White Paper

Improving Access to Affordable and Sustainable Oncological Care in Africa

DANIEL MORA-BRITO, Engagement Manager, Global Public Health, EMEA Thought Leadership
TEMIS VASILI, Principal, Global Public Health

Table of contents

Introduction

The prevalence of cancer cases and number of cancer-related deaths are rising significantly across Africa, with mortality predicted to double by 2030. If current trends continue, those figures will double again by 2040.[1] According to recent data from the International Agency for Research on Cancer (IARC), the most prevalent cancer types on the continent are breast and cervical.[2] This implies women are disproportionately impacted by the growing burden of disease and are least likely to access affordable care, creating a gulf of health inequity.[3]

Some researchers argue that a historic focus on infectious diseases and maternal, newborn and child health in low- and middle-income countries (LMICs), particularly in Africa, has made cancer care a less prominent health priority, with the true scale of the problem yet to be known.[4] A recent report by the Lancet outlined the urgent need to tackle the oncological care gap in Africa and build on the progress already made to avoid a cancer crisis in the region.[5]

This paper explores the barriers to cancer care within the patient journey in Africa by detailing an in-depth country level assessment and outlining actions that the global health community can take to improve affordable and sustainable access. To address the greatest burden of disease, the assessment focuses on the two most commonly diagnosed cancer types, cervical and breast, and examines countries with the highest incidence and mortality rates as measured by IARC and the Global Cancer Observatory (GLOBOCAN).[6,7]

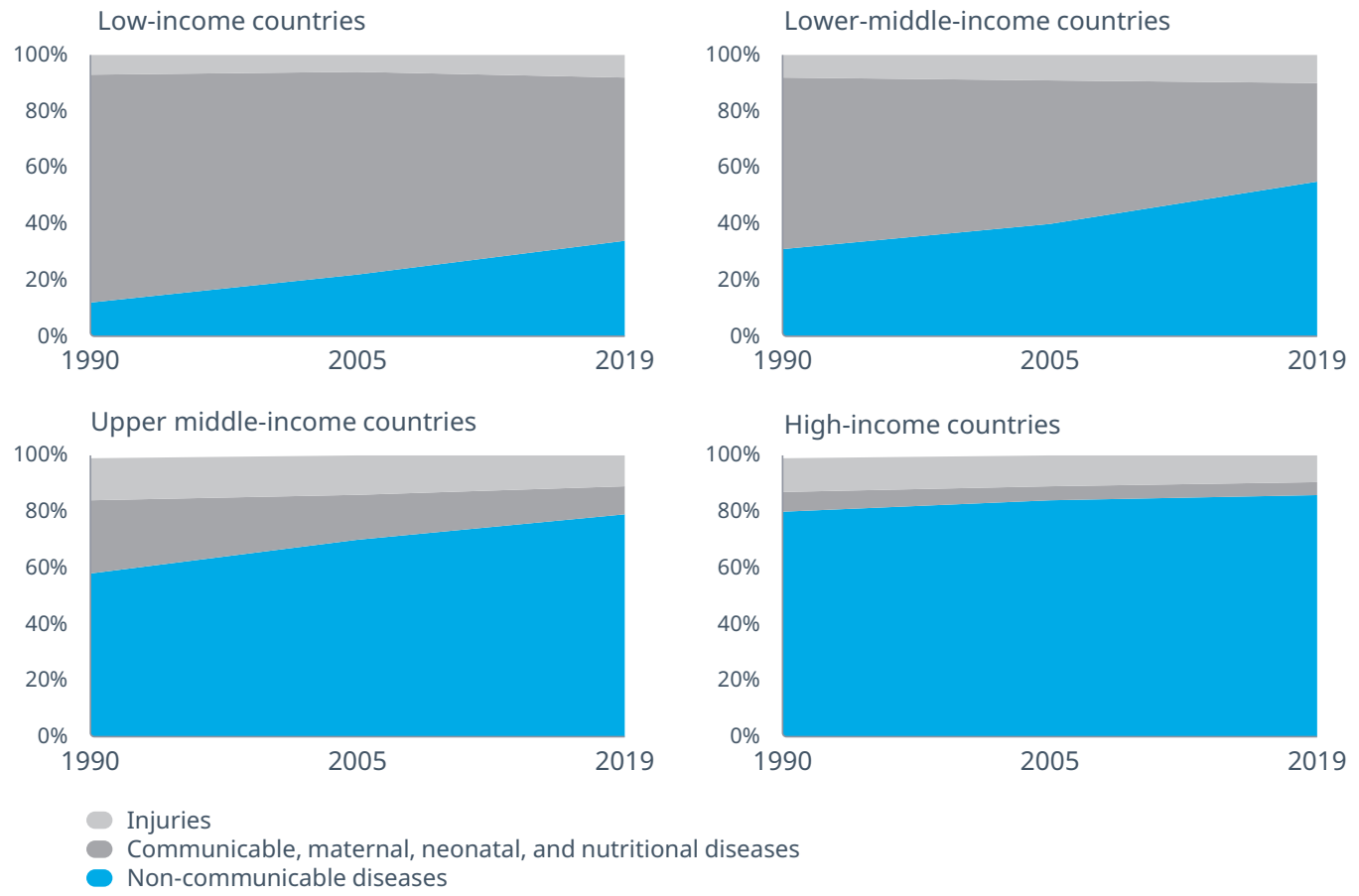
With the objective of ensuring regional (north, south, east and west) and socioeconomic representation (lower, lower-middle, middle and upper-middle), the study covers Egypt, Ghana, Nigeria, Kenya, Rwanda and South Africa. Countries selected for the study also respond to unmet need, impact potential of multi-sectoral action, and data availability from IQVIA's operations in Africa.

