Bridging the Gap in Women's Cancer Care: A Global Policy Report on Disparities, Innovations, and Solutions

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Foreword

Women's cancers – defined in this report as breast, cervical, endometrial, and ovarian cancers – represent a major global health challenge, accounting for millions of diagnoses and deaths each year. While progress has been made in prevention, early detection, and treatment, this progress remains uneven across countries, socioeconomic groups, and cancer types. In some places, survival rates approach 90% for certain cancers, yet in others they remain below 50%. The reality is that too many women still face late diagnoses and limited access to effective treatments which results in huge numbers of preventable deaths.

Women diagnosed with cancer face distinct challenges far beyond the disease itself. Gender norms, cultural expectations, and structural inequities shape how and when women seek care, what treatments they receive, and how they cope, physically, emotionally, and economically. These challenges are especially pronounced in women's cancers, which often carry additional layers of stigma or emotional burden, as they may affect fertility, body image, and sexual health. The economic toll of cancer can be profound. Women's cancers affect women at all stages of life, disrupting families, communities, and economies. Productivity losses, caregiving demands, and long-term health needs often far outweigh the direct costs of care.

There are complex gaps along the entire care continuum in prevention, early detection, diagnosis and treatment. The good news is that effective tools and technologies exist to address women's cancers in all these areas. New innovations in care offer major opportunities to improve outcomes. Yet in many settings patients do not have access to these innovations, especially in low- and middle-income countries. This is despite the fact that evidence from diverse health systems shows that investment care delivers high returns in improved survival, quality of life, and economic and social gains.

Global policy initiatives by the World Health Organization for breast and cervical cancer are important starting points for action at the country level, but more needs to be done. Closing the gaps that this report uncovers requires political will, sustained investment, and coordinated global and local action. Delaying policy action perpetuates inequities and leads to avoidable suffering, loss of life, and long-term costs. Urgent, well-funded strategies are needed to ensure that all women everywhere have access to timely, affordable, and dignified cancer care.

IHE is deeply grateful for the insights gathered through interviews and reviews with experts affiliated with and from the Advanced Breast Cancer (ABC) Global Alliance and the International Gynecologic Cancer Society (IGCS). We extend sincere thanks to all who generously shared their expertise, helping to shape this analysis and deepen our collective understanding of women's cancers.

The responsibility for the analysis and conclusions in this report lies solely with the authors.

Stockholm, September 2025

Peter Lindgren
Managing Director, IHE

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Endorsements

This report is explicitly endorsed by the following organizations:

ABC GlobAlliance

IGCS

INTERNATIONAL GYNECOLOGIC CANCER SOCIETY

IGCAN

INTERNATIONAL GYNECOLOGIC CANCER ADVOCACY NETWORK

WORLD OVARIAN CANCER COALITION

Summary

Women's cancers: A global burden with uneven progress

In 2022, an estimated 3.7 million women were diagnosed with women's cancers – defined here as breast, cervical, ovarian, and uterine (endometrial) cancers – and 1.3 million died from them worldwide. They accounted for 20% of new cancer cases and 14% of cancer deaths among men and women. Globally, one in every nine women is at risk of being diagnosed with women's cancers before the age of 85. The burden is expected to grow by over 50% by 2050, reaching 5.7 million new diagnoses and 2.2 million deaths. This growth is most pronounced in low- and middle-income countries (LMICs), with Africa expected to see more than a doubling of cases.

Breast cancer is the most commonly diagnosed cancer type in women in 150 countries, although it is comparatively less common in Asia. The occurrence of ovarian cancer is relatively similar in all parts of the world, whereas cervical cancer is most common in Africa and uterine cancer in Europe and Northern America compared to the global average. Survival prospects differ by cancer type, e.g., five-year survival rates in the United States are at 92% for breast cancer, 81% for uterine cancer, 68% for cervical cancer, and 52% for ovarian cancer. Yet while five-year breast cancer survival reaches 90% in some high-income countries (HICs), it remains below 70% in some LMICs. Survival has most improved for breast and ovarian cancer in recent decades, whereas progress for cervical cancer has been slower and even stalled for uterine cancer in HICs.

The social and economic toll of women's cancers

On an individual level, women - as opposed to men - diagnosed with cancer face distinct challenges. Gender norms, cultural expectations, and structural inequities shape how and when women seek care, what treatments they receive, and how they cope – physically, emotionally, and economically. In many settings, women delay care to prioritize their families, and they lack financial autonomy to make health decisions. Women's dual role as patient and caregiver of children or elderly people in the household further adds to the burden.

Women's cancers - as opposed to other cancer types that affect women - carry additional layers of stigma or emotional burden, as they may more profoundly affect body image, fertility, and sexual health. In general, women's cancers affect quality of life across physical, psychosocial, and economic dimensions. Physically, survivors often face fatigue, infections, sleep problems, lymphedema, early menopause, and sexual dysfunction, while fertility concerns weigh heavily on younger women. Psychosocially, anxiety and depression are common, with emotional distress sometimes persisting for years. Treatments alter body image and self-esteem, while family life may be strained by changes in intimacy, role balance, or caring responsibilities. Fear of stigma and social consequences can further burden patients, particularly in some cultural contexts. Economically, many women struggle with employment loss, reduced income, and high out-of-pocket costs. For example, in a study of eight Asian countries, almost 75% of women newly diagnosed with cancer spent 30% or more of their household's annual income on cancer-related expenses within the first year. Family members acting as informal caregivers provide extensive support, often at significant personal and financial sacrifice, adding to the overall impact on households.

On a societal level, women's cancers impose a major economic burden that extends beyond healthcare expenditures. Treatment costs are significant, but lost productivity from premature mortality and work absence of working-age patients and caregiver time often account for the

largest share. For example, a recent study found that 91% of ovarian cancer's global economic burden was due to indirect costs. In Sweden, productivity losses made up more than half of societal costs of breast and ovarian cancer. These hidden costs highlight the need for decision-makers to adopt a broader societal perspective when evaluating interventions and health investments.

Multiple challenges exist across the cancer care continuum and vary by region

Effective measures to reduce the burden of women's cancers are abundant across the full continuum of care, although they differ by cancer type. Prevention can be scaled through human papillomavirus (HPV) vaccination and efforts to address modifiable risk factors such as obesity. Screening for breast and cervical cancer enables earlier diagnosis, when treatment is more effective and less costly. Advances in diagnostics and biomarker testing, together with new therapies including immunotherapies and targeted medicines, provide opportunities for personalized care and improved survival. Rehabilitation and survivorship support can further help women regain their health, well-being, and social roles after treatment.

The main challenge from a global perspective is access to these effective measures. There are pronounced inequities between HICs and LMICs, for which a root cause is health system readiness (strength and financing of health systems), as well as women with high and low socioeconomic status. For instance, although late-stage diagnosis of breast cancer has been reduced around the world in the last 20 years, many LMICs still struggle to detect at least 60% of cases in early stages. If breast cancer is detected early, five-year survival can reach almost 100%, whereas in advanced stages it drops to 30% and treatment costs more than double. The same goes for gynecologic cancers – earlier detection, diagnosis, and treatment directly translate into better outcomes and lower costs.

In the area of prevention, HPV vaccination is still not fully integrated into national immunization programs in dozens of countries, and only a handful of countries currently achieve vaccination rates in girls of 90% or more, needed to achieve cervical cancer elimination. Access to genetic testing for women at high risk is inadequate and uneven, while rising rates of overweight and obesity add to the future cancer burden.

For detection and screening, fears of having cancer and its consequences often deter women from seeking care. Even when awareness of common symptoms of women's cancers or the benefit of screening exists, it does not always translate into action. Referral systems for women with suspicious symptoms remain patchy. Effective screening tools are still missing for ovarian and endometrial cancer, while many countries lack organized programs for breast and cervical cancer. Where programs are in place, participation rates remain suboptimal in many cases.

Diagnostics and treatment face significant gaps across all countries. The availability of gynecologists and pathologists is limited, particularly in LMICs, and access to biomarker testing is highly unequal. Too often, treatment begins without complete diagnostic information, and reimbursement systems may not cover essential diagnostic tests together with the treatments that depend on them. In treatment, shortages of healthcare professionals and radiation therapy equipment are common, especially in resource-constrained settings. Novel cancer medicines only become reimbursed many years after regulatory approval. Multidisciplinary teams, which are key to high-quality treatment decisions, are underused. Patients frequently encounter fragmented care, high copayments, and geographical barriers in addition to social and cultural barriers described before.

Innovation exists, but it must be equitably scaled

Innovation is reshaping every part of women's cancer care and offers powerful opportunities to improve outcomes, equity, and sustainability. Expanding reach through gender-neutral (or "universal") HPV vaccination and catch-up programs, self-sampling for cervical cancer screening, and mobile breast cancer screening units can raise prevention and early detection rates, particularly in underserved populations. Technology is also driving breakthroughs: artificial intelligence (AI) can support task-shifting in diagnostics and for instance improve breast cancer detection rates while reducing radiologist workload, a development that is especially valuable in settings with limited resources. Minimally invasive diagnostics and surgery along with greater use of hypofractionated radiation therapy are additional examples. Care can be further streamlined through patient navigation, the use of AI and telemedicine in pathology, and integration of screening into maternal health services, which together help reduce delays and simplify access. Finally, rethinking delivery models, such as providing gender-sensitive care (female staff) and leveraging trusted voices in the community, can ensure innovations translate into real impact.

Real-world examples show that context-driven solutions can work. To name just a few, in Egypt, the presidential Women's Health Initiative has screened over 28 million women for breast cancer since 2019, expanded mobile units, achieved a considerable shift in diagnosis towards earlier disease stages, and reduced the median diagnostic time from 120 days to 49. In Kenya, peer support with integrated scheduling system improved patient experience despite resource constraints. Slovenia transformed its cervical cancer response from opportunistic to a nationally organized screening, which halved the incidence rates over the span of 20 years and positioned the country on a trajectory toward elimination of the disease. These country-led efforts offer transferable lessons in delivering equitable cancer care.

Investing in women's cancers pays off

The return on investment (ROI) in cancer care is increasingly well established across a range of health systems. Prevention saves the costs of treatment and indirect costs. Early detection and effective treatment improve survival, reduce long-term health costs, and enable women to remain in the workforce which strengthens the economy. For example:

- The WHO's cervical cancer elimination strategy could return $3.20 per $1 invested in prevention, early detection, and treatment in LMICs.
- In the Middle East and North Africa region, comprehensive breast cancer care yields $6.4–7.8 for every $1 spent.
- In Sweden, every $1 spent on breast cancer treatment returns $4.9 in economic benefit.

Additional evidence from Switzerland and Slovenia shows that investments in medicines and vocational rehabilitation speeds up return to work, reduces absenteeism, and lowers women's dependency on social benefits. This underscores broader fiscal and societal benefits. Yet despite the strong economic case for investing in women's cancers, healthcare payers often struggle with the time lag between when costs are incurred and when benefits are realized. It is therefore important for healthcare payers to view their expenditure not only as immediate costs but also as a strategic investment in the future.

Policy recommendations for advancing the global agenda on women's cancers

The tools to transform women's cancer outcomes already exist, but they are underutilized, and their benefits are not equitably distributed. Continued advocacy, cross-sector collaboration, and political leadership are essential to implement what we already know works. Breast cancer is an excellent example of how long-term advocacy by multiple stakeholders has created increasing visibility around the Breast Cancer Awareness Month in October and the pink ribbon as a symbol of hope, strength, and solidarity.

Global policy frameworks by the World Health Organization – Cervical Cancer Elimination Initiative (CCEI) and Global Breast Cancer Initiative (GBCI) – offer actionable strategies for prevention, early detection, diagnosis, and treatment. However, no comparable global frameworks exist for ovarian or uterine cancers, despite their growing burden and substantial unmet needs. These cancers must not be overlooked in global and national cancer control efforts, particularly as they have significant long-term consequences for women's health. The same goes for public research funding, which is comparatively low for gynecologic cancers.

This report proposes actionable recommendations grouped into four areas:

1. **Advocate for women's cancers as a health priority & smart investment**
   Include women's cancers in national cancer control plans (NCCPs) along with gender equity considerations to ensure due attention and increased funding, awareness, and research.

2. **Accelerate prevention and early detection efforts**
   Establish comprehensive public health strategies to address lifestyle-related risks such as obesity, suboptimal HPV vaccine uptake, expanding genetic risk assessments, raising awareness of common signs and symptoms of women's cancers, and enhancing the use of screening services.

3. **Strengthen and streamline cancer care delivery**
   Cancer systems must be patient-centered, integrating mental health, survivorship care, and community support. Essential investments include specialist training, nurse-led care models, patient navigation, infrastructure development, AI technologies, and cultural competence training for healthcare workers to address both conscious and unconscious bias, alongside initiatives that empower women as both recipients and providers of care.

4. **Leverage innovation across the women's cancer care continuum**
   Novel diagnostic approaches, AI technologies, and medicines can all improve outcomes for women, but they must be equitably scaled. Investment, supportive and enabling regulation, and workforce training are needed to close the innovation-access gap.

Four cross-cutting enablers underpin all of these areas. First, achieving universal health coverage is needed to ensure financial protection and public investment in essential services to enable affordable and timely access to care. Second, gender equity considerations should be embedded in all aspects of research, service delivery, and policy planning. Third, investment is needed in workforce training and task-sharing to meet growing patient numbers and facilitate adoption of innovations, including the incorporation of AI technologies to help overcome the workforce shortages. Fourth, building robust data ecosystems should be prioritized to drive monitoring, accountability, and targeted action.

Together, these recommendations form a roadmap for inclusive, effective, and equitable action on women's cancers. They are grounded in evidence, built for impact, and designed for scale.

Key messages

Facts about Women's Cancers

1. A Major and Growing Global Health Challenge

In 2022, an estimated 3.7 million women were diagnosed with breast, cervical, ovarian, or uterine cancers, and 1.3 million died from these diseases. They accounted for 20% of all new cancer cases and 14% of all cancer deaths among men and women. Without decisive action, annual cases are projected to rise by over 50% by 2050, reaching 5.7 million new diagnoses and 2.2 million deaths. The burden is growing fastest in LMICs, with Africa expected to see more than a doubling of cases by 2050.

2. Gynecologic Cancers Receive Less Attention than Breast Cancer

Breast cancer is the number one cancer type in 150 countries and generally well known (Pink Ribbon & Awareness Month in October; WHO Global Breast Cancer Initiative), whereas gynecologic cancers – especially ovarian and endometrial with no global WHO strategy – are more neglected. Gynecologic cancers have lower survival rates than breast cancer, no established screening method (except for cervical cancer), receive less public research funding, and have seen few new medicines being introduced over the last decades.

3. Profound Social and Economic Consequences

Women's cancers - as opposed to other cancer types that affect women - carry additional layers of stigma or emotional burden, as they may more profoundly affect body image, fertility, and sexual health. They disrupt careers, families, deepen gender inequality, and impose severe economic hardship. In a study of eight Asian countries, more than 75% of newly diagnosed women spent at least 30% of their household's annual income on cancer care within the first year. Productivity losses, job insecurity, and the long-term impact on children and partners make these cancers also a pressing social issue. These hidden societal costs need to be acknowledged by decision-makers.

4. The Potential to Address Women's Cancers is High but Differs

Effective measures to profoundly reduce the burden of women's cancers already exist – from HPV vaccination to organized screening programs, from precision diagnostics to novel treatments. Cervical cancer can be eliminated through HPV vaccination, screening, and treatment. Yet survival rates remain highly unequal, with five-year breast cancer survival reaching 90% in some high-income countries but being below 70% in many LMICs. A root cause is health system readiness, which differs especially between high-income countries and LMICs. Unequal access to essential healthcare services coupled with social and structural barriers continue to fuel preventable mortality.

5. High Returns on Investment in Women's Cancers

Evidence from multiple countries shows that every dollar invested in prevention, early detection, and treatment can return 3–8 times its value in economic benefit. The WHO's cervical cancer elimination strategy could yield $3.20 for every $1 invested in LMICs, while comprehensive breast cancer care in the Middle East and North Africa region can yield up to $7.8 per $1 spent.

How to Improve Women's Cancer Care

6. Accelerate Prevention and Risk Reduction

Many women's cancer cases are preventable. Scaling up HPV vaccination, tackling modifiable risks such as obesity and alcohol consumption, and improving identification of inherited cancer syndromes like BRCA mutations and Lynch syndrome are critical steps to reduce incidence. Yet only a handful of countries reached the WHO's 90% HPV vaccination target for girls in 2024.

7. Expand and Strengthen Early Detection

Early detection followed by swift diagnosis and effective treatment saves lives and reduces costs. 5-year survival rates in early-stage breast cancer are close to 100% but only around 30% for metastatic breast cancer, while treatment for metastatic disease is at least twice as expensive as for early-stage disease. Yet women's awareness of common symptoms of women's cancers often is low, and their knowledge, willingness, or ability to act on the symptoms is restricted. In addition, participation in screening programs remains low in most LMICs and suboptimal in many high-income countries.

8. Close the Access Gap to Diagnostics and Treatments

Biomarker testing and novel medicines are rapidly transforming the treatment of women's cancers, yet access remains highly uneven. Especially in LMICs, health systems are frequently underfunded and universal health coverage has not yet been achieved resulting in high out-of-pocket payments for patients. Lack of streamlined referral systems, diagnostic capacity, infrastructure gaps, and workforce shortages are major barriers that hinder equitable and timely care delivery.

9. Deliver Patient-Centered and Integrated Care

Cancer care must address not only medical treatment but also mental health, fertility preservation, rehabilitation, and return-to-work support. Survivorship services are often fragmented or absent, leaving many women without long-term support to rebuild their lives after treatment.

10. Leverage Innovation

From AI-assisted imaging to molecular diagnostics, novel medicines, and healthcare delivery models, innovations are transforming cancer care, holding the potential to improve quality, equity, and sustainability across the care pathway. Context-adapted models, such as Egypt's nationwide breast cancer screening program or Slovenia's organized cervical screening, show how innovation can be scaled equitably.

How to Drive Policy Change

11. Make Women's Cancers a Global Health Priority & Embed Gender Equity

While the WHO has launched global initiatives for breast and cervical cancer, there are no comparable strategies for ovarian and uterine cancers, despite their growing burden. Global frameworks, national cancer control plans, and funding mechanisms should explicitly address all women's cancers. Health systems and policies must recognize and respond to the gendered barriers women face in accessing timely, affordable, and quality care. Policies should account for women's potential dual roles as patients and caregivers and address social determinants of health.

List of abbreviations

Acronym	Meaning
ADC	Antibody–Drug Conjugate
AICCS	AI-supported Cytology Screening
AI	Artificial Intelligence
AKT1	AKT Serine/Threonine Kinase 1
ASCO	American Society of Clinical Oncology
BMI	Body Mass Index
BRCA	Breast Cancer gene (BRCA1/2)
CBE	Clinical Breast Examination
CCEI	Cervical Cancer Elimination Initiative
CDK4/6	Cyclin-Dependent Kinase 4 and 6
CHF	Swiss Franc
CIN	Cervical Intraepithelial Neoplasia
CT	Computed Tomography
DALY	Disability-Adjusted Life Year
dMMR	Deficient Mismatch Repair
EMA	European Medicines Agency
ER	Estrogen Receptor
ESR1	Estrogen Receptor 1
ESMO	European Society for Medical Oncology
EU	European Union
EU-27	The 27 Member Countries of the European Union
FDA	Food and Drug Administration
FGFR	Fibroblast Growth Factor Receptor
GDP	Gross Domestic Product
GBCI	Global Breast Cancer Initiative
HDI	Human Development Index
HER2	Human Epidermal Growth Factor Receptor 2
HICs	High-Income Countries
HPV	Human Papillomavirus
HRD	Homologous Recombination Deficiency
ICD-10	International Classification of Diseases, 10th Revision
ISPOR	International Society for Pharmacoeconomics and Outcomes Research
IV	Intravenous
LICs	Low-Income Countries
LMICs	Low- and Middle-Income Countries
MDT	Multidisciplinary Team
MRI	Magnetic Resonance Imaging
MSI	Microsatellite Instability
MSI-H	Microsatellite Instability–High
NCI	National Cancer Institute (US)
NGO	Non-Governmental Organization
NGS	Next-Generation Sequencing
NHS	National Health Service
NTRK	Neurotrophic Tyrosine Receptor Kinase
PARP	Poly (ADP-Ribose) Polymerase
PD-L1	Programmed death-ligand 1

PET	Positron Emission Tomography
PIK3CA	Phosphatidylinositol-4,5-Bisphosphate 3-Kinase Catalytic Subunit Alpha
POLE	DNA Polymerase Epsilon
PR	Progesterone Receptor
PTEN	Phosphatase and Tensin Homolog
RET	Rearranged during Transfection
ROI	Return on Investment
SBE	Self-Breast Examination
SC	Subcutaneous
SEER	Surveillance, Epidemiology, and End Results Program
TMB-H	Tumor Mutational Burden–High
TP53	Tumor Protein 53
UK	United Kingdom
US	United States
WHO	World Health Organization
YLD	Years Lived with Disability
YLL	Years of Life Lost
ZORA	Slovene National Cervical Cancer Screening Program

1. Introduction

Women's cancers – defined in this report as breast, cervical, ovarian, and uterine (endometrial) cancers – represent a major global health challenge. In 2022, an estimated 3.7 million women worldwide received a breast or gynecologic cancer diagnosis and 1.3 million died from those cancers (1). They accounted for 20% of new cancer cases and 14% of cancer deaths among men and women globally. Looking ahead, projections by the International Agency for Research on Cancer (IARC) show that the incidence and mortality of women's cancers are expected to grow by more than 50% until 2050, reaching 5.7 million new cases and 2.2 million deaths (2). Fueled by underlying shifts in demographics, Africa is expecting more than a doubling of affected women until 2050, whereas Europe is expecting the least growth.

Table 1: Estimated number of women's cancers in 2022 and 2050.

	New cases (Incidence)			Deaths (Mortality)		
	2022	2050	Growth 2022-2050 (%)	2022	2050	Growth 2022-2050 (%)
Africa	364,916	853,911	134%	194,552	468,936	141%
Asia	1,728,552	2,515,451	46%	663,627	1,102,527	66%
Europe	810,097	862,472	6%	247,893	303,721	23%
Latin America	342,098	544,101	59%	118,589	210,349	77%
Northern America	420,422	536,555	28%	85,533	127,615	49%
Oceania	38,027	61,213	61%	9,462	16,767	77%
World	3,704,112	5,681,239	53%	1,319,656	2,215,237	68%

Notes: Numbers for 2050 do not sum up. Future numbers only reflect the impact of the expected demographic development and not the impact of any future innovations. Source: IARC (1).

Although breast cancer is the most frequently diagnosed cancer type among women in most countries, cervical, ovarian, and uterine cancers also make a substantial contribution to the global cancer burden. The distribution of cancer types varies across regions, reflecting differences in risk factors, prevention strategies, and healthcare access. As shown in Figure 1, breast cancer is the most commonly diagnosed cancer in women in 150 countries, spanning both high- and middle-income countries, while cervical cancer is the most commonly diagnosed cancer in 24 countries, predominantly in sub-Saharan Africa, parts of Central America, and Southeast Asia (1).

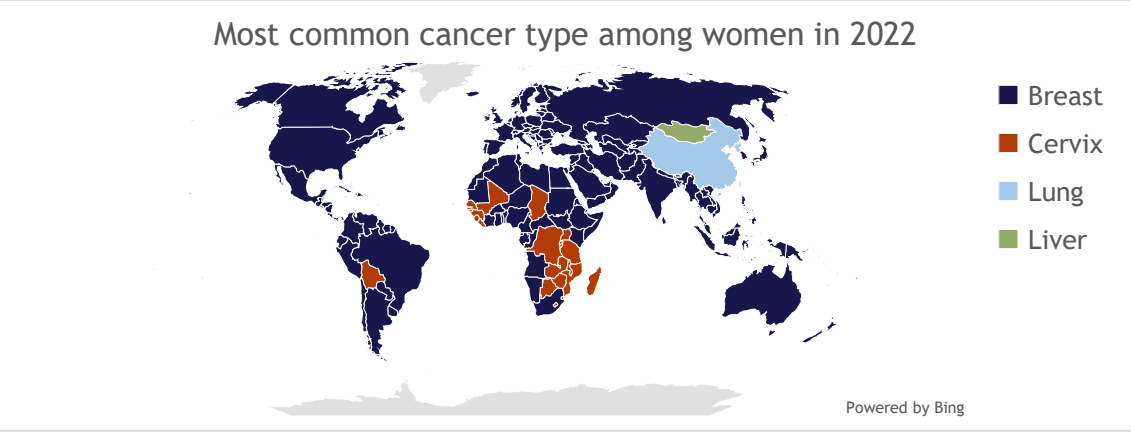


Figure 1: Most common cancer type among women by country in 2022.
Source: IARC (1).

Unlike some other cancers – such as pancreatic cancer, which remains difficult to prevent, detect early, or treat effectively – women's cancers are in many ways a solvable problem. Opportunities to improve the current situation exist across the entire disease pathway. Prevention can be scaled through human papillomavirus (HPV) vaccination and addressing modifiable risk factors like obesity. Screening for breast and cervical cancer can shift diagnoses to earlier stages when outcomes are significantly better and treatment costs lower. Advances in diagnostics and biomarker testing together with increasingly effective novel treatments, including immunotherapies and targeted therapies, offer personalized care and improved survival. Holistic care also includes rehabilitation and reintegration into the labor market, ensuring that women not only survive but live well after treatment.

The main challenge is not a lack of solutions, but a lack of access to them. While five-year survival rates for breast cancer reach 90% in some high-income countries (HICs), they remain below 70% in some low- and middle-income countries (LMICs) (3). Gaps in access to prevention (including vaccination), screening, diagnostics, and treatment services are compounded by social, cultural, geographical, financial and political barriers, low health literacy, fragmented health systems, and gender inequalities within health systems and within societies. Especially in LMICs, many women are diagnosed too late, face barriers to timely treatment, and often shoulder unbearable financial costs and social consequences. In a study of two upper-middle income and six lower-middle income countries in Asia, nearly three-quarters of newly diagnosed women reported spending over 30% of their annual household income on cancer care, placing them at risk of catastrophic health expenditure (4). Cancer care services for women remain fragmented, siloed, and underfunded in many locations. At the same time, the burden of breast and gynecologic cancers[1] is rising fastest among younger women of childbearing age, a group that often balances caregiving, work, and reproductive responsibilities, yet is underserved by current systems (5). As noted by the Lancet Commission on Women and Cancer "*it is the whole family, and children especially, who suffer when a mother dies of cancer in the prime of life*" (6). Addressing women's cancers is a matter of health justice and a critical step toward reducing avoidable deaths and strengthening the social and economic fabric of communities worldwide, as discussed in chapter 2.3.

According to the World Economic Forum, women's health on a global level is typically under-prioritized and under-funded, which has created a gap in research and treatment between men and women, and also within and between countries (7). Overall, they found that closing the health gap between men and women could unlock USD 1 trillion in annual global gross domestic product (GDP) until 2040. By closing the women's health gap in breast cancer and cervical cancer, USD 8.7 billion and 10 billion in annual GDP until 2040 could be created. This emphasizes the wider effects of women's cancers on the economy and society. Given the high economic burden and the availability of effective measures to reduce the disease burden, there is mounting evidence of high returns on investment for governments addressing women's cancers, according to the World Health Organization (WHO) (8).

Objectives of the report

This report provides a comprehensive overview of the burden, disparities, and opportunities across the women's cancer care pathway. Drawing on published evidence, expert interviews, and country-specific case studies, it highlights the structural neglect and gender bias that have long shaped cancer care for women, not only in how services are delivered, but in how research,

[1] The study found that the largest increases from 1990 to 2021 occurred in younger women of childbearing age in gynecologic cancers excluding endometrial (uterine) cancer (5).

policy, and funding priorities are set. It also showcases practical solutions and how various countries around the world act to close the gaps.

The objectives of the report are:

- To highlight key characteristics of women's cancers and global disparities by analyzing geographic variations in epidemiology, economic burden, patient experiences, and policy initiatives (Chapter 2).
- To summarize global policy frameworks and the progress achieved (Chapter 3)
- To describe key challenges across the cancer care pathway, examining the patient journey for each women's cancer type and identifying barriers encountered in different world regions (Chapter 4).
- To describe innovative approaches and opportunities to improve women's cancers care and share best-practice examples from countries implementing these innovations (Chapter 5).
- To review evidence on returns on investment in women's cancers and disparities in public research funding (Chapter 6).
- To provide actionable policy recommendations (Chapter 7).

Methodology

This report is a result of a multi-step process involving comprehensive desk research and in-depth expert interviews. The desk research involved a literature review of the current evidence on women's cancers worldwide. It primarily included peer-reviewed scientific articles and was complemented by grey literature. Previous international policy reports by IHE on breast cancer and endometrial cancer that were prepared with the involvement of external experts were also consulted (9-14).

The second step involved one-hour interviews with eight experts and aimed to complement and deepen the understanding of the literature findings. The experts included patient advocates and representatives, experts in cancer policy, leaders of women's health initiatives, radiologists, oncologists, gynecologic oncologists, and pathologists from various regions.

Terminology

This report focuses on four cancers that most commonly affect women: breast, cervical, uterine (endometrial), and ovarian cancer. The latter three are the most common gynecologic cancers that originate in women's reproductive organs.[2] While the four included cancer types are not the only cancers affecting women, they are among the most prevalent and impose a significant burden in terms of incidence, mortality, and long-term impact. Throughout the report, the term "women's cancers" is used to refer to these malignancies, which predominantly affect individuals assigned female at birth. We acknowledge, however, that these cancers can also impact transgender men, non-binary individuals, and others. The terminology reflects common usage in public health while aiming to be inclusive and respectful of gender diversity.

The terms 'endometrial cancer' and 'uterine cancer' are used interchangeably throughout the report, reflecting common usage and the predominance of endometrial cancers (around 90% of cases) among uterine cancers. However, where endometrial-specific data were not available, statistics on uterine cancer (ICD-10 codes C54 and C55) were used as a proxy. See Appendix for

[2] Vaginal and vulvar cancers are other types of gynecologic cancers but were not considered in the report because they are rather uncommon.

a detailed explanation of cancer site classifications and how these affect data availability and interpretation.

Geographic classification

Regional classifications in this report vary slightly by chapter, reflecting differences in data availability and analytical focus. In Chapter 2, regions are grouped broadly by continent: Africa, Asia, Europe, Latin America, Northern America, and Oceania. From Chapter 4 onward, a more detailed regional breakdown is used to support comparative analysis and better reflect health system similarities, income levels, geographic proximity, and policy contexts. The classification used in Chapter 4 and onward is as follows:

- **Asia-Pacific**: Includes South Asia, Southeast Asia, East Asia, and the Pacific Islands. Countries and territories in this group include Australia, China, Japan, Korea, India, and a range of Southeast Asian and Pacific nations.
- **Eastern Europe and Central Asia**: Encompasses both EU and non-EU countries in Eastern Europe and on the Balkan, along with post-Soviet states in Central Asia, including Russia, Ukraine, Kazakhstan, and others.
- **Latin America**: Covers South and Central American countries as well as the Caribbean.
- **Middle East and North Africa**: Includes North African and Middle Eastern countries spanning from Morocco to Iran and the Gulf states.
- **Sub-Saharan Africa**: Refers to all African countries south of the Sahara, including both mainland and island countries.
- **Western countries**: A composite grouping that includes most EU-27 countries, other high-income European countries and Northern America (Canada and the United States).

See Table 8 in the Appendix for a full list of countries included in each regional grouping.

2. Impact of women's cancers on individuals, families, and societies

Beyond the immediate physical and emotional toll on patients, women's cancers also cause substantial challenges for families, healthcare systems, and economies. The impact extends beyond direct medical care, influencing workforce participation, healthcare expenditures, and overall societal productivity. This chapter highlights the full scope of these impacts. It begins by tracing the global epidemiology of women's cancers, revealing stark regional disparities in incidence, age at diagnosis, and survival outcomes. It then examines the profound economic burden, often hidden from plain sight, by uncovering the direct medical expenses as well as the less visible costs of lost productivity and premature death. Finally, it explores the lived realities of women navigating cancer and its aftermath, the physical, psychological, and social challenges, compounded by gender norms and structural inequities.

