized as essential partners and rights-holders who shape cancer policy, planning, service design and quality improvement at every level.

What different stakeholders need to do to achieve this vision:

Governments:

a. Mandate meaningful representation of patients and survivors on all national cancer committees, planning bodies and service quality boards.

b. Establish formal mechanisms for patient feedback in service design, including digital platforms, community consultations and annual satisfaction surveys.

c. Allocate dedicated budget lines for patient organization capacity building and participation in policy processes.

Civil society:

a. Build inclusive networks of patient advocates and survivor groups representing diverse cancer experiences, demographics and geographies.

b. Provide training and mentorship for patient representatives to participate effectively in technical policy discussions.

c. Monitor and document levels of patient inclusion in decision-making processes through annual public reporting.

Academic institutions:

a. Conduct research on effective models of patient and public engagement in cancer control across different contexts and resource settings.

b. Develop training curricula for patient advocates covering health systems, policy processes and evidence-based advocacy.

c. Evaluate the impact of patient inclusion on service quality, health equity and clinical outcomes through rigorous studies.

Private sector:

a. Include patient advocates in product development, clinical trials and access programmes from design through implementation.

b. Establish patient advisory panels for health technology and service innovations affecting cancer care.

c. Support patient organization capacity through core funding, training and platform access.

WHO will continue to:

a. Develop and promote global standards and guidance on meaningful patient engagement in cancer control planning and service delivery.

b. Support countries to establish patient advisory mechanisms within national cancer programmes.

c. Facilitate global patient networks and platforms for cross-country learning and advocacy.

SHIFT 2: Better protections
Recommendation 4: Enhance community-level health promotion on cancer and strengthen social protections
Vision: Communities across all literacy levels, cultures and geographies possess the knowledge, confidence and skills to prevent cancer, recognize early symptoms, seek timely care and navigate health systems effectively.

What different stakeholders need to do to achieve this vision:

Governments:

a. Launch sustained national cancer awareness campaigns using multimedia approaches tailored to literacy levels, languages and cultural contexts.

b. Integrate cancer prevention and early detection literacy into school curricula and community health worker training programmes.

c. Establish community cancer education coordinators within primary health care teams for ongoing awareness activities.

d. Integrate social protections for people with cancer and their caregivers, including sickness benefits, disability support and anti-discrimination provisions.

Civil society:

a. Co-develop culturally appropriate, evidence-based education materials in local languages, including formats for low-literacy audiences.

b. Train community health workers, peer educators and trusted local leaders to deliver cancer literacy through community networks.

c. Partner with faith leaders, women's groups, youth organizations and traditional healers to disseminate messages through existing structures.

Academic institutions:

a. Research effective cancer communication strategies for diverse populations, testing optimal messaging, channels and formats.

b. Evaluate health literacy interventions' impact on screening uptake, early diagnosis rates and health behaviours.

c. Provide technical support for monitoring and evaluation of national awareness campaigns with clear baseline and outcome indicators.

Private sector:

a. Integrate cancer prevention messaging into corporate wellness programmes and employee health initiatives.

b. Support development of accessible digital health literacy tools with inclusive design standards.

c. Leverage marketing expertise and distribution networks to amplify evidence-based cancer awareness campaigns.

WHO will continue to:

a. Develop and promote evidence-based communication toolkits and campaign frameworks adaptable to national contexts.

b. Support countries to integrate cancer literacy into existing health promotion platforms and community health strategies.

c. Facilitate global exchange of effective cancer literacy approaches and digital campaign innovations.

SHIFT 3: Better value
Recommendation 5: Promote alignment and transparency in global cancer data
Vision: Countries and stakeholders have access to robust, transparent and coherent cancer data aligned across global initiatives, that are routinely used to guide decisions and accountability. Uncertainty is communicated clearly.

What different stakeholders need to do to achieve this vision:

Governments:

a. Invest in national cancer registries, vital statistics and routine health information systems with relevant indicators, ensuring sustainable financing and data quality.

b. Engage with international data initiatives to provide high-quality national data, understand methods, and request clear communication of uncertainties and limitations.

c. Use data from multiple sources in a complementary way for planning and monitoring, while working with partners to reconcile major discrepancies.

International organizations and partners:

a. Coordinate data initiatives to reduce duplication and methodological confusion.

b. Ensure that global reports present consistent, transparent messages on cancer burden and progress.

c. Support investments in national data systems as a core component of cancer and UHC programmes.

Civil society:

a. Advocate for transparency and public access to cancer data and methods.

b. Use available data to highlight inequities in cancer outcomes by region, socioeconomic status, disability, gender and other factors.

c. Participate in advisory groups or consultations on data strategies, bringing patient and community perspectives on information needs.

Academic institutions:

a. Collaborate across institutions (including WHO, IARC, and others) to compare and, where possible, harmonize methods, assumptions and communication of cancer estimates.

b. Develop tools to help countries interpret differences between data sources and use them appropriately for policy.

c. Support capacity-building in epidemiology, statistics, registry management and data quality, especially in LMICs.

Private sector:

a. Share relevant anonymized data from health technologies or services in line with ethical and legal standards, to strengthen national and global cancer intelligence.

b. Ensure that proprietary data systems used in health care are interoperable and compatible with national data strategies.

c. Support innovations that facilitate affordable, high-quality data collection and analysis in LMICs.

WHO will continue to:

a. Advance implementation of the GICR.

b. Lead efforts to harmonize global cancer data standards and promote coherent narratives across different data groups.

c. Provide countries with clear guidance on interpreting and using data from various sources.

d. Support technical assistance for establishing and strengthening cancer registries and information systems.

SHIFT 3: Better value
Recommendation 6: Unify the cancer agenda around equity-based, system-wide solutions
Vision: The global and national cancer agenda is driven by common priorities and shared platforms, so that every investment strengthens systems that benefit people with all types of cancer.

What different stakeholders need to do to achieve this vision:

Governments:

a. Require that vertical or disease-specific funding streams, including external grants, align with and reinforce national cancer and health system strategies.

b. Invest in shared infrastructure, such as pathology, imaging, radiotherapy, rehabilitation, palliative care and information systems, designed to serve the full cancer spectrum and other conditions.

c. Adopt and implement the WHO Global Cancer Monitoring Framework as the shared accountability architecture for all cancer programmes.

International organizations and partners:

a. Align advocacy and financing with shared cancer system priorities that focus on vulnerable communities rather than exclusively disease-specific agendas.

b. Design multi-disease funding mechanisms that incentivize integrated service delivery and shared infrastructure to reach vulnerable communities.

Civil society:

a. Build alliances across cancer communities to advocate for common priorities.

b. Harmonize messaging and campaigns to emphasize shared system gaps (workforce, diagnostics, financial barriers) rather than competing disease priorities.

c. Act as a bridge between disease-specific groups and national authorities, ensuring entry-point programmes strengthen platforms for broader cancer care.

Academic institutions:

a. Produce comparative analyses showing how investments in cross-cutting functions (prevention, pathology, surgical capacity, radiotherapy, rehabilitation) yield benefits across multiple cancers.

b. Support development of integrated clinical pathways and guidelines that emphasize common elements across cancers.

Private sector:

a. Design access programmes and innovations (diagnostics, therapeutics, digital platforms) that are scalable across multiple cancers and settings.

b. Avoid narrowly disease-specific initiatives that fragment services; instead co-invest in cross-cutting capacities such as laboratories, radiotherapy and data systems.

c. Collaborate with governments and civil society to ensure that product donations or pilots strengthen long-term system functions.

WHO will continue to:

a. Promote integrated frameworks and guidance that highlight cross-cutting functions and platforms for all cancers.

b. Maintain leadership across global cancer initiatives while ensuring they explicitly strengthen system-wide capacities that benefit all cancers across all settings.

c. Facilitate joint planning among technical programmes to reduce fragmentation at country level.

SHIFT 3: Better value
Recommendation 7: Align research and innovation with public health priorities and the service needs of LMICs
Vision: Global cancer research and innovation reflect the needs and realities of LMICs, using endpoints of meaning for affected populations and payers, matched by investments that allow effective interventions to be adopted, scaled and sustained.

What different stakeholders need to do to achieve this vision:

Governments:

a. Allocate a defined share of national and external cancer research funding to implementation research and service delivery innovation in LMICs and/or underserved regions.

b. Include research and innovation priorities explicitly within NCCPs, focusing on context-appropriate, cost-effective interventions.

c. State preferred endpoints for clinical trial design to promote value for money and improved outcomes for people affected by cancer.

International organizations and partners:

a. Rebalance global research funding portfolios towards LMIC-relevant questions and implementation science.

b. Link innovation funding to commitments on access, affordability and capacity strengthening in LMICs.

c. Support global platforms for sharing evidence on what works in resource-constrained settings.

Civil society:

a. Advocate for research agendas that reflect the needs of patients and communities in LMICs, including access, affordability and quality of care.

b. Monitor and report on mismatches between spending on high-cost innovations and underinvestment in basic cancer services.

c. Partner in community-engaged research, ensuring that lived experience shapes research questions, outcomes and translation into policy.

Academic institutions:

a. Prioritize research on scalable, resource-appropriate interventions (task-sharing models, simplified protocols, tele-oncology, supply chain maintenance) and their real-world implementation.

b. Form equitable research partnerships between institutions in HICs and LMICs, with shared governance, capacity-building and data ownership.

c. Conduct economic evaluations that demonstrate the value of investing in basic and intermediate cancer services in LMICs.

Private sector:

a. Design clinical trials and research programmes that include LMIC sites and populations that are often underrepresented and that measure endpoints of clinical meaning.
b. Commit to access and pricing models that enable uptake of proven interventions in LMICs.
c. Co-invest in implementation pilots that translate innovations into routine services in partnership with governments and local institutions.

WHO will continue to:

a. Provide guidance on priority research questions for cancer control in LMICs.
b. Promote standards for ethical, equitable research partnerships and supporting countries to integrate research into cancer control plans.
c. Facilitate synthesis and dissemination of implementation research to inform policy.

5.4 The future we choose together

The future of cancer control will be shaped by the choices we make together by defining what we value, what we measure, whom we listen to, and what we are willing to finance. This report is an invitation to make those choices together and to make them well.

The progress presented in the 2026 report is encouraging. Implementation of tobacco control policies under the WHO Framework Convention for Tobacco Control (FCTC) have contributed to a 27% relative reduction in the prevalence of tobacco use since 2010. One-dose schedules have enabled progress toward cervical cancer elimination, driven by 85% of countries integrating HPV vaccination in their national immunization programmes, leading to vaccinated cohorts with no or minimal evidence of HPV infections or cervical pre-cancerous lesions. In countries that have access to essential medicines and trained health professionals, childhood cancer survival has improved dramatically.

And yet the human picture painted in this report is one of inequity and hardship, unnecessary suffering and avoidable illness.

We envision a better future, in which a person's chances of preventing, surviving, and living with cancer with minimal impact on their lives, is no longer determined by where they live, their income, gender, or social status. In this future, every country will have strong, people-centred health systems that can prevent avoidable cancers, detect disease early, guarantee access to safe and effective treatment and ensure survivorship and palliative care for all who need it. This is not naive dreaming but a rebellious act of imagination, envisaging a reality that, together, we have the power and means to achieve.

Securing a better prognosis for all of us will take willingness, focused determination and coordinated action on the part of governments, international organizations, civil society, academia, the private sector and WHO to implement actions that support this shared intent.

This starts with building a present in which global and national efforts on cancer are integrated and aligned: human, financial and societal impacts of cancer are mitigated through

better capabilities and better protections, data are coherent and transparent, research and innovation reflect and serve the needs of all people affected by cancer, and people with lived experience of the disease – as patients, caregivers and health professionals – are central partners in decision-making.

Only with all these elements in place can our ambition to make a difference on what matters to us translate into meaningful progress for all, and allow us to build the future we choose together – and a better future for us all.

References

1. Chen S, Cao Z, Prettner K, Kuhn M, Yang J, Jiao L et al. Estimates and Projections of the Global Economic Cost of 29 Cancers in 204 Countries and Territories From 2020 to 2050. JAMA Oncology. 2023;9(4):465 (https://doi.org/10.1001/jamaoncol.2022.7826).
2. Kong Y-C, Niyigaba J, Tran PB, Vignat J, Bray F, Gauvreau CL et al. Global paid and unpaid productivity losses due to cancer-related mortality. JNCI: Journal of the National Cancer Institute. 2025;117(12):2612–20 (https://doi.org/10.1093/jnci/djaf193).
3. Global Health Estimates 2021 [website]. World Health Organization; 2024 (https://www.who.int/data/global-health-estimates).
4. Bray F, Laversanne M, Weiderpass E, Soerjomataram I. The ever-increasing importance of cancer as a leading cause of premature death worldwide. Cancer. 2021;127(16):3029–30 (https://doi.org/10.1002/cncr.33587).
5. Ferlay J EM, Lam F, Laversanne M, Colombet M, Mery L et al. Global Cancer Observatory: Cancer Today [website]. International Agency for Research on Cancer; 2026 (https://gco.iarc.fr/today).
6. Shah R, Hanna NM, Loo CE, David M, Mafra A, Fink H et al. The global impact of the COVID-19 pandemic on delays and disruptions in cancer care services: a systematic review and meta-analysis. Nature Cancer. 2025;6(1):194–204 (https://doi.org/10.1038/s43018-024-00880-4).
7. Maruthappu M, Watkins J, Noor AM, Williams C, Ali R, Sullivan R et al. Economic downturns, universal health coverage, and cancer mortality in high-income and middle-income countries, 1990–2010: a longitudinal analysis. The Lancet. 2016;388(10045):684–95 (https://doi.org/10.1016/s0140-6736(16)00577-8).
8. Romero Y, Tittenbrun Z, Trapani D, Given L, Hohman K, Cira MK et al. The changing global landscape of national cancer control plans. The Lancet Oncology. 2025;26(1):e46–e54 (https://doi.org/10.1016/s1470-2045(24)00405-4).
9. WHO framework for meaningful engagement of people living with noncommunicable diseases, and mental health and neurological conditions. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/367340).
10. WHO report on cancer: setting priorities, investing wisely and providing care for all. Geneva: World Health Organization; 2020 (https://iris.who.int/handle/10665/330745). Licence: CC BY-NC-SA 3.0 IGO.
11. WHO global survey on the inclusion of cancer care in health-benefit packages, 2020–2021. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/375828). Licence: CC BY-NC-SA 3.0 IGO.
12. Reduce cancer inequity and inequality to reduce cancer mortality. The Lancet Regional Health - Europe. 2023;25:100591 (https://doi.org/10.1016/j.lanepe.2023.100591).
13. Ginsburg O, Horton R. A Lancet Commission on women and cancer. The Lancet. 2020;396(10243):11–3 (https://doi.org/10.1016/s0140-6736(20)31479-3).
14. Ginsburg O, Vanderpuye V, Beddoe AM, Bhoo-Pathy N, Bray F, Caduff C et al. Women, power, and cancer: a Lancet Commission. The Lancet. 2023;402(10417):2113–66 (https://doi.org/10.1016/S0140-6736(23)01701-4).
15. Kitaw TA, Tilahun BD, Zemariam AB, Getie A, Bizuayehu MA, Haile RN. The financial toxicity of cancer: unveiling global burden and risk factors – a systematic review and meta-analysis. BMJ Global Health. 2025;10(2):e017133 (https://doi.org/10.1136/bmjgh-2024-017133).