Understanding the landscape of non-communicable diseases: A growing global health threat

Global and Africa-specific trends

Cardiovascular and respiratory chronic conditions, cancer and diabetes, the most prevalent non-communicable diseases (NCDs), are responsible for 71% of deaths globally, disproportionally affecting the poorest and most vulnerable sectors of society. Out of the 41 million people killed by NCDs every year, 31.6 million, or the equivalent of 77%, live in LMICs, with 85% of this population segment dying prematurely between the ages of 30 and 69 years.[8] Figure 1 illustrates the evolution of NCD burden, showing how the greatest increases are taking place in low-, lower-middle, and upper middle-income countries. This elevated mortality rate reflects weak and underfunded health systems unable to ensure easily accessible screening services, information and prevention to those with undiagnosed chronic conditions, and treatment and control to those suffering from them.

Figure 1. Evolution of NCDs burden by World Bank income classification (1990-2019)

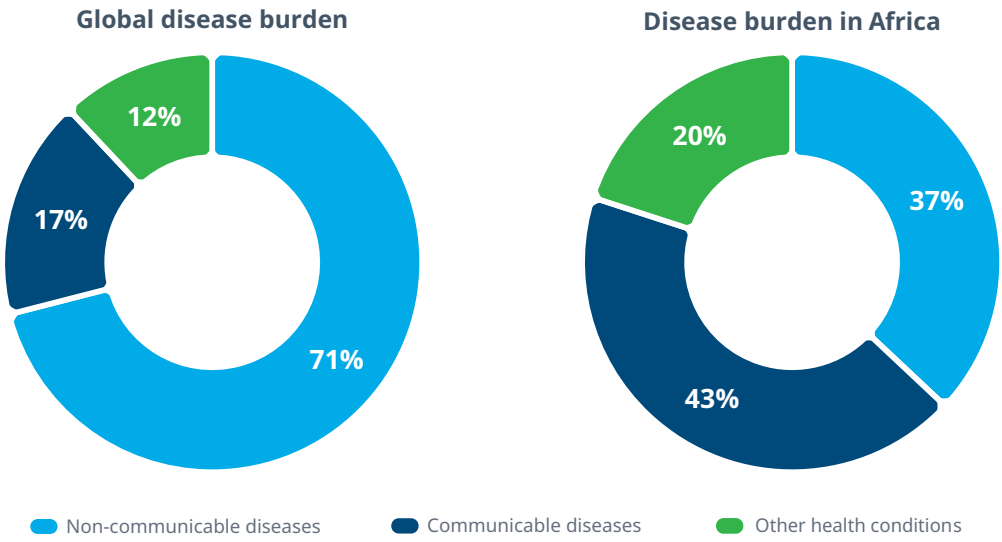


Source: IHME, Global Burden of Disease (2019). Information presented in disability-adjusted life years (DALYs).