2.1 Epidemiology

Women's cancers represent a significant health burden globally (15). They account for 20% of all new cancer cases (in men and women combined; 40% in women alone) and 14% of all cancer deaths (31% in women alone) worldwide, with the highest proportions observed in Africa and the lowest ones in Asia (1). Breast cancer is the leading contributor, with 2.30 million new cases and 0.67 million deaths globally in 2022, followed by cervical cancer (662,301 cases and 348,874 deaths), ovarian cancer (324,603 cases and 206,956 deaths), and uterine cancer (420,368 cases and 97,723 deaths). Globally, one in every nine women is at risk of being diagnosed with women's cancers before the age of 85 (1). To understand the global distribution of women's cancers, it is useful to examine regional patterns in incidence and mortality. Figure 2 shows the proportion of incidence and mortality of women's cancers among women by global regions, with the following observations made:

- **Breast cancer** accounts for the highest proportion of new cancer cases in women, ranging from 21% in Asia to 31% in Oceania. Breast cancer mortality is lower, ranging from 14% in Asia to 22% in Africa, but in terms of absolute numbers, breast cancer kills the highest number of women in all regions among women's cancers.
- **Cervical cancer** accounts for 19% of all new cases in women in Africa, a much higher proportion than in other regions, followed by Asia and Latin America, each at 8%. It also carries the highest mortality burden in Africa, representing 20% of all cancer deaths among women, followed by Asia and Latin America with 9% of women's cancer deaths.
- **Ovarian cancer** represents a small proportion of new cases across all regions, generally between 2% and 4%. The proportion of ovarian cancer deaths is a bit higher at around 4%–5% across all regions, which reflects comparatively low survival rates.
- **Uterine cancer** incidence ranges from 2% in Africa to 6%-7% in Europe and Northern America. The mortality from endometrial cancer is notably lower than its incidence share, typically 1%–4%, which reflects comparatively high survival rates.

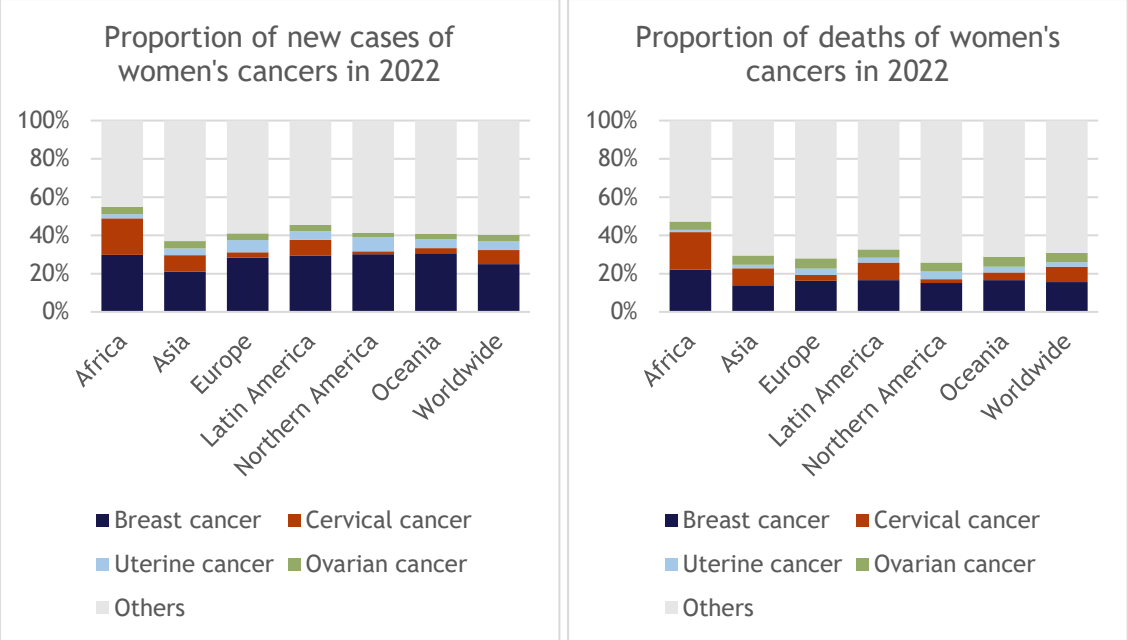


Figure 2: Proportion of new cancer cases and deaths of women's cancers among all cancers in women by world regions in 2022.

Notes: Latin America includes the Caribbean region. "Others" include all other cancers excluding non-melanoma skin cancer. Source: IARC (1).

Info box 1. Cervical cancer, HIV infection, and HPV infection in sub-Saharan Africa

Sub-Saharan countries have the highest prevalence of HIV infection in the world, despite progress over the last decade (16). The causes of the high infection rate are of both biological and socio-economic nature. These include a lack of awareness of infection prevention or a lack of willingness to protect yourself, which leads to unprotected sexual intercourse. Gender-based violence and the lack of protection for vulnerable populations such as sex workers are also contributing factors. All of this is exacerbated by inadequate HIV treatment provided by healthcare systems (17, 18).

The prevalence of HPV infection is also high in sub-Saharan countries in general, and especially high among people living with HIV (19, 20). This is partly because HPV is also transmitted through unprotected sexual intercourse. The other reason is co-infection with HIV. In people without HIV and a healthy immune system, HPV usually goes away on its own in one to two years. Since HIV suppresses the immune system, an HPV infection can more easily persist and eventually lead to the development of cervical cancer (21).

Age at diagnosis

Women's cancers can develop at any age after puberty, but with increasing likelihood later in life. The age at which women are first diagnosed varies across regions and cancer types. In the US, the median age at diagnosis in 2017-2021 was 50 years for cervical cancer, 63 for both breast and ovarian cancer, and 64 for uterine cancer (22). However, the median age might differ for different subtypes of women's cancers, e.g., breast cancer patients with triple-negative breast cancer (TNBC) tend to be younger than patients with other subtypes (12). Figure 3 presents regional patterns, showing the following trends:

- **Cervical cancer** is diagnosed at a younger age than other women's cancers, with a large share of cases occurring in women aged 40–64 and a higher proportion diagnosed before age 40 compared to other cancer types.
- **Breast, ovarian, and uterine cancer** diagnoses occur mostly in women aged 40–64 and those ≥65 years in high-income regions such as North America, Europe, and Oceania.
- In Africa, Asia, and Latin America, women are diagnosed with cancer at a younger average age, which is mainly a reflection of the younger population structures in these regions. Overall, 13% of women's cancer cases in these regions occur in women under 40, compared to just 6% in Europe, Northern America, and Oceania.

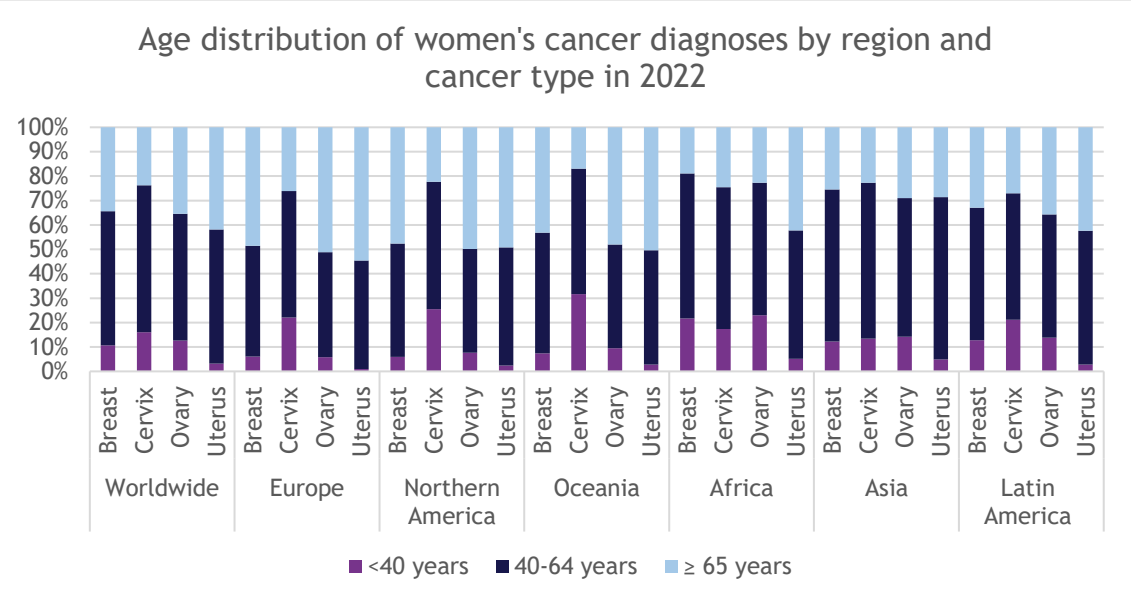


Figure 3: Age distribution of women's cancer diagnoses by region and cancer type in 2022.
Source: IARC (1).

Info box 2. Rising incidence of early-onset cancers in women

While advances in prevention, detection, and treatment have improved outcomes in women's cancers, new trends are emerging, particularly among younger women. A recent study found that breast cancer incidence among women under 50 is rising in 56% of countries analyzed (28 out of 50) (23). In countries such as Ecuador, Slovenia, Croatia, Estonia, Türkiye, Czechia, Lithuania, Italy, and Denmark, this increase was observed exclusively in women under 50, with no significant change in older age groups.

In the US, the overall age-adjusted incidence rate of uterine cancer increased between 1990 and 2021, with a pronounced rise among women under 50 (22). In this age group, the rate grew from 4.3 to 6.1 cases per 100,000 women. This upward trend in early-onset uterine cancer has been linked to rising levels of excess body weight and a decline in childbearing among younger women, two important risk factors for that cancer (24).

Cervical cancer incidence shows early results of HPV vaccination efforts (25). In countries that established vaccination programs early on in the mid-2000s, declines of cervical cancer rates have been observed among younger cohorts. In the US, for instance, cervical cancer incidence dropped by 11% among women aged 20–24 between 2012 and 2019, while women aged 30–44 experienced a 1.7% annual increase during the same period (25). Beyond invasive cancer, precancerous cervical lesions also represent a substantial burden, requiring follow-up, treatment, and repeated testing.

Stage at diagnosis

The stage at which a cancer is detected and diagnosed often determines patient outcomes, treatment strategies, healthcare costs, and overall burden of disease. Improving early detection and timely treatment can greatly reduce mortality and economic burden, making it a key priority in cancer control and policy. Figure 4 shows the distribution of women's cancers' stage at diagnosis in a high-income country setting, based on the example of the United States (US) for the period 2012-2021 (22).

- **Breast and uterine cancers** are most often diagnosed at an early, localized stage. In the case of breast cancer, 65% of cases are detected early, with only 6% diagnosed at a distant stage. Some 10% of uterine cancer cases are detected at a distant stage.
- **Cervical cancer** is most frequently detected at a localized or regional stage.
- **Ovarian cancer** is often diagnosed at a late stage; 54% of cases are diagnosed at a distant stage.

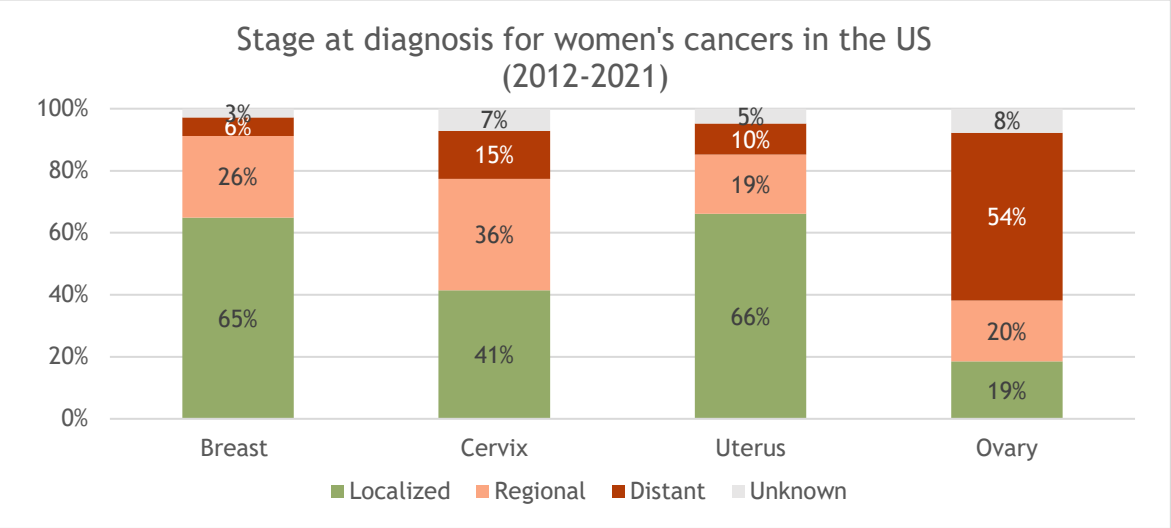


Figure 4: Stage at diagnosis for women's cancers in the US (2012-2021).

Notes: In the graph, "localized" cases represent cancer diagnoses confined to the organ, without any spread, "regional" cases indicate the cancer has spread to nearby structures, while "distant" cases denote cancer that has metastasized, i.e., spread to distant parts of the body. Source: (22).

Info box 3. Impact of breast cancer screening programs on early diagnosis

Countries with established national breast cancer screening programs have experienced a shift toward earlier-stage diagnoses, contributing to reductions in breast cancer mortality over time. This decline is attributed to both increased early detection and advancements in treatment. In a study encompassing data from 81 countries, the proportion of patients diagnosed with metastatic disease showed a marked decrease over time: rates varied widely in the early 2000s, ranging from approximately 3.8% to 35.8%, but more recent figures from 2015 onward fell to a narrower range of 3.2% to 11.6% (26).

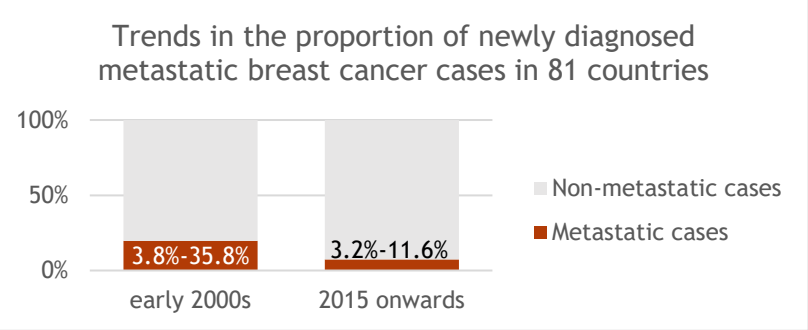


Figure 5: Trends in the proportion of newly diagnosed metastatic breast cancer cases in 81 countries.

Source: Benitez Fuentes et al. (2024) (26).

The WHO recommends that countries implement breast and cervical cancer screening programs, and while most countries have adopted some form of screening, many still rely on opportunistic approaches where screening is recommended but not systematically organized with personal invitations. Figure 6 shows countries with some forms of screening programs around the world.

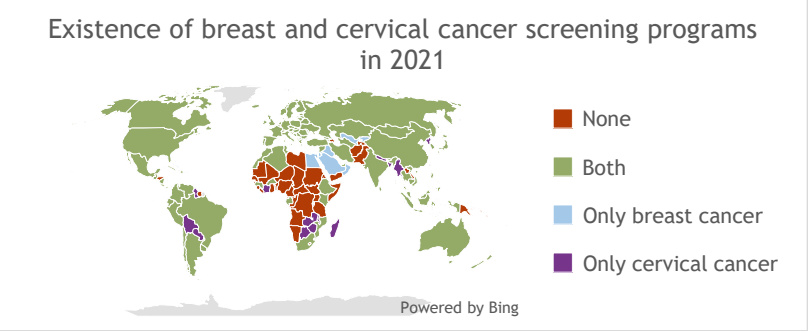


Figure 6: Existence of breast and cervical cancer screening programs in 2021.

Source: WHO (27, 28).

Survival

Survival outcomes for women's cancers vary widely by cancer type and region, influenced by factors such as early detection, access to treatment, and healthcare infrastructure. In the US, five-year survival rates between 2015 and 2021 were highest for breast cancer (92%) and lowest for ovarian cancer (52%) (22); see below in Figure 7. Regional patterns show the following:

- **Breast cancer** has the highest survival rates worldwide, particularly in high-income regions, where screening programs and treatment advances contribute to better outcomes. According to the CONCORD-3 study (3), five-year breast cancer survival in 2010-2014 approached 90% in many HICs, including the US, Canada, Australia, and much of Western Europe. However, survival rates drop to around or below 70% in some countries, such as India, Malaysia, Russia, and South Africa.
- **Cervical cancer** survival rates vary widely, with lower-income countries facing poorer outcomes due to limited access to screening, resulting in late-stage diagnosis, and worse access to treatment services. The CONCORD-3 study revealed stark global disparities (3), with survival exceeding 70% in the Nordic countries, high-income Asian countries, Costa Rica, Cuba, and Algeria, while remaining below 60% in much of Eastern Europe, the UK, Latin America, the Middle East, South and Southeast Asia, and sub-Saharan Africa.
- **Ovarian cancer** has the lowest survival rate among women's cancers. One of the main reasons for this is late-stage diagnosis; see Figure 4. According to the CONCORD-3 study, five-year survival rates for patients diagnosed in 2010-2014 were below 50% in most HICs, including 14 European countries, Japan, Israel, and Australia (3). In many Latin American countries, as well as Kuwait, Thailand, and 12 European countries (including Italy and the United Kingdom (UK)), survival rates ranged between 30% and 39%.
- **Uterine cancer** was not included in the CONCORD-2 and CONCORD-3 studies, meaning survival data at the international level are less visible for this cancer type. While this omission may reflect lack of available data, it also illustrates how certain women's cancers, particularly those less prioritized in research, may be unintentionally overlooked in global monitoring efforts. Evidence from the Nordic countries and the US indicate five-year survival rates of above 80%, but with no progress during the last 20 years (13).

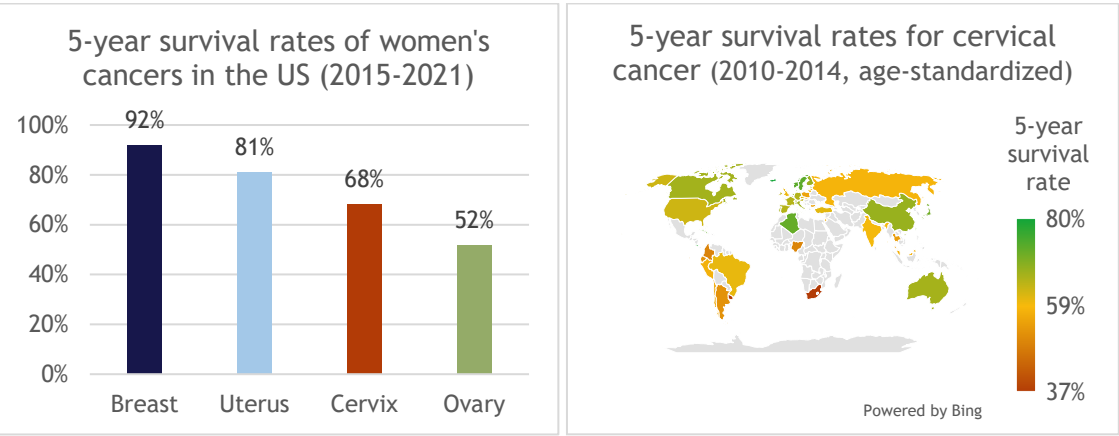


Figure 7: 5-year survival rates for women's cancers in the US and global variability in cervical cancer survival.

Notes: The US data show relative survival rates from the National Cancer Institute. Global data show age-standardized relative survival rates. Sources: (3, 22).

When examining the evolution of 5-year relative survival rates in the US, the following trends are observed by cancer site (22, 29):

- **Breast cancer**: Survival was 75% in 1975–1977 and increased to 92% in 2015–2021.
- **Cervical cancer**: Survival was 69% in 1975–1977 but stagnated at 68% in 2015–2021.
- **Ovarian cancer**: Survival was 36% in 1975–1977 and rose to 52% in 2015–2021.
- **Uterine cancer**: Survival was 87% in 1975–1977 but declined to 81% in 2015–2021.

A similar document can be observed among the Nordic countries in Europe, where 5-year relative survival rates increased a lot for breast cancer (from around 64%-74% in 1974-1978 to 91%-93% in 2019-2023), increased a bit less for cervical cancer (from around 59%-66% to 70%-78%), increased a lot for ovarian cancer (from around 23%-34% to 47%-56%), and increased a bit less for uterine cancer (from around 66%-73% to 83%-86%) (30). While progress was rather continuous from 1974-1978 to 2019-2023 in these cancer types, for uterine cancer the survival rates have stagnated for the last 25 years (30).

Survival disparities by stage at diagnosis, subtype, and demographics

Even within the same country and within the same cancer type, survival outcomes can vary substantially. Figure 8 illustrates three examples of such disparities based on five-year survival data from the US (22). Firstly, survival varies by stage at diagnosis. In all women's cancers, five-year survival rates are above 90% if the cancer was detected early and is still localized. With regional spread, these survival rates are between 62% for cervical cancer and 82% for breast cancer. The five-year survival chances drop considerably if the cancer is detected late and has already metastasized, with survival rates of around 30% in breast and ovarian cancer and 20% in cervical and uterine cancer.

Secondly, survival varies by subtype of a cancer type. Breast cancer is usually classified into four subtypes, with patients with luminal A tumors having the highest five-year survival (96%), followed by luminal B and HER2-positive subtypes. In contrast, patients with TNBC have the lowest five-year survival of around 78%, which is a result of comparatively late detection, more aggressive nature, and more limited treatment options for this subtype (10).

Thirdly, survival varies by socio-demographic factors such as socio-economic status, education and ethnicity. In uterine cancer, Caucasian women have a five-year relative survival rate of 85% in the US, whereas the rate drops to 63% for African American women (22). These differences are a result of many underlying factors such as access to care, comorbidities, and possible biological differences that contribute to worse outcomes in some populations (31-33). In a study conducted in Sweden women with a low education level had a 65% higher risk of being diagnosed with stage II and an 82% higher risk of being diagnosed with stage III-IV than women with a high education level (34). Whereas in England, it is estimated that annually 640 cases of uterine cancer could be prevented if women from various income groups experienced the same age-incidence rate as those in the most advantageous group (Quintile 1) (35).

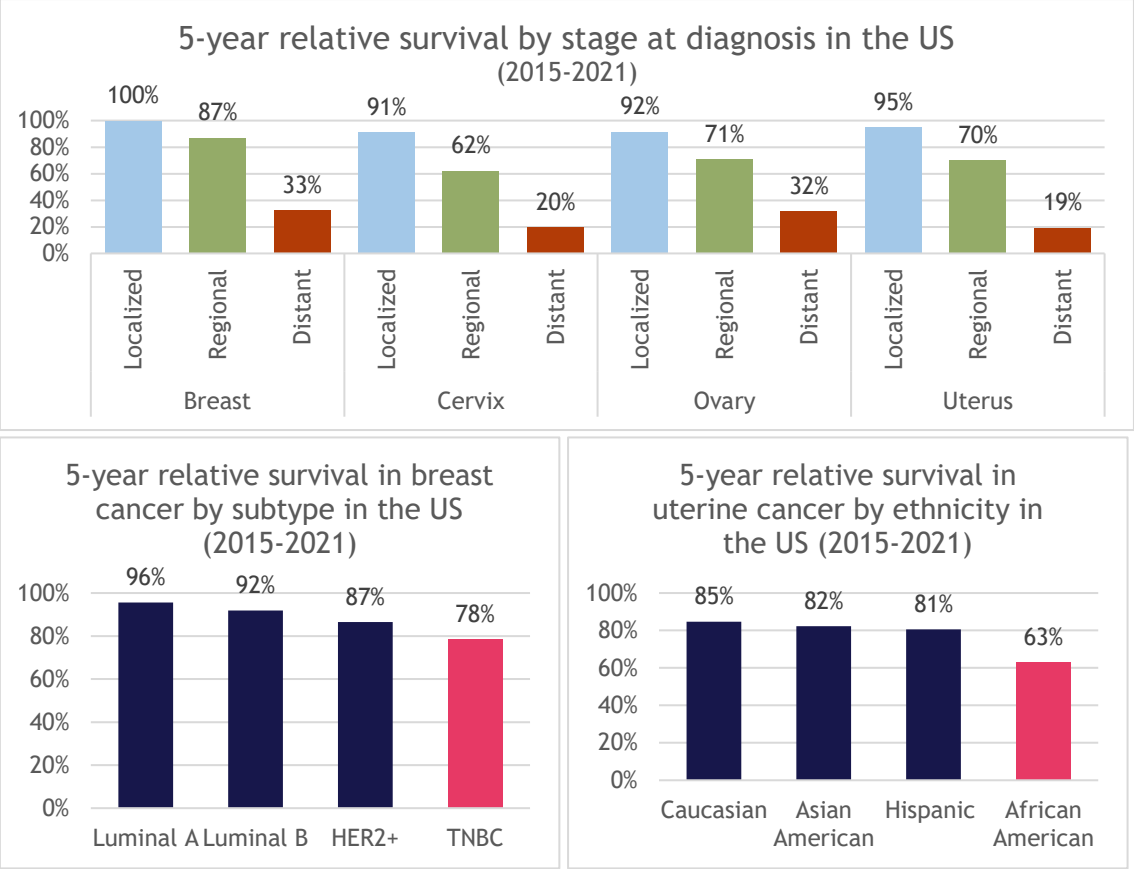


Figure 8: Five-year relative survival in women's cancers by stage at diagnosis (top graph), in breast cancer by subtype (bottom-left graph), and in uterine cancer by ethnicity (bottom-right graph) in the US in 2015-2021.

Note: Pink is used solely for visual emphasis where survival differences are notably larger and does not reflect any specific clinical classification. TNBC = Triple-negative breast cancer; HER2+ = Human epidermal growth factor receptor 2-positive. Source: (22).

Expert insights: The missing reality behind those numbers

Accurate, high-quality data are essential for planning cancer services, guiding research investment, and ensuring that policies reflect the realities patients face. Yet in many countries, critical gaps in data collection persist.

In the European Union, cancer registries typically capture information at diagnosis, during initial treatment, and at death. However, they often do not systematically register relapses, in particular distant relapses (metastatic cancer) (36). As a consequence, one interviewed expert explained, "We do not know how many women are living with metastatic breast cancer, because [registries] do not count when the cancer comes back, i.e., relapses." This means that a growing population of metastatic patients remains largely invisible in official statistics, limiting their representation in research, policy, and service planning. "If we do not register relapses," the expert added, "we are ignoring the most vulnerable patients in the system."

This invisibility is even more pronounced in LMICs, where the absence of robust cancer registries or universal health coverage means that many cases are never diagnosed or recorded. One expert emphasized that in these settings, statistics only capture women who access care, while others remain uncounted, meaning that diagnoses and deaths may be misclassified or go entirely unreported. The result is a distorted view of need, and a major barrier to resource allocation, health system planning, and targeted research investment.

2.2 Economic burden

The burden of women's cancers on society can be quantified in monetary terms. The societal costs of cancer include direct costs (costs for medical services covered by public and private sources, costs for transportation), indirect costs (productivity losses to the economy from working-age women not being able to work or dying prematurely), and informal care costs (value of the time spent providing unpaid care). While direct costs are very visible to healthcare payers and decision-makers, indirect costs and informal care costs are less visible as they do not directly affect payers' budgets. Nevertheless, these "invisible costs" can be substantial as illustrated in Figure 9, using the analogy of an iceberg. The existence of these hidden societal costs needs to be acknowledged by decision-makers, and, in addition, should be considered when new interventions are being evaluated for inclusion in benefit packages.

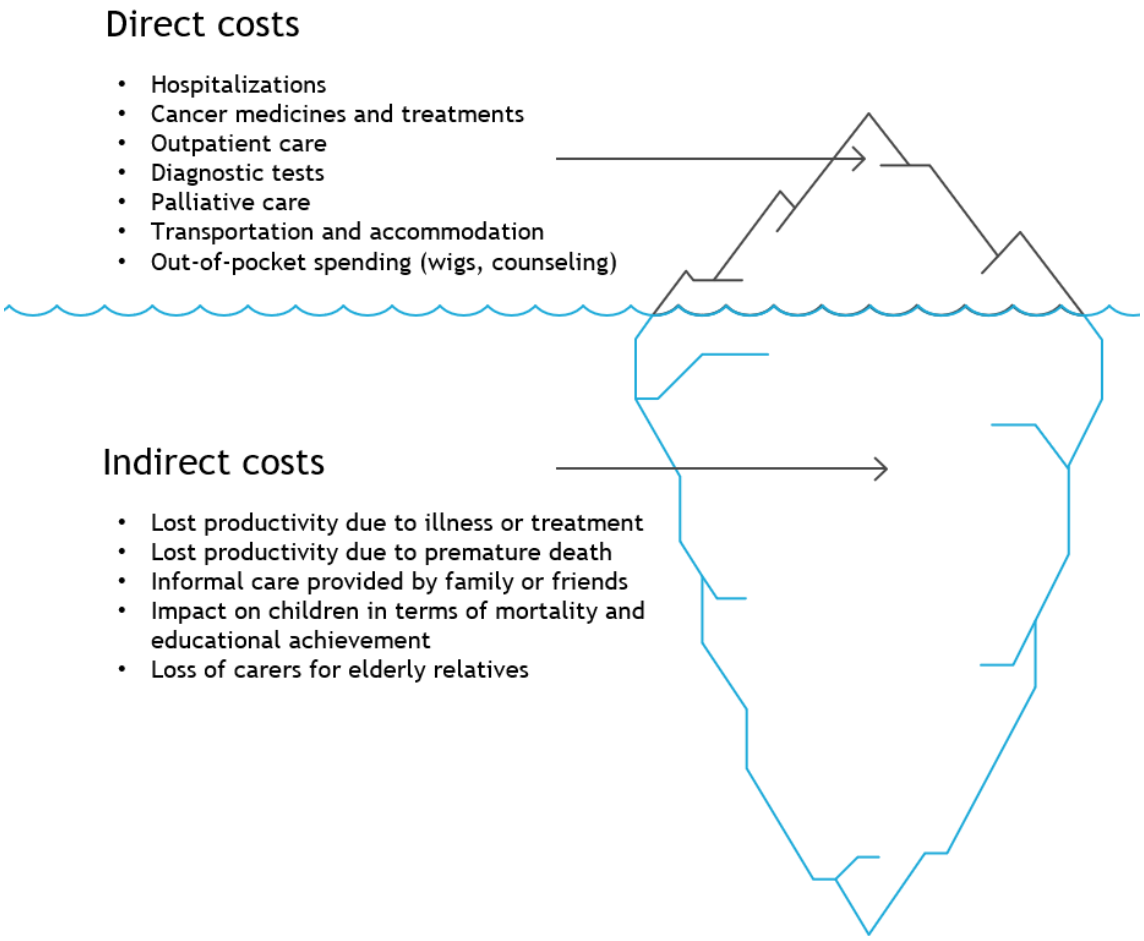


Figure 9: Direct and indirect costs of cancer.

The size of direct and indirect costs

Systematic data on the global economic burden of women's cancers does not exist. However, there are many studies that have tried to quantify the burden in multiple or single countries for specific cancer types yet using varying methodologies. For instance, the World Ovarian Cancer Coalition recently published a study that put the total costs – direct costs and indirect costs - of ovarian cancer across 11 high-, middle-, and low-income countries to USD 70 billion or 0.11% of GDP in 2022 (37). Notably, indirect costs accounted for 91% of the economic burden of ovarian cancer. Another study focusing on cervical cancer and including 13 countries found that the direct costs in 2024 ranged from around USD 10-17 million in Austria, the Netherlands,

Poland, Romania, and Saudi Arabia to around USD 650 million in Mexico and South Africa and to USD 7.4 billion in China (adjusting for differences in purchasing power parity) (38).

Comprehensive data on the economic burden in a high-income country setting, based on the example of Sweden (39), are illustrated in Figure 10. Breast cancer caused the highest economic burden among women's cancers in 2022, which is expected as it is the most frequently diagnosed cancer among women. The higher number of breast cancer patients results in greater healthcare expenditures and indirect costs. Breast cancer is followed by cervical, ovarian, and, lastly, uterine cancer in terms of total costs. Indirect costs account for more than half of the total costs for both breast and ovarian cancer, highlighting their broader economic and societal impact beyond direct healthcare expenditures on workforce participation and for ovarian cancer also its lower survival rate (see section 2.1). For cervical and uterine cancers, indirect costs account for around a third of the total costs.

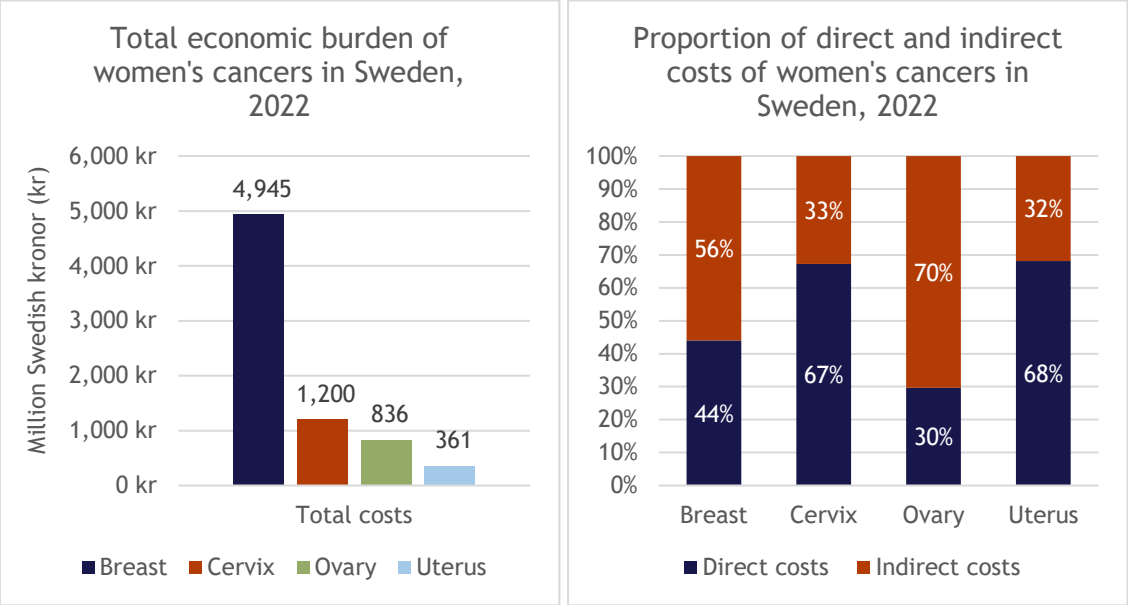


Figure 10: Total economic burden of women's cancers in Sweden in 2022.
Source: (39).