16. Iragorri N, de Oliveira C, Fitzgerald N, Essue B. The Out-of-Pocket Cost Burden of Cancer Care—A Systematic Literature Review. Current Oncology. 2021;28(2):1216–48.
17. Rodin G, Feldman A, Trapani D, Skelton M, Unger-Saldaña K, Essue B et al. The human crisis in cancer: a Lancet Oncology Commission. The Lancet Oncology. 2025;26(12):e628–e70 (https://doi.org/10.1016/S1470-2045(25)00530-3).
18. International Classification of Diseases for Oncology, 3rd Edition (ICD-O-3) [website]. World Health Organization; 2026 (https://www.who.int/standards/classifications/other-classifications/international-classification-of-diseases-for-oncology).
19. IARC Monographs on the Identification of Carcinogenic Hazards to Humans [website]. International Agency for Research on Cancer; 2026 (https://monographs.iarc.who.int/agents-classified-by-the-iarc/).
20. Measuring survival, driving change: advancing equity through the WHO Global Initiative for Childhood Cancer. Geneva: World Health Organization; 2026 (https://iris.who.int/handle/10665/385623). Licence: CC BY-NC-SA 3.0 IGO.
21. Zheng R, Wang S, Zhang S, Zeng H, Chen R, Sun K et al. Global, regional, and national lifetime probabilities of developing cancer in 2020. Science Bulletin. 2023;68(21):2620–8 (https://doi.org/10.1016/j.scib.2023.09.041).
22. Ferlay J EM, Lam F, Laversanne M, Colombet M, Mery L et al. Global Cancer Observatory: Cancer Over Time [website]. International Agency for Research on Cancer; 2026 (https://gco.iarc.fr/overtime/en).
23. Allemani C, Matsuda T, Di Carlo V, Harewood R, Matz M, Nikšić M et al. Global surveillance of trends in cancer survival 2000-2014 (CONCORD-3): analysis of individual records for 37 513 025 patients diagnosed with one of 18 cancers from 322 population-based registries in 71 countries. The Lancet. 2018;391(10125):1023–75 (https://doi.org/10.1016/S0140-6736(17)33326-3).
24. Girardi F, Nyangasi M, Callender C, Narita S, Torode J, AlSawahli H et al. Global breast cancer survival estimates in 2017–2021 to advance the WHO Global Breast Cancer Initiative. In press. Nature Medicine. 2026 (https://doi.org/10.1038/s41591-026-04531-2).
25. Allemani C, Di Carlo V, Ssenyonga N, Baloch FK, Kuehni C, Girardi F et al. Progress towards the WHO Global Initiative for Childhood Cancer target of 60% 5-year survival for all childhood cancers combined, 1990-2013;2019 (CONCORD-4): a Cancer Survival Index derived for 68 countries by analysis of individual records for 613 021 children from 307 population-based cancer registries. The Lancet. 2026;407(10536):1335–59 (https://doi.org/10.1016/S0140-6736(26)00189-3).
26. Murthy SS, Trapani D, Cao B, Bray F, Murthy S, Kingham TP et al. Premature mortality trends in 183 countries by cancer type, sex, WHO region, and World Bank income level in 2000–19: a retrospective, cross-sectional, population-based study. The Lancet Oncology. 2024;25(8):969–78 (https://doi.org/10.1016/s1470-2045(24)00274-2).
27. Reducing social inequalities in cancer: evidence and priorities for research. Lyon: International Agency for Research on Cancer; 2019 (http://publications.iarc.fr/580).
28. Khanna D, Sharma P, Budukh A, Vishwakarma R, Sharma AN, Bagal S et al. Rural-urban disparity in cancer burden and care: findings from an Indian cancer registry. BMC Cancer. 2024;24(1) (https://doi.org/10.1186/s12885-024-12041-y).
29. Bhatia S, Landier W, Paskett ED, Peters KB, Merrill JK, Phillips J et al. Rural–Urban Disparities in Cancer Outcomes: Opportunities for Future Research. JNCI: Journal of the National Cancer Institute. 2022;114(7):940–52 (https://doi.org/10.1093/jnci/djac030).
30. Semprini J, Zahnd W, Brandt HM. What cancers explain the growing rural-urban gap in human papillomavirus-associated cancer incidence? The Journal of Rural Health. 2025;41(1) (https://doi.org/10.1111/jrh.12915).

31. Ramashia PN, Nkosi PB, Mbonane TP. Barriers to Radiotherapy Access in Sub-Saharan Africa for Patients with Cancer: A Systematic Review. International Journal of Environmental Research and Public Health. 2024;21(12):1597 (https://doi.org/10.3390/ijerph21121597).
32. Siegel RL, Kratzer TB, Giaquinto AN, Sung H, Jemal A. Cancer statistics, 2025. CA: A Cancer Journal for Clinicians. 2025;75(1):10–45 (https://doi.org/10.3322/caac.21871).
33. Wilkinson AN, Lofters A, Rushton M, Seely JM, Ng C. Breast Cancer Characteristics and Outcomes in Canadian Black Women by Ancestry. Current Oncology. 2025;32(11):616 (https://doi.org/10.3390/curroncol32110616).
34. Mo T, Joffe M, Cubasch H, Galukande M, Parham G, Pinder L et al. Breast cancer overall survival, annual risks of death, and survival gap apportionment in sub-Saharan Africa (ABC-DO): 7-year follow-up of a prospective cohort study. The Lancet Global Health. 2025;13(10):e1681–e90 (https://doi.org/10.1016/s2214-109x(25)00273-6).
35. Rodet N, Zahed H, Colombet M, Bray F, McCormack V. Understanding age and sex differentials in cancer incidence and mortality: An international population-based study. International Journal of Cancer. 2025;158(8):2102–10 (https://doi.org/10.1002/ijc.70244).
36. Kim J, Harper A, McCormack V, Sung H, Houssami N, Morgan E et al. Global patterns and trends in breast cancer incidence and mortality across 185 countries. Nature Medicine. 2025;31(4):1154–62 (https://doi.org/10.1038/s41591-025-03502-3).
37. Yang Y, Afshar N, Aitken Z, Bergin RJ, Summers P, Milne RL et al. Inequalities in cancer mortality between people with and without disability: A nationwide data linkage study of 10 million adults in Australia. PLOS Medicine. 2026;23(1):e1004873 (https://doi.org/10.1371/journal.pmed.1004873).
38. Hughes RB, Robinson-Whelen S, Knudson C. Cancer Disparities Experienced by People with Disabilities. International Journal of Environmental Research and Public Health. 2022;19(15):9187 (https://doi.org/10.3390/ijerph19159187).
39. Kuper H, Rotenberg S, Azizatunnisa' L, Banks LM, Smythe T. The association between disability and mortality: a mixed-methods study. The Lancet Public Health. 2024;9(5):e306–e15 (https://doi.org/10.1016/S2468-2667(24)00054-9).
40. Tosetti I, Kuper H. Do people with disabilities experience disparities in cancer care? A systematic review. PLOS ONE. 2023;18(12):e0285146 (https://doi.org/10.1371/journal.pone.0285146).
41. Kim Y-S, Ho SH. Factors Associated with Lack of Health Screening among People with Disabilities Using Andersen's Behavioral Model. Healthcare. 2023;11(5):656 (https://doi.org/10.3390/healthcare11050656).
42. Andiwijaya FR, Davey C, Bessame K, Ndong A, Kuper H. Disability and Participation in Breast and Cervical Cancer Screening: A Systematic Review and Meta-Analysis. International Journal of Environmental Research and Public Health. 2022;19(15):9465 (https://doi.org/10.3390/ijerph19159465).
43. IARC Albinism Research Network [website]. International Agency for Research on Cancer; 2026 (https://albinism.iarc.who.int/).
44. Bergin ART, te Marvelde L, Milne RL, Lara Gonzalez LE, Meehan K, Spalding LJ et al. Aboriginal and Torres Strait Islander Females and Survival from Breast Cancer. Cancer Epidemiology, Biomarkers & Prevention. 2025;34(7):1167–76 (https://doi.org/10.1158/1055-9965.epi-24-1526).
45. McLeod M, Harris R, Purdie G, Cormack D, Robson B, Sykes P et al. Improving survival disparities in cervical cancer between Māori and non-Māori women in New Zealand: a national retrospective cohort study. Australian and New Zealand Journal of Public Health. 2010;34(2):193–9 (https://doi.org/https://doi.org/10.1111/j.1753-6405.2010.00506.x).

46. Figures at a glance. Topline global statistics on forced displacement, including current and historical numbers of refugees, asylum-seekers and internally displaced people. [website]. (https://www.unhcr.org/uk/about-unhcr/overview/figures-glance).
47. Batumalai V, Zhou M, Blake B, Carter DJ, Chauhan A, Rahman MM et al. Cancer Control in Refugee and Asylum Seeker Populations: A Scoping Review. JCO Global Oncology. 2026;12(2) (https://doi.org/10.1200/go-25-00307).
48. Abukmail H, Chen Z, Jamaluddine Z, Aly S, Igusa T, Spiegel PB et al. Modelling excess mortality from non-communicable diseases during wartime: application to the Gaza Strip, occupied Palestinian territories. Population Health Metrics. 2025;23(1) (https://doi.org/10.1186/s12963-025-00426-5).
49. Casolino R, Sullivan R, Jobanputra K, Abdel-Wahab M, Grbic M, Hammad N et al. Integrating cancer into crisis: a global vision for action from WHO and partners. The Lancet Oncology. 2025;26(1):e55–e66 (https://doi.org/10.1016/s1470-2045(24)00522-9).
50. Ghebreyesus TA, Mired D, Sullivan R, Mueller A, Charalambous A, Kacharian A et al. A manifesto on improving cancer care in conflict-impacted populations. The Lancet. 2024;404(10451):427 (https://doi.org/10.1016/s0140-6736(24)01023-7).
51. Islami F, Torre LA, Jemal A. Global trends of lung cancer mortality and smoking prevalence. Translational Lung Cancer Research. 2015;4(4):327–38 (https://doi.org/10.3978/j.issn.2218-6751.2015.08.04).
52. Kazerooni EA, Wood DE, Rosenthal LS, Smith RA. The American Cancer Society National Lung Cancer Roundtable strategic plan: Introduction. Cancer. 2024;130(23):3948–60 (https://doi.org/10.1002/cncr.35385).
53. Sung H FA, Laversanne M, Ferlay J, Siegel RL, Soerjomataram I, Jemal A, Bray F. Global cancer statistics 2024: GLOBOCAN estimates of incidence and mortality worldwide for 34 cancers in 186 countries. CA: A Cancer Journal for Clinicians. 2026 (https://doi.org/10.3322/caac.70090).
54. Fink H, Langselius O, Vignat J, Rumgay H, Rehm J, Martinez RX et al. Global and regional cancer burden attributable to modifiable risk factors to inform prevention. Nat Med. 2026;94:103944 (https://doi.org/10.1016/j.eclinm.2026.103944).
55. WHO global report on trends in prevalence of tobacco use 2000-2024 and projections 2025-2030. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/383060). Licence: CC BY-NC-SA 3.0 IGO.
56. Zhao J, Xu L, Sun J, Song M, Wang L, Yuan S et al. Global trends in incidence, death, burden and risk factors of early-onset cancer from 1990 to 2019. BMJ Oncology. 2023;2(1):e000049 (https://doi.org/10.1136/bmjonc-2023-000049).
57. Ugai T, Sasamoto N, Lee H-Y, Ando M, Song M, Tamimi RM et al. Is early-onset cancer an emerging global epidemic? Current evidence and future implications. Nature Reviews Clinical Oncology. 2022;19(10):656–73 (https://doi.org/10.1038/s41571-022-00672-8).
58. Schilstra CE, Wakefield CE, McLoone J, Wiener L, Donoghoe MW, Hoffman RI et al. Development of a World Health Organization international survey assessing the lived experience of people affected by cancer: outcomes from pilot testing, user feedback, and survey revision. Supportive Care in Cancer. 2025;33(5) (https://doi.org/10.1007/s00520-025-09372-2).
59. Cayrol J, Wakefield CE, Ilbawi A, Donoghoe M, Hoffman R, Echodu M et al. The lived experience of people affected by cancer: A global cross-sectional survey protocol. PLOS ONE. 2024;19(2):e0294492 (https://doi.org/10.1371/journal.pone.0294492).
60. Cedenilla Ramón N, Calvo Arenillas JI, Aranda Valero S, Sánchez Guzmán A, Moruno Miralles P. Psychosocial Interventions for the Treatment of Cancer-Related Fatigue: An Umbrella Review. Current Oncology. 2023;30(3):2954–77 (https://doi.org/10.3390/curroncol30030226).

61. Kang Y-E, Yoon J-H, Park N-h, Ahn Y-C, Lee E-J, Son C-G. Prevalence of cancer-related fatigue based on severity: a systematic review and meta-analysis. Scientific Reports. 2023;13(1) (https://doi.org/10.1038/s41598-023-39046-0).
62. Bergerot C, Jacobsen PB, Rosa WE, Lam WWT, Dunn J, Fernández-González L et al. Global unmet psychosocial needs in cancer care: health policy. eClinicalMedicine. 2024;78:102942 (https://doi.org/10.1016/j.eclinm.2024.102942).
63. Milic J, Vucurovic M, Grego E, Jovic D, Sapic R, Jovic S et al. From Fear to Hope: Understanding Preparatory and Anticipatory Grief in Women with Cancer—A Public Health Approach to Integrating Screening, Compassionate Communication, and Psychological Support Strategies. Journal of Clinical Medicine. 2025;14(11):3621 (https://doi.org/10.3390/jcm14113621).
64. Junkins CC, Kent E, Litzelman K, Bevans M, Cannady RS, Rosenberg AR. Cancer across the ages: a narrative review of caregiver burden for patients of all ages. Journal of psychosocial oncology. 2020;38(6):782–98 (https://doi.org/10.1080/07347332.2020.1796887).
65. Bauder N, Cabrera Chien L. Enhancing Mobility in Oncology: Evidence-Based Practices Across the Care Continuum. Seminars in Oncology Nursing. 2024;40(4):151677 (https://doi.org/https://doi.org/10.1016/j.soncn.2024.151677).
66. Allman G, Morrell L, Meheus F, Ilbawi A, Soerjomataram I, Mackay C et al. A systematic review and meta-analysis of labor and productivity outcomes caused by cancer. JCO Global Oncology. In press.
67. Allman G, Morrell L, Meheus F, Ilbawi A, Soerjomataram I, Mackay C et al. A systematic review and meta-analyses of time-use, productivity, and labor outcomes among unpaid cancer caregivers. JCO Global Oncology. In press.
68. Fugmann D, Boeker M, Holsteg S, Steiner N, Prins J, Karger A. A Systematic Review: The Effect of Cancer on the Divorce Rate. Frontiers in Psychology. 2022;13 (https://doi.org/10.3389/fpsyg.2022.828656).
69. Kang D, Kim N, Han G, Kim S, Kim H, Lim J et al. Divorce after breast cancer diagnosis and its impact on quality of life. Palliative and Supportive Care. 2021;20(6):807–12 (https://doi.org/10.1017/s1478951521001711).
70. Kaso AW, Regesu AH, Haftu HK, Agero G, Jima GH, Kaso T et al. Magnitude of catastrophic health expenditure and its determinants among cancer patients in low and middle-income countries: a systematic review and meta-analysis. BMC Health Services Research. 2025;25(1) (https://doi.org/10.1186/s12913-025-13723-4).
71. Tekin BH. Healing Environments for Cancer Care: Toward a Patient-Centered Design Guideline for Inpatient Settings. HERD: Health Environments Research & Design Journal. 2025;19(2):129–49 (https://doi.org/10.1177/19375867251406202).
72. Chen N, Mita C, Chowdhury-Paulino IM, Shreves AH, Hu CR, Yi L et al. The built environment and cancer survivorship: A scoping review. Health & Place. 2024;86:103206 (https://doi.org/10.1016/j.healthplace.2024.103206).
73. Eijkelenboom A, Bluyssen PM. Comfort and health of patients and staff, related to the physical environment of different departments in hospitals: a literature review. Intelligent Buildings International. 2019;14(1):95–113 (https://doi.org/10.1080/17508975.2019.1613218).
74. Nagy DS, Isaic A, Motofelea AC, Popovici DI, Diaconescu RG, Negru SM. The Role of Spirituality and Religion in Improving Quality of Life and Coping Mechanisms in Cancer Patients. Healthcare. 2024;12(23):2349 (https://doi.org/10.3390/healthcare12232349).
75. Weaver KE, Rowland JH, Alfano CM, McNeel TS. Parental cancer and the family: a population-based estimate of the number of US cancer survivors residing with their minor children. Cancer. 2010;116(18):4395–401 (https://doi.org/https://doi.org/10.1002/cncr.25368).