Africa's epidemiological profile has been historically characterized by a high prevalence of infectious diseases, triggering substantial international efforts to fight and eradicate them over the last few decades. However, as a result of population ageing, behavioral and lifestyle changes, environmental exposure, infections, genetics and sub-optimal primary prevention, the stark increase in the prevalence of NCDs, as shown in figure 2, is exposing Africa to a double disease burden that adds even more pressure to an already strained healthcare infrastructure. Rising from 24% in 2000,[9] 37% of deaths in sub-Saharan Africa in 2019 were attributable to NCDs, with 70% of them caused by cardiovascular disease, cancer, diabetes, chronic respiratory conditions, and poor mental health.[10] In Africa as a whole, NCDs have killed approximately 2.8 million people in 2019, 63% of them prematurely.[11] While infectious diseases still account for more than half of deaths across the continent, mortality due to chronic conditions in Africa is higher than anywhere in world.[12]

While infectious diseases still account for more than half of deaths across the continent, mortality due to chronic conditions in Africa is higher than anywhere in world.

Figure 2. Disease burden globally and in Africa (mortality percentages) (2019)



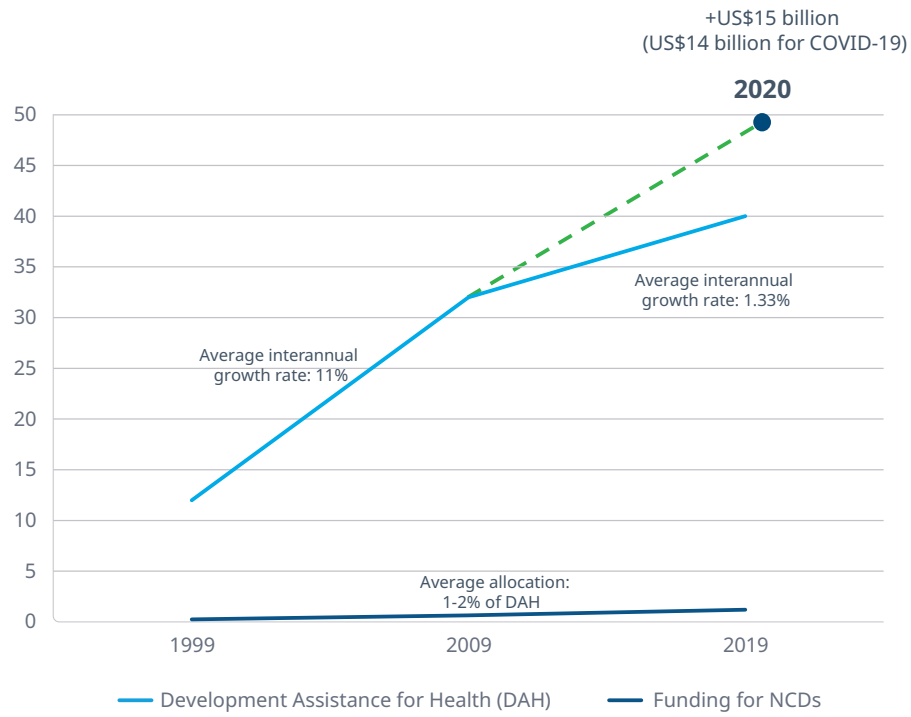
Source: World Health Organization, Global Health Observatory and Noncommunicable Diseases Data Portal

Funding in a highly volatile context

International funding for NCDs remains significantly lower than for infectious diseases, arguably due to the perceived cost of related care and limited returns on investment. NCDs currently receive between 1% and 2% of global investment financing for health despite being responsible for the world's highest rate of standardized disability-adjusted life years (DALYs), about 20,205 per 100,000.[13,14] Global investments to fight and control infectious diseases, in conjunction with interventions in maternal, newborn and child health, have increased life expectancy and strengthened health systems in extremely vulnerable geographies, particularly Africa. Yet, unmet need across all disease types continues to be sizeable and demands urgent attention, and even more so after COVID-19's disruptions of critical health services and the pandemic's impact on hard-fought wins in the management and control of many conditions. To maintain a greater balance across priorities and maximize funding, key global health stakeholders have been pushing for more deliberate horizontal and community-focused programming, strengthening the healthcare continuum and moving away from disease-specific approaches. The guiding star is holistic care for patients from their first point of access.

As figure 3 illustrates, after increasing at a steady rate of 11% between 2000 and 2010 annually, development assistance for health only grew by approximately 1.33% between 2010 and 2018.[15] Notwithstanding this trend, the COVID-19 pandemic, the exacerbation of climate change's impact, the emergence of major geopolitical conflicts, humanitarian crises, and global macroeconomic downturns triggered the reconsideration of international development priorities and the funding streams to support them. This generated greater fragmentation across larger financial pledges and reduced the attention of donors toward critical health issues, although less so for pandemic preparedness and response. For example, the level of foreign aid donors mobilized to support Ukraine's crisis reached a record high of US$211 billion in 2022, with a significant portion of these resources focused on humanitarian response, accounting as well for in-country refugee attention expenditures.[16]

Figure 3. Development assistance for health and NCD funding trends (2009-2019) (in USD billions)



Source: World Health Organization; Mushasha, R. and El Bcheraoui, C. (2023); and Shi, J. et al. (2023). Calculations by IQVIA EMEA Thought Leadership.