Info box 4. Understanding the hidden costs of women's cancers

As for the composition of indirect costs in Sweden, mortality-related costs exceed morbidity-related (sick leave and early retirement) costs in all women's cancers. The proportion ranges from 66% in breast cancer to 87% in ovarian cancer (39). Mortality-related costs are particularly high for ovarian and cervical cancer (87% and 84%, respectively), reflecting their lower survival rates. In contrast, breast and uterine cancer have a relatively higher share of morbidity-related costs (34% and 31%) as a result of higher survival rates but sustained impact of long-term treatment and side effects on reduced workforce participation.

These figures are key in informing future policy development. For ovarian and cervical cancer, investments in early detection and improved treatment access are crucial to reducing mortality and its associated economic burden. Preventive strategies, such as risk-reducing surgery for high-risk carriers and opportunistic salpingectomy (removal of the fallopian tubes during another surgical procedure; see section 5.1) also hold potential to reduce the burden of ovarian cancer. For breast and uterine cancer, enhancing survivorship care, rehabilitation, and workplace reintegration programs can help mitigate productivity losses from morbidity.

The size of indirect costs underlines the importance of adopting a broader societal perspective when estimating the economic burden of women's cancers. Traditional analyses often focus mostly on direct medical costs, overlooking substantial indirect and intangible costs such as lost productivity, caregiver time, or broader social consequences (40). As demonstrated in recent studies, including one on TNBC in Canada, incorporating wider elements such as productivity losses, caregiver burden, value of hope, and out-of-pocket costs, not always captured in standard models such as fertility preservation, provides a more complete picture of the real burden of disease (41).

Expenditure in relation to the disease burden

In the US in 2020, about 21% of total cancer care expenditure[3] was directed toward women's cancers, which closely mirrored these cancers' share of 20% of all new diagnoses in men and women (1, 42); see Figure 11. For ovarian cancer, the pattern is skewed as it accounts for 3% of expenditure but only 1% of cancer cases. However, expenditure is determined by many factors such as stage at diagnosis, survival outcomes, and access to and prices of diagnostic and treatment procedures. Advances in prevention, early detection, diagnostics, and treatment will continue to reshape the expenditure structure, while also reducing the disease burden.

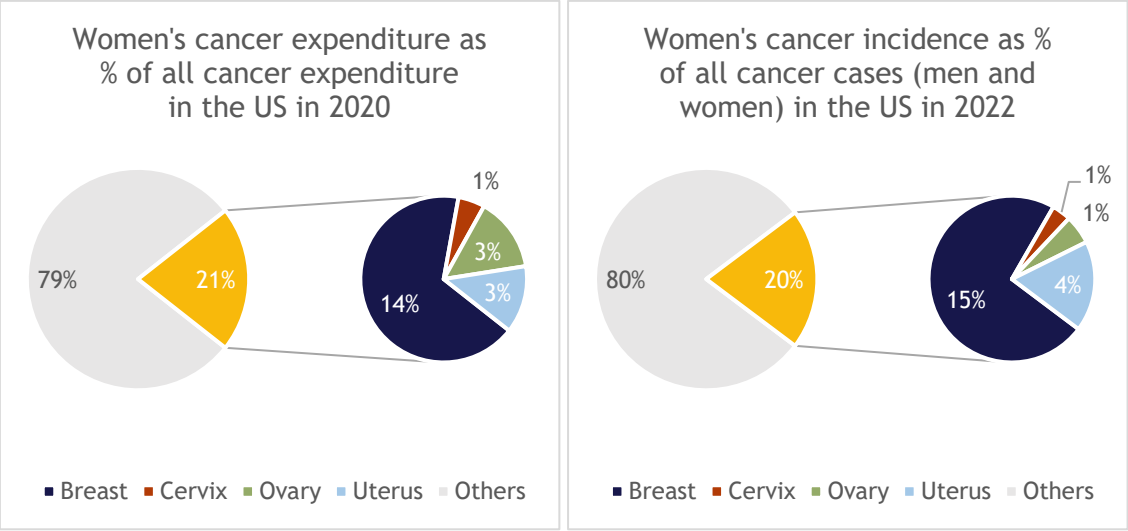


Figure 11: Cancer care expenditure and cancer cases of women's cancers in relation to all cancer care expenditure/cases.

Sources: (1, 42).

Treatment costs by disease stage

The healthcare costs of treating women's cancers generally increase with later detection and higher cancer stage; Figure 12. Data from the US show that cervical cancer treatment costs in the first year after diagnosis are nearly nine times higher in stage IV compared to stage I, reflecting the need for more and advanced medical interventions (43). The difference is even greater for ovarian cancer, where stage IV treatment costs are almost 18 times higher than those for stage I. In England, healthcare costs associated with treating a patient with endometrial cancer in stage III are 2.5 times higher than for a patient in stage I (44). In Latin

[3] These data refer to national expenditure on cancer care services, including diagnosis, treatment, and follow-up, and should not be confused with research funding, which is presented later in chapter 6. Research funding typically supports clinical trials, medicine development, and innovation in prevention or detection methods.

America, breast cancer treatment costs are 120% higher in stage IV than in stage I (45). Data from a systematic review that included studies in high, medium and low income countries also confirm that treatment costs for breast cancer increase with stage at diagnosis (46).

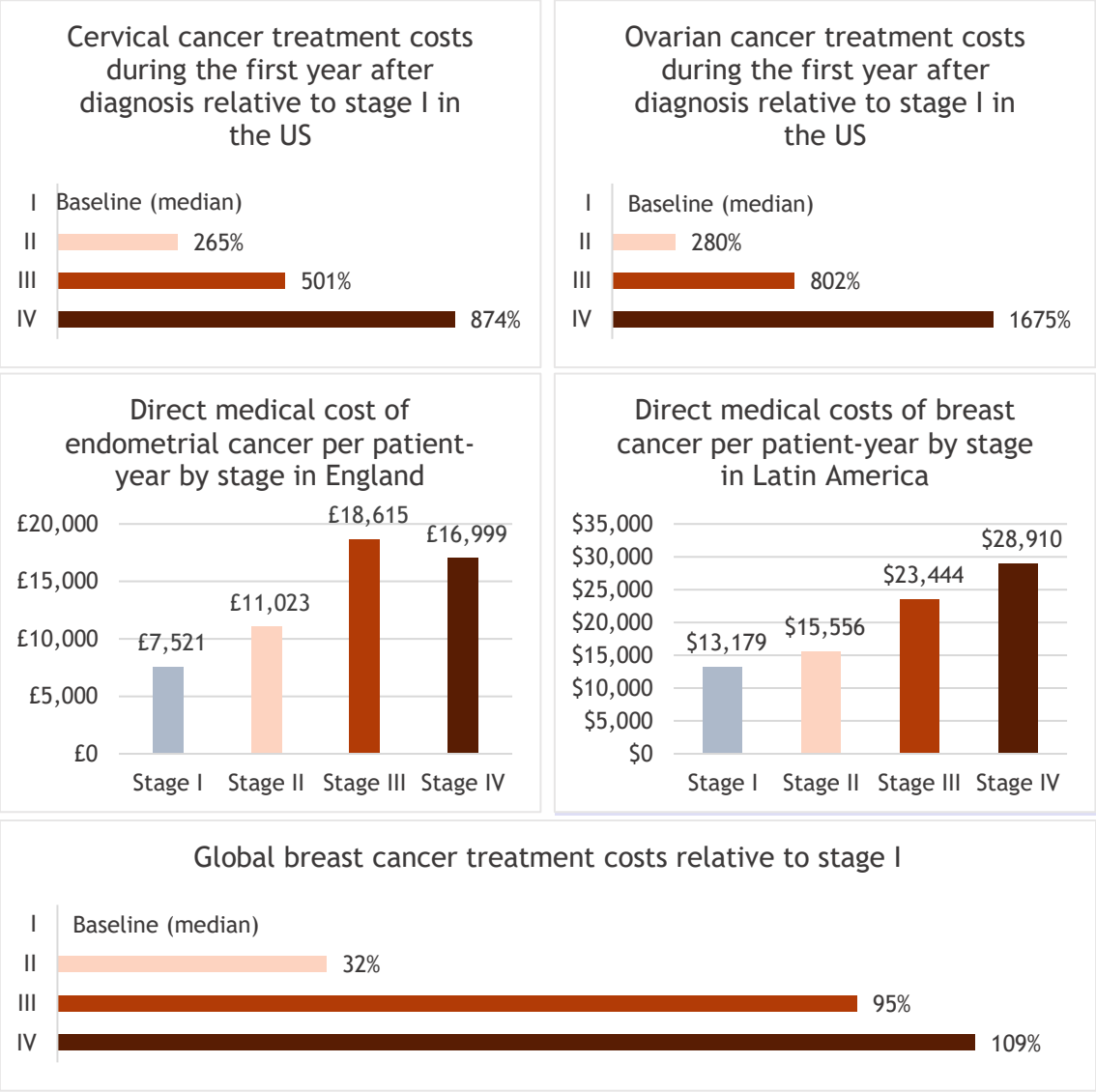


Figure 12: Direct medical costs by cancer type and stage across countries.

Notes: Endometrial cancer: The study used data from 491 patients from the Hospital Episode Statistics diagnosed from 2001 to 2005. Costs are in 2013 British pounds (£). Patients with metastatic cancer also generate higher costs than those in stage I and II, although they incur less costs than stage III patients. Lower costs in stage IV than in stage III might relate to notable differences in surgical intervention rates, as only 20% of stage IV patients underwent a hysterectomy in contrast to 95-100% of patients in stages I to III in the example from England. Breast cancer: the figures for Latin America are pooled estimates in 2020 international dollars (int$), calculated as weighted averages from individual studies covering Brazil, Colombia, Ecuador, Mexico, Peru, and Puerto Rico. Global treatment costs in comparison to baseline are from a systematic review of 20 international studies of breast cancer. Sources: (43-46).

Efforts to reduce the number of late-stage diagnoses through screening have shown promising economic results. Broad implementation of breast cancer screening (with mammography, more about it in section 4.2) correlates with fewer advanced cancers over time, which in turn lowers treatment expenditures. In the US, widespread mammography has contributed to a nearly 29% decline in the rate of late-stage (metastatic) breast cancer diagnoses in recent decades (47). In settings with limited resources, downstaging breast cancer via screening can produce net

healthcare savings. In a poor area of Cairo, women underwent clinical breast exams to detect tumors earlier (48). An economic evaluation found that the program achieved a 13.7% decrease in late-stage diagnoses, which in turn reduced the average treatment cost per patient from $58,170 (if unscreened) to $28,632 (with screening) (48). More on why investing in women's health is a smart investment can be found in section 6.1.

2.3 Navigating life with and beyond cancer

When assessing the impact of women's cancers on quality of life, it is important to distinguish what is specific to women and what reflects the broader experience of cancer. Many consequences such as treatment side effects or mental health challenges are shared across sexes and cancer types. However, women diagnosed with cancer often face distinct challenges shaped by gender norms, cultural expectations, and structural inequities. Women's cancers in particular carry additional burdens related to fertility, sexual health, and body image, which may be more stigmatized or emotionally charged. The experience also varies by region. While in HICs issues like survivorship, work reintegration, or long-term treatment effects dominate more, in LMICs barriers to care, household responsibilities, and stigma can weigh more heavily. These contextual factors should be kept in mind when interpreting the evidence that follows.

Building on this context, recent global reports have highlighted how these challenges manifest for women. The Lancet Commission on Women, Power, and Cancer highlights that women diagnosed with cancer face distinct and compounding challenges beyond the disease itself, shaped by financial, social, cultural, research, and structural factors (4). The European Cancer Organisation echoes this perspective in their recent work on "Women and Cancer" (49). Some of the most important challenges identified were:

Gender norms and cultural barriers: Social expectations often lead women to put their families' wellbeing before their own, delay seeking care, and face barriers related to childcare and financial dependence (4). In healthcare settings, institutionalized gender norms can lead to mistreatment, neglect, and exclusion of women from treatment decisions (4). In addition, men are often excluded from caregiving duties, thus increasing women's burden both before and after a cancer diagnosis and creating a dual role of affected women being both patients and caregivers (4). Women may also be divorced or abandoned by their husbands following a cancer diagnosis (50). Stigma and misconceptions surrounding certain cancers, such as cervical cancer, often linked to sexual behavior or perceived personal responsibility (51), can further isolate women and deter them from seeking timely care, or lead to healthcare discrimination (52).

Systemic bias in health policy and economic evaluation: Standard economic assessments of cancer often fail to capture the full extent of women's contributions to society, families, and economies, as well as their vulnerabilities. Much of the work women do, such as caregiving, household responsibilities, and informal labor, is not counted in market-based measures commonly used in health economics (4). As a result, these analyses undervalue the true costs and impact of cancer on women's lives (53). Tools such as investment cases, which guide decisions on where to allocate health resources, frequently rely on data that reflect formal employment and average market wages, overlooking how structural discrimination and gender roles affect women's economic participation (4, 54).

Financial catastrophe[4] and economic inequality: Women with cancer face a uniquely high risk of financial catastrophe, driven by a combination of structural economic disadvantages and gender-based inequalities. In many countries, women are more likely to lack financial autonomy and decision-making power, particularly those from low-income or traditional conservative settings, where they may depend on male family members for financial support or even permission to seek care. A study from eight Asian countries found that nearly 75% of women newly diagnosed with cancer ended up spending 30% or more of their household's yearly income on cancer-related costs in the first year after the diagnosis (4, 55).

Research underrepresentation: Historically, women were often left out of clinical trials due to concerns about hormonal variability and potential risks to future pregnancies (4). Although regulations have since pushed for greater inclusion, the legacy of this exclusion still affects research today. An analysis of over 20,000 clinical trials (registered between 2000 to 2020) found that cancer trials had the lowest participation of women, even when adjusting for women-specific incidence of a disease (56).

Limited potential for primary prevention: While some known risk factors for common cancers in women, such as breast cancer and endometrial cancer, are reproductive factors and considered modifiable (e.g., age at first childbirth, number of pregnancies, breastfeeding) (57), these are often not easily altered in practice due to personal, social, or economic circumstances. Moreover, most of the underlying causes of breast cancer are still not fully understood, limiting the potential for targeted preventive strategies (4). Cervical cancer stands out as the only common women's cancer for which the primary cause, HPV infection, is clearly established and preventable. In contrast, breast and ovarian cancer have a strong genetic component, particularly among women with mutations in BRCA1/2. Prevention efforts have therefore focused on identifying individuals with inherited risk (see section 4.1).

Structural disadvantages can deeply influence women's experiences living with and after a cancer diagnosis. Beyond the above-listed challenges, cancer affects nearly every aspect of a women life; see Table 2 with specific challenges for women with women's cancers.

Table 2: Aspects of quality of life affected by women's cancers by dimension.

Aspect	Description
Physical dimension	
Physical health 	Cancer can impact physical well-being, with effects that may begin even prior to diagnosis and can persist for years after treatment. One year after diagnosis, many women with endometrial (uterine) cancer continue to struggle with daily tasks due to treatment-related side effects, such as chronic diarrhea and incontinence, affecting their ability to work, manage household responsibilities, and participate in social activities (58). Similarly, ovarian cancer patients, particularly those with advanced disease or those undergoing chemotherapy, often experience long-term cognitive and social impairments, impacting their mental sharpness and engagement in daily life (58). A study in the Netherlands found that breast cancer survivors may experience adverse health effects for up to a decade after diagnosis, including respiratory and urinary infections, fatigue, sleep disturbances, osteoporosis, and lymphedema (59). Moreover, the impact of early menopause, whether induced by surgery or hormonal therapy, is often underestimated. Studies show it is associated with elevated risks of cardiovascular disease, cognitive impairment, osteoporosis,

[4] "Financial catastrophe" refers to situations where a household's out-of-pocket health spending exceeds a substantial share of income (commonly 10–25%), jeopardizing their ability to afford basic needs. This differs from "financial toxicity", which encompass the broader impact of cancer-related costs on patients, including income loss, psychological stress, and difficulty affording care.

Aspect	Description
	sexual dysfunction, and premature mortality (60). One of the major challenges in understanding the full physical impact of women's cancers is the tendency for women to under-report symptoms, particularly those that are sensitive or difficult to discuss with physicians, leaving healthcare providers without crucial information (61).
Intimacy and reproductive health 	Sexual dysfunction affects around 60% of women with cancer and over 70% of those with gynecologic cancers (49, 62). Common issues include vaginal dryness, low libido, pain during intercourse, and difficulty reaching orgasm, often straining intimate relationships (63). Treatment for cervical and uterine cancers often involves pelvic radiation therapy, which is associated with reduced vaginal lubrication and difficulties with sexual intercourse (64). About 10% of breast and gynecologic cancers occur in women under 40, many of whom have not begun or completed childbearing (see Figure 3). Among reproductive-aged patients, 75% express a desire for children, yet many treatments compromise fertility and carry additional implications for family planning (65, 66).
Psychosocial dimension	
Mental health and emotional well-being 	Beyond physical health, a cancer diagnosis profoundly affects mental well-being. Breast cancer patients often experience anxiety and depression at higher rates than women in the general population; self-reported data shows that one-year post-diagnosis, anxiety affects between 20% and 50%, while depression is found in 30% to 50% of cases (67). People living with metastatic breast cancer (MBC) often face challenges related to incurable disease, such as uncertainty, emotional distress, anxiety, and fear related to disease progression and mortality. Around 88% of individuals with MBC experience some form of mental health burden (36). Women with gynecologic cancers often face significant psychological distress, with anxiety and depression peaking within the first three months and heavily affecting quality of life (68). Although many patients improve after a year, emotional effects can persist. For example, among endometrial (uterine) cancer survivors, 30% of those aged 55–74 continue to experience anxiety and depression 6 to 12 years after early-stage treatment—twice the expected rate of 15% in this age group (69).
Body image and self-esteem 	Cancer-related treatments often lead to changes in one's body and physical appearance, such as hair loss, weight fluctuations, skin changes, or scarring, all of which can impact one's self esteem For example, women with breast cancer who undergo a mastectomy (removal of the entire breast) often report lasting psychological impacts and may struggle with aspects of sexuality and intimacy (70), particularly when dissatisfied with reconstructive surgery or when conservative surgical approaches are used (49). For some, such as women with cervical cancer, even when scars are not outwardly visible, there is still an internalized sense of "bodily damage" (71).
Family life 	Cancer can impact family life by straining intimacy, communication, and role balance in relationships. Although divorce rates do not universally rise, and may even decline for some cancers, women with cancers affecting sexual health, such as cervical cancer, may face a higher risk of divorce (50, 72). In general, a study has found that among couples 50-64, women in poor health with a healthy male partner face an increased risk of separation, whereas men in poor health with healthy female partners do not experience the same elevated risk (73). In the Middle East and North Africa, many women with breast cancer might hide a cancer diagnosis from their family members because of fear of divorce or being forced to accept their husbands marrying a second wife as well as consequences for their daughters' marriage prospects (9, 74). Mothers with cancer often struggle to balance treatment with parenting, feeling pulled between their own needs and their children's. Children may experience a wide range of emotional responses, including fear, confusion, sadness, anger, and guilt (75). In addition, lack of childcare is one of the most common logistical reasons women delay care. A study in Canada (mostly young breast cancer patients) found 40% of participants had to reschedule a cancer treatment appointment and 14% outright missed an appointment because they could not arrange childcare (76).

Aspect	Description
Economic dimension	
Informal care 	Partners, children, and other family members of women with breast or gynecologic cancers often serve as informal caregivers, handling household tasks, childcare, and elder support, especially in multigenerational homes. In the US, caregivers spend an average of 6.5 hours daily for breast cancer patients, 6.8 hours for endometrial (uterine) cancer patients, and 10.3 hours for ovarian cancer patients (77). Their responsibilities include attending appointments, managing symptoms, providing emotional and financial support, assisting with daily activities, and arranging transportation. In 2023, ovarian cancer patients received an average of 33 days of informal caregiving annually, with an estimated economic value of USD 471.6 million across 11 countries (37).
Work life 	Approximately 67% of breast and gynecologic cancer cases occur in women under 65 (see Figure 3). Many patients who remain in the workforce report fears of job loss, discrimination, or instability. In Portugal, a study of women with advanced breast cancer found that only 38% retained employment after treatment (78). Most were unemployed (51%), on medical leave (25%), or retired (24%), while just 5% left work voluntarily. Key reasons for leaving the workforce included physical disability (55%) and cognitive impairment (16%), with 20% opting for early retirement—on average at age 49.7, 16 years before Portugal's statutory retirement age. Another study from the US showed that one year post-diagnosis, 21% of gynecologic cancer patients experienced employment loss and faced a threefold higher risk of disruption compared to women without cancer (79).
Household finances 	The financial burden of breast and gynecologic cancers on households can be substantial. Many working-age women experience severe symptoms requiring extended sick leave or permanent job loss, leading to reduced household income. In HICs, the likelihood of breast cancer survivors returning to work within a year from diagnosis ranges from 43% to 93% (80). Caregivers also face productivity losses, with studies reporting 21%–27% reductions due to absenteeism or presenteeism (81). Families incur additional out-of-pocket costs for transportation and medical services, including co-payments or full payments, depending on insurance coverage.

Emerging research highlights that the impact of women's cancers extends far beyond the individual, placing emotional, social, and economic strain on entire families. Info box 5 provides a striking example of this intergenerational burden. However, such quantitative insights remain rare. There is a pressing need for more longitudinal studies of this kind, which depend on sustained investment in high-quality cancer and screening registries. These data systems are essential for capturing the full scope of cancer's toll and for shaping policies that better support both patients and their families across the entire care continuum.

Info box 5. The hidden toll on families

A study using Swedish national registries with data from 2006-2018 revealed that cervical cancer does not only affect the women diagnosed, it places lasting psychological and economic strain on their families (82).

- **Partners** of women diagnosed with cervical cancer had a 32% higher risk of developing a **mental disorder** compared to partners of women without cancer. This risk increased to 83% if the woman died during the follow-up period.
- **Partners** were also 17% more likely to **lose employment** within five years of the diagnosis and faced higher risks of needing financial support or entering early retirement.
- **Children** of women diagnosed with cervical cancer had a 19-22% higher risk of **mental disorders** during the five years after their mother's diagnosis. For daughters, the elevated risk persisted for over a decade.
- By adulthood, **children** of affected mothers were 13% less likely to **attain higher education** than peers whose mothers did not have cancer.

These findings highlight the intergenerational burden of women's cancers and the urgent need for structured psychosocial support for both patients and their families, not only during treatment, but long after. In low-resource settings, a systematic review and meta-analysis has found a clear link between a mother's death and increased child mortality (83). Global analyses highlight the scale of this hidden toll. In 2020 alone, maternal cancer deaths left more than one million children newly orphaned (84), half of which was caused by women's cancers as shown below. The majority of these deaths occurred in Asia (48%) followed by Africa (35%). Globally, the contribution of each cancer site to maternal orphans was as follows (84):

- **Breast cancer**: 257,561 children (25% of all new maternal orphans)
- **Cervical cancer**: 209,857 children (20% of all new maternal orphans)
- **Other female-specific cancers** (including ovarian, endometrial, vulvar, and vaginal cancers): 63,054 children (6% of all new maternal orphans)

3. Global policy frameworks

The 70th World Health Assembly (WHA) in Geneva in 2017 adopted a cancer resolution that represented a global call for action and laid the foundation for a coordinated, system-wide approach to cancer prevention and control (85). Following this, the WHO launched two major global initiatives for cervical cancer in 2020 and breast cancer in 2021; see Figure 13. These two flagship efforts – the Cervical Cancer Elimination Initiative and the Global Breast Cancer Initiative – aim to reduce the burden of cervical and breast cancers worldwide through specific targets and strategies. No comparable global initiatives exist for ovarian cancer or uterine cancer. 2023–2025 saw major advancements, including substantial donor pledges to expand access to vaccination, screening, and treatment (86-88).

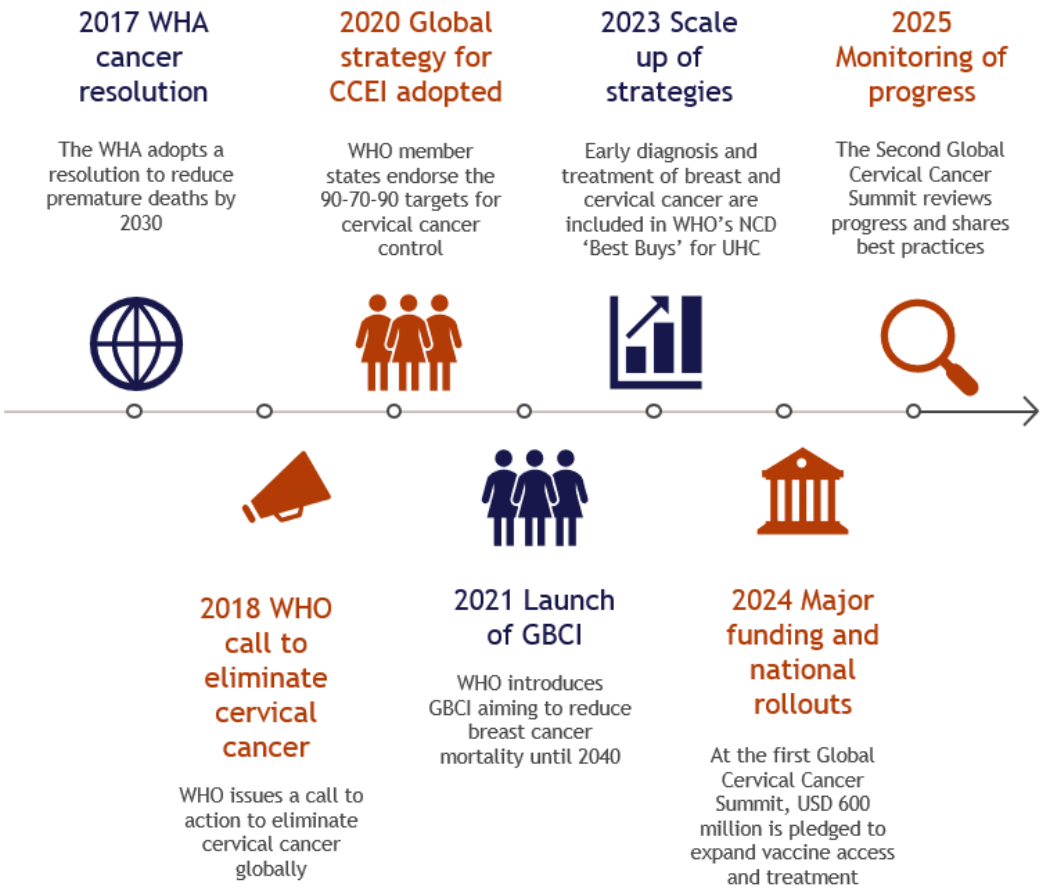


Figure 13: Timeline of global women's cancers initiatives by the WHO.

Notes: WHA = World Health Assembly, WHO = World Health Organization, CCEI = Cervical Cancer Elimination Initiative, GBCI = Global Breast Cancer Initiative, NCD = non-communicable diseases, UHC = universal health coverage. Source: (85-87, 89-92).

WHO Global Breast Cancer Initiative (GBCI)

Launched in 2021, the WHO GBCI seeks to cut global breast cancer mortality by 2.5% per year, averting an estimated 2.5 million deaths by 2040 (90). This initiative provides strategic guidance and coordination aimed at improving breast cancer care, with a focus on LMICs. GBCI's strategy is built on three pillars with the 60-60-80 targets across the care continuum:

1. **Health promotion for early detection**: Increase public awareness and reduce delays in seeking care so that >60% of invasive breast cancers are diagnosed at stage I or II (early stage).
2. **Timely breast diagnosis**: Strengthen diagnostic services to ensure that clinical evaluation, imaging, tissue sampling, and pathology are completed within 60 days of initial presentation.
3. **Comprehensive breast cancer management**: Provide effective multidisciplinary treatment (surgery, systemic therapy, and radiation therapy) and supportive care, with >80% of patients undergoing the recommended multimodal therapy without abandonment of treatment.

WHO Cervical Cancer Elimination Initiative (CCEI)

In 2018, the WHO issued a historic call to eliminate cervical cancer, signaling the feasibility of preventing a cancer through vaccination, screening, and treatment (89). This culminated in the 2020 adoption of the Global Strategy for CCEI, the first-ever international commitment to eliminate a cancer as a public health problem (91). The overarching goal is to eliminate cervical cancer, defined by the WHO as reducing every country's cervical cancer age-standardized incidence to below 4 cases per 100,000 women per year. To achieve elimination, the WHO outlines three pillars with 90–70–90 targets for 2030 that all countries should reach:

1. **HPV vaccination:** 90% of girls fully vaccinated with the human papillomavirus (HPV) vaccine by age 15.
2. **Screening:** 70% of women screened with a high-performance test by age 35, and again by age 45.
3. **Treatment:** 90% of women with cervical disease receive appropriate treatment – including 90% of women with precancerous lesions treated, and 90% of women with invasive cancer managed.

Challenges in implementation of WHO initiatives

The CCEI targets require broad access to HPV vaccination, high-performance screening (primarily with HPV tests and not cytology (Pap smear) or visual inspection with acetic acid (VIA)), and timely treatment. However, many LMICs face structural barriers across all three pillars due to under-resourced health systems, financial constraints, and critical shortages in healthcare infrastructure and trained personnel (93). Achieving elimination requires a coordinated approach to be sustainable. In 2024, the WHO reported that implementation of the CCEI was falling short in many countries (86). Despite the existence of cost-effective tools for prevention, screening, and treatment, the WHO identified health system constraints, costs, logistical issues, and lack of political will as key obstacles to comprehensive program implementation (86), meaning that closing these gaps requires not only technical resources but renewed and visible political commitment.

Challenges in monitoring progress of WHO initiatives

Monitoring progress of WHO initiatives such as the CCEI and GBCI remains difficult due to persistent gaps in cancer data. For example, a 2023 review of the 21 countries in the Asian National Cancer Centers Alliance found that over 60% lacked national data on breast cancer stage at diagnosis, time to diagnosis, and treatment completion (94). Although some institutional-level data exist, they often fail to reflect national trends, and definitions of indicators vary across countries, hampering comparability. Similarly, a review in West Africa highlighted that the absence of national cancer registries is a major barrier to monitoring

progress on the GBCI (95). Only two countries, Cape Verde and The Gambia, currently maintain national registries, while others rely on sub-national or hospital-based registries with very limited coverage.

Despite these limitations, some progress has been made in building reliable datasets for selected pillars of the initiatives. For instance, the first pillars of both the CCEI and GBCI, focused on prevention and early detection, are beginning to be supported by better-quality data (see sections 4.1 and 4.2). However, unlike HPV vaccination rates, which are tracked through an international WHO database (96), there is still no comparable global system for breast cancer stage at diagnosis. As a result, multi-country reviews that bring together patchy data remain the primary source for such information.

In contrast, data for later pillars of both initiatives are largely missing. The ideal data source for those pillars would be clinical cancer registries rather than the more commonly available epidemiological registries. Treatment indicators are particularly challenging, since they are either not routinely measured with existing health data systems or not consistently reported. For example, neither the Swedish Quality Register for Breast Cancer (97) nor the Swedish Quality Register for Gynecologic Cancer (98) routinely report on indicators aligned with the third pillars of the GBCI and CCEI, respectively.

Global Cancer Awareness Months

Several awareness months have been established globally to draw attention to women's cancers and promote prevention, early detection, and research. The month of October focusing on breast cancer is probably the best known one and the most firmly established one of all cancer types around the world.