76. Guida F, Kidman R, Ferlay J, Schüz J, Soerjomataram I, Kithaka B et al. Global and regional estimates of orphans attributed to maternal cancer mortality in 2020. Nature Medicine. 2022;28(12):2563–72 (https://doi.org/10.1038/s41591-022-02109-2).
77. Cancer statistics [website]. National Cancer Institute 2025 (https://www.cancer.gov/about-cancer/understanding/statistics).
78. Ngo P, Shah R, Vignat J, Collins L, Cunnama L, Hwang I et al. The direct costs of cancer care: a review of recent trends and variations in 39 countries. JNCI Monographs. 2026;2026(72):3–14 (https://doi.org/10.1093/jncimonographs/lgag005).
79. Manzano A SC, Hofmarcher T, Wilking N. Comparator Report on Cancer in Europe 2025 – Disease Burden, Costs and Access to Medicines and Molecular Diagnostics. Lund, Sweden; 2025 (https://ihe.se/en/rapport/comparator-report-on-cancer-in-europe-2025-disease-burden-costs-and-access-to-medicines-and-molecular-diagnostics-2/).
80. Global Oncology Trends 2025. Adopting new therapies as modalities shift and expenditures rise. IQVIA Institute for Human Data Science; 2025 (https://www.iqvia.com/insights/the-iqvia-institute/reports-and-publications/reports/global-oncology-trends-2025).
81. Goddard KAB, Feuer EJ, Mandelblatt JS, Meza R, Holford TR, Jeon J et al. Estimation of Cancer Deaths Averted From Prevention, Screening, and Treatment Efforts, 1975-2020. JAMA Oncology. 2025;11(2):162 (https://doi.org/10.1001/jamaoncol.2024.5381).
82. Allen LN, Wigley S, Holmer H. Implementation of non-communicable disease policies from 2015 to 2020: a geopolitical analysis of 194 countries. The Lancet Global Health. 2021;9(11):e1528–e38 (https://doi.org/10.1016/S2214-109X(21)00359-4).
83. Noncommunicable diseases progress monitor 2025. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/381602). Licence: CC BY-NC-SA 3.0 IGO.
84. Rumgay H, Nethan ST, Shah R, Vignat J, Ayo-Yusuf O, Chaturvedi P et al. Global burden of oral cancer in 2022 attributable to smokeless tobacco and areca nut consumption: a population attributable fraction analysis. The Lancet Oncology. 2024;25(11):1413–23 (https://doi.org/10.1016/s1470-2045(24)00458-3).
85. 2025 Global Progress Report on Implementation of the WHO Framework Convention on Tobacco Control. Geneva: World Health Organization; 2025 (https://fctc.who.int/resources/publications/m/item/2025-global-progress-report-on-implementation-of-the-who-fctc). Licence: CC BY-NC-SA 3.0 IGO.
86. WHO report on the global tobacco epidemic, 2025. World Health Organization; 2025 (https://doi.org/10.2471/b09466).
87. Global status report on alcohol and health and treatment of substance use disorders. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/377960). Licence: CC BY-NC-SA 3.0 IGO.
88. Rumgay H, Shield K, Charvat H, Ferrari P, Sornpaisarn B, Obot I et al. Global burden of cancer in 2020 attributable to alcohol consumption: a population-based study. The Lancet Oncology. 2021;22(8):1071–80 (https://doi.org/10.1016/s1470-2045(21)00279-5).
89. Manthey J, Shield KD, Rylett M, Hasan OSM, Probst C, Rehm J. Global alcohol exposure between 1990 and 2017 and forecasts until 2030: a modelling study. The Lancet. 2019;393(10190):2493–502 (https://doi.org/10.1016/s0140-6736(18)32744-2).
90. Global alcohol action plan 2022–2030. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/376939). Licence: CC BY-NC-SA 3.0 IGO.
91. Reduction or Cessation of Alcoholic Beverage Consumption. Lyon: International Agency for Research on Cancer; 2024:Volume 20A (Licence: CC BY-NC-ND 3.0 IGO.

92. Zhao J, Stockwell T, Vallance K, Hobin E. The Effects of Alcohol Warning Labels on Population Alcohol Consumption: An Interrupted Time Series Analysis of Alcohol Sales in Yukon, Canada. Journal of Studies on Alcohol and Drugs. 2020;81(2):225–37 (https://doi.org/10.15288/jsad.2020.81.225).
93. Tackling NCDs: best buys and other recommended interventions for the prevention and control of noncommunicable diseases, 2nd ed. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/376624). Licence: CC BY-NC-SA 3.0.
94. Ferreira-Borges C, Esser MB, Dias S, Babor T, Parry CDH. Alcohol Control Policies in 46 African Countries: Opportunities for Improvement. Alcohol and Alcoholism. 2015;50(4):470–6 (https://doi.org/10.1093/alcalc/agv036).
95. Institute for Health Metrics and Evaluation (IHME). Global Burden of Disease 2023: Findings from the GBD 2023 Study. Seattle, WA: IHME; 2023 (https://www.healthdata.org/research-analysis/library/global-burden-disease-2023-findings-gbd-2023-study).
96. WHO Factsheet: Obesity and overweight [website]. World Health Organization; 2025 (https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight).
97. Phelps NH, Singleton RK, Zhou B, Heap RA, Mishra A, Bennett JE et al. Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults. The Lancet. 2024;403(10431):1027–50 (https://doi.org/10.1016/S0140-6736(23)02750-2).
98. Colditz GA, Peterson LL. Obesity and Cancer: Evidence, Impact, and Future Directions. Clinical Chemistry. 2018;64(1):154–62 (https://doi.org/10.1373/clinchem.2017.277376).
99. Zhou B, Phelps NH, Galeazzi A, O'Driscoll ON, Bennett JE, Jain L et al. Obesity rise plateaus in developed nations and accelerates in developing nations. Nature. 2026;653(8114):510–8 (https://doi.org/10.1038/s41586-026-10383-0).
100. Hay SI, Ong KL, Santomauro DF, A B, Aalipour MA, Aalruz H et al. Burden of 375 diseases and injuries, risk-attributable burden of 88 risk factors, and healthy life expectancy in 204 countries and territories, including 660 subnational locations, 1990–2023: a systematic analysis for the Global Burden of Disease Study 2023. The Lancet. 2025;406(10513):1873–922 (https://doi.org/https://doi.org/10.1016/S0140-6736(25)01637-X).
101. Ungvari Z, Fekete M, Varga P, Munkácsy G, Fekete JT, Lehoczki A et al. Exercise and survival benefit in cancer patients: evidence from a comprehensive meta-analysis. GeroScience. 2025;47(3):5235–55 (https://doi.org/10.1007/s11357-025-01647-0).
102. Strain T, Flaxman S, Guthold R, Semenova E, Cowan M, Riley LM et al. National, regional, and global trends in insufficient physical activity among adults from 2000 to 2022: a pooled analysis of 507 population-based surveys with 5.7 million participants. The Lancet Global Health. 2024;12(8):e1232–e43 (https://doi.org/10.1016/S2214-109X(24)00150-5).
103. Guthold R, Stevens GA, Riley LM, Bull FC. Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1·6 million participants. The Lancet Child & Adolescent Health. 2020;4(1):23–35 (https://doi.org/10.1016/s2352-4642(19)30323-2).
104. Nutrition – Data and statistics [website]. World Health Organization; 2021 (https://www.who.int/europe/news-room/photo-stories/item/data-and-statistics).
105. Xu X, Yan P, Chen W, Wei W, Thomson B, Ruan S et al. The global burden of disease attributable to suboptimal fruit and vegetable intake, 1990–2021: a systematic analysis of the global burden of disease study. BMC Medicine. 2025;23(1) (https://doi.org/10.1186/s12916-025-04275-9).
106. International WCRF. Diet, Nutrition, Physical Activity and Cancer: a Global Perspective. Continuous Update Project Exper Report 2018. World Cancer Research Fund International 2018 (https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf).

107. Chu AHY, Lin K, Croker H, Kefyalew S, Markozannes G, Tsilidis KK et al. Dietary-Lifestyle Patterns and Colorectal Cancer Risk: Global Cancer Update Programme (CUP Global) Systematic Literature Review. The American Journal of Clinical Nutrition. 2025;121(5):986–98 (https://doi.org/https://doi.org/10.1016/j.ajcnut.2025.01.014).

108. Shi X, Deng G, Wen H, Lin A, Wang H, Zhu L et al. Role of body mass index and weight change in the risk of cancer: A systematic review and meta-analysis of 66 cohort studies. Journal of Global Health. 2024;14 (https://doi.org/10.7189/jogh.14.04067).

109. Hermelink R, Leitzmann MF, Markozannes G, Tsilidis K, Pukrop T, Berger F et al. Sedentary behavior and cancer–an umbrella review and meta-analysis. European Journal of Epidemiology. 2022;37(5):447–60 (https://doi.org/10.1007/s10654-022-00873-6).

110. Sawyer A, den Hertog K, Verhoeff AP, Busch V, Stronks K. Developing the logic framework underpinning a whole-systems approach to childhood overweight and obesity prevention: Amsterdam Healthy Weight Approach. Obesity Science & Practice. 2021;7(5):591–605 (https://doi.org/10.1002/osp4.505).

111. Global action plan on physical activity 2018–2030: more active people for a healthier world. Geneva: World Health Organization; 2018 (https://iris.who.int/handle/10665/272722). Licence: CC BY-NC-SA 3.0 IGO.

112. Global status report on physical activity 2022. Geneva: World Health Organization; 2022 (https://iris.who.int/handle/10665/363607). Licence: CC BY-NC-SA 3.0 IGO.

113. Acceleration plan to support Member States in implementing the recommendations for the prevention and management of obesity over the life course. Geneva: World Health Organization; 2022 (A75/10 Add.6. Annex 12; https://apps.who.int/gb/ebwha/pdf_files/WHA75-REC1/A75_REC1_Interactive_en.pdf#page=105).

114. WHO technical package to stop obesity. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/370281).

115. Global database on the implementatio nof Food and Nutrition Action [website]. World Health Organization; 2026 (https://gifna.who.int/).

116. Global report on the use of sugar-sweetened beverage taxes, 2025. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/384659). Licence: CC BY-NC-SA 3.0 IGO.

117. de Martel C, Ferlay J, Franceschi S, Vignat J, Bray F, Forman D et al. Global burden of cancers attributable to infections in 2008: a review and synthetic analysis. The Lancet Oncology. 2012;13(6):607–15 (https://doi.org/10.1016/s1470-2045(12)70137-7).

118. Hepatitis B vaccines: WHO position paper, July 2017 – Recommendations. Vaccine. 2017;37(2):223–5 (https://doi.org/10.1016/j.vaccine.2017.07.046).

119. Immunization Agenda 2030. A global strategy to leave no one behind. Geneva; 2024 (https://www.who.int/publications/m/item/immunization-agenda-2030-a-global-strategy-to-leave-no-one-behind).

120. Wei F, Georges D, Man I, Baussano I, Clifford GM. Causal attribution of human papillomavirus genotypes to invasive cervical cancer worldwide: a systematic analysis of the global literature. The Lancet. 2024;404(10451):435–44 (https://doi.org/10.1016/s0140-6736(24)01097-3).

121. Human Papillomavirus (HPV) vaccination coverage [website]. World Health Organization; 2026 (https://immunizationdata.who.int/global/wiise-detail-page/human-papillomavirus-(hpv)-vaccination-coverage).

122. Global hepatitis report 2024: action for access in low- and middle-income countries. Geneva: World Health Organization 2024 (https://iris.who.int/handle/10665/376409). Licence: CC BY-NC-SA 3.0 IGO.

123. WHO Immunization dashboard [website]. World Health Organization; 2026 (https://immunizationdata.who.int/).

124. Global hepatitis report 2026. Geneva: World Health Organization; 2026 (https://iris.who.int/handle/10665/385385). Licence: CC BY-NC-SA 3.0 IGO.

125. Ford AC, Yuan Y, Park JY, Forman D, Moayyedi P. Eradication Therapy to Prevent Gastric Cancer in Helicobacter pylori-Positive Individuals: Systematic Review and Meta-Analysis of Randomized Controlled Trials and Observational Studies. Gastroenterology. 2025;169(2):261–76 (https://doi.org/10.1053/j.gastro.2024.12.033).

126. The Global Health Observatory. Ambient air pollution [website]. World Health Organizatio; 2026 (https://www.who.int/data/gho/data/themes/topics/indicator-groups/indicator-group-details/GHO/ambient-air-pollution).

127. Zhou J, Liu L, He W. Global impact of air pollution on cancer: causal evidence and health inequities across regions from 1990 to 2021. BMC Cancer. 2025;25(1) (https://doi.org/10.1186/s12885-025-15234-1).

128. De Guzman R, Schiller J. Air pollution and its impact on cancer incidence, cancer care and cancer outcomes. BMJ Oncology. 2025;4(1):e000535 (https://doi.org/10.1136/bmjonc-2024-000535).

129. Korsiak J, Pinault L, Christidis T, Burnett RT, Abrahamowicz M, Weichenthal S. Long-term exposure to wildfires and cancer incidence in Canada: a population-based observational cohort study. The Lancet Planetary Health. 2022;6(5):e400–e9 (https://doi.org/10.1016/s2542-5196(22)00067-5).

130. WHO global air quality guidelines. Particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/345329). Licence: CC BY-NC-SA 3.0 IGO.

131. Updated road map for an enhanced global response to the adverse health effects of air pollution. Geneva: World Health Organization; 2025 (https://apps.who.int/gb/ebwha/pdf_files/EB156/B156_24-en.pdf).

132. Cancer: Carcinogenicity of the consumption of red meat and processed meat [website]. World Health Organization; 2015 (https://www.who.int/news-room/questions-and-answers/item/cancer-carcinogenicity-of-the-consumption-of-red-meat-and-processed-meat).

133. Reddy SR, Broder MS, Chang E, Paydar C, Chung KC, Kansal AR. Cost of cancer management by stage at diagnosis among Medicare beneficiaries. Current Medical Research and Opinion. 2022;38(8):1285–94 (https://doi.org/10.1080/03007995.2022.2047536).

134. McGarvey N, Gitlin M, Fadli E, Chung KC. Increased healthcare costs by later stage cancer diagnosis. BMC Health Services Research. 2022;22(1):1155 (https://doi.org/10.1186/s12913-022-08457-6).

135. Hubbell E, Clarke CA, Smedby KE, Adami H-O, Chang ET. Potential for Cure by Stage across the Cancer Spectrum in the United States. Cancer Epidemiology, Biomarkers & Prevention. 2024;33(2):206–14 (https://doi.org/10.1158/1055-9965.EPI-23-1018).