- **Breast Cancer Awareness Month**, observed every October, was launched in 1985 as a partnership between the American Cancer Society and Imperial Chemical Industries (99). Its purpose is to raise awareness about breast cancer, encourage screening (especially mammography), and support research and patient advocacy. It is also called "Pink October" as organizations use and people wear a pink ribbon (100).
- **Cervical Cancer Awareness Month** is marked in January draws especially attention to HPV vaccination and screening (101, 102). The WHO marks 17 November as the Day of Action on Cervical Cancer Elimination, marking the launch of the global effort (87). It celebrates progress, addresses challenges, and drives commitments toward elimination by 2030. In addition, March 4th was chosen and inaugurated as International HPV Awareness Day by the International Papillomavirus Society (103).
- **Ovarian Cancer Awareness Month** is observed in September, largely driven by patient advocacy groups such as the Ovarian Cancer Research Alliance (OCRA), with a focus on highlighting the disease's nonspecific symptoms and promoting earlier diagnosis and research investment (104, 105). In the UK, Ovarian Cancer Awareness Month takes place in March and was established in 2005 by the charity Ovarian Cancer Action (106). In addition, the World Ovarian Cancer Coalition observes World Ovarian Cancer Day on May 8, which was established in 2013 by a group of leaders from ovarian cancer advocacy organizations around the world (107).
- **Uterine Cancer Awareness Month** was most recently designated to be in June by the International Gynecologic Cancer Society (IGCS) (108). It was launched in 2023 to raise awareness about uterine cancer and promote the need for further research funding, community education, and equitable access to high-quality care.

- **Gynecologic Cancer Awareness Month** is observed in September by many organizations around the world (105, 109, 110). The World Gynecologic Oncology Day (World GO Day) is observed on September 20 every year since 2019 and was initiated by the European Network of Gynaecological Cancer Advocacy Groups (ENGAGe), the patient arm of the European Society of Gynaecological Oncology (ESGO) (111).

Info box 6. Signing declarations is not the same as implementing them

Countries often sign on to international commitments aimed at advancing women's rights and health, including human rights treaties like the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW). However, ratifying or endorsing these frameworks does not guarantee adequate investment or meaningful implementation on the ground. Evidence from CEDAW reviews highlights this disconnect (112):

- **Weak planning and underfunding**. Many countries lack comprehensive, well-resourced plans aligned with CEDAW's standards. National efforts are often fragmented, with good laws enacted but not backed by sufficient resources, institutional capacity, or sustained follow-through.
- **Monitoring gaps**. Data systems and monitoring mechanisms are frequently underdeveloped. As a result, governments struggle to assess whether policies are improving women's lives in practice or to identify where inequality persists.
- **Limited political will**. Some countries maintain formal commitments while lacking the political intention to implement them fully.
- **Fragmented implementation**. Rather than pursuing coordinated, strategic reform, many efforts remain piecemeal, such as isolated legal changes or short-term programs, without embedding women's rights into national policy frameworks, governance systems, or public budgets.

4. Challenges across the care pathway

The potential to prevent, detect early, diagnose, and treat women's cancers varies considerably between cancer types. While some, such as cervical cancer, are almost entirely preventable through vaccination and screening, others, such as, ovarian cancer, lack effective early detection methods and are frequently diagnosed at advanced stages. These differences have implications for patient outcomes, as well as for the types of policy responses and investments needed.

Table 3: Characteristics of women's cancers along the care pathway.

Care pathway	Cancer type	Breast	Cervical	Ovarian	Endometrial (uterine)
Prevention	Prevention potential*	Low	Total	Very low	Medium
Detection	Screening availability	Yes	Yes	No	No
Diagnostics	Important subtypes	4 subtypes: HR-positive (luminal A and luminal B), HER2-positive, TNBC	None influencing treatment approach	2 subtypes: epithelial and non-epithelial	2 subtypes (old): type 1, type 2 4 subtypes (new): POLE, dMMR, p53, NSMP
	Potential for biomarker-driven personalized treatment	High; Markers such as ER, PR, HER2, Ki-67, BRCA, PIK3CA, ESR1, PD-L1, etc.	Limited; Only PD-L1	Moderate; BRCA and HRD	Growing; dMMR, p53, POLE
Treatment	Number of new treatments by EMA 1995-2024	57 in total (44 for advanced stage, 13 for early stage)	5 in total (4 for advanced stage, 1 for early stage)	14 in total (all for advanced stage)	7 in total (all for advanced stage)
Policy initiative	Global policy initiative	WHO GBCI	WHO CCEI	No global initiative	No global initiative

*Notes: * Prevention potential refers to the proportion of cases attributable to modifiable risk factors related to lifestyles; see section 4.1. Screening availability refers to the existence of a screening method recommended by the WHO; see section 4.2. Molecular/gene expressions that can be addressed by tumor-agnostic medicines are omitted in the fourth column; see section 4.4. Abbreviations: TNBC = triple-negative breast cancer, ER = estrogen receptor, PR = progesterone receptor, HER2 = human epidermal growth factor receptor 2, BRCA = breast cancer gene, ESR1 = estrogen receptor 1, PD-L1 = programmed death-ligand 1, HRD = homologous recombination deficiency, POLE = DNA polymerase epsilon, dMMR = mismatch repair deficiency, NSMP = no specific molecular subtype.*

This chapter outlines main challenges across each step of the cancer care pathway – from prevention, early detection and screening, diagnosis to treatment – for the four women's cancers and across geographies around the world. While the challenges presented here are certainly not an exhaustive list, they highlight recurring themes from different countries. Both commonalities and distinct barriers that affect care delivery and outcomes are described. Opportunities to address these challenges are discussed in chapter 5.

The one major underlying theme across the entire chapter is health system readiness, which is a critical determinant of a country's ability to deliver timely, effective, and equitable cancer

care but which differs especially across HICs and LMICs. Vast global disparities persist, largely shaped by differences in the strength and financing of national health systems. In many LMICs, underdeveloped infrastructure, shortages of trained health professionals, and limited access to diagnostic tools and essential medicines undermine efforts to provide comprehensive cancer services. These gaps are deeply rooted in broader structural issues, particularly the pace of progress toward universal health coverage (UHC). According to the WHO, about half of the global population was still not fully covered by essential health services as of 2021 (113). This dire reality disproportionately affects cancer patients, for whom early detection, continuity of care, and financial protection are essential to achieving good outcomes.

Health care financing and spending patterns are central to understanding the readiness of health systems to respond to cancer. The WHO's latest Global Health Expenditure Report shows that while global health spending has increased steadily over the past two decades, the level of spending was highly uneven across regions in 2022 (114). Average health spending per capita (not adjusting for differences in purchasing power) in HICs was $3,731, seven times the $540 in upper-middle income countries, 28 times the $132 in lower-middle income countries and 87 times the $43 in low-income countries. Many LMICs remain reliant on out-of-pocket payments and external aid, limiting sustainable investment in cancer care infrastructure and services. Countries with low public spending on health often struggle to prioritize noncommunicable diseases, including cancer, within their national budgets. Without robust, equitable, and sustainable health financing mechanisms, health systems will continue to face major constraints in scaling up cancer prevention, early detection, diagnostic services, and treatment services.

4.1 Prevention

According to the WHO, around 40% of all cancers can be prevented by addressing modifiable risk factors such as tobacco use, alcohol consumption, an unhealthy diet, obesity, physical inactivity, infections, and environmental exposures to toxins (115). However, this number differs widely from cancer type to cancer type, and also among women's cancers; see Figure 14 for evidence from Western countries on modifiable lifestyle-related risk factors, excluding medical or surgical interventions (116, 117). Almost all cervical cancer cases can be prevented as they are caused by HPV infection. Around 35-60% of uterine cancer cases can be prevented due to their link to excess body weight (overweight / obesity) and physical inactivity. For breast cancer, around 25-30% of cases are linked to excess body weight, physical inactivity, and alcohol consumption. Ovarian cancer has the lowest potential to be prevented through easy modifiable lifestyle risk factors with only 5-10% of cases being mainly linked to excess body weight and also a bit to cigarette smoking.

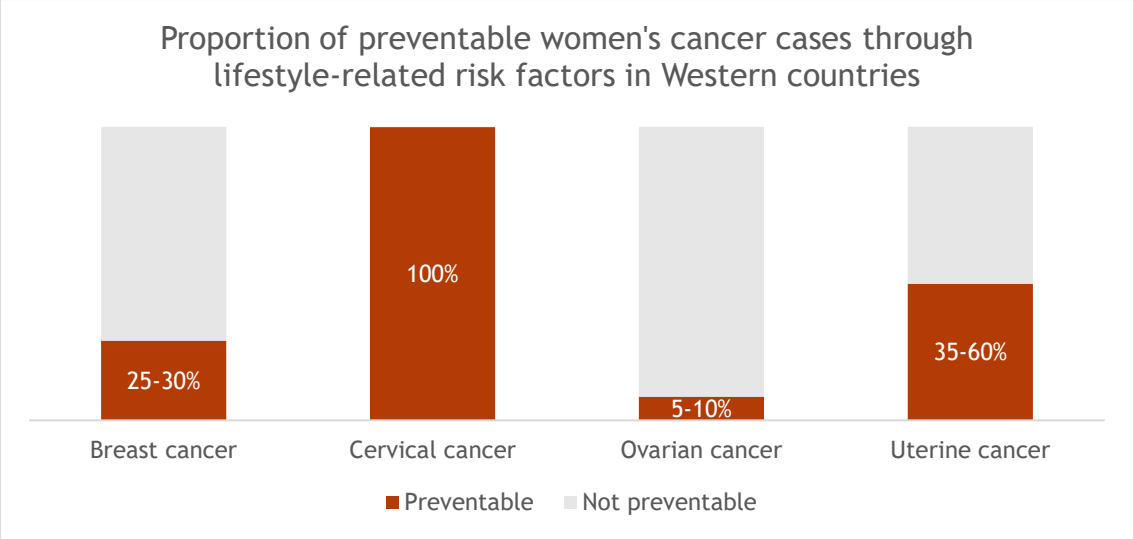


Figure 14: Approximate proportion of women's cancer cases preventable through lifestyle-related risk factors in Western countries.

Notes: Data combine estimates from the UK from 2015 and the US from 2019. Preventable cases are defined as those attributable to modifiable lifestyle-related risk factors only. Source: (116, 117).

For cervical cancer, the combination of HPV vaccination and screening[5] offers an unprecedented opportunity to eliminate[6] the disease. Since the introduction of HPV vaccines in 2006 (118), global efforts have expanded vaccination among girls and more recently also boys. Real-world data now show substantial reductions in HPV infections and precancerous cervical lesions in countries that started vaccination early, foreshadowing the vaccine's global impact in the decades to come (119-121). Beyond individual protection against precancerous lesions, the HPV vaccine also reduces viral transmission, offering indirect protection to unvaccinated individuals, thus contributing to herd immunity (122).

There are also many known non-modifiable risk factors for women's cancers. This includes foremost age (as described in section 2.1), but also ethnicity and various inherited genetic mutations. For instance, Caucasian women have a greater propensity for being diagnosed with uterine cancer compared with women of other ethnic backgrounds in the US (31), yet African American and Hispanic women are at an elevated risk for developing more aggressive uterine tumors (123). Similarly, Caucasian women have the highest risk and Hispanic women the lowest risk to develop breast cancer in the US, but for the subtype TNBC, black women have the highest risk and Asian women the lowest one (124).

Around 0.2–0.3% of the general population carry inherited harmful changes in BRCA1/2 genes, which increase the risk of developing breast and ovarian cancer (125). More than 60% of women with BRCA1/2 mutations will develop breast cancer during their lifetime compared to about 13% of women without these gene changes in the US (125). Similarly, about 39–58% of women with BRCA1 and 13–29% of women with BRCA2 risk developing ovarian cancer during their lifetime compared to about 1.1% of women without these changes in the US (125). Furthermore, around 0.36% (1 in 279 people) of the general population in the US has a hereditary genetic disorder called Lynch syndrome, which elevates the risk of developing several cancer types,

[5] Screening can detect pre-stages of cervical cancer (cervical dysplasia), which can be removed by surgery and thereby prevent the development of cancer.
[6] The WHO defines cervical cancer elimination as achieving an age-standardized incidence rate of below 4 cases per 100,000 women per year (91).

including endometrial and ovarian cancer (126). Women with Lynch syndrome have a lifetime risk of developing endometrial cancer of 42-54% and ovarian cancer of 7-12% compared to the general population with a 2.6% and 1.4% risk, respectively (127). Women who have inherited harmful genetic mutations have several options for reducing cancer risk. These include enhanced screening, risk-reducing surgery (i.e., removal of the breasts, ovaries, fallopian tubes, uterus), and taking medication that can reduce their risk (125).

Info box 7. Endometriosis and women's cancer risk

Despite the similarity in names, endometriosis and endometrial cancer are two distinct medical conditions. Both affect the endometrium (the inner layer of tissue of the uterus) but differ in nature and health implications for women. Endometriosis is an inflammatory disease that affects approximately 10% of women and is often associated with debilitating pelvic pain and infertility. Although benign, endometriosis has cancer-like features, presents with mutations similar to those found in ovarian cancer, and carries an increased risk for developing ovarian but not endometrial cancer (128).

A recent study in the US involving over 450,000 women observed that endometriosis entails a 4.2-fold increased risk for ovarian cancer. The risk was even higher, nearly 10 times, for women with deep infiltrating endometriosis and/or ovarian endometriosis (129). Though the absolute risk of ovarian cancer remains low (130), these findings highlight a subgroup of women who may benefit from targeted counselling, risk-reducing strategies, or inclusion in future screening and prevention studies.

Advancing our understanding of the biological link between endometriosis and ovarian cancer may also contribute to the development of novel molecular targets for prevention and treatment. In addition, heavy and painful periods are frequently normalized or dismissed by both patients and clinicians, often viewed as, "just part of being a woman", which can delay recognition and diagnosis of endometriosis and related menstrual disorders (131). Greater training and research focused on menstrual health are essential to improve early detection.

4.1.1 Challenges and regional disparities

The prevention of women's cancers is constrained by the availability of effective interventions and by persistent gaps in their equitable implementation. These gaps stem from a complex interplay of factors, from resource limitations and workforce shortages to policy delays and sociocultural barriers, which vary across regions. Figure 15 provides an overview of some of the most pressing prevention challenges.

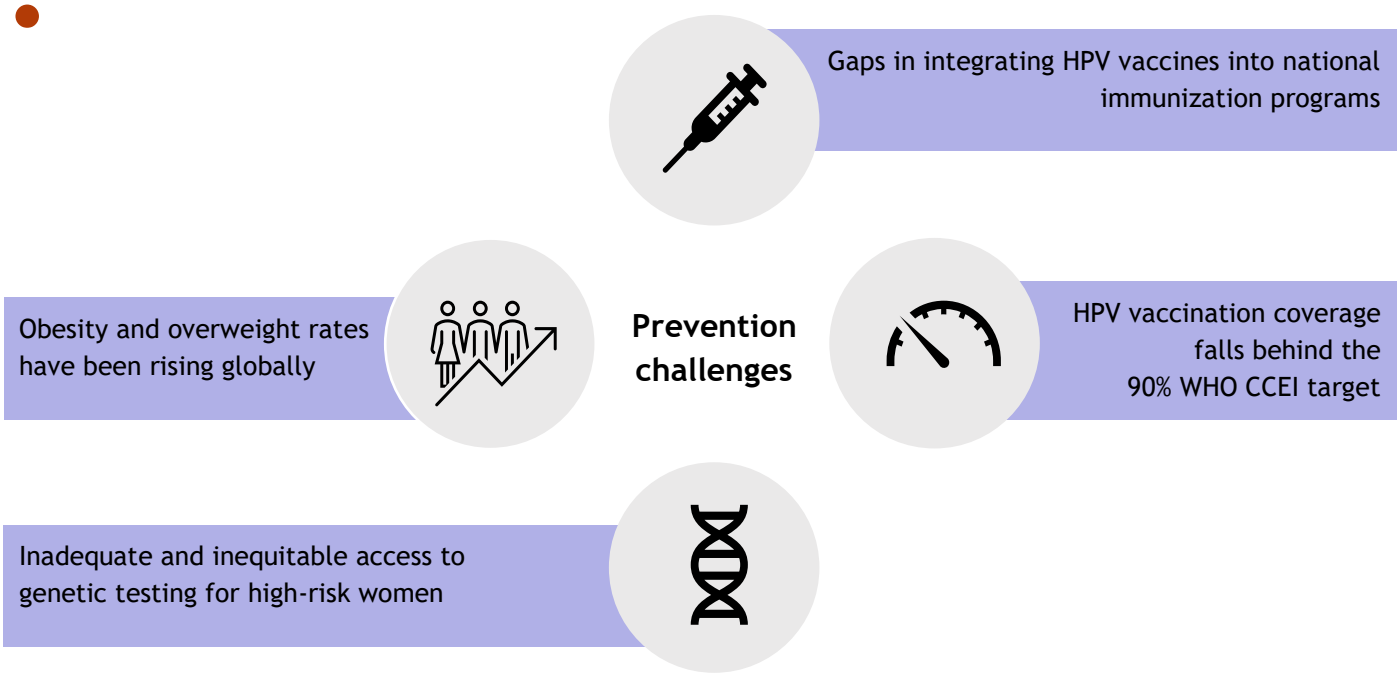


Figure 15: Prevention challenges.

Gaps in integrating HPV vaccines into national immunization programs

In 2021, 133 countries had included the HPV vaccine in their national immunization program (132). By mid-2025, that number had increased to 147, reflecting steady global progress. In addition, two countries, namely the Philippines and Moldova, have partially introduced the vaccine (133). However, 45 countries have not yet incorporated the HPV vaccine into their national immunization schedules. These countries are shown in Figure 16. In the Asia-Pacific region, several populous countries, including India, China, Pakistan, Vietnam, and Papua New Guinea, have yet to introduce the HPV vaccine nationally and make it accessible to the full population. In China, free HPV vaccination was made accessible to approximately 40 percent of girls aged 13 to 14 in 2024, according to the National Health Commission (134). The Middle East and North Africa region also includes several countries without national programs, such as Algeria, Egypt, Iraq, Lebanon, and Yemen. In Eastern Europe and Central Asia, countries such as, Russia, Belarus, and Ukraine have not fully implemented the vaccine at national scale. In sub-Saharan Africa, a significant number of countries remain without a national HPV immunization program, including Angola, Chad, Ghana, the Democratic Republic of Congo, Somalia, and Sudan, among others.

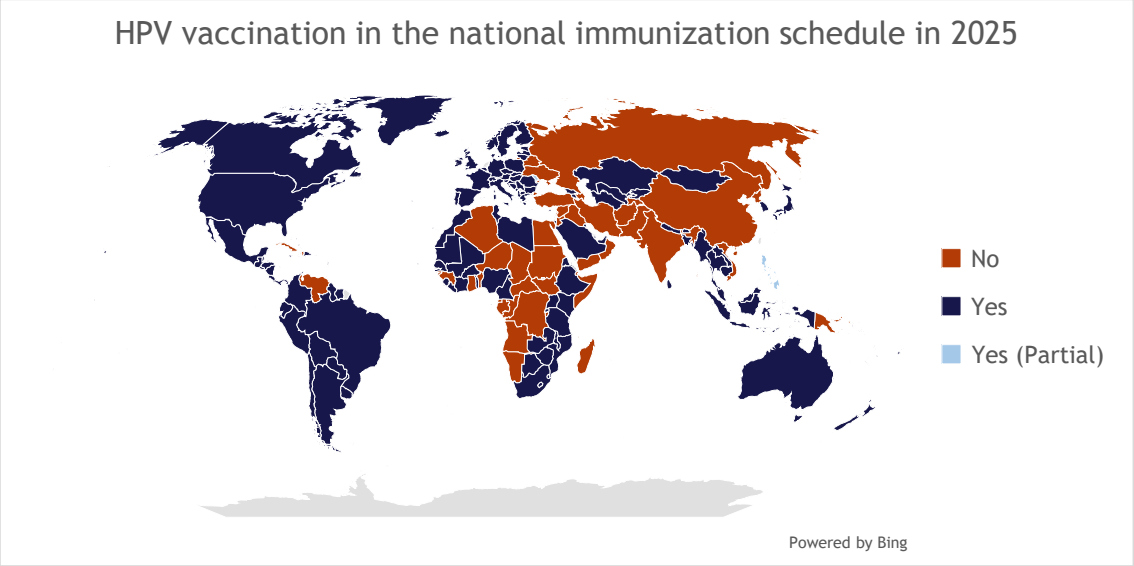


Figure 16: HPV vaccination in the national immunization schedule in 2025.
Source: WHO (133).

HPV vaccination coverage falls behind the 90% WHO CCEI target

Current HPV vaccination coverage has not yet reached the WHO's CCEI target of 90% in girls by age 15 in most countries. Globally, the share of adolescent girls receiving at least one HPV vaccine dose rose from ~20% in 2022 to 27% in 2023, a move in the right direction but still well below 90% (135). There are wide disparities between countries. In HICs, the average coverage is around 56%, with uptake at 90% or above in some countries such as Iceland, Norway, and Portugal (96). Coverage in LMICs hovers around 23% (135). Countries with some of the lowest rates are Indonesia, Thailand, and the Philippines (96). Some of the most common barriers to HPV vaccination are shown in Figure 17; see Table 9 in the Appendix for details on the most important challenges by region.

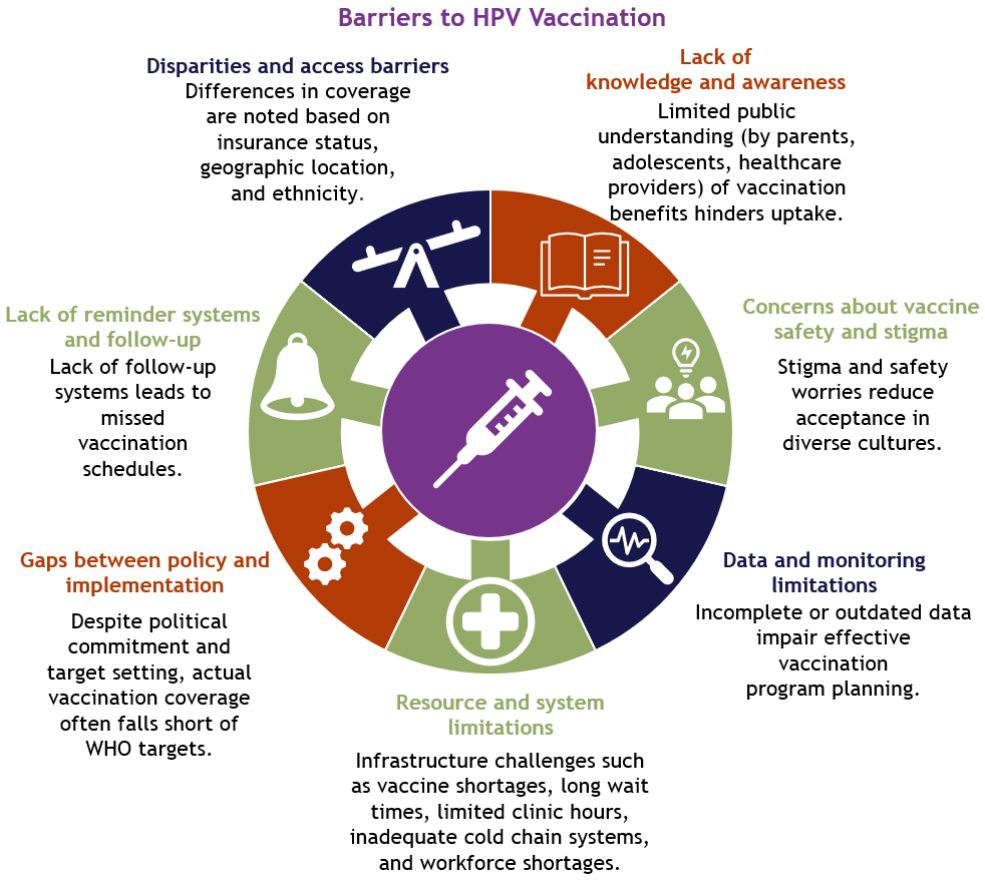


Figure 17: Barriers to HPV vaccination.

Notes: This figure is based on Table 9 in the Appendix which summarizes the main barriers by region and provides the corresponding sources. Cold chain refers to temperature-controlled supply chain that is required to safely transport and store vaccines.

HPV vaccination coverage among girls by age 15 showed considerable variation across regions in 2024, as illustrated in Figure 18. Some countries, such as Chile and Canada, have achieved high coverage with 89% and 86% for the last dose, respectively. In the Asia-Pacific region, countries such as Indonesia, Philippines and Thailand report low completion rates[7] (1% to 32%), although in the last two years Indonesia has vaccinated around 80% of 12-year-olds. In Europe, around 45–55% receive the final dose in France, Germany, and Italy, which is lower than in the US. In Latin America, vaccination rates are above 60% in some major countries. Coverage in the Middle East and North Africa is moderate, with rates of 55% reported in Israel and 37% in the UAE, and 26% in Mauritania. However, data are unavailable for many other countries in the region. In Eastern Europe and Central Asia, 37% of girls in Georgia receive the final dose, compared to 23% in Romania and 3% in Bulgaria. In sub-Saharan Africa, coverage varies with South Africa having 44% coverage for the last dose, while Nigeria and Ethiopia are at around 30%.

[7] Completion rates refer to the percentage of girls who receive all the required doses of the HPV vaccine series, not just the first dose. Most HPV vaccination schedules require two or three doses depending on age and national guidelines, so completion means finishing the full vaccination schedule.

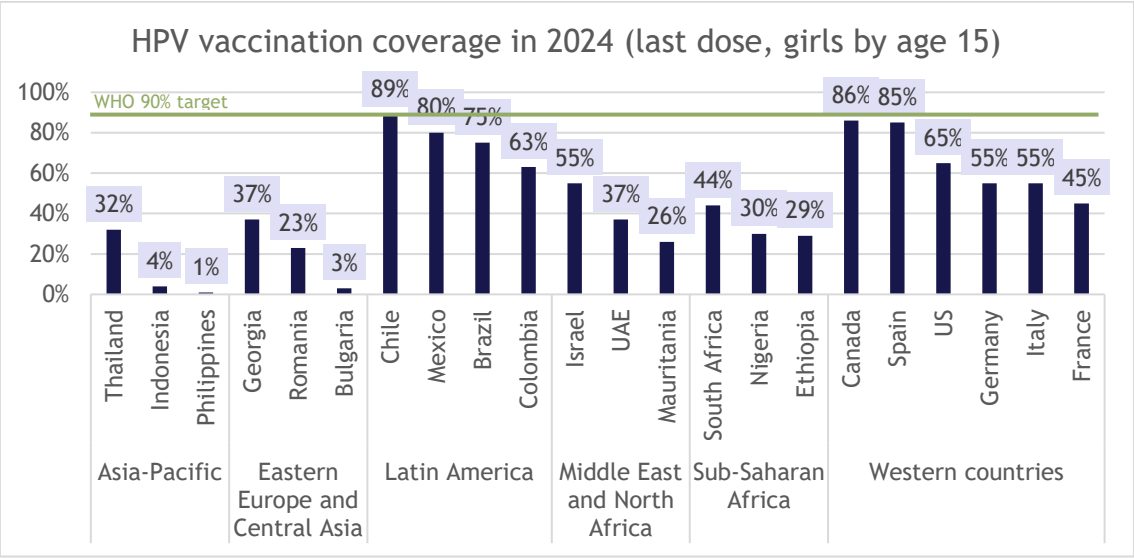


Figure 18: HPV vaccination coverage rate – last dose in girls by age 15 in 2024.

Notes: UAE = United Arab Emirates. HPV vaccination coverage by age 15 is an indicator of the proportion of girls turning 15 in the reporting year that received HPV vaccine between ages 9 to 14 at any time during previous years. This is a lagging indicator because it captures outcomes of vaccinations that occurred in previous years, reflecting long-term coverage of a cohort. Vaccination program coverage is another indicator that calculates the coverage according to girls in the program as per eligibility criteria in each calendar year. Source: WHO (96).

Inadequate and inequitable access to genetic testing for high-risk women

Genetic testing for hereditary breast and ovarian cancer is underutilized, and most mutation carriers remain unidentified (136). Traditional testing based on family history misses approximately 50% of BRCA mutation carriers (137). In the US, it is estimated that around 70% of women with breast or ovarian cancer who carry a BRCA mutation remain undiagnosed, while among those without cancer, an estimated 95% of carriers are never identified (138). Many women with mutations in BRCA1/2 or other breast and ovarian cancer susceptibility genes do not have a known family history of the disease, and therefore are not offered testing (139). This leaves a large number of women at high-risk without access to timely preventive or therapeutic interventions. In Latin America, access to genetic risk evaluation for breast and ovarian cancer is generally limited. Constraints include a shortage of trained professionals, low awareness among physicians regarding referral guidelines, and significant out-of-pocket costs (136). Similarly, in most countries in Asia-Pacific, the Middle East, and North Africa, genetic testing for cancer risk is often not covered by public or private insurance, leaving women to pay out-of-pocket if they wish to get tested (9, 140). Genetic testing remains largely unavailable or inaccessible in many sub-Saharan African countries, even for women already diagnosed with cancer (141), with virtually no access for healthy women at risk. While Western countries show strong workforce growth and training infrastructure, most of the world faces a shortage of genetic counselors, especially in sub-Saharan Africa, Latin America, and parts of Asia-Pacific and the Middle East (142). Even in Western countries, challenges remain in regulation, integration, and equitable access to genetic counseling services (142).

Obesity and overweight rates have been rising globally

Obesity and overweight are well-established risk factors for breast, ovarian, and uterine cancers (116). Among women worldwide, the prevalence of obesity increased from 8.4% in 1990 to 17.9% in 2022, and the prevalence of overweight rose from 26.6% to 43.9% over the same period (143). As shown in Figure 19, this rising trend is observed across all regions. Although Africa, South-East Asia, and the Western Pacific still report lower absolute levels, they have seen a steady and consistent rise. These trends point to a narrowing gap between HICs and LMICs, highlighting the growing importance of addressing obesity as a global public health priority.

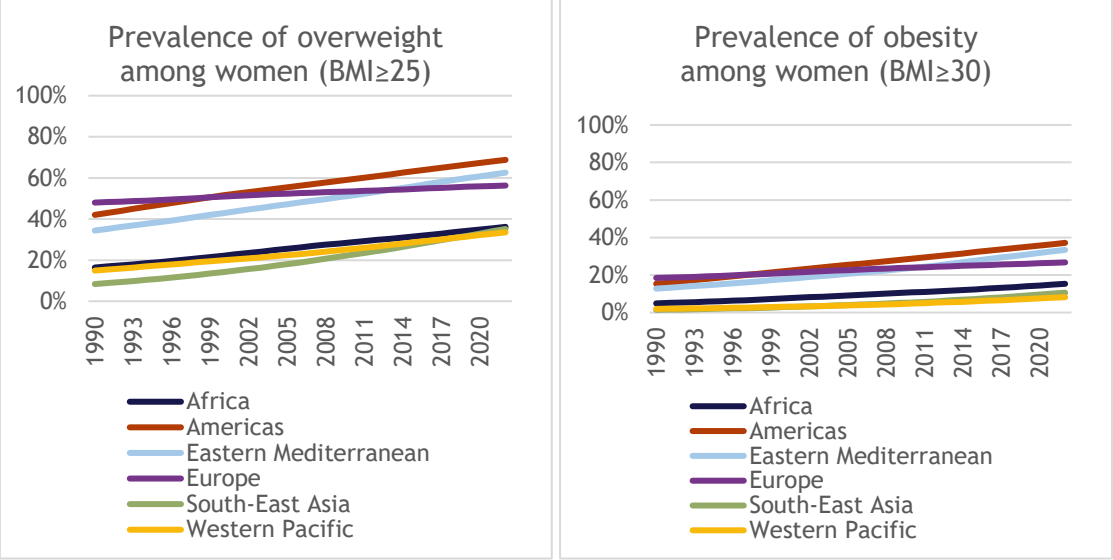
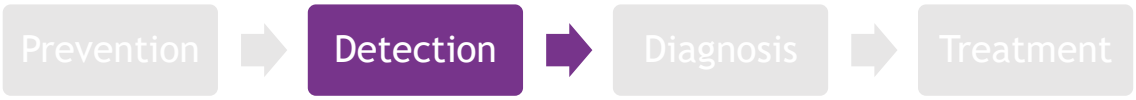


Figure 19: Prevalence of overweight and obesity among women by WHO region, 1990-2022.

Notes: BMI = body mass index, overweight is defined as BMI ≥25 and obesity as BMI ≥30. Regional classifications follow WHO definitions (144). Source: WHO (143).

4.2 Detection and screening



There are generally two ways to detect cancer; either the cancer is suspected by the person themselves based on symptoms or through screening prior to onset of any symptoms. At present, only breast and cervical cancers have effective screening methods suitable for population-based screening; see Table 4. However, screening does not detect all cases and for unscreened women, including those outside the eligible age range, early detection of signs and symptoms remains essential. A further challenge, particularly for gynecologic cancers, is that symptoms are often dismissed – either by women themselves or by physicians – as being caused by more common conditions, which can delay timely diagnosis (145, 146). For ovarian and uterine cancers, which currently lack population-based screening tools, symptom awareness and prompt diagnosis are critical. For women with Lynch syndrome, regular monitoring of the endometrium using transvaginal ultrasound or endometrial biopsy has been suggested (147).

There is no benefit of early detection if diagnosis and treatment do not follow in a timely manner or are provided at all. A major challenge, especially in LMICs, is late detection. Early

detection followed by swift diagnosis and effective treatment is crucial to ensure good outcomes, and it also entails lower treatment costs as shown in section 2.2. Therefore, cancer pathways with clear referral systems matter for outcomes, as they help to ensure that all elements are in place (available and accessible) and that there is coordination (links between service providers).

Table 4: Early detection and screening of women's cancers.

Cancer type	Most common signs and symptoms	Is there a standard population-based screening method?	WHO recommendations for general population
Breast cancer	A new lump or mass in the breast (148)	Yes, mammography (149). Depending on the country it may be organized (women are actively invited to get screened) or opportunistic (women are not formally invited) (12).	Well-resourced settings: - 50-69 years: mammography every 2 years (recommended) - 40-49 and 70-75 years: mammography every 2 years (suggested) Limited resourced settings with strong health systems: - 50-69 years: mammography every 2 years (suggested) - 40-49 and 70-75 years: mammography every 2 years (not recommended) Limited resourced settings with weak health systems: - Mammography not recommended - Clinical breast examination as an alternative
Cervical cancer	Early stages: Usually no symptoms Late stages: Abnormal vaginal bleeding, unusual discharge from the vagina, pain during sex, pain in the pelvic region (150)	Yes, HPV testing to identify high-risk infections (151). Pap smear used to be the standard method as it can detect precancerous changes that result from persistent HPV infection.	HPV DNA detection in a screen-and-treat or screen-triage-treat approach: - HPV test as primary test method - Start age: 30 years - Screening every 5 to 10 years
Ovarian cancer	Bloating, pelvic or abdominal pain, trouble eating or feeling full quickly, urinary symptoms such as urgency or frequency (152)	No, there is no proven screening method.	Not applicable
Uterine cancer	Abnormal vaginal bleeding (153)	No, there is no proven screening method.	Not applicable

Source: WHO on breast cancer screening from 2014 and cervical cancer screening from 2021 (154, 155).

An important factor influencing women's ability to benefit from early detection services and cancer services more generally is health literacy, i.e. the skills, motivation, and knowledge on how to access, understand, assess, and use health information to make informed decisions regarding one's health (156). Low health literacy is consistently associated with poorer cancer outcomes, including reduced participation in screening, lower adherence to treatment, and diminished quality of life (157, 158). These effects are particularly pronounced among women from racial minority groups, those with lower socioeconomic status, and individuals facing cultural or language barriers (159). Enhancing health literacy is therefore not only a matter of

individual empowerment, but a modifiable social determinant of health equity and societal prosperity.

4.2.1 Challenges and regional disparities

Early detection of women's cancers depends on symptom awareness and the availability of screening tools. Even where screening programs for breast and cervical cancer exist, many remain unreached due to health system gaps, financial and geographic barriers, stigma, and limited health literacy. For cancers without population-based screening, these barriers are even more critical. Figure 20 summarizes these challenges.

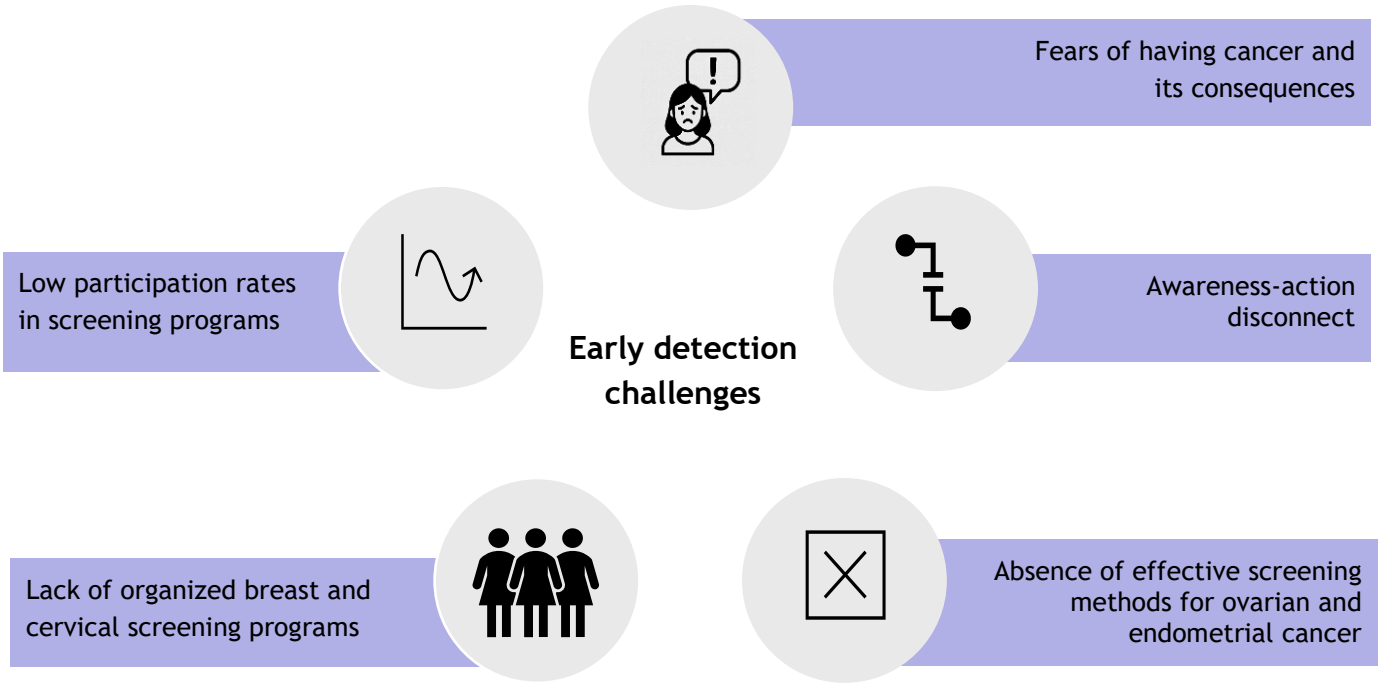


Figure 20: Early detection challenges.

Late breast cancer diagnoses

The first pillar of the WHO GBCI is about ensuring that at least 60% of invasive breast cancers are diagnosed at stage I or II, recognizing this threshold as critical for reducing breast cancer mortality (see chapter 3). While virtually all Western countries already meet or exceed this benchmark, a significant proportion of LMICs across other regions continue to fall short. In a study covering 41 countries, 40% of countries failed to reach the GBCI target, including all included sub-Saharan countries (26). As illustrated in Figure 21, there are stark differences across and within regions. South Korea stands out with 83% of breast cancer cases diagnosed at an early stage, while the Philippines only report 48% early-stage diagnoses. In Iraq, there were 32% diagnosis at stage I or II and nearly 43% of cases at stage III and 25% at stage IV, while Oman achieved almost 60% early-stage diagnoses. The situation is particularly alarming in sub-Saharan Africa – in Uganda and Zimbabwe only about 8% of patients are diagnosed at stage I or II while most patients lack information on staging. Western countries and Eastern European countries are above the GBCI benchmark and have low rates of 5-10% at stage IV. Ecuador is also above the benchmark, whereas Colombia is more representative of many Latin American countries

with only 33% early-stage diagnoses and a substantial 38% being unstaged. The absence of staging data is not simply a gap in clinical information; it reflects deeper weaknesses in diagnostic infrastructure and cancer registration systems.

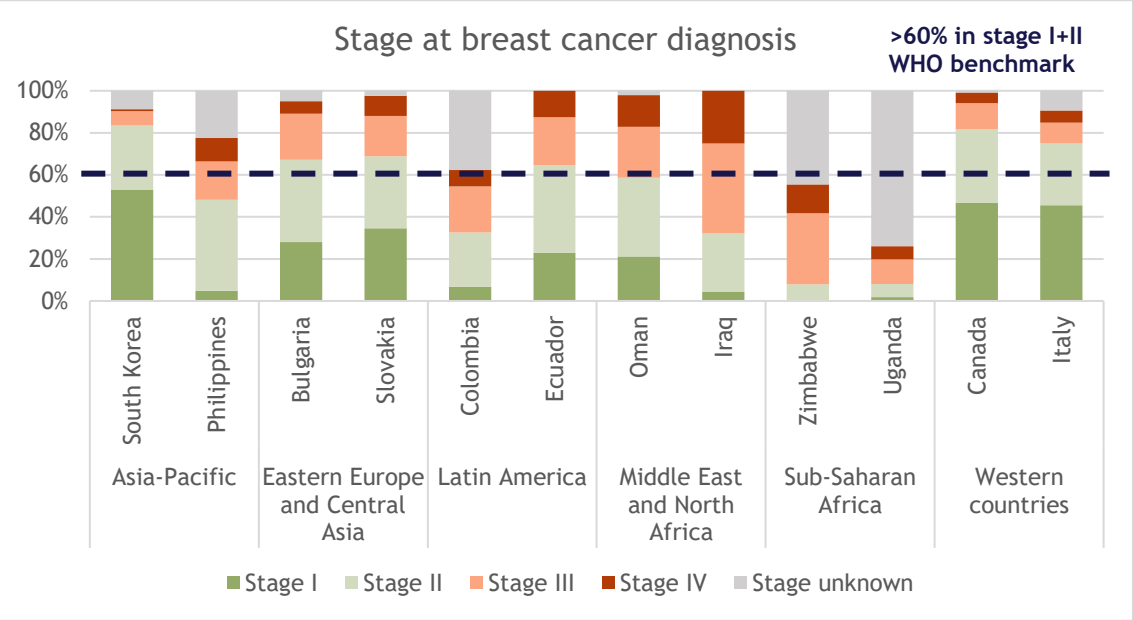


Figure 21: Stage distribution of breast cancer at diagnosis in selected countries and regions.

Notes: Data for all countries, unless otherwise specified below, were obtained from a systematic review and meta-analysis published in 2024 (26). This study included data from population-based cancer registries. Data sources were selected based on the highest population coverage, most recent calendar period, and completeness of staging information. Data for South Korea were obtained from national breast cancer statistics (160) and includes all newly diagnosed breast cancer in 2021. Data for Iraq were extracted from a study by Mutar et al. (161) and are based on a sample of 171 patients diagnosed in the National Center of Cancer in 2018.

Fear of having cancer and its consequences

Many women with suspicious symptoms avoid getting a medical check-up – hoping that the symptoms will go away on their own – due to fear of being diagnosed with cancer and the associated stigma. In the case of breast cancer, this has been documented in research from Latin America (162), sub-Saharan Africa (163), and also in Western countries such as the US (164). In the Middle East and North Africa, women dread the potential social repercussions, such as facing abandonment by their spouses or jeopardizing their daughters' marriage prospects (9). These fears are often compounded by the widespread misconception that cancer is incurable, and by anxiety surrounding the mammogram procedure itself (9). Beyond fear of cancer itself, broader emotional and social factors can influence health-seeking behavior (165). Embarrassment and discomfort related to gynecologic exams have been identified as deterrents (165). These feelings may stem from cultural norms, lack of familiarity with the procedures, or previous negative experiences with health professionals (165). The intimate nature of gynecologic exams can contribute to reluctance, particularly when symptoms are perceived to be linked to sexuality (165, 166).

Barriers to seeking medical care

Barriers to seeking medical care can arise from both health system constraints and provider-level factors. In many countries, including those in the Asia-Pacific region, Latin America, and

parts of the Middle East and North Africa, the growing demand for health services has overburdened primary care, reducing timely access for women presenting with breast cancer symptoms (9, 12). Inadequate training of primary health care workers in recognizing early signs and counseling women about breast cancer and early detection services further contributes to delays in care. For endometrial cancer, evidence from England shows that younger women are less likely to receive prompt referrals through the fast-track pathway compared to older women (167). For cervical cancer, worldwide, a range of practical, psychosocial, and cultural barriers hinder screening uptake among young women (168). These include financial constraints, lack of insurance, low awareness of where and how to access screening, and inconvenient locations or appointment systems (168). In Nigeria, additional barriers include the need for women to obtain permission from male partners or elders before seeking care and financial dependence on male partners, which can delay or prevent timely access to ovarian cancer services (141). In rural parts of Argentina, women also face barriers to accessing healthcare professionals outside their communities, imposed either by their partners or by community leaders (169). A qualitative study conducted in Canada found as a recurring theme that obese women diagnosed with endometrial cancer (with a BMI greater than 40 kg/m^2) often delayed seeking medical care (170). This hesitation was primarily due to fears of being judged or past negative encounters with healthcare professionals (170). In addition, obese women are less likely to participate in cervical cancer screening, and screening adherence declines further as obesity increases (171).

Disconnect between awareness and preventive screening behaviors

There is a gap between awareness and uptake of screening. For example, in the Middle East and North Africa, although knowledge of self-breast examination (SBE), clinical breast examination (CBE), and mammography is relatively high, it does not always translate into consistent action by women. In a study involving 2,681 women from Jordan, Lebanon, Sudan, Saudi Arabia, Palestine, and the UAE, 87% of participants were aware of SBE, yet only 72% reported practicing it regularly. Similarly, while 62% were aware of CBE and 68% knew about mammography, just 50% reported undergoing regular CBEs, and only 57% of eligible women had annual mammograms (172). The same study also highlighted that women may only go to screening when they are already experiencing symptoms, which again is a sign of a potential lack of understanding and prioritization of preventive measures. The misconception that screening is unnecessary without symptoms is an important barrier to cervical cancer screening too (173). In Nepal, a study found that although around 70% of women expressed positive attitudes toward Pap smear testing, fewer than 25% had ever undergone the procedure (174). Similarly, research conducted in China revealed that while 84% of women expressed willingness to participate in regular cervical cancer screening, nearly 40% had never received one (175). A lack of emphasis on preventive healthcare also contributes to low screening rates in several Western and East European countries (176). In Romania, a study found that 33% of women cited the absence of symptoms as the main reason for not undergoing cervical cancer screening (177). A study in Peru echoed these trends, showing that low education, limited knowledge about HPV, and time constraints related to work were key reasons why women failed to follow up and collect their Pap smear results, highlighting additional barriers that persist even after initial screening access is achieved (178).

Lack of organized breast and cervical cancer screening programs and/or free access

Many countries in Asia-Pacific, Latin America, the Middle East and North Africa, and sub-Saharan Africa lack breast cancer organized population-based screening programs (179). In other countries with breast cancer screening programs, women may need to contribute with a

copayment for accessing screening services (180, 181). As for cervical cancer screening, several Western countries have a mature organized-population based programs, such as, the UK, Nordic countries, Netherlands, Portugal, Australia, Slovenia, among others (182-184). In other countries, including France and Spain, organized screening programs have been scaled up nationally in the past decade (184). However, opportunistic cervical cancer screening is still common in many countries, including the US and several regions, such as Eastern Europe and Central Asia, Latin America, Sub-Sharan Africa and the Middle East and North Africa (183, 185-187). In settings with high HPV vaccination coverage, there is growing discussion on optimizing cervical cancer screening strategies to reflect reduced population risk (188). This may include starting screening at an older age, as in Italy, or extending intervals between tests (188, 189).

Low breast cancer screening participation

Participation rates in mammography screening remain suboptimal globally. In Europe, more than 80% of women in the target age range participated in biennial mammography screening programs in Nordic countries such as Denmark, Finland, and Sweden in 2022 (190). However, participation was much lower in several Central and Eastern European countries; in Hungary and Slovakia, around 30% of eligible women underwent screening and in Serbia only 6% (190). Similarly, in Latin America, national screening programs have reached only a modest share of the target population, with participation rates ranging from 24% to 45% across countries such as Brazil, Chile, Mexico, and Colombia (191), although more recent data show greater disparities ranging from 8-10% in Peru to over 70% in Chile (14). In Asia-Pacific, participation varies from less than 40% of the target population in Taiwan to 60-70% in South Korea, whereas in Thailand without an organized screening program only 4-6% of women had a mammography (11). In the Middle East and North Africa, participation rates in mammography screening are generally low at 10-30% in Algeria, Jordan, Saudi Arabia, and Türkiye, whereas Egypt achieved around 57% participation in its presidential Women's Health Initiative in 2019-2021 (9). The persistently low uptake in many regions is driven by a complex interplay of factors, including inadequate health infrastructure, and insufficient engagement or encouragement from healthcare professionals and systems, limited health literacy, socioeconomic barriers, and cultural attitudes toward cancer prevention (192, 193).

Participation in cervical cancer screening remains low

Worldwide, 64% of women aged 30 to 49 had never been screened for cervical cancer by 2019 (185). Regional disparities were particularly stark. In Northern Africa and the Middle East, between 85% and 91% of women in this age group had never undergone screening (185). The figure was similarly high in sub-Saharan Africa at 85%, and around 68% in parts of the Asia-Pacific region[8]. In contrast, lower proportions were observed in Latin America (26%), Eastern Europe (15%), and Western countries, where the proportion ranged from 4% to 11%. These figures are far from the WHO's CCEI target of at least 70% of women being screened by age 35 and again at age 45; see chapter 3. Barriers to traditional screening models, including logistical challenges such as the need for clinic-based exams (e.g., Pap smears), stigma, shortage of trained providers, and high costs continue to limit coverage, especially among underserved populations (173, 185).

[8] Parts in Asia-Pacific region here refer specifically to Eastern Asia and South-Eastern Asia, where, by 2019, 64% and 77% of women aged 30 to 49, respectively, had never having been screened for cervical cancer in their lifetime (185).

Expert insights: "We don't have a cancer problem; we have a care problem."

One interviewed expert noted that many women never reach the cancer center, not because they lack symptoms, but because they are unable to seek help. "We do not have a cancer problem; we have a care problem." According to the expert, the real barriers are not just clinical, but structural and social: stigma, low health literacy, financial hardship, and the burden of caregiving often prevent women from prioritizing their own health.

Geographic inequalities deepen these challenges. Another interviewed expert highlighted that in India, Nepal and Bangladesh, over 40% of women with ovarian cancer had to travel more than five hours to reach care. Without financial or logistical support, this burden delays diagnosis or deters it altogether. As the expert cautioned, "centralization [of care] must come with system integration, otherwise, we are building walls, not pathways."

Even in HICs, access is not guaranteed. In Australia, rural and remote areas rely on mobile screening units that only return every two years. "If a woman misses one visit, she might not be screened for four years," an interviewed expert explained. First Nations women and those from culturally and linguistically diverse communities also face delayed help-seeking due to cultural disconnection, health literacy gaps, and structural limitations. National screening rates have stagnated, and even women at high genetic risk must often pay privately for early detection.

One interviewed expert working on HPV elimination pointed out that nearly 1 million migrant women in the Netherlands are not included in the national cervical screening program because they are not officially registered. As a result, "these women often present with advanced-stage disease," the expert explained. "We are designing systems for the registered, not the real."

4.3 Diagnosis

The diagnosis of breast and gynecologic cancers involves a combination of physical examination, imaging, tissue sampling, and laboratory testing. The time to diagnosis is crucial, as delays can postpone treatment initiation and worsen outcomes. For example, a meta-analysis found that delays in initiating breast cancer treatment significantly worsen survival. Breast cancer-specific mortality increased by up to 20–71% depending on the duration of the delay (4, 8, 12 weeks) (194).

For breast cancer, the diagnostic process typically starts with a clinical breast exam by a nurse, a primary care physician, or a gynecologist. Afterwards imaging of the breast, most often through mammography, but sometimes combined with ultrasound or MRI, is conducted (195). If a suspicious area is found on the image, a core needle biopsy is performed to remove a tissue sample for histopathological examination, which confirms whether cancer is present. Further biomarker testing is done to determine hormone receptor status (estrogen and progesterone receptors) and HER2 status, which are crucial to classify the cancer subtype and guide treatment (196).

For gynecologic cancers, the diagnostic process depends on the type but usually starts with a pelvic examination by a gynecologist. Cervical cancer is often detected through a Pap smear if

an initial HPV test has shown positive results. If abnormalities are found, a colposcopy (visual examination) and biopsy are performed (197, 198). Endometrial (uterine) cancer is usually assessed with transvaginal ultrasound, followed by a biopsy to confirm diagnosis (199). Ovarian cancer is more difficult to detect early. It is typically evaluated through CA125 blood test, transvaginal ultrasound, CT and/or MRI, with biopsy confirming diagnosis if needed (200). In advanced cases of all gynecologic cancers and breast cancer, CT, PET, or MRI scans are used to assess disease spread across the body.

Biomarker testing plays an increasingly important role in all women's cancers, especially in advanced cases. Pathologists perform tests to assess, e.g., HER2 expression, BRCA mutations, homologous recombination deficiency (HRD), mismatch repair deficiency (dMMR), or PD-L1 expression, to help guide personalized treatment options, such as targeted therapies or immunotherapies. Next-generation sequencing (NGS)-based panels that can detect multiple mutations simultaneously are increasingly recommended, such as by the European Society for Medical Oncology (ESMO) for advanced ovarian cancer (since 2020) and advanced breast cancer (since 2024) (201). In recurrent advanced breast cancer, a new biopsy and re-assessment of biomarkers is recommended, as significant differences can exist between the primary tumor and the recurrent disease, such as a change from one subtype to another (202, 203). Table 10 in the Appendix summarizes the key molecular classifications, biomarker tests, and diagnostic approaches across breast and gynecologic cancers.

4.3.1 Challenges and regional disparities

Accurate and timely cancer diagnosis relies on both the availability of essential technologies and the systems that enable women to access them. Yet across regions, shortages of specialists, limited pathology and biomarker testing capacity, incomplete diagnostic data, and fragmented reimbursement policies delay confirmation of disease and its key characteristics. These gaps postpone treatment and undermine its effectiveness, particularly for cancers where therapy choices depend on precise molecular profiling. Figure 22 summarizes these diagnostic challenges.

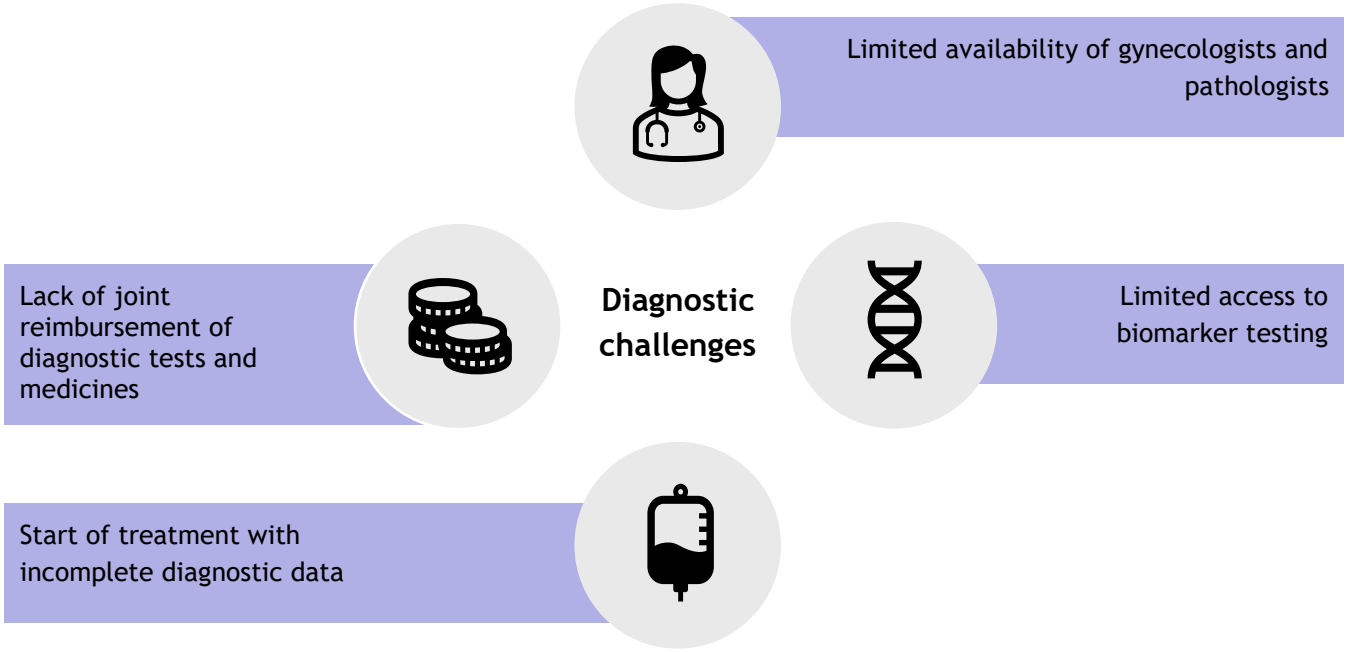


Figure 22: Diagnostic challenges.

Limited availability of gynecologists

A shortage of gynecologists can result in extended wait times for appointments, leading to delays in diagnosis. According to OECD data from 2023, the average number of gynecologists and obstetricians was 17 per 100,000 population (204). While many Western countries reported some of the highest levels of availability, several—including Finland, Canada and Ireland had fewer than 10 per 100,000 (204). In Latin America, Colombia and Chile reported 8 and 13 per 100,000, respectively. In the Middle East and North Africa, Türkiye had 12 per 100,000. In Eastern Europe, availability was close to or above the average, with Bulgaria at 28 and Romania at 16 per 100,000. In Asia-Pacific, South Korea, reported 13 per 100,000 and Australia fewer than 10 per 100,000. The situation is much worse in sub-Saharan Africa, where a severe shortage of health care workers, including gynecologists, has been widely documented (205, 206).

Limited availability of pathologists

Pathologists are essential for confirming whether a tumor is malignant and determining key characteristics needed to guide treatment. When pathology services are delayed, treatment initiation is also delayed, potentially allowing cancer to progress to a more advanced stage. Many countries face shortages of pathologists (207). In the UK, a 2018 workforce census revealed that only 3% of pathology departments considered themselves adequately staffed, while 78% reported unfilled consultant positions (207). Similar concerns exist in other HICs, where staffing gaps are straining diagnostic capacity and a substantial proportion of the pathology workforce is nearing retirement (207). In LMICs, the situation is even more critical. Experts have highlighted that in parts of sub-Saharan Africa, a handful of pathologists are expected to serve populations of millions, often with even fewer professionals available in the public sector. For example, in South Africa, important disparities exist between the public and private sectors, with the public sector experiencing a notable shortage of pathologists (9). In Latin America, several countries face similarly shortages. In Colombia, for instance, there are only around 500 general pathologists available to serve a population of 51 million people (208). In Peru, although the absolute number of pathologists is relatively sufficient, they are heavily concentrated in the capital, Lima, leaving large segments of the population without timely access to diagnostic services (209). The Middle East and North Africa region also struggles with both general and specialized workforce gaps (9). Countries such as Algeria report shortages not only in general pathology but also in subspecialties such as breast pathology (9). Similar challenges have been reported in Israel, Morocco, and Saudi Arabia (9). In Eastern Europe, there is a dual challenge. Taking Romania as a case in point, the country faces both a shortage of pathologists and an outdated training system (210).

Limited access to biomarker testing

For gynecologic cancers, limited availability and uptake of biomarker testing, especially NGS technology, are key barriers to accessing newer cancer medicines in many parts of Europe, particularly in Central and Eastern European countries (211). A study conducted in 44 HICs in 2018 found that just over half (51%) of women diagnosed with ovarian cancer underwent genetic testing after diagnosis (212). However, the study revealed substantial international variation, with testing rates ranging from as low as 5% in Japan to 79% in the US. Experts interviewed for this report highlighted that genetic testing for breast and ovarian cancers is highly limited in LMICs, with post-diagnosis testing estimated at around 15% for ovarian cancer. In several LMICs, the necessary infrastructure for genetic testing for ovarian cancer is lacking, requiring samples to be sent abroad for analysis, as is the case of countries in sub-Saharan Africa (141).

Starting treatment with incomplete diagnostic data

In breast cancer management, treatment decisions crucially rely on tumor biomarkers to guide both the choice of therapeutic agents and the timing of treatment. Current protocols recommend treatment with medicines before surgery (neoadjuvant therapy) for the subtypes HER2-positive and TNBC in certain cases. Yet real-world evidence shows that many patients may be sent straight to surgery before full assessment of essential biomarkers. A case series of 1,218 breast cancer patients diagnosed in 2006-2012 at a public hospital in South Africa reported missing ER, PR, and HER2 results in 10–15% of cases (213). Similarly, a 2023 population-based study from the US found that 4.7% of invasive breast cancers lacked complete receptor information at diagnosis, with the likelihood of missing data being higher among African American, among older patients, and among those with advanced disease or living in rural areas (214). Comparable challenges were observed in a Moroccan study, which found that receptor status was frequently incomplete at the start of treatment. Specifically, between 78% and 91% of patients had available information on ER and PR status, while HER2 results were accessible for only 70% to 86% of cases (215). In Eastern Europe, data from Bulgaria's national cancer registry in 2012-2013 showed that only ~61.7% of breast cancer cases in 2012–2013 had complete ER, PR, and HER2 information recorded (216). Unpublished market research from 2021 further indicated that in countries like France and the US, approximately 20–25% of patients with non-metastatic TNBC were taken directly to surgery without full assessment of their ER, PR, and HER2 status (10). In Latin America, although a complete biomarker assessment is part of standard practice, delays in test processing can mean that surgery is performed before results are available (14). In Malaysia, full HR and HER2 assessments are not routinely performed on biopsy samples, and clinicians report that these tests often need to be specifically requested, with patients referred from district hospitals frequently arriving without receptor status information (217).

Expert insights: Diagnostic gaps and unaffordable basic services

In Zambia, diagnostic bottlenecks undermine cancer care long before treatment can even start, a local expert explained. "We send biopsies to India, if the family can afford it," referring to molecular and immunohistochemistry tests that are unavailable in public laboratories locally.

Only 27 pathologists serve the entire population of 21 million people in Zambia, with 15 pathologists working in the public sector. All are concentrated in five of the country's ten provinces, leaving large regions without access to pathology services. While public hospitals can perform basic histology, advanced tests must be outsourced to private labs abroad. This leads to delays, out-of-pocket expenses, or treatment decisions made without biomarker confirmation.

Similarly, in Mozambique, the absence of affordable diagnostic procedures for breast cancer patients is equally detrimental. One interviewed expert recalled how something as simple as a core biopsy needle, essential for breast cancer diagnosis, can cost as much as a month's salary. Without the biopsy being covered by health insurance, diagnosis is delayed or skipped altogether.

Lack of joint reimbursement of diagnostic tests and medicines

A common, yet paradoxical challenge across regions is that a biomarker test required for the administration of a targeted therapy (called a companion diagnostic) is not reimbursed by the healthcare payer even though the medicine is reimbursed. Although the price of newer

medicines usually far outnumbers the price of biomarker tests, modern tests such as NGS panels can cost more than USD 1,000, which represents a financial barrier for most patients (211). According to a 2023 OECD survey with 28 countries, fewer than half reported automatic reimbursement of companion diagnostics alongside the corresponding medicine (218). This included Western countries and HICs from Asia-Pacific, such as Australia, Germany, and Ireland, whereas others such as Canada, France, and Spain and require separate or regional-level decisions, delaying or limiting access. In Eastern Europe, Bulgaria did not report automatic reimbursement. Mexico, the only Latin American country included in the survey, also reported no automatic reimbursement for companion diagnostics. Targeted medicines are only cost-effective if administered in case where the biomarker is present, and not evaluating the biomarker leads to higher costs through misuse of the medicine.

4.4 Treatment

The treatment of breast and gynecologic cancers should be tailored to each patient, depending on the cancer type, stage, and molecular subtype. The goal is to deliver the most effective and personalized care while preserving quality of life. Treatment typically involves one or more of the following: surgery, radiation therapy, and cancer medicines (systemic therapy). Treatment decisions should be made by a multidisciplinary team (MDT) of at least a medical/clinical oncologist, radiation oncologist, surgeon, radiologist, pathologist, and nurse to ensure the most appropriate care for each patient.

Surgery is often the first step when the cancer is localized. In breast cancer, common procedures include breast-conserving surgery (partial removal of the breast) or mastectomy (full removal of the breast) depending on the tumor size and location, and management of the axilla (219). In gynecologic cancers, surgery may involve hysterectomy (removal of the uterus and cervix) and, when needed, bilateral salpingo-oophorectomy (removal of both ovaries and fallopian tubes) (220). In advanced ovarian cancer, debulking surgery plays a critical role and aims to remove as much of the tumor mass as possible, including affected reproductive organs and, when necessary, portions of surrounding tissues or other organs (221).

Radiation therapy uses high-energy beams to destroy cancer cells and is often delivered by a radiation oncologist. In breast cancer, it is commonly used after breast-conserving surgery to eliminate any remaining cancer cells and thereby reduce recurrence risk (222). In gynecologic cancers, radiation is also often used after surgery or as the main treatment if surgery is not possible (223-225). Less commonly, it is used before surgery to shrink tumors and make them easier to remove. It can be delivered as external beam radiation or internal radiation (brachytherapy), with the latter often being used in gynecologic cancers (222-225).