136. Screening programmes: a short guide. Increase effectiveness, maximize benefits and minimize harm. Copenhagen: World Health Organization. Regional Office for Europe 2020 (https://iris.who.int/handle/10665/330829.). Licence: CC BY-NC-SA 3.0 IGO.

137. Cancer in the UK: Overview 2026. Cancer Research UK; 2026 (https://assets.ctfassets.net/u7vsjnoopqo5/1FpRYBXGBq4FZRVh0IS1ts/580a5ef27fdcc62706eba509a7ed4683/Cancer_in_the_UK_2026_-_Overview.pdf).

138. Danckert B, Falborg AZ, Christensen NL, Frederiksen H, Lyratzopoulos G, McPhail S et al. Routes to diagnosis and the association with the prognosis in patients with cancer – A nationwide register-based cohort study in Denmark. Cancer Epidemiology. 2021;74:101983 (https://doi.org/https://doi.org/10.1016/j.canep.2021.101983).

139. Richards MA, Westcombe AM, Love SB, Littlejohns P, Ramirez AJ. Influence of delay on survival in patients with breast cancer: a systematic review. The Lancet. 1999;353(9159):1119–26 (https://doi.org/10.1016/s0140-6736(99)02143-1).

140. Guide to cancer early diagnosis. Geneva: World Health Organization; 2017 (https://iris.who.int/handle/10665/254500). Licence: CC BY-NC-SA 3.0 IGO.

141. Cervical Cancer Screening. IARC Handbooks of Cancer Prevention. Volume 18 Lyon: International Agency for Research on Cancer; 2022 (https://publications.iarc.fr/604).

142. Oral Cancer Prevention. IARC Handbooks of Cancer Prevention Volume 19. Lyon: International Agency for Research on Cancer; 2023 (https://publications.iarc.who.int/617).

143. Breast Cancer Screening. IARC Handbooks of Cancer Prevention Volume 15. Lyon: International Agency for Research on Cancer; 2016 (https://publications.iarc.who.int/Book-And-Report-Series/Iarc-Handbooks-Of-Cancer-Prevention/Breast-Cancer-Screening-2016).

144. Colorectal Cancer Screening. IARC Handbooks of Cancer Prevention Volume 17. Lyon: International Agency for Research on Cancer; 2019 (http://publications.iarc.fr/573).

145. Global strategy to accelerate the elimination of cervical cancer as a public health problem. Geneva: World Health Organization; 2020 (https://iris.who.int/handle/10665/336583). Licence: CC BY-NC-SA 3.0 IGO.

146. McPhail S, Elliss-Brookes L, Shelton J, Ives A, Greenslade M, Vernon S et al. Emergency presentation of cancer and short-term mortality. British Journal of Cancer. 2013;109(8):2027–34 (https://doi.org/10.1038/bjc.2013.569).

147. Benitez Fuentes JD, Morgan E, de Luna Aguilar A, Mafra A, Shah R, Giusti F et al. Global Stage Distribution of Breast Cancer at Diagnosis: A Systematic Review and Meta-Analysis. JAMA Oncology. 2024;10(1):71–8 (https://doi.org/10.1001/jamaoncol.2023.4837).

148. Allemani C, Minicozzi P, Morawski B, Lima CA, Bennett D, Pongnikorn D et al. Global variation in patterns of care and time to initial treatment for breast, cervical, and ovarian cancer from 2015 to 2018 (VENUSCANCER): a secondary analysis of individual records for 275 792 women from 103 population-based cancer registries in 39 countries and territories. The Lancet. 2025;406(10517):2325–48 (https://doi.org/10.1016/s0140-6736(25)01383-2).

149. Fridman I, Bylund CL, Elston Lafata J. Trust of social media content and risk of making misinformed decisions: Survey of people affected by cancer and their caregivers. PEC Innovation. 2024;5:100332 (https://doi.org/10.1016/j.pecinn.2024.100332).

150. Johnson SB, Parsons M, Dorff T, Moran MS, Ward JH, Cohen SA et al. Cancer Misinformation and Harmful Information on Facebook and Other Social Media: A Brief Report. JNCI: Journal of the National Cancer Institute. 2021;114(7):1036–9 (https://doi.org/10.1093/jnci/djab141).

151. Parker ND, Johnson SB, King AJ, Amin TB, Swire-Thompson B, Zhang Z et al. Assessing Cancer Patients' Exposure to Treatment Misinformation. Journal of Cancer Education. 2025 (https://doi.org/10.1007/s13187-025-02712-0).

152. Miller DG, Lapen K, Dee EC, Meske S, Weiss MC, Chino JP et al. Fear and Medical Misinformation Regarding Risk of Progression or Recurrence Among Patients with Breast Cancer. JAMA Network Open. 2025;8(12):e2549809 (https://doi.org/10.1001/jamanetworkopen.2025.49809).

153. European Code Agains Cancer, 5th Edition. 14 ways you can help prevent cancer [website]. International Agency for Research on Cancer; 2025 (https://cancer-code-europe.iarc.who.int/).

154. Latin America and the Caribbean Code Against Cancer [website]. International Agency for Research on Cancer and Pan American Health Organization (PAHO); 2023 (https://cancer-code-lac.iarc.who.int/en/).

155. Assessing national capacity for the prevention and control of noncommunicable diseases: report on 2023 global survey. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/381204). Licence: CC BY-NC-SA 3.0 IGO.

156. Delivering High Value Cancer Care: European Cancer Inequalities Registry Analytical Report. OECD Publishing, Paris: OECD/European Commission; 2026 (https://doi.org/10.1787/060869fe-en).

157. Cancer Screening in Five Continents (CanScreen5) [website]. International Agency for Research on Cancer; 2025 (https://canscreen5.iarc.fr/).
158. Serrano B, Roura E, Alemany L, de Sanjose S, Cowman M, Poljak M et al. 2022 WHO Estimates for overall and HPV-based cervical cancer screening coverage worldwide. In Press. The Lancet Global Health. 2026 (In press).
159. Health at a Glance 2025: OECD Indicators. OECD Publishing, Paris: OECD; 2025 (https://doi.org/10.1787/8f9e3f98-en).
160. Health at a Glance 2023: OECD Indicators. OECD Publishing, Paris; 2023 (https://doi.org/10.1787/7a7afb35-en).
161. Chen Y, Zhang Y, Yan Y, Han J, Zhang L, Cheng X et al. Global colorectal cancer screening programs and coverage rate estimation: an evidence synthesis. Journal of Translational Medicine. 2025;23(1) (https://doi.org/10.1186/s12967-025-06887-4).
162. Zhang L, Carvalho AL, Mosquera I, Wen T, Lucas E, Sauvaget C et al. An international consensus on the essential and desirable criteria for an 'organized' cancer screening programme. BMC Med. 2022 (https://doi.org/10.1186/s12916-022-02291-7).
163. Camilloni L, Ferroni E Fau - Cendales BJ, Cendales Bj Fau - Pezzarossi A, Pezzarossi A Fau - Furnari G, Furnari G Fau - Borgia P, Borgia P Fau - Guasticchi G et al. Methods to increase participation in organised screening programs: a systematic review. B M C Public Health. 2013 (https://doi.org/10.1186/1471-2458-13-464).
164. Martinez-Gutierrez J, Chima S, Boyd L, Sherwani A, Drosdowsky A, Karnchanachari N et al. Failure to follow up abnormal test results associated with cervical cancer in primary and ambulatory care: a systematic review. BMC Cancer. 2023;23(1) (https://doi.org/10.1186/s12885-023-11082-z).
165. Destaw A, Getachew S, Getachew E, Shita A, Midaksa M, Rossner SS et al. Follow-up rescreening uptake and persistent positive rates among women after positive cervical cancer screening results in Ethiopia: a longitudinal cross-sectional study. BMJ Open. 2025;15(7):e099955 (https://doi.org/10.1136/bmjopen-2025-099955).
166. Martei YM, Dauda B, Vanderpuye V. Breast cancer screening in sub-Saharan Africa: a systematic review and ethical appraisal. BMC Cancer. 2022;22(1) (https://doi.org/10.1186/s12885-022-09299-5).
167. Nessa A, Uddin SMN, Lucas E, Nag P, Palaniraja S, Rol M et al. Implementation of an electronic health information system using DHIS2 tracker to manage and evaluate the National cervical screening programme in Bangladesh. BMC Public Health. 2025;25(1) (https://doi.org/10.1186/s12889-025-22668-6).
168. Ebrahimoghli R, Aghaei MH, Azami-Aghdash S, Houssami N. Uptake of breast cancer screening practices in low- and middle-income countries: a systematic review and meta-analysis. JNCI: Journal of the National Cancer Institute. 2024;117(1):29–39 (https://doi.org/10.1093/jnci/djae187).
169. Fleming KA, Horton S, Wilson ML, Atun R, DeStigter K, Flanigan J et al. The Lancet Commission on diagnostics: transforming access to diagnostics. The Lancet. 2021;398(10315):1997–2050 (https://doi.org/10.1016/s0140-6736(21)00673-5).
170. Hricak H, Abdel-Wahab M, Atun R, Lette MM, Paez D, Brink JA et al. Medical imaging and nuclear medicine: a Lancet Oncology Commission. The Lancet Oncology. 2021;22(4):e136–e72 (https://doi.org/10.1016/s1470-2045(20)30751-8).
171. IAEA Medical imAGIng and Nuclear mEdicine global resources database (IMAGINE) [website]. International Atomic Energy Agency; 2026 (https://www.iaea.org/resources/hhc/nuclear-medicine/databases/imagine).
172. National Health Workforce Accounts Data Portal [website]. World Health Organization; 2026 (https://apps.who.int/nhwaportal/).

173. Wilson ML, Fleming KA, Kuti MA, Looi LM, Lago N, Ru K. Access to pathology and laboratory medicine services: a crucial gap. The Lancet. 2018;391(10133):1927–38 (https://doi.org/10.1016/s0140-6736(18)30458-6).

174. Edited by Bray F CM, Aitken JF, Bardot A, Eser S, Galceran J, Hagenimana M, Matsuda T, Mery L, Piñeros M, Soerjomataram I, de Vries E, Wiggins C, Won YJ, Znaor A, Ferlay J. Cancer Incidence in Five Continents Volume XII. Lyon: International Agency for Research on Cancer; 2024 (169. Licence: CC BY-NC-ND 3.0 IGO.

175. Petrova D, Špacírová Z, Fernández-Martínez NF, Ching-López A, Garrido D, Rodríguez-Barranco M et al. The patient, diagnostic, and treatment intervals in adult patients with cancer from high- and lower-income countries: A systematic review and meta-analysis. PLOS Medicine. 2022;19(10):e1004110 (https://doi.org/10.1371/journal.pmed.1004110).

176. McGenity C, Clarke EL, Jennings C, Matthews G, Cartlidge C, Freduah-Agyemang H et al. Artificial intelligence in digital pathology: a systematic review and meta-analysis of diagnostic test accuracy. npj Digital Medicine. 2024;7(1):114 (https://doi.org/10.1038/s41746-024-01106-8).

177. Kumar Verma K. Artificial intelligence models for lung cancer diagnosis: A comprehensive review. Current Problems in Diagnostic Radiology. 2026;55(3):476–80 (https://doi.org/10.1067/j.cpradiol.2025.10.019).

178. Liu M, Wu J, Wang N, Zhang X, Bai Y, Guo J et al. The value of artificial intelligence in the diagnosis of lung cancer: A systematic review and meta-analysis. PLOS ONE. 2023;18(3):e0273445 (https://doi.org/10.1371/journal.pone.0273445).

179. Rabilloud N, Allaume P, Acosta O, De Crevoisier R, Bourgade R, Loussouarn D et al. Deep Learning Methodologies Applied to Digital Pathology in Prostate Cancer: A Systematic Review. Diagnostics. 2023;13(16):2676 (https://doi.org/10.3390/diagnostics13162676).

180. Zhang Y, Yuan J, Chen L. Transforming cervical cancer pathological diagnosis through artificial intelligence: progress, performance, and barriers to clinical implementation. Frontiers in Oncology. 2026;15 (https://doi.org/10.3389/fonc.2025.1716018).

181. Tandon R, Agrawal S, Rathore NPS, Mishra AK, Jain SK. A systematic review on deep learning-based automated cancer diagnosis models. Journal of Cellular and Molecular Medicine. 2024;28(6) (https://doi.org/10.1111/jcmm.18144).

182. Javaeed A, Schuh A. Artificial intelligence in breast cancer diagnosis: A systematic literature review. Cambridge Prisms: Precision Medicine. 2025;3 (https://doi.org/10.1017/pcm.2025.10006).

183. Tiangco B, Daguit SEJ, Astrologo NC, Flores L, Parma RN, Celi LA. Challenges in the maintenance of an open hospital-based cancer registry system in a low-to-middle-income country (LMIC): 2017–2022 experience. PLOS Digital Health. 2024;3(1):e0000328 (https://doi.org/10.1371/journal.pdig.0000328).

184. Gutierrez ME, Price KS, Lanman RB, Nagy RJ, Shah I, Mathura S et al. Genomic Profiling for KRAS, NRAS, BRAF, Microsatellite Instability, and Mismatch Repair Deficiency Among Patients With Metastatic Colon Cancer. JCO Precision Oncology. 2019(3):1–9 (https://doi.org/10.1200/PO.19.00274).

185. Chipidza FE, Kayembe MKA, Nkele I, Efstathiou JA, Chabner BA, Abramson J et al. Accuracy of Pathologic Diagnosis in Patients With Lymphoma and Survival: A Prospective Analysis From Botswana. JCO Global Oncology. 2021(7):1620–32 (https://doi.org/10.1200/go.21.00209).

186. Meara JG, Leather AJM, Hagander L, Alkire BC, Alonso N, Ameh EA et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. The Lancet. 2015;386(9993):569–624 (https://doi.org/10.1016/S0140-6736(15)60160-X).

187. Sullivan R, Alatise OI, Anderson BO, Audisio R, Autier P, Aggarwal A et al. Global cancer surgery: delivering safe, affordable, and timely cancer surgery. The Lancet Oncology. 2015;16(11):1193–224 (https://doi.org/10.1016/S1470-2045(15)00223-5).

188. Effects of hospital facilities on patient outcomes after cancer surgery: an international, prospective, observational study. Lancet Glob Health. 2022;10(7):e1003–e11 (https://doi.org/10.1016/s2214-109x(22)00168-1). Licence: NIHMS1812322.

189. Knight SR, Shaw CA, Pius R, Drake TM, Norman L, Ademuyiwa AO et al. Global variation in postoperative mortality and complications after cancer surgery: a multicentre, prospective cohort study in 82 countries. The Lancet. 2021;397(10272):387–97 (https://doi.org/10.1016/S0140-6736(21)00001-5).

190. Gerk A, Campos LN, Telles L, Bustorff-Silva J, Schnitman G, Ferreira R et al. Expansion of national surgical, obstetric, and anaesthesia plans in Latin America: can Brazil be next? (https://doi.org/10.1016/j.lana.2024.100834).

191. Ramsay G, Haynes AB, Lipsitz SR, Solsky I, Leitch J, Gawande AA et al. Reducing surgical mortality in Scotland by use of the WHO Surgical Safety Checklist. British Journal of Surgery. 2019;106(8):1005–11 (https://doi.org/10.1002/bjs.11151).

192. Qaiser S, Noman M, Khan MS, Ahmed UW, Arif A. The Role of WHO Surgical Checklists in Reducing Postoperative Adverse Outcomes: A Systematic Review. Cureus. 2024 (https://doi.org/10.7759/cureus.70923).

193. Elmore SNC, Polo A, Bourque J-M, Pynda Y, van der Merwe D, Grover S et al. Radiotherapy resources in Africa: an International Atomic Energy Agency update and analysis of projected needs. The Lancet Oncology. 2021;22(9):e391–e9 (https://doi.org/10.1016/s1470-2045(21)00351-x).

194. DIrectory of RAdiotherapy Centers [website]. International Atomic Energy Agency (IAEA); 2026 (https://dirac.iaea.org/).

195. Christ SM, Willmann J. Measuring Global Inequity in Radiation Therapy: Resource Deficits in Low- and Middle-Income Countries Without Radiation Therapy Facilities. Advances in Radiation Oncology. 2023;8(4):101175 (https://doi.org/10.1016/j.adro.2023.101175).

196. Selecting Megavoltage Treatment Technologies in External Beam Radiotherapy. Vienna: International Atomic Energy Agency; 2022 (http://www.iaea.org/Publications/index.html).

197. Pozo G, Pérez-Escutia MA, Ruíz A, Ferrando A, Milanés A, Cabello E et al. Management of interruptions in radiotherapy treatments: Adaptive implementation in high workload sites. Reports of Practical Oncology & Radiotherapy. 2019;24(2):239–44 (https://doi.org/10.1016/j.rpor.2019.02.003).

198. Wroe LM, Ige TA, Asogwa OC, Aruah SC, Grover S, Makufa R et al. Comparative Analysis of Radiotherapy Linear Accelerator Downtime and Failure Modes in the UK, Nigeria and Botswana. Clinical Oncology. 2020;32(4):e111–e8 (https://doi.org/10.1016/j.clon.2019.10.010).

199. Schantz C, Diarra I, Traoré A, Traoré BA, Chabrol F, Sogoba S. Radiothérapie et lutte contre les cancers : défis de maintenance de l'unique accélérateur linéaire à l'Hôpital du Mali. Santé Publique. 2022;Vol. 34(3):425–8 (https://doi.org/10.3917/spub.223.0425).

200. Wawrzuta D, Klejdysz J, Pędziwiatr K, Chojnacka M. Global access to radiotherapy: A geospatial analysis of current disparities and optimal facility placement. Radiotherapy and Oncology. 2025;211:111061 (https://doi.org/10.1016/j.radonc.2025.111061).

201. Holt DE, Hiniker SM, Kalapurakal JA, Breneman JC, Boik N, Cooper BT et al. Improving the Pediatric Patient Experience During Radiation Therapy – A Children's Oncology Group Study. International Journal of Radiation Oncology*Biology*Physics. 2020;108(3):e216 (https://doi.org/10.1016/j.ijrobp.2020.09.002).

202. Wilson BE, Oar A, Rodin D, Bray F, Ferlay J, Polo A et al. Radiotherapy prioritization in 143 national cancer control plans: Correlation with radiotherapy machine availability, geography and income level. 2022 (https://doi.org/10.1016/j.radonc.2022.09.001).

203. IAEA Programme of Action for Cancer Therapy. National Radiotherapy Service Planning [website]. International Atomic Energy Agency; 2026 (https://www.iaea.org/resources/hhc/radiation-oncology/national-radiotherapy-service-planning).

204. Rays of Hope. IAEA Annual Report 2024 — In Focus. Vienna: International Atomic Energy Agency; 2024 (https://www.iaea.org/interactive/annual-report/2024/in-focus/rays-of-hope.html).

205. Nuclear Science and Technology Delivers Hope to Cancer Patients Around the World. IAEA News Centre. 2026 (https://www.iaea.org/newscenter/news/nuclear-science-and-technology-delivers-hope-to-cancer-patients-around-the-world).

206. IAEA Director General's Introductory Statement to the Board of Governors [website]. International Atomic Energy Agency; 2026 (https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-8-june-2026).

207. How Rays of Hope is Expanding Access to Cancer Care for All [website]. International Atomic Energy Agency; 2026 (https://www.iaea.org/bulletin/how-rays-of-hope-is-expanding-access-to-cancer-care-for-all).

208. van der Steege AE, Humuza J, Shyirambere C, Hogerzeil H, Baltussen RMPM. Weak economic evidence for WHO's essential cancer medicines for Africa. BMJ Global Health. 2026;11(5):e022533 (https://doi.org/10.1136/bmjgh-2025-022533).

209. Access to safe, effective and quality-assured health products and technologies: roadmap for WHO action 2025–2030. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/381763). Licence: CC BY-NC-SA 3.0 IGO.

210. Cherny NI, Trapani D, Galotti M, Saar M, Bricalli G, Roitberg F et al. ESMO Global Consortium Study on the availability, out-of-pocket costs, and accessibility of cancer medicines: 2023 update. Annals of Oncology. 2025;36(3):247–62 (https://doi.org/10.1016/j.annonc.2024.12.005).

211. Fundytus A, Sengar M, Lombe D, Hopman W, Jalink M, Gyawali B et al. Access to cancer medicines deemed essential by oncologists in 82 countries: an international, cross-sectional survey. The Lancet Oncology. 2021;22(10):1367–77 (https://doi.org/10.1016/s1470-2045(21)00463-0).

212. Cherny NI, Sullivan R, Torode J, Saar M, Eniu A. ESMO International Consortium Study on the availability, out-of-pocket costs and accessibility of antineoplastic medicines in countries outside of Europe. Annals of Oncology. 2017;28(11):2633–47 (https://doi.org/10.1093/annonc/mdx521).

213. Palagyi A, Balane C, Shanthosh J, Jun M, Bhoo-Pathy N, Gadsden T et al. Treatment abandonment in children with cancer: Does a sex difference exist? A systematic review and meta-analysis of evidence from low- and middle-income countries. International Journal of Cancer. 2020;148(4):895–904 (https://doi.org/10.1002/ijc.33279).

214. Boucheron P, Zietsman A, Anele A, Offiah AU, Galukande M, Parham G et al. Measuring the WHO Global Breast Cancer Initiative Pillars' key performance indicators in Sub-Saharan Africa: experience in the African Breast Cancer—Disparities in Outcomes hospital-based cohort study. eClinicalMedicine. 2025;81:103104 (https://doi.org/10.1016/j.eclinm.2025.103104).

215. Hofmarcher T, C. Berchet and G. Dedet Access to oncology medicines in EU and OECD countries. In: OECD Health Working Papers, No 170. OECD Publishing, Paris: Organisation for Economic Co-operation and Development; 2024 (https://doi.org/10.1787/c263c014-en).

216. Aitken M, Kleinrock M, Pritchett J. IQVIA institute for human data science. Global Oncology Trends 2024. Outlook to 2028. Parsippany, New Jersey; 2024 (www.iqviainstitute.org).

217. Easty AC, Coakley N, Cheng R, Cividino M, Savage P, Tozer R et al. Safe handling of cytotoxics: guideline recommendations. Current Oncology. 2015 (https://doi.org/10.3747/co.21.2151).

218. Repository of National Essential Medicines Lists (nEMLs) [website]. World Health Organization; (https://www.who.int/teams/health-product-policy-and-standards/assistive-and-medical-technology/essential-medicines/national-emls).

219. Political declaration of the fourth high-level meeting of the General Assembly on the prevention and control of noncommunicable diseases and the promotion of mental health and well-being. New York: United Nations; 2025 (https://www.who.int/publications/m/item/political-declaration-of-the-fourth-high-level-meeting-of-the-general-assembly-on-the-prevention-and-control-of-noncommunicable-diseases-and-the-promotion-of-mental-health-and-well-being).

220. Razis E, Kassapian M, Andriakopoulou C, Martei YM, Zurn SJ, Hammad N et al. Essential medicines list in national cancer control plans: a secondary analysis from a global study. 2022 (https://doi.org/10.1016/S1470-2045(21)00706-3).

221. Jenei K, Raymakers AJN, Bayle A, Berger-Thürmel K, Cherla A, Honda K et al. Health technology assessment for cancer medicines across the G7 countries and Oceania: an international, cross-sectional study. The Lancet Oncology. 2023;24:624–35 (https://doi.org/10.1016/S1470-2045(23)00175-4).

222. Ghosh S, Pramesh CS, Sengar M, Ranganathan P, Ruiz F, Wadasadawala T et al. Exploring adaptive health technology assessment for evaluating 10 cancer interventions: insights and lessons from a pilot study in India. BMJ Evidence-Based Medicine. 2025;30(Suppl 2):s20 (https://doi.org/10.1136/bmjebm-2023-112490).

223. Wei Y, Zhang Y, Xu Z, Wang G, Zhou Y, Li H et al. Cancer drug indication approvals in China and the United States: a comparison of approval times and clinical benefit, 2001-2020. 2024 (https://doi.org/10.1016/j.lanwpc.2024.101055).

224. Full List of WHO Medical Product Alerts [website]. World Health Organization; 2026 (https://www.who.int/teams/regulation-prequalification/incidents-and-SF/full-list-of-who-medical-product-alerts).

225. Moye-Holz D, Vogler S. Comparison of Prices and Affordability of Cancer Medicines in 16 Countries in Europe and Latin America. Applied Health Economics and Health Policy. 2022;20(1):67–77 (https://doi.org/10.1007/s40258-021-00670-4).

226. Why cancer medicines are and continue to be vulnerable to drug shortages [website]. United States Pharmacopeia; 2023 (https://qualitymatters.usp.org/why-cancer-medicines-are-and-continue-be-vulnerable-drug-shortages).

227. Malta M, Christian M, Cadwallader AB. Oncology Drug Shortages: Impacts, Policy Reforms, and Advocacy Imperatives. The Cancer Journal. 2025;31(5) (https://doi.org/10.1097/ppo.0000000000000784).

228. 4 Drivers of Childhood Cancer Treatment Supply Chain Vulnerability. 2022 (https://qualitymatters.usp.org/4-drivers-childhood-cancer-treatment-supply-chain-vulnerability).

229. Radtke V, König T, Radcke C, Bergmann U, Eichler R, Pohl KJ et al. Physicochemical quality assessment of four asparaginases. PLoS One. 2025;20(6):e0326106 (https://doi.org/10.1371/journal.pone.0326106).

230. Wilfinger MJ, Doohan J, Okorigwe E, Ashenef A, Fentie AM, Chikowe I et al. Substandard anticancer medications in clinical care settings and private pharmacies in sub-Saharan Africa: a systematic pharmaceutical investigation. The Lancet Global Health. 2025;13(7):e1250–e7 (https://doi.org/10.1016/S2214-109X(25)00138-X).

231. WHO guideline on country pharmaceutical pricing policies, 2nd edition. World Health Organization; 2020 (https://iris.who.int/handle/10665/335692). Licence: CC BY-NC-SA 3.0 IGO.

232. Yehoda MMa, Shalini JZ. The importance of addressing antimicrobial resistance for better cancer care outcomes 2026 (https://revive.gardp.org/addressing-antimicrobial-resistance-for-better-care-in-cancer-patients/).

233. Rolston KVI. Infections in Cancer Patients with Solid Tumors: A Review. Infectious Diseases and Therapy. 2017;6(1):69–83 (https://doi.org/10.1007/s40121-017-0146-1).

234. Gupta V, Satlin MJ, Yu K, Martei YM, Sung L, Westblade LF et al. Burden of Antimicrobial Resistance in Adult Hospitalized Patients With Cancer: A Multicenter Analysis. Cancer Medicine. 2024;13(24) (https://doi.org/10.1002/cam4.70495).

235. Falcone M, Carbonara S, Marino A, Di Caprio G, Carretta A, Mularoni A et al. Impact of multidrug resistance in cancer patients with bloodstream infections caused by Gram-negative bacilli: results from a multicentre study. JAC-Antimicrobial Resistance. 2025;7(4) (https://doi.org/10.1093/jacamr/dlaf116).

236. Zheng Y, Chen Y, Yu K, Yang Y, Wang X, Yang X et al. Fatal Infections Among Cancer Patients: A Population-Based Study in the United States. Infectious Diseases and Therapy. 2021;10(2):871–95 (https://doi.org/10.1007/s40121-021-00433-7).

237. Liberati C, Barbieri E, Cavagnero F, Petris MG, Brigadoi G, Reggiani G et al. Impact of a two step antimicrobial stewardship program in a paediatric haematology and oncology unit. Scientific Reports. 2024;14(1) (https://doi.org/10.1038/s41598-024-80163-1).

238. Connor SR, Garralda E, Tripodoro VA, Centeno C. Estimating the Number of Services and Patients Receiving Specialized Palliative Care Globally in 2025. Journal of Pain and Symptom Management. 2025;70(5):422–6 (https://doi.org/10.1016/j.jpainsymman.2025.07.018).

239. Knaul FM, Arreola-Ornelas H, Kwete XJ, Bhadelia A, Rosa WE, Touchton M et al. The evolution of serious health-related suffering from 1990 to 2021: an update to The Lancet Commission on global access to palliative care and pain relief. The Lancet Global Health. 2025;13(3):e422–e36 (https://doi.org/10.1016/s2214-109x(24)00476-5).

240. Global Atlas of Palliative Care. London: World Healt Organization and Worldwide Hospice Palliative Care Alliance; 2020 (

241. Arias-Casais N G-DE, Rhee JY, Lima L, dePons-Izquierdo JJ, Clark D, Hasselaar J, Ling J, Mosoiu D, Centeno C. EAPC Atlas of Palliative Care in Europe 2019 Vilvoorde: EAPC Press; 2019 (https://hdl.handle.net/10171/56787).

242. Suárez D TV, Gafer N, Montero Á, Garralda E, Bastos F, Monzón Llamas L, Herrero J, Pons J J and Centeno, C. Atlas of Palliative Care Developments in the Eastern Mediterranean Countries 2025 Pamplona: IAHPC; 2025 (https://hdl.handle.net/10171/117475).

243. Tripodoro VA SD, Béjar AC, Montero-Calero A, Ruiz-Ospina PM, Lopez-Saca M, et al. Palliative Care Atlas of the Americas, 2025 2025 (https://hdl.handle.net/10171/117222).

244. Bastos F TV, Namisango E, Luyirika E, Montero-Calero A, Garralda-Domezain E, Monzón L, Bejar-Alban AC, Suárez D, Herrero-Álvarez J, Pons-Izquierdo JJ, Centeno C. APCA Atlas of Palliative Care in Africa 2025. Pamplona: EUNSA; 2025 (https://hdl.handle.net/10171/117004).

245. Monzón L TV, Hamzah E, Montero A, Bastos F, Garralda E, et al. APHN Atlas of palliative care in the Asia Pacific Regions 2025 Pamplona: EUNSA; 2025 (https://hdl.handle.net/10171/116069).

246. Left behind in pain: extent and causes of global variations in access to morphine for medical use and actions to improve safe access. Geneva; 2023 (https://iris.who.int/handle/10665/369294). Licence: CC BY-NC-SA 3.0 IGO.

247. Narcotic Drugs 2025. Estimated World Requirements for 2026. Statistics for 2024. New York: International Narcotics Control Board, United Nations; 2025 (www.incb.org).

248. Bossi P, De Luca R, Ciani O, D'Angelo E, Caccialanza R. Malnutrition management in oncology: An expert view on controversial issues and future perspectives. Front Oncol. 2022;12:910770 (https://doi.org/10.3389/fonc.2022.910770).

249. Quality health services and palliative care: practical approaches and resources to support policy, strategy and practice. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/345674). Licence: CC BY-NC-SA 3.0 IGO.

250. Reynolds T, Wilkinson T, Bertram MY, Jowett M, Baltussen R, Mataria A et al. Building implementable packages for universal health coverage. BMJ Global Health. 2023;8(Suppl 1):e010807 (https://doi.org/10.1136/bmjgh-2022-010807).