Cancer medicines are the most rapidly evolving field in the treatment of women's cancers, with four major medicine classes being used; see Figure 23 for the accelerated trend in approvals since 1995 in Europe, where the number of newly approved medicine-indications for women's cancers was three times higher in the period 2020-2024 compared to twenty years earlier in 2000-2004. Chemotherapy plays a central role in all women's cancers (223-225), although it is increasingly combined or replaced by other medicine classes in certain settings. Hormonal therapy (also called endocrine therapy) has been used in hormone receptor-positive breast cancer since the late 1970s (219), and it is also used in some cases of endometrial and

ovarian cancers (223, 224). Targeted therapies started being used in breast cancer at the turn of the millennium with the first HER2-targeted agent for HER2-positive cases (219), whereas targeted therapies for gynecologic cancers such as PARP inhibitors for BRCA mutations have been launched more recently (223-225). Immunotherapies have mostly come into use since 2020 for TNBC and cervical and endometrial cancer (219, 223, 225). Certain targeted therapies and immunotherapies have seen their use expand from treating advanced cases to early-stage cases; see Figure 23. Cancer medicines in early-stage cases are either used before surgery to shrink tumors or after surgery to reduce the risk of recurrence (or both), while they are the main treatment option for advanced or recurrent inoperable tumors.

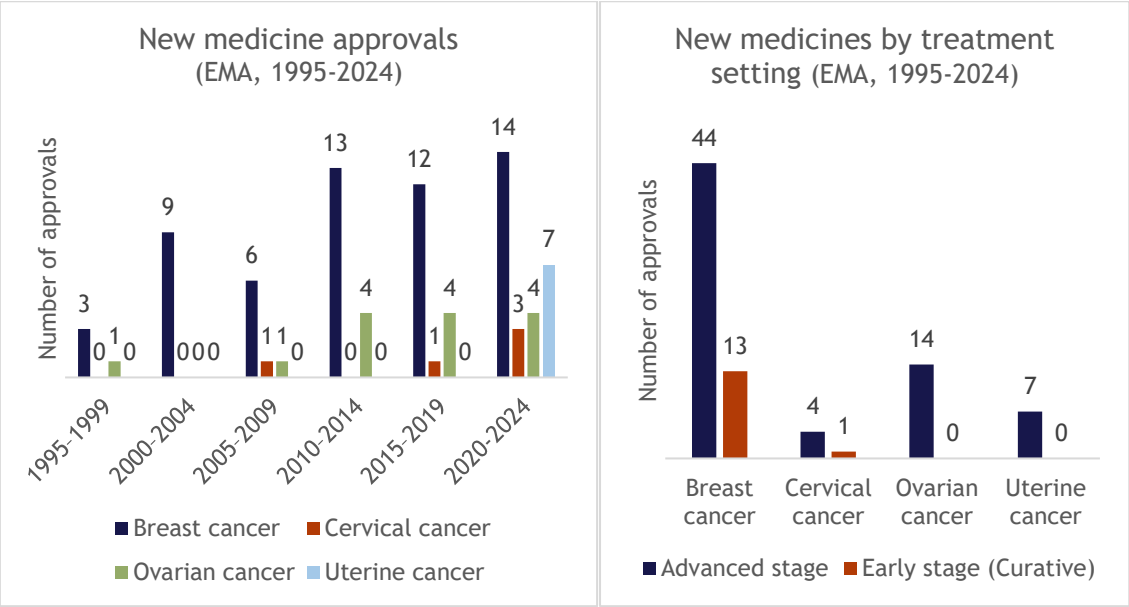


Figure 23: Approvals of new medicine-indications for women's cancers by the European Medicines Agency, 1995-2024.

Notes: The number of approved indications is shown. A medicine can receive multiple indications over time as new areas of use are discovered. Source: own analysis based on data from EMA (226).

As described in section 2.3, each cancer treatment can have significant effects on a woman's quality of life and long-term health, including her ability to have children after treatment. Fertility preservation is particularly important for women of reproductive age, especially in early-onset cases of breast and gynecologic cancers. The impact on fertility varies by cancer type, stage, age, tumor biology, and the treatment plan. For instance, chemotherapy in breast cancer can damage the ovaries, potentially causing temporary or permanent infertility (227). In gynecologic cancers, surgery involves removing reproductive organs, and both chemotherapy and radiation can impair ovarian or uterine function even when organs are preserved (65). Given these risks, clinical guidelines strongly recommend discussing fertility-sparing options before the start of any treatment, so patients can make informed decisions (228, 229).

4.4.1 Challenges and regional disparities

Ensuring optimal treatment for women's cancers is a complex endeavor, requiring coordination across specialties, timely delivery of appropriate therapies, and systems that can support patients throughout their care. In reality, these conditions are not equally met across regions, and disparities in capacity, organization, and policy often limit the reach and effectiveness of treatment. Figure 24 provides a snapshot of the most significant challenges.

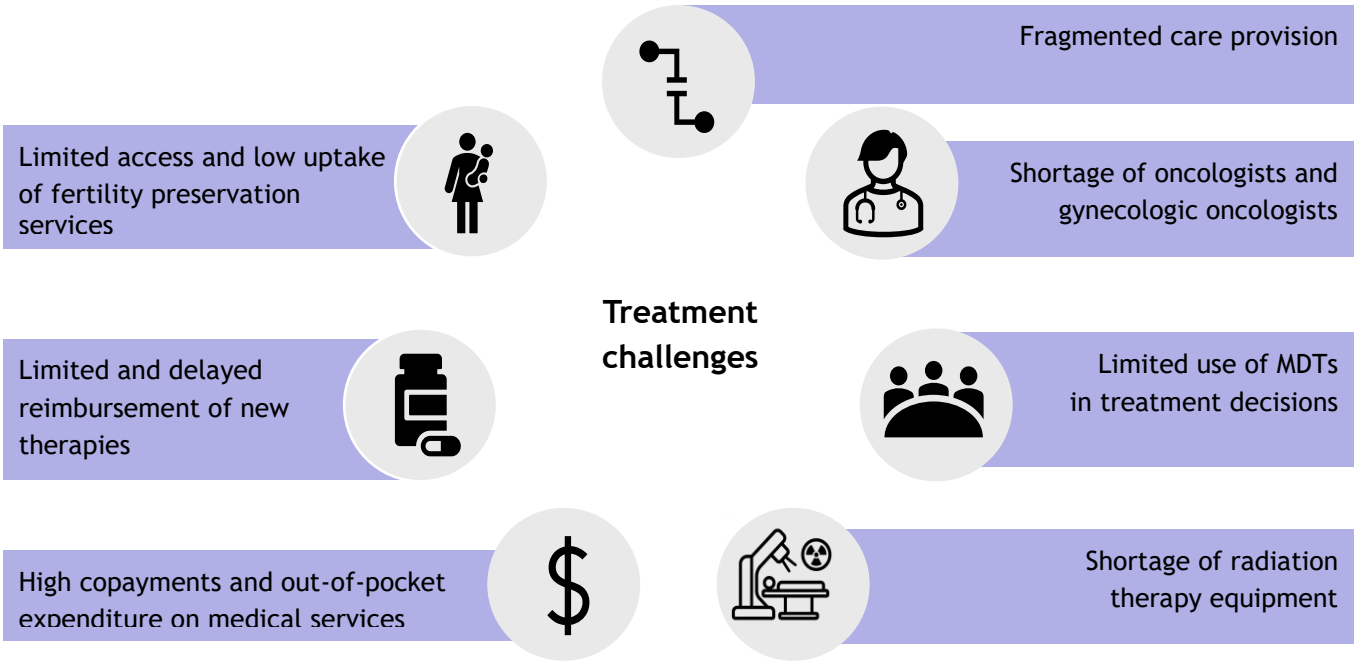


Figure 24: Treatment challenges.

Expert insights: The importance of specialized treatment facilities

Specialized care should not be seen as luxury, it saves lives. One interviewed expert emphasized the difference that certified breast units with high patient volume and experienced healthcare professionals can make in breast cancer: "If a woman is operated on by a breast surgeon who performs more than 50 surgeries per year, compared to less than that, there is a 10% difference in mortality. It is extremely rare to have a new medicine that provides a 10% difference in mortality."

This evidence has informed policies in several HICs. In Germany, the health authorities mandate since 2021 a minimum number of 100 breast surgeries per year and hospital clinic for clinics to be allowed to perform such surgeries (230). In Italy, public reimbursement of clinics for breast surgeries is linked to minimum case volume (150 cases/year), making it financially unsustainable for low-volume centers to operate, according to one interviewed expert. These models ensure that women receive care from trained, experienced teams in properly equipped facilities.

The situation is different in LMICs. One expert noted that many patients simply go to the first provider they are referred to, without knowing whether the quality of care provided there meets adequate standards.

Fragmented care provision

Fragmented care refers to situations in which patients must navigate multiple uncoordinated facilities or providers to receive cancer services (physical examinations, imaging, biopsy, surgery, chemotherapy, radiation therapy, etc.), often leading to gaps or delays in the care continuum. Fragmentation is a major barrier to timely and equitable cancer care in Latin America, Middle East and North Africa, sub-Saharan Africa, Eastern Europe, and parts of Asia-Pacific, especially in lower-income settings (231-234). In contrast, Western countries and some

high-income Asia-Pacific countries, such as South Korea, Japan and Singapore demonstrate highly integrated models (234). Fragmentation of care has a link with poorer survival outcomes for breast cancer and there is some evidence, though mixed, of a similar link for gynecologic cancers (232, 235, 236). Fragmentation in general contributes to treatment delays, poor coordination, higher costs and worse patient experiences (237, 238).

Shortage of oncologists and gynecologic oncologists

The supply of oncologists often falls short of meeting the growing number of cancer patients (239). Severe shortages are most pronounced in sub-Saharan Africa, where many countries, such as Burundi, Chad, and Ethiopia, have either no clinical oncologists or extremely high patient loads per oncologist (239). Asia-Pacific countries such as India and the Philippines also face significant shortages, with some oncologists managing over 1,000 new cancer cases annually (239). While Eastern Europe, Latin America, and the Middle East generally fare better, countries such as Serbia, Chile, Panama, and Morocco report oncologist shortages that may delay treatment. Even in Western countries such as the UK, notable shortages exist, and the US previously anticipated a shortfall of over 2,300 oncologists by 2025 (239). These gaps are often more acute in rural areas, where oncologists are less likely to practice, increasing the risk that cancer patients may be treated by non-specialists or experience long waiting times. For women with gynecologic cancers, access to gynecologic oncologists rather than general gynecologists is important, as the former generally are found to provide better treatment resulting in higher survival outcomes, yet shortages limit access even across Western countries (13). In LMICs access to gynecologic oncologists varies widely across and within regions (141). In many settings, the absence of formal subspecialty recognition hinders workforce development and standardization of care (240). In Latin America, access is constrained – countries such as Nicaragua and Guatemala lack formal training programs altogether, and gynecologic cancer care is often delivered by general gynecologists or surgical oncologists without dedicated subspecialty training (240). In Eastern Europe, similar challenges persist, for example, Bulgaria does not recognize gynecologic oncology as a distinct subspecialty, and gynecologists are typically trained through general oncology programs (240). In sub-Saharan Africa, most training programs were established only recently, often after 2012, and countries rely heavily on international collaborations to support the education of a limited number of specialists (240).

Limited use of multidisciplinary teams (MDTs) in treatment decisions

MDTs meetings are key to determining the most appropriate treatment plans but are still unevenly conducted in some countries and clinical settings. In Latin America, a large study based on 2010 data found that only 25% of researchers from countries such as Argentina, Brazil, Chile, and Peru reported that MDT participation was a mandatory component of breast cancer care (241). More recent studies have reinforced this finding, identifying the limited implementation of MDTs as a major barrier to effectively treating locally advanced breast cancer in the regio*n* (242). Notably, patients receiving care in the private sector appear to have better access to MDT-based treatment decisions. In Asia-Pacific, the same study revealed that in countries such as, China, Malaysia, the Philippines, and Thailand, only 30% of respondents indicated that MDT participation was mandatory (241). In the Middle East and Africa, the adoption of MDTs is uneven. For example, in Egypt, the importance of MDT meetings is increasingly recognized. However, their widespread implementation is still limited by technical and financial constraints (243).

Shortage of radiation therapy equipment

Radiation therapy is essential for more than half of all cancer patients, yet 36 countries, primarily located in sub-Saharan Africa and parts of Asia-Pacific, still lack access to linear accelerators (LINACs), the core technology used in modern radiation treatment (244). In HICs, the median number of LINACs is 36 per country, compared with just one in LMICs (244). This disparity creates a severe capacity gap, low-income countries serve a median of 6,856 patients per LINAC each year, compared with just 432 patients per LINAC in HICs (244). Interviewed experts noted that in Zambia, radiation therapy machines have been non-functional for nearly three years, forcing patients to seek treatment abroad if they can afford it (245), and experts noted that the government has set up a short-term mechanism through a monthly ad hoc committee to approve a limited number of patients for treatment abroad. In Mozambique, the first LINAC was installed in 2019 (246), but it is frequently out of service, according to interviewed experts. These examples show that even when equipment is available, maintenance and reliability remain major barriers to consistent care delivery.

High copayments and out-of-pocket expenditure on medical services

High out-of-pocket costs due to lack of insurance coverage of services and uncapped copayments for services limit access to care, particularly for economically disadvantaged patients. This financial burden can cause significant distress and lead to treatment delays, modifications, nonadherence, and discontinuation (247). A recent study across 126 countries revealed that patients in most HICs can access cancer medicines without significant out-of-pocket expenditure, including novel treatments (248). Conversely, for LMICs the study found that 40% of traditional chemotherapies on the WHO Essential Medicines List are only available at full cost to patients. Across Asia-Pacific, copayments for medicines can impose a significant burden on patients, including in HICs without caps such as in South Korea (11). In Latin America, long waiting times in the public sector and/or non-coverage of services for breast cancer, e.g., for imaging in Argentina or diagnostic tests in Brazil and Mexico, compel women to rely on services in the private sector with the risk of high out-of-pocket expenditure (14). Out-of-pocket payments vary across the Middle East and North Africa as citizens in wealthier Gulf states (e.g., Saudi Arabia, UAE, Qatar) receive free or subsidized care, but patients in LMICs frequently face high treatment expenses (9). Similarly, out-of-pocket costs represent one of the most severe access barriers in sub-Saharan Africa. A study in Nigeria found that over 70% of breast cancer patients experienced catastrophic health expenditures (249). In contrast, Western countries generally offer the strongest financial protection against cancer-related costs, as cancer care is predominantly funded through government programs or mandatory insurance schemes (250). As a result, patients typically face little to no out-of-pocket spending for treatment services, with the exception of the US, where significant copayments and deductibles remain common despite insurance coverage (250). Nevertheless, even in Western countries, some services such as palliative care are structurally excluded or very limited paid by health insurances.

Limited and delayed reimbursement of new therapies

The regulatory approval of new cancer medicines (e.g., by the FDA in the US and the EMA in the EU) is only the first step in securing access to patients. Reimbursement by public payers after regulatory approval is generally limited and delayed by several years in most countries. In Latin America, patients wait an average of 4.7 years after international approval before medicines are available in public systems, and only 35% of new cancer medicines since 2014 have achieved any type of public reimbursement until 2024 (251). In the Middle East and Africa,

the proportion of reimbursement of US FDA-approved medicines (approved in 2017-2020) at the end of 2020 was between 24% and 43% in the Gulf countries, but no such medicines were reimbursed in Algeria, Egypt, and Morocco (252). Reimbursement of new medicines in Asia-Pacific shows a clear difference between HICs and LMICs, with comparatively high proportions of internationally approved medicines being reimbursed within 1-2 years in HICs and China, but very limited reimbursement elsewhere (253). In Western and Eastern Europe, the average time from EMA approval to reimbursement exceeds one year in most countries, but the proportion of medicines reimbursed is generally much lower in Eastern Europe and also in Türkiye (254). sub-Saharan Africa experiences the greatest challenges, as most novel treatments are never reimbursed. A study in Kenya, Rwanda, and Uganda found that newer targeted treatments were not affordable for universal health coverage funding (255).

Limited access and low uptake of fertility preservation services

Low uptake of fertility preservation has been reported across both low- and high-income countries, suggesting persistent barriers to access and implementation on a global scale (256). In countries from Asia-Pacific, Latin America, Middle East and Africa and sub-Saharan Africa assistive reproductive technology services are primarily geared toward overcoming infertility rather than dedicated oncofertility programs (256). In HICs, including the Nordic countries and the US, fertility preservation options such as egg or embryo freezing are often available for cancer patients and, in some cases, covered by national insurance. Despite this, utilization rates remain low (256). One key barrier is the timing of discussions: the initial oncology visit is frequently overwhelming, with patients facing a flood of information and urgent treatment decisions, making it difficult to act on fertility-related options (256). Studies show that fertility preservation is not consistently discussed; among women with breast and gynecologic cancers, reported rates of such conversations vary widely, from just 21% in ovarian cancer cases to 71% in breast cancer (257), indicating missed opportunities even in well-resourced health systems.

5. Opportunities for innovation and best practices

Women's cancers are being reshaped by innovation, not only through new technologies, but also through smarter delivery models, locally adapted solutions, and more. This chapter highlights how innovation can translate into progress across the cancer care continuum. Some of these innovations are high-tech and system-level, while others are practical and context-specific, showing that meaningful change does not always require large-scale transformation; see Figure 25.

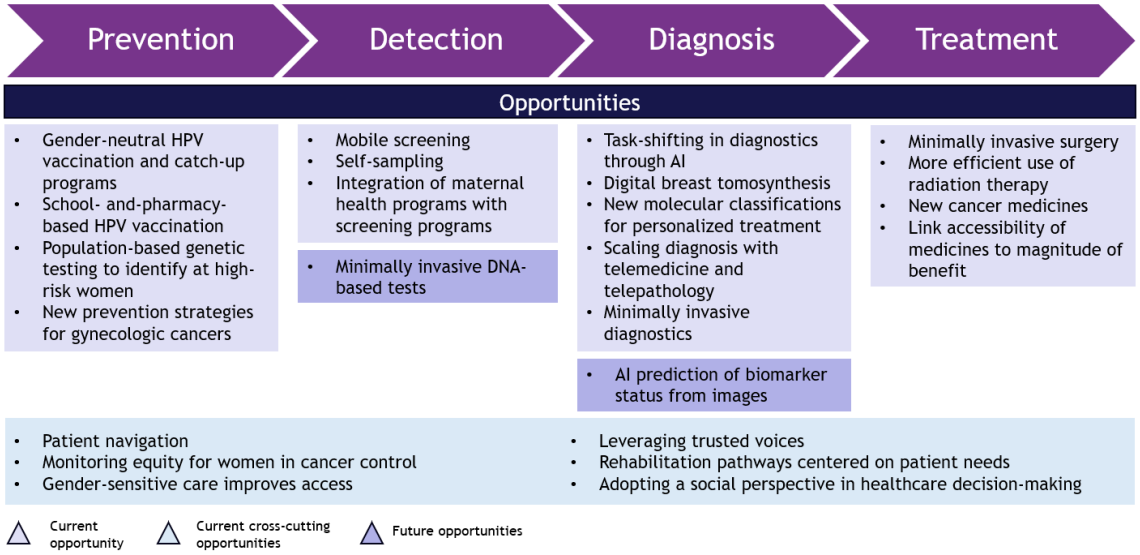


Figure 25: Opportunities for innovation along the care pathway.

In addition to showcasing technological advancements, this chapter draws on real-world case stories that reflect how countries across regions and income levels are improving access, coordination, and outcomes in the care of women's cancers. These examples are not just inspirational, they provide transferable lessons that can inform planning, decision-making, and investment in women's cancers globally.

5.1 Innovative approaches

Innovation is transforming the landscape of women's cancer care, from how prevention and screening are delivered to how care is accessed, experienced, and prioritized. While some approaches are already reshaping practice, others hold significant promise for the future. This section highlights both types of developments, focusing on innovations that can improve quality, equity, and sustainability across the care pathway. The examples described are grouped into four areas: 1) expanding reach and access, 2) leveraging technology and innovation, 3) simplifying and streamlining care, and 4) rethinking care delivery models. Together, these offer practical lessons and future directions for improving outcomes in women's cancers.

5.1.1 Expanding reach and access

Gender-neutral HPV vaccination and catch-up programs to speed up cervical cancer elimination

A shift toward gender-neutral (or "universal") HPV vaccination could meaningfully lower HPV transmission rates, while simultaneously addressing misinformation, mitigating stigma associated with vaccination, and fostering equitable access to protection across genders (258). Many countries have expanded HPV vaccination programs from girls to include boys, aiming to achieve broader protection among girls with a gender-neutral approach through herd immunity as well as to protect boys directly from HPV-related cancers. For instance, all 27 EU countries have included boys in the national vaccination program between 2014 and 2025 (259, 260). Catch-up vaccination programs for older adolescents who missed the recommended doses are also increasingly adopted and made gender neutral. In the EU, 13 countries offered catch-up vaccination programs in 2024, e.g., a free catch-up vaccination up to age 30, with a three-dose regimen starting from age 21, was available in Austria (259).

School- and pharmacy-based HPV vaccination to achieve high coverage rates

School-based HPV vaccination programs consistently achieve higher uptake than facility- or community-based approaches by removing logistical barriers such as transportation, scheduling, and healthcare access (261). Systematic reviews of vaccination policies in Western countries and the Asia-Pacific region point to school-based system as one crucial determinant for a high vaccination rate (262, 263). Similarly, in LMICs, school-based approaches reach 85% of eligible girls compared to just 50% with clinic-based approaches (264). School-based approaches are also more cost-effective, enable rapid coverage, and result in lower drop-out rates (264). In addition, pharmacy-based vaccination can further enhance accessibility and uptake (265). The convenience and widespread availability of pharmacies make them valuable vaccination points. A cross-country study found that HPV vaccines were offered in pharmacies in 27% of the 56 countries analyzed, including Argentina, Australia, South Africa, the UK, and the US (266). In England, the NHS recognizes pharmacy-based HPV vaccination as a complementary strategy to improve coverage rates for catch-up vaccines (267).

Single-dose HPV vaccination as an opportunity to expand coverage

Recommendations on the use of HPV vaccines were issued by the WHO Strategic Advisory Group of Experts (SAGE) on Immunization at its meeting in April 2022, and subsequently endorsed by WHO (268). The simplified schedule presents an opportunity to expand coverage in LMICs and whenever financial or logistical barriers exist. However, evidence on its long-term effectiveness beyond 10 years as well as protection in boys and at non-cervical sites remains limited (269). In addition, a single dose schedule represents off label use.

Mobile screening services broaden access

Mobile screening units in the form of trucks or vans that are equipped with screening equipment for breast cancer and/or cervical cancer have been used for several decades in some Western countries (270, 271). Their purpose is to bridge geographical and social barriers by bringing the screening services to women in remote and underserved areas instead of them having to travel to health facilities in urban areas. The general evidence from Western countries is that they achieve to raise participation in screening (270). Non-Western countries have also started to use mobile screening units, mostly mammography trucks, such as in Türkiye which in 2023 had 331 cancer screening centers of which 42 were mobile (9). A best-practice example in the

Middle East and North Africa is the “Pink Caravan” initiative in the UAE that uses mobile trucks to traverse the country, providing accessible and free screenings (9). In all of these initiatives, clear referral pathways are essential to ensure that abnormal results are followed up promptly and in an organized manner.

Self-sampling increases cervical cancer screening uptake

Countries as diverse as the US and Kenya have updated their guidelines to use HPV testing as the primary screening method for cervical cancer (with Pap smears reserved only for triage or follow-up) (272, 273). Instead of gynecologists using cervical swabs for HPV testing, self-sampling by women at home has emerged as a new strategy. Studies show good agreement between self-collected and clinician-collected samples, supporting self-sampling as a reliable alternative for HPV detection (274). It helps overcome common barriers to clinician-based screening, such as lack of convenience, cost, embarrassment, and discomfort, which often deter participation. In Sweden, mailing self-sampling kits has proven especially effective in reaching women who have never participated in screening. Sweden’s cervical screening program reported that over 40% of non-attenders returned the kit when offered the opportunity (275). In Slovenia, HPV self-sampling significantly increased participation among non-attenders, especially in opt-in and opt-out groups, and helped identify women at high risk of cervical lesions, particularly those absent from screening for over a decade (276). A systematic review from the Asia-Pacific region found it to be highly acceptable to women (277), and studies in resource-constrained settings confirm that self-sampling can substantially increase screening participation (278). Ensuring timely and effective follow-up for women who test positive is critical to realizing the full benefits of self-sampling. In a study of nearly 20,000 women in Italy using self-sampling kits, more than 90% of those who tested HPV-positive adhered to follow-up procedures (279), indicating strong compliance in a real-world setting.

Population-based genetic testing to identify women at high-risk of breast and ovarian cancer

Identifying women at high risk of breast and ovarian cancer has traditionally relied on assessing family history, an approach that misses more than half of individuals carrying mutations in cancer susceptibility genes (137). As a result, many women remain unaware of their elevated cancer risk and miss opportunities for early detection or preventive interventions. To address this gap, population-based genetic testing strategies are under evaluation as a proactive approach to find high-risk individuals regardless of family history (139). These strategies involve offering multigene panel testing to all women at a certain age, typically between 30 and 35 years, enabling timely risk-reducing interventions such as enhanced screening, chemoprevention, or risk-reducing surgery (137). Economic evaluations have shown population-based testing to be more cost-effective than family history-based approaches (137). However, implementing population-based testing poses real challenges, including test cost, limited availability of genetic counseling, ethical and social concerns related to result interpretation, and disparities in healthcare access that may affect uptake across populations (139). Without adequate infrastructure for counseling, follow-up, and equitable access, the potential harms of population-based genetic testing, may, in some contexts, outweigh the anticipated benefits.

Minimally invasive DNA-based tests for uterine cancer detection

Detecting uterine cancer typically requires invasive procedures such as a transvaginal ultrasound, which carry risks such as pain, bleeding, and infection on top of the feeling of embarrassment and shame (13). To address this, new minimally invasive tests are currently

under investigation to triage women with abnormal uterine bleeding to a reference histology test. These include methods using samples collected from the cervix or vagina via tampons or cervical swabs by the patient or healthcare professionals (280). Early clinical trials of these novel tests have shown promising results when compared to traditional transvaginal ultrasound and may help reduce the need for invasive procedures. However, these findings are based on small study populations and require validation through larger, confirmatory trials (280).

5.1.2 Leveraging technology and innovation

Task-shifting in diagnostics enabled by AI

AI is transforming cancer diagnostics by improving accuracy of detection and reducing workload on specialists, a finding carrying important implications in countries with limited resources in radiology and pathology. In a major randomized trial on breast cancer screening in Sweden, AI-assisted mammography by one radiologist matched or surpassed double-reading by radiologists in detection performance and reduced screen-reading workload of radiologists by 44% (281). Similarly, in Germany, the use of AI improved detection in mammograms without increasing the rate of false positives (282). In cervical cancer, AI-supported cytology analysis (AICCS) showed a 13% improvement in sensitivity over manual review, while reducing false negatives and cutting diagnostic time by a third (283). For ovarian cancer, AI-assisted ultrasound improved both sensitivity (89% vs. 82%) and specificity (89% vs. 83%), while cutting specialist referrals by 63% (284). However, the adoption of AI-driven technologies must be guided by appropriate regulatory frameworks to respect patient integrity and confidentiality. It is also important to prevent perpetuation of bias and inequity if AI algorithms are optimized in single healthcare systems and homogenous patient populations.

AI predicts biomarker status from images

An active area of research is to use AI in pathology to predict biomarker status solely based on image analysis. In breast cancer, AI tools are developed that can help predict the three important breast cancer markers for guiding treatment – ER, PR, HER2 - just by analyzing standard mammogram images (285). These markers are normally identified through lab tests after a biopsy. This technology could be particularly useful in speeding up treatment decisions, especially in places where access to lab testing is limited. It would also help address the challenge in breast cancer care of sending patients directly to surgery without complete biomarker data, thus losing the opportunity to start treatment with medicines before surgery.

Digital breast tomosynthesis improves breast cancer detection

Another promising example of advancing breast cancer screening is digital breast tomosynthesis (3D mammography), which has been increasingly adopted across HICs in recent years. By producing layered, high-resolution images, this technique enhances the early detection of breast cancer, particularly among women with dense breast tissue, when compared to conventional 2D mammography (286). In a study conducted at a hospital in Sweden, 3D mammography detected 34% more breast cancer cases than conventional mammography (287).

New molecular classifications enhance personalized treatment

Important progress in understanding the biology of endometrial cancer has been achieved by identifying four distinct molecular subtypes: POLE ultramutated, mismatch repair-deficient dMMR, p53-abnormal, and tumors with no specific molecular profile. This has started to replace the traditional way of classifying endometrial cancer by histology (microscopic analysis of

tissue) into type I (linked to estrogen exposure and exhibiting slow growth) and type II (not estrogen driven and growing faster) (288). The four new subtypes have different prognostic outlooks and can guide treatment decisions (199). For example, tumors with dMMR are more likely to respond well to immunotherapy, although individual results may still vary based on biological differences within this group (289). Another example is breast cancer, where recent research results are leading to a reinterpretation of HER2 status and, on this basis, a more personalized treatment approach is being applied (290). Traditionally, only tumors with high HER2 levels were eligible for HER2-directed targeted therapy. Newer studies show that even cancers with low or ultra-low HER2 expression can benefit from new treatments called antibody-drug conjugates (ADCs), which combine the properties of HER2 targeted agents and chemotherapy.

Advancements in minimally invasive diagnostics and surgery

Minimally invasive surgical approaches encompass techniques to determine if the cancer has spread to nearby tissues, such as through sentinel lymph node mapping, as well as techniques to remove the tumor. The latter includes operating via small incisions (laparoscopy) and robotic-assisted surgery (291). These innovative surgeries are less invasive compared to traditional open surgery, which results in faster recovery, smaller scars, and fewer complications. For example, breast-conserving surgery has largely replaced radical mastectomy for early breast cancer (292), preserving much of the breast's appearance and sensation and offering a shorter, easier recovery (293). In gynecologic oncology, minimally invasive surgery has rapidly become standard of care: laparoscopic surgery is now the gold standard for early-stage uterine cancer (294). Robotic-assisted surgery has emerged as a transformative approach in the treatment of cervical, endometrial, and selected ovarian cancers (295). Although, despite these benefits, robotic surgery faces challenges as the associated costs and required infrastructure greatly limit access (295).

New risk-reducing prevention strategies

Recent innovations in women's cancer prevention are creating new ways to lower cancer risk while improving quality of life. Traditionally, women with a high inherited risk of ovarian cancer (such as those with BRCA gene mutations) have been advised to have both fallopian tubes and ovaries removed early in life to prevent cancer (296). However, this will trigger early menopause and its side effects (297). There are studies testing a different approach, first removing only the fallopian tubes (salpingectomy), where many aggressive ovarian cancers begin, and delaying removal of the ovaries until later (296). Another promising approach is opportunistic salpingectomy, which means removing the fallopian tubes during other planned abdominal surgeries, even in women who are not known to be at high genetic risk (298). This adds little time or complexity to the surgery but could lower future ovarian cancer risk (298). Beyond surgery, hormonal prevention may also help. Studies show that using a levonorgestrel-releasing intrauterine device, a small birth control device placed in the uterus, may lower the risk of endometrial cancer in women with obesity and could be a cost-effective way to prevent the disease (299, 300).

More efficient use of radiation therapy

Hypofractionation is a method to deliver high doses of radiation at fewer treatment sessions if external beam radiation therapy is used. It was introduced during the last ten years, offering the benefits of shortening treatment time without impeding health outcomes. In the case of breast cancer major clinical trials initially demonstrated that the number of radiation therapy

sessions after breast surgery could be reduced from a 5-week (25 fractions, 5 days per week) to a 3-week (15 fractions, 5 days per week) schedule (301), and later on also from a 3-week to a 1-week (5 fractions, 5 days per week) schedule (302, 303). Estimates indicate that the cost of breast cancer treatment with hypofractionation is around one third lower than with conventional radiation therapy (304). Hypofractionation also reduces non-medical costs for patients and their families, such as travel costs and the time spent by informal caregivers going back and forth to the hospital every day. Despite this, one expert noted that 25 fractions are still being used, against recommendations and only due to misguided reimbursement rules (payment by fractions instead of payment for the whole treatment).

New cancer medicines

As shown in Figure 23 in section 4.4, the number of new medicines introduced for women's cancers has accelerated in recent years and has transformed the treatment landscape. All four subtypes of breast cancer have seen the introduction of targeted therapies and/or immunotherapies in both advanced-stage and early-stage settings (305). Additionally, targeted therapies for distinct mutations such as BRCA1/2, PIK3CA, and ESR1 have been introduced, allowing for more personalized and effective care. Progress in gynecologic cancers has been more modest, although targeted therapies for BRCA1/2 and HRD in ovarian cancer and immunotherapies for cervical and endometrial cancer have been introduced (305). ADCs with the combined properties of targeted therapies and chemotherapy have more recently been approved in advanced-stage gynecologic cancers (306). All these advances are the result of decades of sustained investment in cancer research and clinical trials. However, the high initial cost of new medicines limits the availability in many settings.

5.1.3 Simplifying and streamlining care

Patient navigation can improve screening uptake and reduce diagnostic delays

Navigation support helps people use healthcare services more effectively, especially when the system is fragmented or difficult to access (307). It involves giving patients personal support and guidance such as having someone who helps them understand what care they need, where to go, and how to get it. Patient navigators can assist with scheduling appointments, sending reminders, arranging transportation, explaining procedures, translating information, and offering emotional support or follow-up. Evidence shows that such programs significantly improve access and outcomes, particularly for underserved groups and individuals with low health literacy (307). For example, navigation alone increased the odds of women undergoing mammography and Pap smear testing by two to six times across different studies (308, 309). Navigation models featuring trained lay navigators, bilingual staff, community health workers, and IT-supported tracking also reduced diagnostic delays, cutting the time to diagnosis by nearly 10 days in one study with women with breast cancer (310).

Integration of maternal health programs with screening programs

Health systems face significant challenges in delivering equitable, high-quality cancer care for women, particularly for those from underserved and underrepresented populations. Fragmented service delivery, siloed disease programs, and insufficient integration across levels of cancer care often result in delayed diagnoses, gaps in treatment, and persistent disparities in outcomes (311). To address the challenges described above, system-level approaches that integrate cancer care into broader women's health and public health programs are essential. Such integration, for example, combining breast and cervical cancer screening at a single healthcare visit or linking screening services with HIV and maternal health programs does not

only streamline access but also reduces logistical and financial barriers, especially for women in low-resource settings (312). Strengthening these approaches should include better coordination of existing cervical and breast cancer screening programs and, in the future, expanding combined screening services to incorporate novel methods for other gynecologic cancers as they become available.

Scaling diagnosis with telemedicine and use of telepathology

Telemedicine refers to the delivery of healthcare services through digital communication technologies, allowing patients and healthcare providers to interact remotely (313). Some benefits in cancer care are saving time and travel costs, lower exposure to infections and be a solution to workforce constraints (313). One promising application is telepathology, which enables remote interpretation of pathology samples. In countries with limited or no on-site pathologists, local technicians are trained to prepare and digitize slides, which are then transmitted to specialists in other regions or countries for review. This approach ensures timely and accurate diagnoses even in remote or underserved areas. At Kamuzu Central Hospital in Malawi, telepathology allows technicians to scan slides that are reviewed jointly with collaborating US-based pathologists, ensuring shared decision-making (314). Similar models exist in Uganda and Rwanda, where the use of dynamic imaging systems or platforms has significantly shortened turnaround times, from a median of 30 days (when slides were physically sent) to 14 days via digital upload (314). These models not only improve speed and access to diagnosis but also support local training and knowledge sharing.

5.1.4 Rethinking care delivery models

Monitoring equity for women in cancer control

A growing recognition of the role that gender and power play in cancer care has led to calls for more inclusive and equity-driven approaches. The Lancet Commission on Women, Power, and Cancer introduced a framework to support countries in integrating gender-transformative strategies across cancer control efforts (315). The framework proposes 31 indicators, prioritized by feasibility and impact, to guide system-level reforms. For instance, it calls for routine collection and public reporting of sex-disaggregated data. It also advocates for economic evaluations that capture the full value of unpaid caregiving, such as the substantial informal care burden associated with cancer (see section 2.2). Workforce indicators aim to ensure equitable access to leadership, research funding, and decision-making roles for women in oncology, which can help close persistent gender gaps in clinical research on breast and gynecologic cancers. Additionally, the framework encourages the development of respectful, inclusive care models that respond to the needs of women navigating cancer-related impacts on fertility, body image, and sexual health, areas particularly relevant to younger women facing cancer (see section 2.3). Implementing these indicators through national cancer control plans can help health systems better recognize and address the lived realities of women with cancer.

Gender-sensitive care improves access

Gender-sensitive care plays a crucial role in improving access to cancer screening for women, particularly in societies where cultural or social norms may discourage seeking care. Studies have shown that women are more likely to participate in breast cancer screening programs when services are provided by female staff (316), especially in cultures where modesty and gender norms influence healthcare decisions. One notable example is Egypt's presidential Women's Health Initiative that aims to provide early detection and treatment for breast cancer free of charge (317); see also section 5.2. To ensure cultural sensitivity and encourage

participation, the initiative prioritized training female healthcare providers. Interviewed experts noted that this approach helped reduce stigma and made services more accessible and acceptable to women, particularly in conservative or rural areas where cultural norms might otherwise hinder engagement with male healthcare workers.

Expert insights: The importance of treating a person and not just their cancer

One interviewed expert recalled a story of the first patient to receive chemotherapy through a local outreach program, where hospital-based nurses administered cancer treatment in community clinics. This model not only made cancer care more accessible but also transformed the patient's experience, reducing travel time, minimizing disruption, and restoring a sense of normalcy. "It made cancer small," the expert explained, reflecting how this approach helped integrate care into daily life rather than the other way around.

This story reflects a broader shift toward more convenient and patient-centered cancer care. With new developments, treatment no longer requires extensive hospital stays and is instead often performed at outpatient clinics and even in patients' homes. In Sweden, for example, hospital admissions for cancer dropped by one-third between 1998 and 2023, while outpatient visits doubled (305).

This shift is closely tied to changes in how medicines are administered (305). Once dominated by several hour-long intravenous infusions of chemotherapy requiring hospital stays, cancer treatment has seen some shifts to oral therapies with the use of some targeted therapies and hormone therapies that are taken as pills. While immunotherapies are still mostly given intravenously, the first subcutaneous forms that are administered within a few minutes have been introduced in the last few years, making these therapies more accessible outside hospital settings (318).

Leveraging trusted voices

Improving awareness of prevention, screening, and early detection of women's cancers require well-designed public health campaigns that work with trusted leaders and grassroot organizations. Interviewed experts noted that real progress hinges on community engagement efforts, especially those involving people whom the population already trusts, such as teachers, health workers, and religious leaders. Stigma and misinformation are best addressed by familiar and credible voices embedded in daily life. For example, the World Bank and the WHO, through the Trusted Voices initiative, have highlighted the role of religious and community leaders in advancing HPV vaccination (319, 320). These leaders can address social and cultural concerns, dispel myths, and build confidence in prevention efforts, especially in settings where institutional trust is low.

Rehabilitation pathways centered on patient needs

A recent study presented compelling evidence that early, individualized, and multidisciplinary rehabilitation improves outcomes for breast cancer patients in Slovenia (321). This creates an opportunity for healthcare systems to restructure care delivery around patient needs, moving away from standardized, one-size-fits-all models toward customized rehabilitation journeys. By designing care models that integrate cancer treatment with ongoing assessments by a multidisciplinary team, including psychologists, nutritionists, and physiotherapists, patients can receive more responsive and holistic support. The impact of such an approach in Slovenia is striking: patients in the intervention group had, on average, 50 fewer calendar days of sick leave compared to those receiving standard care, along with improved work ability and reduced disability rates one year after treatment initiation (321).

Link accessibility of medicines to magnitude of benefit

Not all new medicines provide the same level of benefit. Linking access and reimbursement of new medicines to the magnitude of clinical benefit is key to more equitable and sustainable cancer care. Value frameworks such as the ESMO Magnitude of Clinical Benefit Scale (ESMO-MCBS) and the ASCO Value Framework provide a structured system to assess clinical value of new medicines, yet remain underused in practice, according to interviewed experts. The ESMO-MCBS is designed to support treatment prioritization by grading therapies based on their impact on survival and quality of life and to inform reimbursement decisions (322). The ASCO Value Framework, while not intended for coverage decisions, was developed to help clinicians and patients weigh the trade-offs between clinical benefit, side effects, and out-of-pocket costs when selecting treatments (323). Together, these tools can support a more nuanced, "multi-speed" access strategy, one that accelerates availability of medicines with high and well-documented benefit, while applying conditional or delayed access where evidence is limited.

Adopting a societal perspective in healthcare decision-making

Given the large hidden cost of women's cancer to healthcare providers ("the iceberg") described in section 2.2, it is important to adopt a broader perspective in healthcare decision-making. For instance, the ISPOR Value Flower, a theoretical framework introduced in 2018, expands the traditional focus on healthcare costs and health outcomes of the patient by incorporating additional dimensions such as societal productivity and caregiver impact (324). Some countries have recently changed their approach to evaluating new technologies in healthcare and are moving closer to considering the real size of the iceberg when decisions are made. For instance, new guidelines for economic evaluations in healthcare in the Netherlands were published in 2025 which now include the assessment of health-related quality of life of informal caregivers, thus taking into account "spillover health effects" in line with a societal perspective (325). In England, the National Health Service (NHS) launched a 10-Year Health Plan in 2025 which amongst other things aims to align investment and savings in the same place to avoid blocking collaboration and innovation because the costs and benefits accrue in different organizations or settings (326).

5.2 Success stories worldwide

Across regions and income settings, countries are adapting and innovating to improve outcomes in women's cancers. The examples in this section show that progress is not limited to high-income settings or large national programs. Even in constrained health systems, targeted reforms, driven by local leadership, data, or practical innovation can reshape care pathways, reduce delays, and improve equity. The examples in Table 5 reflect insights shared by interviewed experts, highlighting a range of strategies to address barriers across the cancer pathway. Rather than offering one-size-fits-all solutions, they provide transferable lessons that can inform and inspire action in other settings.

Table 5: Examples of success stories worldwide.

Asia Pacific	
 *Australia*	**Path to Eliminating Cervical Cancer by 2035** *Australia is on track to become the first country in the world to eliminate cervical cancer as a public health issue (327). In November 2023, the government launched the National Strategy for the Elimination of Cervical Cancer, supported by a AU$ 48.2 million investment over four years to expand access to HPV vaccination, cervical screening, and follow-up care (327). Developed by the Australian Centre for the Prevention of Cervical Cancer through broad public consultation, the strategy introduced new national targets: extending the 90% HPV vaccination goal to include boys and raising cervical screening participation to 70% every five years among people aged 25 to 74. Between 2020 and 2024, 83% of 15-year-old girls and 81% of boys received the HPV vaccine (328).*
 *Indonesia*	**National Cervical Cancer Elimination Plan for 2023-2030** *In 2023, Indonesia launched its National Cervical Cancer Elimination Plan (2023-2030), marking an important milestone in women's health (329). The plan builds on pilot programs conducted between 2016 and 2022 and was accompanied by the nationwide rollout of the HPV vaccination program in August 2023. The program initially targets girls in Grades 5 and 6, typically aged 11 to 12, with vaccinations delivered primarily in schools to ensure high coverage. This approach takes advantage of mandatory school attendance at this age and aligns with the schedule for the tetanus, diphtheria, and pertussis (TDP) booster, making delivery efficient and coordinated. The first phase, running from 2023 to 2027, focuses on ensuring that all girls are fully vaccinated by ages 11 to 12 and that out-of-school girls also receive catch-up doses. This phased expansion is expected to significantly increase HPV vaccination coverage in the coming years and position Indonesia as a leading example of large-scale cervical cancer prevention in the Asia-Pacific region. Early results are promising, according to WHO data, program coverage for the last dose was 7% in 2022, 29% in 2023 and soared to 79% in 2024 (96).*
 *Malaysia*	**National genetic testing program** *Malaysia has launched a national program integrating BRCA genetic testing into ovarian cancer management, greatly expanding access to genetic counseling and precision medicine. Spearheaded by Cancer Research Malaysia in collaboration with the Ministry of Health, the program (known as the "MaGIC" study - Mainstreaming Genetic Counseling for Ovarian Cancer) trained gynecologic oncologists across the country to deliver genetic counseling and testing for ovarian cancer patients (330). Traditionally, BRCA1/2 testing was available only through a few clinical geneticists in Kuala Lumpur, which meant most patients nationwide could not be tested (330). Starting in 2017, Malaysia began "mainstreaming" these services: oncologists and surgeons treating ovarian cancer were empowered to directly offer BRCA testing as part of routine care after diagnosis. By 2021, this initiative made Malaysia the first country in Asia to implement nationwide mainstreamed BRCA testing for ovarian cancer (331). According to experts, this approach decentralizes access and has led to an increase in post-diagnostic testing, with implications for both treatment decisions and family risk management.*
Eastern Europe and Central Asia	
 *Kazakhstan*	**Fast-track cancer diagnosis pathway** *Kazakhstan's introduction of a nationwide "green pathway" in 2022 marks a major advance in accelerating cancer diagnosis and treatment (332). The policy guarantees that patients with suspected malignancies receive diagnostic consultations and testing within 18 working days, outside the normal waiting lists, and that full diagnostic workups and treatment planning are completed within 15 and 30 working days, respectively. MRI and CT scans are provided free of charge under this system (332). Experts interviewed noted that breast cancer and ovarian cancer are included in the green pathway, which has begun to shorten diagnostic timelines for women presenting with suspected symptoms. Notably, such pathways only work effectively if all intended services are covered by the healthcare payer, because otherwise patients will incur out-of-pocket expenses which will deter some patients from receiving timely services.*

Latin America	
 *Uruguay*	**Most comprehensive HPV National Immunization Program** *Uruguay stands out as a model for comprehensive primary prevention of cervical cancer, offering free, universal HPV vaccination for girls and boys aged 11-26, with access extended up to age 45 for multiple high-risk groups (333). These include people living with HIV, transplant recipients, those on immunosuppressive therapy, patients with HPV-related high-grade lesions, and survivors of sexual violence. The program uses tailored dosing schedules, safeguards confidentiality, and covers both routine and special-case indications, ensuring that HPV vaccination reaches a wide and diverse population.*
Middle East and North Africa	
 *Egypt*	**Women's Health Initiative** *In 2019, the Women's Health Initiative was launched by the president and aimed to provide early detection and treatment of breast cancer, along with other health services, free of charge. As part of this initiative, over 28 million women have been screened for breast cancer (317). According to experts, over 22 million women were screened via CBE through more than 3,500 primary care units. CBE was chosen due to infrastructure constraints, with mammography gradually scaling up through static and mobile units. As a result, the median diagnostic time decreased from over 120 days to 49 days, shorter than the WHO GBCI target of 60 days (334). Mandatory assessments by multidisciplinary teams were established for all diagnosed breast cancer cases and free treatment is guaranteed for all women diagnosed via the program. Importantly, the proportion of advanced-stage cases fell from 70% to 20% (334). According to an interviewed expert, the success of Egypt is inspiring other countries in the region, with Algeria set to replicate the initiative.*
Sub-Saharan Africa	
 *Rwanda*	**A model for HPV primary prevention** *Rwanda stands out as a global HPV vaccination success story. It became the first African country to introduce a nationwide HPV immunization program in 2011 (335), and it achieved over 90% vaccine coverage among eligible girls in its very first year (336). Rwanda has since maintained one of the world's highest HPV vaccination rates (336), and the WHO reports that Rwanda plans to reach the "90-70-90" cervical cancer elimination targets by 2027 - several years ahead of the global schedule (337).*
 *Nigeria*	**Streamlined diagnostic services** *In Gombe, Nigeria, a small city far from the country's major urban centers, a hospital has implemented a streamlined pathway for women with suspected ovarian cancer. Run by an oncologist and a pathologist, the facility triages patients the same day they arrive with symptoms, orders necessary tests, and delivers results within two weeks. Nurses play an active role in test ordering, creating a highly efficient system that shortens the time to diagnosis. Unlike other centers in the region, where diagnostic delays are common, this model demonstrates what is possible through strong clinical leadership, local organization, and task-sharing.*
 *Kenya*	**Coordinated care and peer support model** *To accommodate women who travel long distances for care, a hospital in Kenya has optimized scheduling and support structures for ovarian cancer patients. The clinical team organizes testing efficiently to minimize repeat visits, reducing both patient burden and healthcare system delays. Moreover, chemotherapy is delivered in grouped sessions based on cancer type and patient characteristics. This informal cohorting creates opportunities for peer support among women undergoing similar treatments. Though low-cost and operationally simple, this model improves patient experience, fosters emotional support, and makes care more patient-centered.*
 *Zambia*	**Expanding multidisciplinary cancer care and virtual coordination** *In Zambia, an MDT model began as a pilot and has since expanded across provinces. Originally intended for case discussion, the MDT evolved into a referral tool to help clinicians coordinate patient care more effectively. A mobile app was piloted to share diagnostic images and reports, allowing a social worker at the cancer hospital to help schedule patients for evaluation. Clinicians are also encouraged to support patient registration in the national health insurance scheme, given the high out-of-pocket costs for diagnostic tests.*

Western countries	
 *Sweden*	**Leading Europe toward cervical cancer elimination** *Sweden has one of the highest HPV vaccination uptakes in Europe, with about 87% to 91% of boys and girls, respectively, receiving a first dose and 82% to 87% receiving the last dose in 2024 (96). In addition, there is an organized population-based HPV-based screening program with recall systems and reminders, which increases participation and follow-up compliance and achieves participation of close to 80% (190, 338). Thanks to high immunization coverage and organized screening, the WHO noted in 2022 that the country could achieve cervical cancer elimination within five years (339). Also, in 2021, Sweden launched an ambitious catch-up HPV vaccination campaign for women born in 1994-1999 who may have missed earlier vaccine opportunities (340). By mid-2025, around 65% of this cohort was vaccinated (341). During the COVID-19 pandemic, a switch was made in the screening program to primary self-sampling instead of clinician sampling, which increased test coverage by six percentage points in just one year (342).*
 *Slovenia*	**Centralized cervical cancer screening** *Slovenia significantly reduced cervical cancer incidence by establishing a centralized, population-based screening program called ZORA (343). Managed by the Institute of Oncology Ljubljana, ZORA integrates a cervical cancer screening registry, centralized and automated invitations for first-time screeners, and standardized triage algorithms across public and private clinics. Women aged 20+ are invited for regular Pap tests every 3 years, with the central system triggering follow-ups if no results are recorded within four years. The ZORA Registry containing screening results is linked with the Central Population Registry and updated nightly, ensuring continuous monitoring and integration of all women who are residing in the country. The program also regularly organizes professional trainings, provides multilingual public resources (for official minorities), and a nurse-led call center for support. Since its launch in 2003, cervical cancer incidence has nearly halved, making Slovenia a regional leader, with current age-standardized incidence hovering around 7 cases per 100,000, and 3-year screening coverage exceeding 70%. ZORA exemplifies how political commitment, data-driven coordination, and inclusive design can deliver measurable progress in small health systems.*
 *England*	**Community-based chemotherapy delivery through NHS outreach** *In England, the University Hospital of Southampton launched an outreach chemotherapy program in 2012 that allows patients to receive treatment locally at Lymington Hospital. Under this model, oncology nurses travel to Lymington on scheduled days (e.g., every Wednesday and Thursday) to administer chemotherapy in the local Knightwood Ward, sparing patients the trip to the city (344). Chemotherapy medicines are prepared at the central hospital and brought by nurses to the local site, where they are administered. This model has reduced the burden on patients, especially women who have to manage work and caregiving responsibilities along with their treatment.*
 *Germany*	**Certification of breast cancer units** *Germany's breast cancer unit certification system, introduced in 2003, is a leading example of a voluntary initiative that has achieved broad national uptake and international relevance (345). Established under the German Cancer Society as part of the country's national cancer plan, breast cancer centers were the first specialist cancer centers to be formally recognized. In 2017, there were over 210 certified breast centers operating across approximately 270 sites, including some in Austria, Switzerland, and Northern Italy (345). Certification is based on compliance with evidence-based quality indicators, which are independently audited by a private certification institute. Benchmarking has shown a consistently high level of adherence to these quality indicators. The initiative has been associated with increased patient and hospital satisfaction, improved adherence to clinical guidelines, and widespread participation from hospitals across the country.*

Source: Personal communication from interviewed experts, unless references are provided.

6. Investment case for women's cancers

Investing in the prevention, early detection, and treatment of cancers, including women's cancers, is not only a public health imperative, but also an economic strategy. Healthier women lead longer, more active lives, contributing more fully to their families, communities, and national economies. When women are healthier, there are fewer premature deaths and less disability, longer workforce participation and greater economic productivity. Fewer women require costly treatment for advanced disease or long-term care, reducing pressure on health systems and social protection budgets; see a summary in Figure 26.

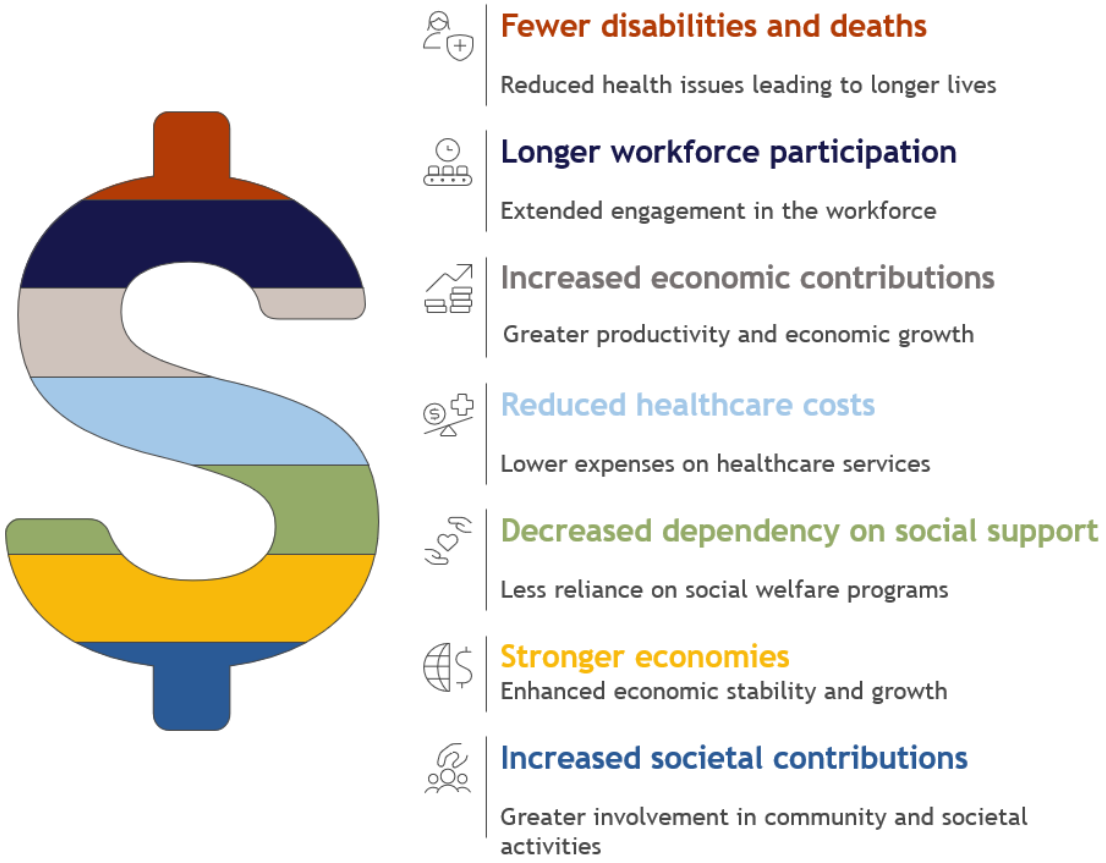


Figure 26: The economic impact of women's health.

This chapter presents examples of investment cases and research funding evidence for women's cancers. Across diverse settings, the data show that well-designed interventions, such as HPV vaccination, community-based screening, or multimodal treatment, can generate strong returns in both health and economic terms.

However, the analysis also reveals important gaps. Investment cases are disproportionately concentrated in breast and cervical cancer, with far less evidence available for endometrial and ovarian cancer. Apart from cervical cancer, there is also a notable lack of data from LMICs, particularly in sub-Saharan Africa. This absence is not a neutral omission; it reflects deeper disparities in research funding, visibility, and policy prioritization. These gaps risk perpetuating a cycle of underinvestment in the cancers and regions that are already most overlooked.

To close these gaps, more consistent and equitable investment in health economic research is needed. Strengthening the evidence base across all women's cancers is essential to inform policy, guide resource allocation, and make the case for sustained and strategic action.

6.1 Economic case for investing in care

Evidence from countries across all income levels consistently demonstrates that well-designed interventions in the prevention, early diagnosis, and treatment of women's cancers deliver substantial returns. This section presents a series of quantified investment cases that highlight the economic and societal value of action. These benefits are typically captured using ***Return on Investment (ROI) analysis***. ROI is an economic measure that compares the gains generated by an intervention to its costs (346). For example, a ROI of 4:1 means that every US$1 invested yields US$4 in economic benefit.

It is important to note that the ROI figures presented in this section are not strictly comparable across countries or cancer types. They are derived using different methodologies, time horizons, and modelling assumptions, and they reflect varying local epidemiology, health system capacity, and economic contexts. However, the intent is not to rank or compare settings, but to underscore a consistent and compelling message: ***investing in women's cancers pays off***; see a summary of the interventions in Table 6. In May 2025, IARC released an online tool called "Cervical Cancer Elimination Planning Tool", covering 75 countries in low-income and lower-middle-income settings that allows policymakers to simulate the effects of different levels of efforts in eliminating cervical cancer through the three pillars of the WHO CCEI of prevention, screening, and treatment (347). Importantly, the tool also calculates the budget impact and the ROI of these efforts besides the health effects.

Despite the strong economic case for investing in women's cancers, healthcare payers often struggle with the time lag between when costs are incurred and when benefits are realized. Taking the example of cervical cancer, HPV vaccination requires upfront expenditures for many years before any benefits emerge – typically decades later, when vaccinated girls reach adulthood and the age at which cervical cancer might otherwise develop (although benefits in terms of preventing genital warts and precancerous lesions will emerge quicker). Similarly, providing life-saving treatment to a 50-year-old breast cancer patient entails immediate costs but generates long-term returns through increased economic and societal contributions and reduced reliance on social support over her remaining lifetime. It is therefore important for healthcare payers to view their expenditure not only as immediate costs but also as a strategic investment in the future.

Table 6: Economic value of interventions across the care continuum of women's cancers.

Care pathway area	*Cancer type (source)*	*Region / country*	*Intervention*	*Key results / ROI*
Prevention	*Cervical cancer (8)*	*Middle East & North Africa*	*HPV vaccination (90% coverage)*	*For each $1 invested, returns in the range of $2.20 (HICs) to $6.20 (LICs)*
	Cervical cancer (348)	*UK, India*	*HPV vaccination*	*In the UK, $134M investment generated $247M in Gross Value Added (GVA[9]); in India, $756M investment yielded $1.15B in GVA*
Prevention & early detection	*Cervical cancer (38)*	*Global*	*HPV vaccination and screening scale-up*	*Per capita savings across 13 countries, e.g., South Africa*

[9] Gross Value Added (GVA) is a measure of the economic value generated by a sector, calculated as the value of output minus the cost of intermediate goods and services used in production. It reflects the sector's direct contribution to a country's economy and is used in calculating GDP.

Care pathway area	Cancer type (source)	Region / country	Intervention	Key results / ROI
				($215.3), Mexico ($79.6), France ($22.2)
Early detection & screening	Breast cancer (48)	Middle East & North Africa (Egypt)	Community-based screening and education	Every $1 spent yields $2.33 in savings
Treatment	Breast cancer (8)	Middle East & North Africa	Comprehensive treatment	For each $1 invested, returns range from $6.4 to $7.8
	Breast cancer (349)	Western countries (Sweden)	Comprehensive treatment	$4.9 return per $1 invested
	Breast cancer (350)	Western countries (Switzerland)	Novel medicines	75% of extra treatment costs offset by increased tax revenue
	Cervical cancer (8)	Middle East & North Africa	Comprehensive treatment	Each $1 invested yields $1.50 to $11.50 depending on country income level
Full care pathway	Cervical cancer (91)	LMICs	Prevention, screening, treatment	Up to $3.20 in economic gains for each $1 invested
	Cervical cancer (351)	Asia-Pacific (Vietnam)	Prevention, screening, treatment	Economic returns of $5-$11, and social returns of $8-$20 per $1 invested

Notes: The countries referred to as the Eastern Mediterranean Region in the cited papers are labeled here as Middle East and North Africa in this report for consistency with the regional classifications used throughout.

Prevention

HPV vaccination offers strong economic returns across income settings

A 2024 WHO analysis of the Middle East and North Africa[10] reports that HPV vaccination (90% coverage) can reduce cervical cancer incidence by ~81% and offers an ROI ranging from about 2.2 in HICs in the region up to 6.2 in low-income countries (8). In other words, each $1 spent on national HPV immunization can return $2.2-$6.2 in economic benefits.

A study covering the UK and India further demonstrates the broader impact of HPV vaccination as a health sector investment. The study estimated the total economic footprint by applying sector-wide multipliers to HPV vaccination spending. In the UK, a US$134 million investment produced US$247 million GVA[9], equivalent to 0.007% of GDP, and created 2,000 jobs. This included US$107 million generated within the health sector, US$62 million in adjacent sectors, and US$78 million from induced income effects (348). In India, a US$756 million investment generated US$1.15 billion in GVA (0.030% of GDP) and 155,000 jobs (348). These included 71,000 jobs directly within the health sector, 40,000 in adjacent sectors, and 44,000 through induced economic activity.

[10] The countries referred to as the Eastern Mediterranean Region in the cited report are labeled here as Middle East and North Africa in this report for consistency with the regional classifications used throughout.

Prevention and early detection

Combining HPV vaccination with screening yields high per capita savings worldwide

Another study found that countries with higher incidence of HPV and lower current prevention coverage (e.g., South Africa, China, Mexico) can generate great per capita savings by investing in HPV vaccination and screening scale-up (38); see Table 7. However, even countries with lower incidence of HPV and stronger health systems (e.g., France, South Korea) show measurable per capita gains, especially where vaccination uptake today remains below 70%.

Table 7: Per capita savings of HPV primary prevention and screening scale-up.

Region	Country	Per capita savings (int $)
Asia-Pacific	China	96.6
	Philippines	11.9
	South Korea	65.6
Eastern Europe and Central Asia	Romania	12.8
Latin America	Brazil	27.9
	Mexico	79.6
Sub-Saharan Africa	South Africa	215.3
Western countries	Austria	18.4
	France	22.3
	Germany	12.9
	Netherlands	6.3
	Poland	5.5

Notes: The estimates of per capita savings are based on modeled outcomes of achieving the WHO CCEI target of fewer than 4 new cases per 100,000 women by 2059 (very high HDI countries) or 2069 (high HDI countries). Sources: (38).

Early detection and screening

Community-based screening and education save costs

An analysis of a community-based breast cancer "downstaging" program in Manshiyat Naser, an underserved urban district in Egypt, found that early detection through screening and education delivers a strong ROI (48). Conducted from the perspective of the Egyptian Ministry of Health, the study projected that every US$1 invested in the program would yield approximately US$2.33 in treatment cost savings. The intervention, which provided free mammography and community education, was associated with a 13.7% reduction in late-stage diagnoses (stage III, IV) and an average of US$4,049 saved per early-stage case (stage I, II) detected.

Treatment

Multimodal breast cancer treatment yields high returns

A 2024 WHO analysis of the Middle East and North Africa found that early diagnosis and stage-appropriate, multimodal breast cancer treatment offers high returns (8). Over a 20-year period (2020–2040), every US$1 invested is expected to generate US$6.4–7.8 in economic benefits. These include productivity gains and tens of thousands of lives saved. These gains are driven by improved survival and increased productivity, with mortality projected to decrease by 26% compared to a status quo scenario.

In Sweden, comprehensive treatment for breast cancer was estimated to produce a benefit of EUR 4.9 for every EUR 1 invested, primarily through productivity gains from reduced and delayed mortality, and is projected to save more than 270 lives between 2023 and 2050 (349).

Innovative therapies can partially offset their cost through fiscal gains

Although new medicines are costly and increase direct healthcare expenditures, they may yield substantial indirect benefits such as higher tax revenues, improved employment outcomes, and lower social benefit payments. In Switzerland, a fiscal analysis of TNBC treatments from the government's perspective estimated that approximately 75% of the additional healthcare costs associated with immunotherapy plus chemotherapy can be offset by increased tax revenue (350). Patients receiving the old regimen with chemotherapy alone generate CHF 128,999 less in tax revenue compared to the average Swiss individual, whereas patients treated with the new regimen of immunotherapy and chemotherapy had a reduced tax loss of CHF 97,008. Clinical improvements are expected to translate into lower unemployment rates and a slight reduction in annual social benefit payments, a result that is particularly relevant for HICs, where governments provide more extensive social support.

Comprehensive treatment for cervical cancer delivers strong returns

A 2024 WHO analysis of the Middle East and North Africa modeled a cervical cancer intervention that combines early diagnosis programs for symptomatic presentations with timely, comprehensive treatment for stages I–IV, assuming a 90% coverage rate (8). The ROI ranged from 1.5 in HICs in the region, 5.5 in medium-income countries, to 11.5 in low-income countries.

Full care pathway

Comprehensive prevention, early detection, and treatment of cervical cancer yields high returns

At the launch of the WHO CCEI in 2020, it was estimated that for every $1 invested in cervical cancer elimination (including vaccination, screening, and treatment), LMICs would see about $3.20 in economic returns by 2050 due to women's improved workforce participation and productivity (91).

Similarly, an investment case study in Vietnam assessed a comprehensive cervical cancer program encompassing vaccination, screening, and treatment. Over the coming decades, every $1 invested was projected to generate $5–$11 in economic returns, and $8–$20 when social benefits are included (351). Economic benefits were calculated based on the projected contribution to GDP from women whose lives are saved by the intervention over their lifetime. Social benefits were estimated by assigning a monetary value to the healthy life years gained through the program.