251. Kaasa S, Knaul FM, Mwangi-Powell F, Rodin G. Supportive care in cancer: new directions to achieve universal access to psychosocial, palliative, and end-of-life care. The Lancet Global Health. 2018;6:S11–S2 (https://doi.org/10.1016/S2214-109X(18)30086-X).

252. Romero Y, Trapani D, Johnson S, Tittenbrun Z, Given L, Hohman K et al. National cancer control plans: a global analysis. The Lancet Oncology. 2018;19(10):e546–e55 (https://doi.org/10.1016/s1470-2045(18)30681-8).

253. Signorelli C, Høeg BL, Asuzu C, Centeno I, Estapé T, Fisher P et al. International Survey of Psychosocial Care for Cancer Survivors in Low-/Middle- and High-Income Countries: Current Practices, Barriers, and Facilitators to Care. JCO Global Oncology. 2024(10) (https://doi.org/10.1200/go.23.00418).

254. Courneya KS, Vardy JL, O'Callaghan CJ, Gill S, Friedenreich CM, Wong RKS et al. Structured Exercise after Adjuvant Chemotherapy for Colon Cancer. New England Journal of Medicine. 2025;393(1):13–25 (https://doi.org/10.1056/nejmoa2502760).

255. Chen X, Li Z, Zhang J. A novel approach to cancer rehabilitation: assessing the influence of exercise intervention on postoperative recovery and survival rates. International Journal of Surgery. 2025;111(5):3373–85 (https://doi.org/10.1097/js9.0000000000002323).

256. Campbell KL, Winters-Stone KM, Wiskemann J, May AM, Schwartz AL, Courneya KS et al. Exercise Guidelines for Cancer Survivors: Consensus Statement from International Multidisciplinary Roundtable. Medicine & Science in Sports & Exercise. 2019;51(11):2375–90 (https://doi.org/10.1249/mss.0000000000002116).

257. Jung Y, Chung J, Son H. Physical Activity Interventions for Colorectal Cancer Survivors. Cancer Nursing. 2020;44(6):E414–E28 (https://doi.org/10.1097/ncc.0000000000000888).

258. Suárez-Alcázar M-P, Folch Ayora A, Muriach M, Recacha-Ponce P, Garcia-Roca ME, Coret-Franco A et al. Multimodal Prehabilitation in Colorectal Cancer: Improving Fitness, Lifestyle, and Post-Surgery Outcomes. Healthcare. 2025;13(9):1083 (https://doi.org/10.3390/healthcare13091083).

259. Stout NL, Santa Mina D, Lyons KD, Robb K, Silver JK. A systematic review of rehabilitation and exercise recommendations in oncology guidelines. CA: A Cancer Journal for Clinicians. 2020;71(2):149–75 (https://doi.org/10.3322/caac.21639).

260. Mehnert A, Hartung TJ, Friedrich M, Vehling S, Brähler E, Härter M et al. One in two cancer patients is significantly distressed: Prevalence and indicators of distress. Psycho-Oncology. 2017;27(1):75–82 (https://doi.org/10.1002/pon.4464).

261. Su HI, Lacchetti C, Letourneau J, Partridge AH, Qamar R, Quinn GP et al. Fertility Preservation in People With Cancer: ASCO Guideline Update. Journal of Clinical Oncology. 2025;43(12):1488–515 (https://doi.org/10.1200/JCO-24-02782).

262. Castillo J, Davis AM, Burns KC. Fertility Preservation in People With Cancer. JAMA. 2026;335(13):1169–70 (https://doi.org/10.1001/jama.2026.0070).

263. Salama M, Nahata L, Jayasinghe Y, Gomez-Lobo V, Laronda MM, Moravek MB et al. Pediatric oncofertility care in limited versus optimum resource settings: results from 39 surveyed centers in Repro-Can-OPEN Study Part I & II. Journal of Assisted Reproduction and Genetics. 2022;40(3):443–54 (https://doi.org/10.1007/s10815-022-02679-7).

264. Purandare N, Ruiloba F, Nguyen-Hoang L, Wilailak S, Yanaihara N, Chung JPW et al. Cancer and fertility management: FIGO best practice advice. International Journal of Gynecology & Obstetrics. 2025;171(1):32–44 (https://doi.org/10.1002/ijgo.70426).

265. Melan K, Amant F, Veronique-Baudin J, Joachim C, Janky E. Fertility preservation healthcare circuit and networks in cancer patients worldwide: what are the issues? BMC Cancer. 2018;18(1) (https://doi.org/10.1186/s12885-018-4046-x).

266. WHO Rehabilitation Need Estimator [website]. Institute for Health Metrics and Evaluation.; 2021 (https://viz-archive.healthdata.org/rehabilitation/).

267. Rehabilitation 2030, a call for action. The need to scale up rehabilitation. Geneva: World Health Organization; 2017 (Licence: CC BY-NC-SA 3.0 IGO.

268. Cormie P, Atkinson M, Bucci L, Cust A, Eakin E, Hayes S et al. Clinical Oncology Society of Australia position statement on exercise in cancer care. Medical Journal of Australia. 2018;209(4):184–7 (https://doi.org/10.5694/mja18.00199).

269. Cieza A, Causey K, Kamenov K, Hanson SW, Chatterji S, Vos T. Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. The Lancet. 2020;396(10267):2006–17 (https://doi.org/10.1016/s0140-6736(20)32340-0).

270. Dennett AM, Peiris CL, Shields N, Morgan D, Taylor NF. Exercise therapy in oncology rehabilitation in Australia: A mixed-methods study. Asia-Pacific Journal of Clinical Oncology. 2016;13(5) (https://doi.org/10.1111/ajco.12642).

271. Rehabilitation 2030 initiative [website]. World Health Organzation; 2026 (https://www.who.int/initiatives/rehabilitation-2030).

272. Lasscock A, Taylor NF, Dennett AM. Oncology Rehabilitation in Australia: A National Survey Update. Asia-Pacific Journal of Clinical Oncology. 2025;22(3):473–82 (https://doi.org/10.1111/ajco.70003).

273. Package of interventions for rehabilitation. Module 7. Malignant neoplasm. Geneva; 2023 (https://iris.who.int/handle/10665/370510). Licence: CC BY-NC-SA 3.0 IGO.

274. WHO Mortality Database [online database]. Geneva: World Health Organization; 2026 (https://www.who.int/data/data-collection-tools/who-mortality-database).

275. Bhakta N, Force LM, Allemani C, Atun R, Bray F, Coleman MP et al. Childhood cancer burden: a review of global estimates. The Lancet Oncology. 2019;20(1):e42–e53 (https://doi.org/10.1016/s1470-2045(18)30761-7).

276. CureAll framework: WHO global initiative for childhood cancer: increasing access, advancing quality, saving lives. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/347370). Licence: CC BY-NC-SA 3.0 IGO.

277. Downing JR, Ghebreyesus TA, Khudayarov A, Isse U, Salako IA. Improving survival and reducing suffering for children with NCDs. The Lancet. 2025;406(10511):1468–9 (https://doi.org/10.1016/s0140-6736(25)01875-6).

278. Seneviwickrama M, Denagamagei SS, Jayakody S, Gunasekera S, Liyanage G. Availability and accessibility of cytotoxic medicines in the WHO model list of essential medicines for childhood cancer in low and lower-middle- income countries: a systematic review. BMC Cancer. 2025;25(1) (https://doi.org/10.1186/s12885-025-13586-2).

279. Accelerating the development of priority formulations in childhood cancer: target product profiles for paediatric formulations of cyclophosphamide, etoposide, mercaptopurine, methotrexate, procarbazine, temozolomide. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/383037). Licence: CC BY-NC-SA 3.0 IGO.

280. WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention: use of human papillomavirus (HPV) DNA genotyping. Geneva: World Health Organization; 2026 (https://iris.who.int/handle/10665/385575.). Licence: CC BY-NC-SA 3.0 IGO.
281. Thermal ablation: cost-effective and safe for the treatment of cervical precancer. IARC Evidence Summary Briefs, No. 7. Lyon: International Agency for Research on Cancer; 2025 (https://www.iarc.who.int/wp-content/uploads/2025/11/IARC_Evidence_Summary_Brief_7.pdf).
282. World Cervical Cancer Elimination Day. Geneva: World Health Organization; 2025 (https://apps.who.int/gb/ebwha/pdf_files/WHA78/A78_R8-en.pdf).
283. Global breast cancer initiative implementation framework: assessing, strengthening and scaling up of services for the early detection and management of breast cancer. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/366385). Licence: CC BY-NC-SA 3.0 IGO.
284. Ong SK, Haruyama R, Yip CH, Ngan TT, Li J, Lai D et al. Feasibility of monitoring Global Breast Cancer Initiative Framework key performance indicators in 21 Asian National Cancer Centers Alliance member countries. eClinicalMedicine. 2024;67:102365 (https://doi.org/10.1016/j.eclinm.2023.102365).
285. Financing transition in the health sector – what can Development Assistance Committee members do? OECD Publishing Paris: Organization for Economic Co-operation and Development (OECD); 2020 (https://doi.org/https://doi.org/10.1787/0d16fad8-en).
286. Health financing [website]. Institute for Health Metrics and Evaluation (IHME); 2026 (https://www.healthdata.org/research-analysis/health-financing).
287. Support to Development of Oncology Services in the Republic of Uzbekistan (Phase - II) [website]. Islamic Development Bank; 2021 (https://www.isdb.org/hub/almaty/news/support-to-development-of-oncology-services-in-the-republic-of-uzbekistan-phase-ii).
288. World health statistics 2018: monitoring health for the SDGs, sustainable development goals. Geneva: World Health Organization; 2018 (https://iris.who.int/handle/10665/272596). Licence: CC BY-NC-SA 3.0 IGO.
289. Piñeros M, Znaor A, Mery L, Bray F. A Global Cancer Surveillance Framework Within Noncommunicable Disease Surveillance: Making the Case for Population-Based Cancer Registries. Epidemiologic Reviews. 2017;39(1):161–9 (https://doi.org/10.1093/epirev/mxx003).
290. Planning and Developing Population-Based Cancer Registration in Low- and Middle-Income Settings. International Agency for Research on Cancer; 2014 (IARC Technical Publication No. 43.
291. Jemal A SH, Kelly K, Soerjomataram I, Bray F. The Cancer Atlas. Atlanta; 2025:Fourth Edition (https://canceratlas.cancer.org/.).
292. World Cancer Declaration 2025-2035. Geneva: Union for International Cancer Control (UICC); 2026 (https://www.uicc.org/what-we-do/driving-global-impact/targeted-commitments/world-cancer-declaration-2025-2035).
293. WHO launches new campaign to amplify the lived experience of people affected by cancer [website]. World Health Organization; 2026 (https://www.who.int/news/item/18-10-2022-who-launches-new-campaign-to-amplify-the-lived-experience-of-people-affected-by-cancer).
294. Gostin LO, Friedman EA, Finch A. The Global Health Architecture: Governance and International Institutions to Advance Population Health Worldwide. Milbank Q. 2023;101(S1):734–69 (https://doi.org/10.1111/1468-0009.12627).
295. The Power of Partnership: Insights into a collaboration between C/Can and Roche to improve cancer care in LMICs. Geneva: City Cancer Challenge Foundation; 2024 (https://citycancerchallenge.org/uploads/2024/05/CCan_Roche_Report_2024-05-21.pdf).
296. Faster Growing Cancer Research Over 20 Years? 2005-2025 [website]. OncoDaily; 2026 (https://oncodaily.com/oncolibrary/cancer-research-trends-2005-2025).

297. Casolino R, Tatah L, Charnaud S, Santero M, Ilbawi A, Ross AL. The WHO global landscape of cancer clinical trials. Nature Medicine. 2025;31(9):2901–12 (https://doi.org/10.1038/s41591-025-03926-x).

298. From innovation to access: Pharmaceutical industry priorities ahead of the 4th UN High-Level Meeting on NCDs and Mental Health. Geneva: International Federation of Pharmaceutical Manufacturers and Associations (IFPMA); 2025 (https://www.ifpma.org/publications/from-innovation-to-access-pharmaceutical-industry-priorities-ahead-of-the-4th-un-high-level-meeting-on-ncds-and-mental-health/).

299. Li F, Dong X. Pembrolizumab provides long-term survival benefits in advanced non-small cell lung cancer: The 5-year outcomes of the KEYNOTE-024 trial. Thoracic Cancer. 2021;12(23):3085–7 (https://doi.org/10.1111/1759-7714.14193).

300. Jang H, Chang J-E. Strategic Combinations of Antibody–Drug Conjugates from 2023 to 2025: From Dual Therapies to Innovative ADC-Based Regimens. Pharmaceutics. 2025;17(12):1581 (https://doi.org/10.3390/pharmaceutics17121581).

301. Antibody–Drug Conjugate Landscape Review 2025 [website]. ChemExpress; 2026 (https://www.chemexpress.com/news-and-events/news/191).

302. Zehir A, Benayed R, Shah RH, Syed A, Middha S, Kim HR et al. Mutational landscape of metastatic cancer revealed from prospective clinical sequencing of 10,000 patients. Nature Medicine. 2017;23(6):703–13 (https://doi.org/10.1038/nm.4333).

303. Reflection paper on patient experience data [news release]. European Medicines Agency. Science Medicines Health (https://www.ema.europa.eu/en/documents/scientific-guideline/reflection-paper-patient-experience-data_en.pdf).

304. Richardson DR, Wang Y, Flannery M, Mohamed M, Magnuson A, Wells M et al. Outcomes of Older Adults With Advanced Cancer Who Prefer Quality of Life vs Prolonging Survival. JAMA Oncology. 2026;12(5):517 (https://doi.org/10.1001/jamaoncol.2026.0072).

305. Pesheva E. AI Predicts Future Pancreatic Cancer [website]. Harvard Medical School; 2023 (https://hms.harvard.edu/news/ai-predicts-future-pancreatic-cancer).

306. Alowais SA, Alghamdi SS, Alsuhebany N, Alqahtani T, Alshaya AI, Almohareb SN et al. Revolutionizing healthcare: the role of artificial intelligence in clinical practice. BMC Medical Education. 2023;23(1) (https://doi.org/10.1186/s12909-023-04698-z).

307. Li J, Zhang L, Yu Z, Bao Z, Li D, Wang L. The impact of AI on modern oncology from early detection to personalized cancer treatment. npj Precision Oncology. 2026;10(1) (https://doi.org/10.1038/s41698-026-01276-6).

308. Liao J, Li X, Gan Y, Han S, Rong P, Wang W et al. Artificial intelligence assists precision medicine in cancer treatment. Frontiers in Oncology. 2023;12 (https://doi.org/10.3389/fonc.2022.998222).

309. Cancer Research Funding Statistics [website]. Worldmetrics; 2026 (https://worldmetrics.org/cancer-research-funding-statistics/).

310. Du A, Brede M, McIntosh SA, Zhang B, Alem AO, Borin G et al. Public and philanthropic research funding, publications, and research networks for cancer in the Commonwealth and globally between 2016 and 2023: a comparative analysis. The Lancet Oncology. 2025;26(9):e466–e76 (https://doi.org/10.1016/S1470-2045(25)00338-9).

311. Cancer research and development landscape: overview of 1999–2022 period. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/380357). Licence: CC BY-NC-SA 3.0 IGO.

312. McIntosh SA, Alam F, Adams L, Boon IS, Callaghan J, Conti I et al. Global funding for cancer research between 2016 and 2020: a content analysis of public and philanthropic investments. The Lancet Oncology. 2023;24(6):636–45 (https://doi.org/10.1016/S1470-2045(23)00182-1).