Challenges in making the economic case for ovarian and uterine cancer

Compared to breast and cervical cancer, ovarian and uterine cancer have received limited attention in global investment cases. Although no formal ROI analyses were found across regions for either cancer type, existing evidence consistently shows that early-stage diagnosis and treatment are substantially less costly than treating advanced-stage disease, which is more resource-intensive and associated with poorer outcomes (43, 44). And while formal ROI studies may still be lacking, recent findings make the broader economic case clear, ovarian cancer imposes a significant burden on society (37). A multi-country study estimated that

socioeconomic losses from ovarian cancer exceeded US$70 billion across 11 countries in 2023, with more than 90% of this cost attributed to premature mortality (37).

Expert insights: Moving from pilot projects toward sustainable cancer care

One interviewed expert noted that public–private partnerships have helped expand cancer services in areas where government capacity is limited, but cautioned that many of these efforts often are pilot based and may not be fully integrated into public systems. “We need to go beyond research objectives to solve a public health problem,” the expert said. “Research is always controlled... when you go to the population, nothing is controlled.”

The expert described how several Indian states have partnered with non-governmental organization (NGOs) and third-party groups to support the rollout of HPV vaccination and cervical cancer screening. “Many of the states... have just engaged the third party... by having some memorandum of understanding with the local NGO so that they can boost their efforts,” they explained. These partnerships help reach underserved populations, particularly where cultural barriers, stigma, and logistical obstacles might otherwise prevent women from accessing services. But the expert emphasized that these efforts need to move beyond pilot projects and become part of the routine system.

6.2 Public research funding

Public research funding for cancer is essential for advancing care because it supports high-risk, high-reward research that may not attract private investment but is crucial for long-term breakthroughs. It enables large-scale studies, infrastructure development, and data-sharing initiatives that improve understanding of cancer biology, prevention, early detection, and treatment. Public funding also ensures that research priorities align with public health needs rather than market incentives, promoting equity and access to innovations that can benefit all patients around the globe.

Breast cancer consistently attracts the highest levels of public and philanthropic investment in cancer research across all cancer types worldwide (352). This sustained financial support reflects not only its high incidence but also the impact of long-standing advocacy efforts, strong public visibility, and prioritization within national research agendas. However, it is important to note that this overall investment does not necessarily extend to all stages of the disease. For example, only an estimated 5% of breast cancer research funding in Europe is allocated to metastatic breast cancer (36), despite its substantial unmet needs and poor prognosis.

For women’s cancers, patterns and trends in public research investment in the UK and the US[11] are shown in Figure 27 (353, 354). In both countries, breast cancer received more funding than the three gynecologic cancers combined, and also cervical cancer and uterine cancer received

[11] Providing an in-depth look at research funding from the US and the UK is especially important given their outsized roles in the global cancer research landscape. According to a global analysis of public and philanthropic cancer research funding between 2016 and 2020, the US alone accounted for 57.3% of all such funding worldwide (352). The UK followed as the second-largest contributor, responsible for 9.8% of the global total.

the least funding. Fundings trends in the US are rather stable over time for all four cancer types, except ovarian cancer that has seen a bit more of an increase from 2016 to 2022.

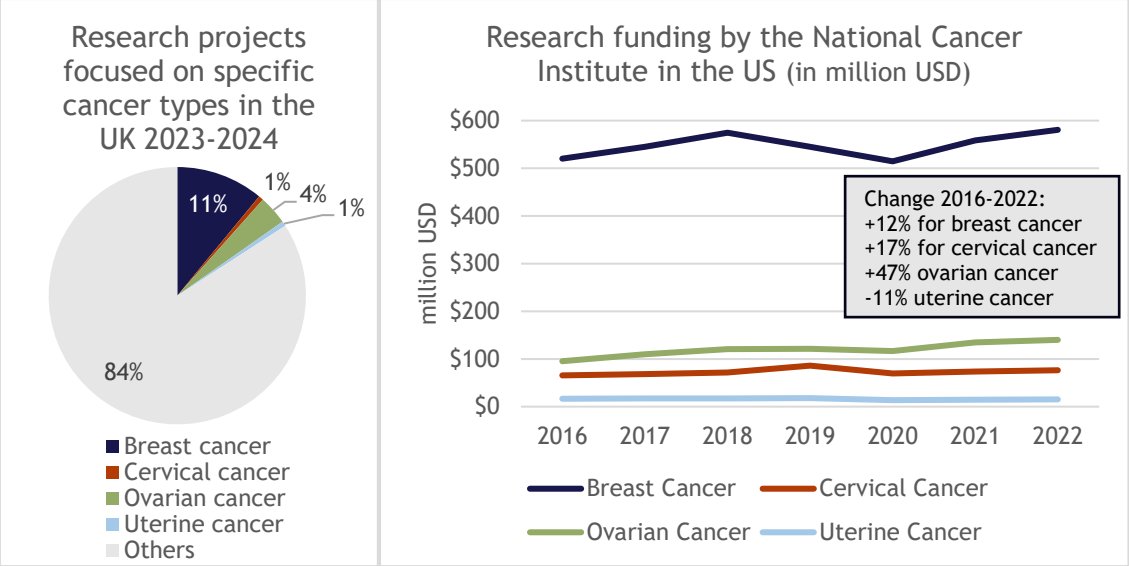


Figure 27: Research projects focused on specific cancer types in the UK between 2023-2024 (left) and trends in research funding by the NCI in the US 2016-2022 (right).

Notes: Total funds spent on research projects focused on specific cancer types was 164 million British pounds. NCI data for 2020-2022 are estimates. Source: (353, 354).

In general, gynecologic cancers appear underprioritized, often receiving less attention and investment. A comparative analysis of funding from the US National Cancer Institute (NCI) between 2007 and 2014 revealed that gynecologic cancers were consistently underfunded relative to their lethality (355). Among these, uterine cancer received particularly low levels of support, standing out as one of the most neglected cancer types in terms of investment relative to disease burden. This pattern has persisted in more recent data. NCI figures from 2021 show that cervical, ovarian, and uterine cancers all received disproportionately low funding when measured against indicators such as deaths, years of life lost (YLL), and disability-adjusted life years (DALYs), with uterine cancer consistently ranking among the lowest of all cancer types across these metrics (356). Similar trends have been observed in other national contexts. A study in Canada found that uterine cancer was among the three cancer sites receiving the lowest levels of research funding in 2015 (357). When comparing site-specific research investments against burden in Canada, defined by incidence and mortality, uterine cancer was identified as the most underfunded, receiving only approximately 0.6% of total cancer research funding that year.

While funding remains disproportionately low for gynecologic cancers, especially in LMICs, there are examples of how targeted, collaborative research initiatives can make a tangible impact; see experts' insights.

Expert insights: How research initiatives can drive change

An interviewed expert highlighted *The Every Woman Study (*141*)*, a joint global initiative by the International Gynecologic Cancer Society and the World Ovarian Cancer Coalition, as a compelling example of how research can drive change beyond data collection. The study aimed to fill critical evidence gaps surrounding the experiences of women diagnosed with ovarian cancer and to identify actionable strategies for improving survival and quality of life, regardless of geographic or economic context.

In addition to generating rich, global data, the study had a transformative impact in several participating countries. In India, it led to the creation of a national ovarian cancer research network and spurred further regional studies. In Kazakhstan and Nigeria, the initiative fostered the development of national research collaborations and strengthened ties between hospitals. In Nigeria specifically, it also gave rise to a pilot implementation project focused on raising awareness, streamlining diagnostic pathways, while in Malaysia, it contributed to the establishment of the patient advocacy group Ovarian Cancer Malaysia.

These examples illustrate how well-designed, inclusive research initiatives can build local capacity, inform policy, and strengthen cancer care systems, ultimately driving sustainable, real-world improvements far beyond the study’s original scope.

7. Recommendations

Women's cancers remain a major global health challenge, accounting for 3.7 million new cases and 1.3 million deaths each year. Despite advances in prevention, screening, diagnosis, and treatment, outcomes remain highly uneven. Survival rates vary dramatically by cancer type and across countries: while five-year breast cancer survival exceeds 90% in many HICs, it falls below 70% in some LMICs. Cervical cancer remains the leading cause of cancer deaths among women in parts of Africa, while uterine cancer is most common in Europe and Northern America. Across all regions, women face barriers such as late diagnosis, limited access to essential services, and financial strain, resulting in preventable deaths and high societal costs.

In responding to these challenges, it is essential to consider both gender-specific and geographical dimensions. Gender norms and structural inequities influence how women seek care, whether they can make autonomous health decisions, and how they cope with the disease and its consequences. Women's dual role as patients and caregivers often amplifies the personal and economic impact. At the same time, geographical disparities shape access to prevention and treatment: HPV vaccination is now routine in many countries but absent in others; advanced diagnostics and novel medicines are widely available in HICs but remain out of reach for many women in many LMICs. Recognizing these dual dimensions is crucial for developing equitable, context-specific solutions that truly address the global burden of women's cancers.

Closing these gaps is not only a moral imperative but also a strategic investment. Evidence consistently shows that investing in women's cancer care – from primary prevention to survivorship – yields high returns: lower healthcare costs in the long-term, stronger workforce participation, and broader economic growth. The following actionable policy recommendations outline how decision-makers can leverage existing tools and innovations to deliver equitable, sustainable improvements in women's cancer care worldwide. The recommendations are grouped into four key areas depicted in Figure 28.

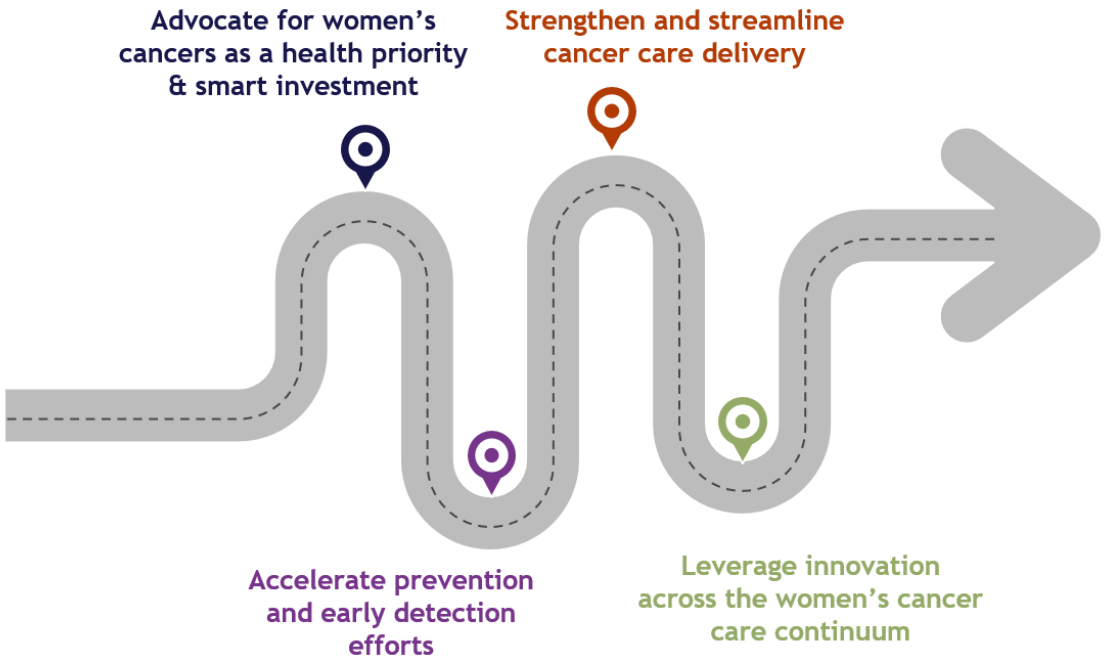


Figure 28: Recommendations to advance women's cancers care

While not exhaustive, the following set of recommendations offers a clear starting point for aligning efforts across sectors and driving meaningful change. Importantly, addressing the existing challenges requires action across all levels of influence (1) Micro level – Individuals, families, and frontline healthcare workers, (2) Meso level – Healthcare institutions, professional bodies, and patient organizations, (3) Macro level – Health systems, governments, and supranational organizations. Micro level recommendations can be more immediate and address local needs, while macro level changes take time and concerted effort but also often in fact draw from local action/pilot programs. Together, the recommendations present a roadmap toward more equitable, effective, and inclusive cancer care for women worldwide.

Notably, many recommendations cut across multiple areas and levels of influence, reinforcing the need for coordinated action. These enablers should be considered foundational elements in the design and implementation of policy responses of women's cancers but also of cancer or any diseases more generally. While some of these foundations have been in place in many HICs for decades, they are still the root causes of various challenges observed in LMICs. Cross-cutting enablers include:

- **Universal health coverage**: Ensuring financial protection and public investment in essential services to enable affordable and timely access to diagnostics, treatment, and follow-up care, helping close disparities and supporting continuity along the care pathway.
- **Gender equity**: Embedding gender considerations in all aspects of research, service delivery, and policy planning.
- **Workforce**: Investing in training and task-sharing to meet growing patient numbers and facilitate adoption of innovations, including the incorporation of AI technologies to help overcome the workforce shortages.
- **Data**: Building robust data ecosystems (interoperable cancer registries linked to vaccination/screening data) to drive monitoring, accountability, and targeted action.

7.1 Area 1: Advocate for women's cancers as a health priority & smart investment

Sustained advocacy, increased public awareness, and a formalized policy approach are essential to ensure that women's cancers receive the attention, funding, and research they warrant. Policymakers need to realize that women's cancers are an area of smart investment with potentially high societal returns. Improving health literacy, promoting community leadership, and embedding gender equity considerations in policies will create a positive feedback loop: raising visibility, driving resources, and ultimately improving care.

Micro	
Individual level; including family, healthcare professionals	
Create awareness campaigns that include local leaders	Engaging trusted community leaders embeds cancer messages within familiar cultural contexts, increasing reach among women who seldom interact with formal health systems. Such campaigns dispel myths, normalize screening and can rapidly mobilize entire communities to participate in prevention and early detection initiatives.
Develop locally adapted health literacy interventions for women	Low health literacy compromises participation in prevention and screening activities and undermines informed decision-making, particularly among marginalized groups. Community-based programs that teach basic medical terms and navigation skills can help address the gaps.
Meso	
Healthcare institution level; including professional bodies, patient organizations	
Strengthen advocacy in local communities to build leadership	Community advocates can help co-design solutions, making interventions more trusted and sustainable. Investing in leadership development for women living beyond cancer can create a community that can lobby for resources and accountability in women's cancer services.
Macro	
Health policy level; healthcare systems, policymakers, supranational organizations	
Integrate women's cancer care into Universal Health Coverage (UHC)	Making women's cancer services an explicit, financed component of UHC guarantees that cost and geography do not determine whether a woman receives screening, diagnosis or treatment. There should be no financial barriers at any stage of care. Countries that integrate women's cancers into essential services can reduce out-of-pocket spending and lower the risk of catastrophic health expenditure for women and families.
Include women's cancers in national cancer control plans (NCCPs)	Governments should explicitly address breast, cervical, ovarian, and uterine cancers in their national cancer control plans. Doing so ensures that prevention, early detection, diagnosis, treatment, and palliative care for women's cancers are prioritized in national strategies, resource allocation, and monitoring frameworks.

Embed gender equity indicators in NCCPs	Embedding gender equity indicators in NCCPs ensures that the unique needs, experiences, and barriers faced by women are systematically identified and addressed. This approach promotes accountability in policy design and implementation. It also supports alignment with broader national and global gender equity commitments in health.
Monitor and evaluate women's representation in research, policy bodies, and clinical trials	Monitoring and evaluating women's representation in research, policy bodies, and clinical trials is essential to address structural gender imbalances that influence cancer research and care.

7.2 Area 2: Accelerate prevention and early detection efforts

Modifiable risk factors account for two fifths of all cancer diagnoses globally. In the context of women's cancers, nearly all cervical cancer cases are preventable, and the incidence of breast, ovarian, and uterine cancers can be reduced by addressing lifestyle factors such as overweight/obesity and physical inactivity. There exist substantial opportunities to scale evidence-based prevention efforts, particularly through HPV vaccination, health promotion, genetic risk assessment, and health literacy community interventions. These approaches represent some of the most cost-effective strategies to reduce disease burden and save lives. In addition, raising awareness of common signs and symptoms of breast cancer and gynecologic cancers along with screening services can help to detect more cases earlier, which benefits patients and healthcare payers.

Micro Individual level; including family, healthcare professionals	
Raise awareness among parents and young adults on HPV	To educate parents, clear and accessible information should emphasize that HPV vaccination protects their children from several cancers later in life. Outreach to at-risk individuals should highlight the continued benefits of catch-up vaccination, using targeted messaging through universities, workplaces, and social media platforms they trust.
Raise symptom awareness among women and strengthen the knowledge of GPs and gynecologists	Awareness campaigns (e.g., as part of the "awareness months") need to include a focus on the most common signs and symptoms of women's cancers. This is particularly important for younger women who might think they are not yet in the risk zone for getting cancer. Similarly, primary care professionals and gynecologists should be equipped with the necessary training to recognize early signs and understand risk factors.
Provide tailored lifestyle counseling for women (e.g., weight management)	Adapting evidence-based guidance such as the European Code Against Cancer to local languages and realities (including healthy-weight messages) empowers women with actionable steps they can take to maintain health.

Meso	
Healthcare institution level; including professional bodies, patient organizations	
Implement school- and workplace-based health promotion programs	Implementing health promotion programs in schools and workplaces provides a strategic opportunity to reach individuals early and consistently across the life course. These programs can raise awareness about cancer risk factors and symptoms, promote healthy behaviors such as physical activity and balanced nutrition, support HPV vaccination uptake, and encourage participation in screening services.
Macro	
Health policy level; healthcare systems, policymakers, supranational organizations	
Introduce HPV vaccination programs and organized breast/cervical screening programs	National policymakers need to integrate the two WHO initiatives on breast and cervical cancer into local policies. Establishing HPV vaccination programs and integrating them into national immunization program should be done everywhere. Organized, population-based screening programs should be established, taking into account local resource constraints.
Fund and tailor HPV vaccination programs with support from global organizations	Gavi, the Vaccine Alliance uses a co-financing model that enables low-income countries to procure HPV vaccine at subsidized prices, reaching girls who would otherwise be missed. School-based, pharmacy-based and community-based delivery adapted to local contexts addresses logistical and cultural barriers and accelerates equity in cervical cancer prevention.
Expand early detection and address screening gaps	Underserved women often present with advanced disease due to delays in screening and diagnosis. Mobile mammography units, HPV self-sampling, integrated invitation or diagnostic pathways and timely referrals shorten time to detection.
Improve affordability and timely access to diagnostic testing for high-risk women	Public health systems should integrate cost-effective genetic testing into national benefit packages for women with a personal or family history of cancer, while also advancing strategies, such as population-based testing, to identify high-risk women who would otherwise be missed under current guidelines.

7.3 Area 3: Strengthen and streamline cancer care delivery

Clear pathways across the cancer care continuum are essential: early detection has little value without timely diagnosis and treatment, and advanced diagnostic procedures are not of value if patients cannot access advanced therapies. Meeting the growing demand for women's cancer care will require redesigned service delivery models and a strengthened health workforce, supported where appropriate by AI technologies to help mitigate workforce shortages. This includes investment in specialist training, nurse-led models, patient navigation, and infrastructure, particularly in low-resource settings. Also important are initiatives to enhance the cultural competence of healthcare workers, addressing both conscious and unconscious bias, and efforts to empower women as active recipients and providers of care is essential to achieving person-centered, resilient systems.

Micro Individual level; including family, healthcare professionals	
Train nurse practitioners and patient navigators	Building capacity of nurses and patient navigators – adding financial and legal advocacy components to their trainings – can shorten diagnostic and treatment delays, improve adherence, reduce the financial burden of cancer on women, and offset some of the workforce shortages.
Develop patient-centered pathways	Developing patient-centered care pathways tailored to women's cancers ensures continuity, coordination, and responsiveness across the entire cancer continuum. These pathways offer clear navigation tools, can strengthen health literacy and promote adherence, particularly in fragmented or resource-constrained health systems.
Meso Healthcare institution level; including professional bodies, patient organizations	
Develop multidisciplinary (MTD) care teams	MTDs should include at least medical/clinical oncologists, radiation oncologists, surgeons, radiologists, pathologists, and nurses but also mental health professionals, and social workers who are essential to delivering comprehensive cancer care for women. Integrating supportive services, including mental health, into routine care can improve adherence, enhance quality of life, and reduce disparities in outcomes.
Invest in capacity building and cultural competence of healthcare professionals	Investments in training programs of all allied health professionals can improve diagnostic accuracy, treatment delivery, and patient navigation. Capacity building efforts should include upskilling in emerging technologies, gender-sensitive care practices, and cultural competence training to address both conscious and unconscious bias, as well as prioritize underserved regions.
Strengthen public-private partnerships and replicate successful regional models	Public-private partnerships can mobilize the funding, technology, and managerial expertise needed to build cancer centers and imaging networks that governments alone cannot finance. Learning from initiatives such as City Cancer Challenge at regional level can scale up screening and treatment access.

Macro	
Health policy level; healthcare systems, policymakers, supranational organizations	
Promote the uptake of evidence-based international clinical guidelines	Evidence-based international clinical guidelines can ensure quality, consistency, and patient outcomes across diverse health systems. Promoting their uptake in both private and public settings requires adaptation to local contexts, training for healthcare providers, integration into national protocols, as well as financial incentives for adherence.
Prioritize healthcare infrastructure	Building and maintaining resilient infrastructure is a foundational step toward reducing global disparities in women's cancer outcomes. Directing domestic and donor funds to diagnostics, radiation therapy, and information systems closes the urban-rural and public-private gaps that currently force women to travel long distances or forego care altogether in LMICs.

7.4 Area 4: Leverage innovation across the women's cancer care continuum

Advances in technology, such as AI-assisted diagnostics, biomarker testing, and novel medicines, are transforming how women's cancers are detected and treated. However, equitable access to these technologies remains a challenge. To avoid widening disparities, innovation must be accompanied by inclusive implementation strategies, international collaboration, and investment in health systems infrastructure.

Micro	
Individual level; including family, healthcare professionals	
Train healthcare professionals on the use of AI tools and new diagnostics	Training healthcare professionals in the use of AI tools and emerging diagnostics is essential to fully harness technological advances and enhance early detection, precision treatment, and clinical decision-making in women's cancers.
Equip women with (digital) tools for self-monitoring or decision support	Empowering women with digital tools for self-monitoring and decision support aids adapted to local context can enhance engagement, health literacy, and early detection of cancer-related symptoms. These tools also help bridge access gaps and promote a more person-centered approach to women's cancer care.
Meso	
Healthcare institution level; including professional bodies, patient organizations	
Test and incorporate IT-driven and AI-driven tools in radiology and pathology	Adopting telepathology can be a way for smaller facilities to get the expertise from specialized facilities without the need for patient travel or transportation of biopsies. AI-assisted mammography can improve detection accuracy and reduce workload on specialists.

Build interoperable cancer registries linked to vaccination and screening data	Establishing national cancer registries, which collect stage at diagnosis and include metastatic/advanced cancers as well as early-stage, and linking individual-level HPV vaccination and screening data to those registries allows to identify coverage gaps by age and geography. Such integrated surveillance systems can help ensure that underserved women are not overlooked, and it supplies metrics to track progress.
Expand access to comprehensive biomarker testing	Comprehensive biomarker testing allows for the personalization of treatment plans, and plays a growing role in the development and use of novel therapies. Building local biomarker testing capacity, subsidizing multigene panels, and integrating testing in the diagnostic process is needed.
Macro Health policy level; healthcare systems, policymakers, supranational organizations	
Ensure equitable access to novel medicines	Ensuring fast and broad access to novel medicines is critical to improve treatment outcomes. Medicines with substantial clinical benefits and that are cost-effective should be prioritized for reimbursement. In LMICs, mechanisms like public-health licensing, donation programs, and pooled procurement initiatives (e.g., the ATOM Coalition) can accelerate access to novel therapies.
Promote international collaboration in research, care, and data sharing	Cross-border alliances led by organizations such as the WHO and UICC pool expertise, harmonize guidelines, and mobilize funding that individual countries cannot secure alone. Joint clinical trials, shared registries, and regulatory cooperation increase representation of LMIC populations in evidence generation and speeding approval and adoption of effective interventions worldwide.

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Appendix

Terminology uterine / endometrial / cervical cancer

The uterus is divided into different parts. The section of the uterus that makes up the upper two-thirds of its structure is called the body (corpus) (358). The cervix is the lower part and connects the body of the uterus to the vagina. Cancers originating in the body are usually referred to as uterine cancer, corpus uteri cancer, or endometrial cancer (358), whereas cancers originating in the cervix are referred to as cervical cancer (359).

Uterine cancer can be of two types depending on their site of origin, endometrial cancer and uterine sarcoma (360). The body of the uterus has two main layers[12], the myometrium (muscular outer layer) and the endometrium (inner layer) (359, 361). Endometrial cancer begins in the endometrium whereas uterine sarcoma begins in the myometrium (359). Endometrial cancer accounts for around 90% of all uterine cancers and uterine sarcoma for the other 10%.

Cancer registries and databases commonly record cancers based on their initial site of origin. Since endometrial cancer falls within the classification of corpus uteri cancers (ICD-10 codes C54 and C55), these broader classifications are utilized in instances where available data do not allow for a more granular distinction of endometrial cancer. Cervical cancer is always identified separately (ICD-10 code C53).

[12] There is also a layer of tissue called serosa that covers the outside of the uterus.

Classification of regions used in this report

Table 8: Regions in chapter 4 and onwards.

Asia-Pacific	*Australia, Bangladesh, Bhutan, Brunei, Cambodia, China, Fiji, India, Indonesia, Japan, Kiribati, Laos, Malaysia, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Nepal, New Zealand, North Korea, Palau, Pakistan, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, South Korea, Sri Lanka, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu, Vietnam.*
Eastern Europe and Central Asia	*Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Georgia, Kazakhstan, Kosovo, Kyrgyzstan, Moldova, Montenegro, North Macedonia, Romania, Russia, Serbia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.*
Latin America	*Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela.*
Middle East and North Africa	*Afghanistan, Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Türkiye, United Arab Emirates, Yemen.*
Sub-Saharan Africa	*Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo-Brazzaville, Congo-Kinshasa, Djibouti, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe.*
Western countries	*Austria, Belgium, Canada, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States.*

Barriers for HPV vaccination by region

Table 9: Barriers for HPV vaccination by region.

Regions	Main challenges
Asia-Pacific	• *In a 2023 study, more than half of ANCCA countries (52%) reported a lack of national HPV vaccination data, making it difficult to plan, monitor, and evaluate vaccination programs (362).* • *Fear of vaccine safety and lack of knowledge about HPV and cervical cancer prevention contribute to low uptake (362).*
Middle East and North Africa	• *Countries within WHO's Eastern Mediterranean Region have the lowest HPV vaccination coverage rates for girls (first and second doses) and for boys, alongside the Asia-Pacific region (96).* • *A lack of knowledge and awareness about HPV infection and the HPV vaccine remains a significant barrier across all population groups, including adolescents, parents, healthcare professionals, teachers, and the general public according to a systematic review of 22 studies (363). Even among primary care physicians, 62% had limited awareness of HPV infection and vaccine recommendations (363).* • *Cultural and religious beliefs contribute to low vaccine acceptance. The stigma surrounding sexually transmitted infections and discussions about sexual health presents an additional challenge to HPV vaccine uptake (364).*
Latin America	• *Lack of information and awareness about HPV and the vaccine. Participants in qualitative studies reported a lack of guidance on vaccination, and concerns about vaccine safety remain common (365).* • *Misconceptions and stigma surrounding HPV. Vaccination against sexually transmitted infections such as HPV is often stigmatized, leading to hesitancy and lower acceptance rates (365).* • *Structural challenges within the healthcare system. Sporadic vaccine shortages, long waiting times, and limited healthcare facility hours create barriers to vaccine access (365).*
Sub-Saharan Africa	• *A systematic review of 20 articles found that the most cited barrier was scarcity of resources, including insufficient resources to educate the public about HPV vaccination, inadequate cold chain capacities that are required for proper storage of vaccines, shortage of healthcare personnel (366).* • *In the same study the second most cited challenge was lack of information regarding vaccination services. This means that individuals do not have sufficient information on how or where to access HPV vaccination (366).* • *The third most cited challenge was a general lack of awareness of HPV and how it causes diseases (366).*
Western countries (and parts of Eastern Europe)	• *Many European countries publicly support WHO's cervical cancer elimination goals, yet there is often a gap between political commitments and actual implementation (367).* • *While 61% of European countries have set vaccination targets, few countries have surpassed the WHO's 90% coverage target for 15-year-old females based on reported data (367).* • *Significant data gaps persist across vaccination domains, including outdated or sporadically published vaccination coverage rates in many European countries (367).* • *EU member states have either introduced gender-neutral vaccination programs or are in the process of doing so, with Estonia and Bulgaria being the most recent examples (368, 369). However, vaccination rates among both boys and girls remain suboptimal (368).* • *Public confidence in HPV vaccination declined between 2020 and 2022 in Europe (370). For example, the proportion of people who agreed that HPV vaccination is important decreased in 17 countries and did not increase in any. The most significant drops were observed in Slovenia and Slovakia, with declines of approximately 14 percentage points in 2022 (370). Similarly, agreement that the HPV vaccine is safe increased in only two countries - Cyprus and Romania - but decreased in 11 countries, with the largest declines seen in the Netherlands and Slovakia (around 12 percentage points).*

Regions	*Main challenges*
	• *HPV vaccination reminder systems are often lacking, with few countries implementing centralized, nationwide reminders, while others have only limited or geographically restricted systems (367).* • *In the US, disparities in HPV vaccination rates exist across insurance coverage, geographic regions, and ethnic groups. In 2022, vaccination rates were higher among children (girls and boys) aged 9-17 years with private health insurance (41%) compared to those covered by Medicaid (37%) or those without insurance (21%) (371). Geographically, children in large metropolitan areas had a higher vaccination rate (39%) compared to those in non-metropolitan areas (30%). Additionally, Hispanic children are less likely to be vaccinated (34%) compared to Caucasian children (40%).*

Notes: HPV vaccination coverage rates refer to the percentage of girls vaccinated by age 15 in 2023. The countries listed are examples and may not represent the absolute highest or lowest coverage rates within a region, as preference was given to more populous countries. Source: (96).

Diagnostics

Table 10: Overview of molecular classification, biomarkers, and diagnostic strategies.

Cancer type	Molecular classification	Biomarkers	Diagnostics	Sources
Breast	*Luminal A* *Luminal B* *HER2+* *Triple negative (TNBC)* *HER2-low is an emerging category responsive to new treatments in the metastatic setting.*	*Early stage or initial diagnosis:* *ER, PR, HER2* *Ki-67* *BRCA 1/2* *Metastatic/recurrent:* *PIK3CA* *BRCA 1/2* *PD-L1* *ESR1*	*IHC/FISH are standard.* *Gene expressions assays (such as Oncotype DX, MammaPrint).* *NGS in the metastatic setting.*	*(196)* *(202)* *(372)* *(373)* *(201)*
Cervical	*Squamous cell carcinoma* *Adenocarcinoma* *Other epithelial tumors*	*Early stage or initial diagnosis:* *P16* *Metastatic/recurrent:* *PD-L1* *Less common/ investigational:* *MMR/MSI* *TMB* *HER2* *NTRK/RET gene fusion*	*IHC: p16, PD-L1, MMR proteins, in selected cases HER2* *MSI testing*	*(197)* *(198)* *(374)*
Ovarian	*The majority (90%) are epithelial ovarian carcinomas subclassified as:* *high-grade serous carcinoma (HGSC)* *low-grade serous carcinoma (LGSC)* *mucinous carcinoma (MC)* *endometrioid carcinoma (EC)* *clear cell carcinoma (CCC)*	*At diagnosis:* *CA-125 (standard for initial assessment)* *CEA and CA 19-9 (helpful in suspected mucinous carcinoma)* *BRCA1/2 mutations (germline and/or somatic) in all high-grade cases* *HRD status (recommended in advanced high-grade cases)* *Subtype-specific (less common): PIK3CA, KRAS, PTEN*	*IHC for tumor classification* *Serum CA-125 and serum CEA and CA 19-9 in some cases.* *Testing for BRCA1/2 (germline and/or somatic)* *HRD testing* *NGS in advanced/metastatic setting (for broader profiling, incl. actionable mutations)*	*(201, 375)*
Endometrial	*Traditional histopathological classification:* *Type 1* *Type 2* *New molecular subgroups based on The Cancer Genome Atlas (TCGA):* *POLE-ultramutated* *dMMR* *p53 aberrant* *NSMP*	*Early stage (or initial diagnosis):* *MMR proteins (MLH1, PMS2, MSH2, MSH6)* *POLE mutations* *p53* *ER/PR* *HER2 (for serous subtype)* *L1CAM (emerging)* *Metastatic/recurrent:* *MMR/MSI* *TMB-H* *HER2* *ER/PR*	*IHC: MMR, p53, ER/PR, HER2, L1CAM* *Targeted sequencing for POLE* *MSI assay* *NGS (for TMB, broad profiling)* *MLH1 methylation (if MLH1 loss by IHC)*	*(199)* *(147)*

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