313. Kovic B, Jin X, Kennedy SA, Hylands M, Pedziwiatr M, Kuriyama A et al. Evaluating Progression-Free Survival as a Surrogate Outcome for Health-Related Quality of Life in Oncology. JAMA Internal Medicine. 2018;178(12):1586 (https://doi.org/10.1001/jamainternmed.2018.4710).
314. Belin L, Tan A, De Rycke Y, Dechartres A. Progression-free survival as a surrogate for overall survival in oncology trials: a methodological systematic review. British Journal of Cancer. 2020;122(11):1707–14 (https://doi.org/10.1038/s41416-020-0805-y).
315. International Clinical Trials Registry Platform (ICTRP) [website]. World Health Organization; 2026 (https://www.who.int/tools/clinical-trials-registry-platform).
316. Global action plan for clinical trial ecosystem strengthening. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/381106). Licence: CC BY-NC-SA 3.0 IGO.
317. Oar A, Moraes FY, Romero Y, Ilbawi A, Yap ML. Core elements of national cancer control plans: a tool to support plan development and review. The Lancet Oncology. 2019;20(11):e645–e52 (https://doi.org/10.1016/s1470-2045(19)30404-8).
318. Utilization of oncology procedures under AB-ArK witnesses six-fold rise. Medical Buyer. 2025 (https://medicalbuyer.co.in/utilization-of-oncology-procedures-under-ab-ark-witnesses-six-fold-rise/).
319. WHO, UNFPA commend Indonesia's efforts to eliminate cervical cancer, urge streamlined vaccine strategy and enhanced screening [website]. World Health Organization; 2024 (https://www.who.int/indonesia/news/detail/15-11-2024-who--unfpa-commend-indonesia-s-efforts-to-eliminate-cervical-cancer--urge-streamlined-vaccine-strategy-and-enhanced-screening).
320. National Health Insurance Authority of Ghana. NHIS active membership hits 56 percent coverage. [website]. NHIA News; 2025; 2025 (https://www.nhis.gov.gh/News/nhis-active-membership-hits-56-percent-coverage--5966).
321. Parliament of Ghana. Ghana Medical Trust Fund Act, 2025 (Act 1142). Passed July 2025. Reported in: Parliament passes MahamaCares Bill. [website]. Citi Newsroom; 2025 (https://www.citinewsroom.com/2025/07/parliament-passes-mahamacares-bill/).
322. Maláková K, Cabasag CJ, Bardot A, Sangrajrang S, Chitapanarux I, Sripan P et al. Cancer survival in Thailand from 1997 to 2012: Assessing the impact of universal health coverage. Journal of Cancer Policy. 2022;34:100353 (https://doi.org/https://doi.org/10.1016/j.jcpo.2022.100353).
323. Meyer S, Harries J, Torode J, Baldwin-Ragaven L. Harnessing the law to advance equitable cancer care in South Africa: exploring the feasibility, desirability and added value of a dedicated national cancer act. ecancermedicalscience. 2024;18 (https://doi.org/10.3332/ecancer.2024.1658).
324. Loggetto P, Ritter J, Marx K, Metzger ML, Lam CG. Equity in national cancer control plans in the region of the Americas. The Lancet Oncology. 2022;23(5):e209–e17 (https://doi.org/10.1016/S1470-2045(22)00057-2).
325. Global Health Expenditure Database [website]. World Health Organization; 2014 (https://apps.who.int/nha/database/Select/Indicators/en).
326. Public spending on health: a closer look at global trends. Geneva: World Health Organization; 2018 (https://iris.who.int/handle/10665/276728). Licence: CC BY-NC-SA 3.0 IGO.
327. WHO Academy. National Cancer Control Planning for Programme Managers Course [website]. World Health Organization; 2026 (https://whoacademy.org/coursewares/course-v1:WHOA+0084+2026?from=discovery&source=edX).
328. NCCP Platform [website]. World Health Organization; 2026 (https://nccp.forecasthealth.org/sign-in?next=%2Fprojects).
329. Ferrara L, Otto M, Aapro M, Albreht T, Jonsson B, Oberst S et al. How to improve efficiency in cancer care: Dimensions, methods, and areas of evaluation. Journal of Cancer Policy. 2022;34:100355 (https://doi.org/10.1016/j.jcpo.2022.100355).

330. Elit L, Haruyama R, Gatti A, Howard SC, Lam CG, Fidarova E et al. Examining policy cohesion for cervical cancer worldwide: analysis of WHO country reports. ESMO Open. 2020;5(6):e000878 (https://doi.org/10.1136/esmoopen-2020-000878).

331. Cancer Care. Assuring quality to improve survival. OECD Health Policy Studies. OECD Publishing; 2013 (https://doi.org/10.1787/9789264181052-en).

332. Huang RS, Mihalache A, Nafees A, Hasan A, Ye XY, Liu Z et al. The impact of multidisciplinary cancer conferences on overall survival: a meta-analysis. JNCI: Journal of the National Cancer Institute. 2024;116(3):356–69 (https://doi.org/10.1093/jnci/djad268).

333. Worst MA, Small A, Furedy A, Zhang C, Yuan M, Bahra S et al. The impact of online CME on clinicians' ability to utilize immunotherapy in unique populations of patients with NSCLC. Journal of Clinical Oncology. 2024;42(16_suppl):e21004–e (https://doi.org/10.1200/JCO.2024.42.16_suppl.e21004).

334. Hricak H, Ward ZJ, Moraes FY, Scott AM, Dako F, Ngwa W et al. Cancer workforce—a global crisis: a Lancet Oncology Commission. The Lancet Oncology. 2026;27(6):e279–e316 (https://doi.org/10.1016/s1470-2045(26)00065-3).

335. Trapani D, Murthy SS, Boniol M, Booth C, Simensen VC, Kasumba MK et al. Distribution of the workforce involved in cancer care: a systematic review of the literature. ESMO Open. 2021;6(6):100292 (https://doi.org/10.1016/j.esmoop.2021.100292).

336. Atun R, Bhakta N, Denburg A, Frazier AL, Friedrich P, Gupta S et al. Sustainable care for children with cancer: a Lancet Oncology Commission. The Lancet Oncology. 2020;21(4):e185–e224 (https://doi.org/10.1016/s1470-2045(20)30022-x).

337. Laskar SG, Sinha S, Krishnatry R, Grau C, Mehta M, Agarwal JP. Access to Radiation Therapy: From Local to Global and Equality to Equity. JCO Global Oncology. 2022(8) (https://doi.org/10.1200/go.21.00358).

338. Gaba F, Ash K, Blyuss O, Bizzarri N, Kamfwa P, Saiz A et al. International Variations in Surgical Morbidity and Mortality Post Gynaecological Oncology Surgery: A Global Gynaecological Oncology Surgical Outcomes Collaborative Led Study (GO SOAR1). Cancers. 2023;15(20):5001 (https://doi.org/10.3390/cancers15205001).

339. Joseph AO, Balogun OD, Akinsete AM, Awofeso OM, Bashir AM, Salako O et al. Oncology Education in the Nigerian Medical Curriculum: A Cross-Sectional Review. Niger Med J. 2021;62(3):127–32 (https://doi.org/https://nigerianmedjournal.org/index.php/nmj/article/view/22).

340. Stähli A, Stiel S, Paal P, Lorenzl S, Elsner F. Postgraduate palliative care education and curricular issues in Central Asia, Eastern and South-Eastern Europe: Results from a quantitative study. Palliative Medicine in Practice. 2020;14(2):81–8 (https://doi.org/10.5603/pmpi.2020.0008).

341. Chidebe RCW, Orjiakor TC, Lasebikan N, Joseph A, Toland S, Simons A. Brain Drain in Cancer Care: The Shrinking Clinical Oncology Workforce in Nigeria. JCO Global Oncology. 2023(9):e2300257 (https://doi.org/10.1200/GO.23.00257).

342. Tony Berberabe M. The Shrinking Oncology Workforce and Its Impact on Supply and Demand. Targeted Oncology 2025 (https://www.targetedonc.com/view/the-shrinking-oncology-workforce-and-its-impact-on-supply-and-demand).

343. Shanafelt TD, West CP, Sinsky C, Trockel M, Tutty M, Wang H et al. Changes in Burnout and Satisfaction With Work–Life Integration in Physicians and the General US Working Population Between 2011 and 2023. Mayo Clinic Proceedings. 2025;100(7):1142–58 (https://doi.org/10.1016/j.mayocp.2024.11.031).

344. Lim KHJ, Kamposioras K, Élez E, Haanen JBAG, Hardy C, Murali K et al. ESMO Resilience Task Force recommendations to manage psychosocial risks, optimise well-being, and reduce burnout in oncology. ESMO Open. 2024;9(10) (https://doi.org/10.1016/j.esmoop.2024.103634).

345. Ngwa W, Addai BW, Adewole I, Ainsworth V, Alaro J, Alatise OI et al. Cancer in sub-Saharan Africa: a Lancet Oncology Commission. The Lancet Oncology. 2022;23(6):e251–e312 (https://doi.org/10.1016/s1470-2045(21)00720-8).

346. Mitema A, Maree L, Young A. Cancer treatment in Africa: surgery, radiotherapy and chemotherapy with a focus on what needs to be done to improve these services—the importance of the role of nursing. ecancermedicalscience. 2019;13 (https://doi.org/10.3332/ecancer.2019.944).

347. Rubagumya F, Costas-Chavarri A, Manirakiza A, Murenzi G, Uwinkindi F, Ntizimira C et al. State of Cancer Control in Rwanda: Past, Present, and Future Opportunities. JCO Global Oncology. 2020(6):1171–7 (https://doi.org/10.1200/go.20.00281).

348. Sankaranarayanan R, Ramadas K, Thara S, Muwonge R, Thomas G, Anju G et al. Long term effect of visual screening on oral cancer incidence and mortality in a randomized trial in Kerala, India. Oral Oncology. 2013;49(4):314–21 (https://doi.org/10.1016/j.oraloncology.2012.11.004).

349. Cancer Systems and Control for Health Professionals. The Union for International Cancer Control (UICC); 2025 (https://doi.org/10.1002/9781394191369).

350. Jiao Y, Bai L, Wang J, Yan VKC, Chan EW, Na R et al. Analysis of drug consumption and expenditure of WHO essential medicines for cancer in 40 countries and regions between 2012 and 2022: a multinational drug use study. The Lancet Oncology. 2025;26(7):877–86 (https://doi.org/10.1016/s1470-2045(25)00159-7).

351. Technical report: pricing of cancer medicines and its impacts: a comprehensive technical report for the World Health Assembly Resolution 70.12: operative paragraph 2.9 on pricing approaches and their impacts on availability and affordability of medicines for the prevention and treatment of cancer. Geneva: World Health Organization; 2018 (https://iris.who.int/handle/10665/277190). Licence: Licence: CC BY-NC-SA 3.0 IGO.

352. Trapani D, Douillard JY, Winer EP, Burstein H, Carey LA, Cortes J et al. The Global Landscape of Treatment Standards for Breast Cancer. JNCI: Journal of the National Cancer Institute. 2021;113(9):1143–55 (https://doi.org/10.1093/jnci/djab011).

353. Morin S, Segafredo G, Piccolis M, Das A, Das M, Loffredi N et al. Expanding access to biotherapeutics in low-income and middle-income countries through public health non-exclusive voluntary intellectual property licensing: considerations, requirements, and opportunities. The Lancet Global Health. 2023;11(1):e145–e54 (https://doi.org/10.1016/s2214-109x(22)00460-0).

354. Ziegenhorn H-V, Frie KG, Ekanem I-O, Ebughe G, Kamate B, Traore C et al. Breast cancer pathology services in sub-Saharan Africa: a survey within population-based cancer registries. BMC Health Services Research. 2020;20(1) (https://doi.org/10.1186/s12913-020-05752-y).

355. Global Data [website]. Global Data; (https://login.globaldata.com/login/index/poli?ReturnUrl=%2fPricingData%2fFilterPoliGrid).

356. Liu ITT, Kesselheim AS, Cliff ERS. Clinical Benefit and Regulatory Outcomes of Cancer Drugs Receiving Accelerated Approval. JAMA. 2024;331(17):1471 (https://doi.org/10.1001/jama.2024.2396).

357. Mittal A, Kim MS, Dunn S, Wright K, Gyawali B. Frequently asked questions on surrogate endpoints in oncology-opportunities, pitfalls, and the way forward. eClinicalMedicine. 2024;76 (https://doi.org/10.1016/j.eclinm.2024.102824).

358. Global Oncology Trends 2003. Outlook to 2027. IQVIA Institute for Human Data Science; 2023.

359. Kanesvaran R, Wong EYT, Keam B, Prasongsook N, Malhotra H, Blay JY. Quality-of-care indicators for oncology management: an analysis of Asia-Pacific healthcare and oncology indicators. ESMO Open. 2025;10(3) (https://doi.org/10.1016/j.esmoop.2025.104293).

360. NCCN Best Practices Committee. New Information and Survey Results from June 2024. National Comprehensive Cancer Network; 2024 (https://www.nccn.org/docs/default-source/oncology-policy-program/nccnbestpracticesdrugshortagesurvey.pdf?sfvrsn=b081351e_6).

361. Ocran Mattila P, Ahmad R, Hasan SS, Babar Z-U-D. Availability, Affordability, Access, and Pricing of Anti-cancer Medicines in Low- and Middle-Income Countries: A Systematic Review of Literature. Frontiers in Public Health. 2021;9 (https://doi.org/10.3389/fpubh.2021.628744).

362. Samsung Bioepis, Biosimilar Market Dynamics. Incheon; 2025:8th Edition (https://www.samsungbioepis.com/en/etc/gadown.do?filename=SB+Biosimilar+Market+Report+Q1+2025.pdf&utm_source=pdfClick&utm_medium=filedown&utm_campaign=marketReport).

363. Hong D, Kesselheim AS, Sarpatwari A, Rome BN. Biosimilar Uptake In The US: Patient And Prescriber Factors. Health Affairs. 2024;43(8):1159–64 (https://doi.org/10.1377/hlthaff.2023.01215).

364. Mulcahy A, Hlavka J, Case S. Biosimilar Cost Savings in the United States. 2017 (https://doi.org/10.7249/PE264).

365. Guidelines for medicine donations, revised 2010. Geneva: World Health Organization; 2011 (https://iris.who.int/handle/10665/44647). Licence: CC BY-NC-SA 3.0 IGO.

366. The selection and use of essential medicines, 2025: report of the 25th WHO Expert Committee on Selection and Use of Essential Medicines, executive summary. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/382350). Licence: CC BY-NC-SA 3.0 IGO.

367. Radhakrishnan V, Kritthivasan V, Kothandan BT, Srinivasan P, Das G, Ramamurthy J. Reducing chemotherapy dose intensity by 25% and adding rituximab improves survival in pediatric mature B-cell non-Hodgkin lymphoma in LMIC setting. Pediatr Blood Cancer. 2023;70(12):e30694 (https://doi.org/10.1002/pbc.30694).

368. Mawalla WF, Achola C, Nabalende H, Otim I, Legason ID, Ogwang MD et al. Rituximab for children with EBV-positive Burkitt lymphoma in East Africa. Blood Advances. 2025;9(10):2393–401 (https://doi.org/10.1182/bloodadvances.2024015234).

369. Bamodu OA, Chung C-C. Cancer Care Disparities: Overcoming Barriers to Cancer Control in Low- and Middle-Income Countries. JCO Global Oncology. 2024(10) (https://doi.org/10.1200/go.23.00439).

370. Brand NR, Qu LG, Chao A, Ilbawi AM. Delays and Barriers to Cancer Care in Low- and Middle-Income Countries: A Systematic Review. The Oncologist. 2019;24(12):e1371–e80 (https://doi.org/10.1634/theoncologist.2019-0057).

371. McCorkle R, Ercolano E, Lazenby M, Schulman-Green D, Schilling LS, Lorig K et al. Self-management: Enabling and empowering patients living with cancer as a chronic illness. CA: A Cancer Journal for Clinicians. 2011;61(1):50–62 (https://doi.org/10.3322/caac.20093).

372. Akin-Odanye EO, Husman AJ. Impact of stigma and stigma-focused interventions on screening and treatment outcomes in cancer patients. Ecancermedicalscience. 2021;15:1308 (https://doi.org/10.3332/ecancer.2021.1308).

373. Right to Social Security. New York and Geneva: United Nations and International Labour Organization; 2025:Fact Sheet (N 39).

Annex

Joint statement of cancer care priorities for governments, WHO and the international development community, co-created by people with a lived experience of cancer and emergent leaders

The first Meeting of people with a lived experience of cancer and emergent leaders convened on 16 September 2024:

having deliberated on the matter of meaningful engagement of people with a lived experience of cancer in the design and implementation of cancer care;

having considered the recommendations of the people with a lived experience of cancer on what governments, WHO, and the development community should prioritize when creating cancer care policies and programmes and enabling environments for meaningful engagement of people with a lived experience of cancer;

recalling WHA77.2 (2024) on Social participation for universal health coverage, health and well-being on the importance of social engagement of affected communities;

mindful of commitments to include the participation of people with lived experience (PWLE) and their direct representatives to be included at every stage of policy and programme development, implementation, service delivery, and monitoring;

noting that this inclusive approach ensures that the cancer care system remains patient- centred and reflects real-world needs and challenges and recalling the WHO framework for meaningful engagement of people living with noncommunicable diseases and mental health and neurological conditions;

appreciating that palliative care is a crucial part of integrated people-centred health services, relieving serious health-related suffering, physical, psychological, social or spiritual and is a global ethical responsibility as stipulated in the WHO Framework;

recognizing that empowering people with lived experience and their direct representatives through capacity-building programmes and adequate funding allows them to contribute valuable insights and foster a holistic approach to cancer care;

acknowledging that all initiatives should include continuous evaluation through learning to ensure quality and effectiveness, allowing for necessary improvements;

recalling the focus on childhood cancer in WHA70.12 (2017) and the importance of government investment in childhood cancer along the life course from early diagnosis/intervention to secondary

prevention to improve survivors' quality of life and reduce treatment costs and noting that each survivor may add 40 to 50 years of productive contributions to the global economy and society;

recognizing that effective national cancer control programmes rely on a holistic, people- centred approach that integrates the insights of those directly impacted and that embracing these priorities will lead to significant improvements in cancer care and a more equitable future for everyone;

building on the need to comprehensively implement WHA70.12 (2017) and its recognition of cancer survivors;

recognizing the achievement of the Sustainable Development Goals, including the progress towards universal health coverage, will contribute significantly to the ability of people with lived experience of cancer to attain the highest level of health and well-being;

acknowledging that despite the significant progress in the development and implementation of national cancer control plans, gaps remain in delivering comprehensive and equitable health systems programmes for the prevention, control, and palliative care of all cancers; and

emphasizing the importance of adopting a holistic approach to cancer care that fully integrates the perspectives and needs of people with lived experience:

The Joint Statement requests WHO Member States:

(1) to adopt a World Health Assembly resolution on the meaningful engagement of people with lived experience in health system response to the growing cancer burden, to serve as a unifying document underscoring the urgency for high-quality cancer control policies and programmes including, but not limited to, WHO's global cancer initiatives;

The Joint Statement urges governments, while focusing on co-creating cancer care policies and programmes and ensuring equitable access to cancer care:

(1) to take immediate action to reduce delays in cancer diagnosis and improve access to timely treatment and supportive care. This includes eliminating long waiting periods for biopsy results and treatment initiation, prioritizing cancer treatment to prevent unnecessary delays, and ensuring widespread availability of essential diagnostic tools such as radiotherapy planning. All diagnosed cancer cases should receive prompt treatment, as early detection is critical to improving survival rates. To achieve this, systematic screening and testing programs must be strengthened and expanded.

(2) to take decisive action to improve health care infrastructure and accessibility by addressing the critical gaps in cancer care. Public health care facilities must be properly maintained and adequately staffed to meet patient needs. Access to treatment centres, particularly in rural areas, must be improved through the decentralization of cancer care. Investments in strengthening cancer infrastructure and expanding the health care workforce are essential. Hospitals must have sufficient capacity to provide palliative care, and standardized cancer care guidelines should be adopted to ensure consistent and high-quality treatment for all patients.

(3) to provide strong financial and legislative support for cancer care to ensure better outcomes for patients and survivors. Adequate funding must be allocated to support cancer survivors, including policies that ensure long-term financial security. Essential cancer

drugs should be included on national essential medicines lists to improve affordability and accessibility. Additionally, legislation must be enacted to ban carcinogenic substances in food and consumer products to reduce cancer risks. Policies should also be implemented to support professional adaptation for individuals living with metastatic disease, ensuring they have opportunities for continued employment and financial stability.

(4) to provide stronger psychosocial support for individuals with lived experience of cancer and their families. Comprehensive emotional and social support services should be established for the children of cancer survivors, ensuring their well-being. Caregivers and families must receive the necessary resources and assistance to help them navigate the challenges of supporting a loved one with cancer. The critical role of carers should be formally recognized and reinforced through targeted policies and programs. Additionally, patients must have access to psychological and logistical support to improve their quality of life throughout their cancer journey.

(5) to implement and, where necessary, amend legal and funded frameworks for National Cancer Control Plan delivery, inclusive of childhood cancer, by establishing localized legislation to support the sustainable delivery and enforcement of cancer control plans and that these frameworks define roles, responsibilities, and accountability for all stakeholders including industry, ensuring equitable access to cancer care;

(6) to institutionalize UNDESA's partnership-based multistakeholder communities of practice by allowing people with lived experience to foster a people-centred approach to policy and programme formulation and implementation, and to community outreach;

(7) to enable and accelerate the use of AI, data sharing and digital platforms such as cancer registries and data-enabled health systems, ensuring the ethical use and integration of data and emerging technologies such as artificial intelligence, while incorporating the perspectives of people with lived experience. This will lead to improved health outcomes in cancer by accurately tracking cancer burden, improving early detection and diagnosis, supporting personalized treatment plans, facilitating research and policy development, as well as assessing the performance of health care interventions for efficient resource allocation and better cancer surveillance, ensuring equitable and effective cancer control and survivorship care. Additionally, policies must be established to leverage telemedicine and mobile platforms for improved care coordination, including electronic medical records, to facilitate service delivery, improve follow-up care and reduce health care costs;

(8) to develop and adopt standardized cancer care guidelines and effectively implement pathways for prevalent cancers, informed by people with lived experience, including continuous capacity- building such as infrastructure and training to enable health care workers to meet the needs of diverse populations, particularly in rural and underserved areas;

(9) to invest in capacity-building, by funding through accountable frameworks, the training of people with lived experience and their direct representatives, to engage meaningfully in the development of cancer policies, programmes, and implementation guidelines, as well as advocacy and awareness campaigns;

(10) to advocate and increase public awareness about cancer risk factors, prevention, and treatment, as well as the need for psychosocial, survivorship, including medical long-term follow-up care through funded tailored education campaigns. This should include

the use of verified social media channels, particularly targeting rural and underserved communities, to address stigma and all other forms of discrimination, in collaboration with UNDESA's partnership-based multistakeholder communities of practice and people with lived experience;

(11) to increase access to evidence-informed prevention, systematic screening, and early detection programmes for prevalent cancers and secondary cancers including preventive vaccines such as human papillomavirus and hepatitis B virus, and timely diagnosis and treatment through funded initiatives and in collaboration with relevant stakeholders, particularly people with lived experience;

(12) to commit resources across all levels of government to implement sustainable, long-term financing models that reduce out-of-pocket expenses to address and promote equity, ensuring that financing is sustained during crises in the health care system, achieved by expanding health benefit packages to include essential cancer services, make available financial assistance programmes, implement cost-sharing reforms and promote dialogue between public and private sectors as well as protecting patients and their caregivers from discrimination in financing. This must include financial and collaborative support mechanisms to increase access for key and vulnerable populations;

(13) to integrate psychosocial support and services, palliative and hospice care into all aspects of cancer care, including training health-care workers and volunteers to address the psychosocial and physical needs of patients, caregivers, and other health-care workers and creating opportunities for people with lived experience to participate in peer-to-peer support;

(14) to prioritize patient navigation for people-centred and survivor support, including in National Cancer Control Plans and relevant policies, along the entire patient journey/cancer care continuum and for the provision of holistic care, including supporting the seamless transition of paediatric patients to adult care and enabling optimal reintegration into society; and

(15) to ensure meaningful collaborations to foster research by securing adequate funding, appropriate legal frameworks from all levels of government and other relevant stakeholders, and to integrate research findings into routine clinical practice, informed by people with lived experience. Key performance indicators (KPIs) should be established to guide and monitor implementation, ensuring that people-centred approaches lead to meaningful improvements in cancer care; and

The Joint Statement requests that the WHO Director-General:

(1) assist WHO Member States in the meaningful engagement of people with lived experience and their direct representatives in the design, implementation and monitoring of cancer care programmes, ensuring that these resources promote standardized best practices;

(2) establish a robust framework including definitions, principles and best practices for policies, and programmes , with a tiered implementation recommendation for WHO Member States at various levels of meaningful engagement in cancer care systems;

(3) aim to supplement the aforementioned framework with adaptable, evidence-informed guidance and toolkits, ensuring that WHO Member States can tailor their national

approaches to local contexts while engaging people with lived experience in line with WHO's normative work;

(4) provide detailed operational guidance on including people with lived experience in the full spectrum of activities such as advisory roles, participatory design workshops, and decision-making committees, ensuring representation that reflects the diversity of national communities. This includes special consideration for people with metastatic disease, both paediatric, adolescent and young adult (AYA), and older people with cancer, and individuals with severe disabilities through in-person and virtual engagements;

(5) offer guidance on incorporating people with lived experience in monitoring and evaluation efforts using practical case studies, templates and adaptable models for pioneer WHO Member States and share lessons learned across regions, including through the implementation of regular cross-sectional surveys;

(6) aim to co-create platforms to facilitate networking, learning and sharing of best practices among people with lived experience, leveraging both digital and in-person formats to support the participation of individuals from diverse representation of age, geographical, socioeconomic and cultural backgrounds. These platforms should also allow to engage with UNDESA's partnership-based multistakeholder communities of practice;

(7) aim to periodically convene global, regional, and national roundtable dialogues to identify and validate new content of the WHO guidance on the meaningful engagement of people with lived experience of cancer, prioritizing participation by offering travel grants or remote participation options for those unable to attend due to health or financial constraints;

(8) support WHO Member States in building capacity for meaningful, informed and equitable engagement of people with lived experience by creating balanced and sustainable mechanisms for routine engagement, including establishing professional roles for people with lived experience, permanent patient advisory boards or consultative committees. Additionally, direct education programmes for people with lived experience should be developed focused on enhancing health literacy, public speaking, understanding health systems, and decision-making processes. These efforts should empower individuals to contribute effectively to policy and programme improvement discussions while ensuring flexibility and resources that accommodate the health limitations of those undergoing treatment or cancer survivors living with chronic health conditions;

(9) seek to provide targeted skill-based training and capacity-building to support policymakers and health care providers in effectively integrating people with lived experience perspectives into decision-making processes. Training should include participatory governance models, empathy-driven communication, cultural competency, and technical assistance to develop national frameworks that mandate people with lived experience involvement in health policies and programmes.

(10) aim to promote innovative approaches to building representation in countries where advocates with lived experience of cancer are scarce by developing networks of advocates, supporting country-based dialogues in collaboration with local NGOs and establishing mentorships and twinning or buddy partnerships between established NGOs and people with lived experience;

(11) look to develop guidance on investing in and promoting the critical role of public and patient involvement in research throughout the research cycle by embedding people with lived experience to ensure that research advances scientific knowledge and leads to innovations that improve the lived experiences of people with cancer. This should include a focus on enhancing the capacity of people with lived experience to engage meaningfully in cancer research. Offering training and mentorship programmes will ensure people with lived experience are equipped to participate as equal partners;

(12) support WHO Member States in establishing the meaningful engagement of people with lived experience as a de facto practice across all phases of cancer research. This should include involving people with lived experience in priority-setting, study design, ethical review, research conduct and dissemination of findings, ensuring a focus on the real-world concerns of people with cancer and their communities;

(13) collaborate with global research bodies to establish guidelines that promote co-generation of research concepts and co-design of research in partnerships where people with lived experience are treated as equal partners in the research process. Partnering should also support capacity-building for training and mentorship programmes focused on equipping people with lived experience and the clinical and scientific research community with the knowledge and resources to support effective patient involvement in the research process;

(14) work with relevant development and research agencies to create mechanisms for people with lived experience to provide input on the allocation of research funding, ensuring equity and prioritizing projects most relevant to patient and caregiver needs;

(15) support WHO Member States' implementation of participatory monitoring and evaluation processes, in which people with lived experience are actively engaged in reviewing KPIs and other data and providing feedback on the effectiveness of engagement strategies. This should involve collaboration with NGOs, health-care providers and other civil society actors to ensure a holistic and multistakeholder approach. These efforts will enable people with lived experience experiences to inform programmatic improvements and facilitate the national sharing of best practices, lessons learned and approaches to the collection, analysis and dissemination of data;

(16) produce a biennial global and regional progress report on the engagement of people with lived experience in shaping prevention, control and palliative care systems based on these KPIs. The report should foster transparency and allow for cross-country comparisons and shared learning. It should also be accompanied by a publicly available, lay-friendly version to ensure accessibility for all stakeholders; and

The Joint Statement requests that the international development community, local NGOs and partners:

(1) aim to amplify the voices of people with a lived experience of cancer and advance cancer care for all by 2030;

(2) seek to prioritize cancer prevention and health promotion: International partners should emphasize the integration of cancer prevention initiatives with broader health promotion, particularly focusing on health literacy, vaccination programmes and risk factors such as

tobacco, alcohol, obesity and infectious diseases. These efforts should align with WHO's best buys for noncommunicable diseases;

(3) promote comprehensive cancer care that includes routine screening, early diagnosis, survivorship, and fertility preservation and ensure seamless transition between care providers for all cancers including childhood cancer encourage the implementation of empowerment programmes for people with lived experience across the cancer care continuum, emphasizing psychosocial support and the inclusion of people with lived experience in decision-making;

(4) Commit to support and facilitate the establishment and strengthening of cancer surveillance through data collection and sharing systems that can be integrated with other partners at both national and local levels,

(5) Enhance capacity building by providing funding and resources for the training of health professionals, in patient navigation, supportive and palliative care and survivorship;

(6) ensure that the allocation of resources for cancer programmes is transparent and that international partners report on funding in a clear and accountable manner, particularly in underserved areas. This can include publishing an accessible annual report communicating how both financial and non-financial resources were distributed and how allocation was conducted;

(7) engage NGOs, academic institutions and civil society organizations, particularly those working with people with lived experience, in cancer programme design, implementation and monitoring. Ensure inclusivity by featuring people with lived experience at major cancer-related events and discussions;

(8) ensure that cancer control strategies are included in international humanitarian responses, guaranteeing that those affected receive cancer prevention and care services in conflict and crisis settings; and

(9) support access to digital platforms and innovations that enhance cancer care delivery, particularly in low- and middle-income countries. These platforms should focus on improving patient outcomes, access to care and early detection.

For more information, please contact:

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