Against this backdrop, many donors are insisting on a redefinition of the global health architecture to ensure that current and future international initiatives are more coherent and cost-effective. Alternatively, donors are also encouraging the wider use of innovative and domestic financing to reduce dependence on foreign support, although the capacity of these mechanisms to generate sustainable funding continues to be quite limited and requires more concerted multi-sectoral efforts. Consequently, NCDs and a host of infectious diseases will most likely be even more impacted by funding shortages in the short and medium term, keeping in mind the fierce competition for very scarce resources across the global health community. Fiscal constraints in national health budgets also represent a major obstacle for the achievement of universal health coverage (UHC) and the satisfaction of basic health-related human rights and Sustainable Development Goals (SDGs).

Amid these austere funding scenarios, some initiatives are showing promise and renewed enthusiasm around the fight against cancer. A convening of the World Health Organization (WHO) in Cartagena, Colombia, in March of 2024, managed to secure funding in the order of US$600 million for the elimination of cervical cancer, demonstrating the interest of the international community to manage a highly preventable disease.[17] These resources are meant to accelerate progress in the implementation of WHO's global strategy to eliminate cervical cancer, primarily increasing access to single-dose human papillomavirus (HPV) vaccination campaigns and diagnostics. In the context of this meeting, African countries such as the Democratic Republic of Congo, Ethiopia, and Nigeria made ambitious commitments on HPV immunization coverage and screening.[18]

Cancer burden in Africa

Current state of affairs

Cancer alone accounts for 9.3 million of NCD deaths globally every year and it is rapidly rising, with the most common types being breast, lung, colon, rectum and prostate. According to these figures, 30% of cancer mortality in LMICs is a consequence of cancer-causing infections, particularly HPV.[19]

Some studies indicate that cancer incidence has doubled in sub-Sahara Africa over the past 30 years, reaching higher rates than in regions with a lower Human Development Index (HDI).[20] For the entire continent, cancer is the second cause of NCD-related deaths after cardiovascular disease, taking the lives of 530,000 people in 2019. Failure to introduce corrective measures could increase mortality to 1,429,812 deaths by 2040, a predicted rise of 106%.[21] This situation is compounded by the fact that, beyond external factors, genetic predispositions for certain types of cancer, especially prostate and breast, are common in populations of African descent. NCDs in general tend to prominently affect male populations in Africa through a high prevalence of cardiovascular disease, but cancer impacts most notably women, given the most common gender-specific types recorded on the continent.

In sub-Saharan Africa, cancer incidence has doubled over the past 30 years, with a rate (128.2 per 100,000) higher than in regions with a lower Human Development Index. For the entire continent, cancer is the second cause of NCD-related deaths after cardiovascular disease, taking the lives of 530,000 people in 2019.

Table 1. Sub-Saharan Africa cancer statistics

HIGHEST INCIDENCE CANCERS ACROSS ALL AGES (PERCENTAGE OF TOTAL INCIDENCE) — TOP FIVE CANCER TYPES BASED ON SUB-SAHARAN AFRICA TOTALS					
TYPE OF CANCER	**SUB-SARAHAN AFRICA**	**CENTRAL AFRICA**	**EASTERN AFRICA**	**SOUTHERN AFRICA**	**WESTERN AFRICA**
Breast	16.1	16.8	13.8	14.2	19.9
Cervical	13.8	14.7	16.5	10.6	11.2
Colorectal	5.7	5.4	5.5	6.6	5.5
Liver	4.8	5.7	3.7	2.2	7.1
Prostate	9.6	12.6	7.1	12.0	10.7
Mortality (age-standardized rate worldwide per 100,000 people)					
All sexes	87.1	78.4	92.1	109.0	78.8
Males	83.6	79.2	82.4	128.8	74.4
Females	92.2	79.9	102.4	98.7	83.6
Deaths in 2020	520,348	71,570	222,189	61,659	164,930
Highest mortality across all ages (percentage of total cancer deaths)					
Breast	12.4	13.3	10.8	8.3	15.5
Cervical	14.0	14.8	16.4	11.1	11.4
Colorectal	6.0	5.9	6.0	0.3	0.1
Liver	7.0	8.0	5.2	4.0	10.2
Prostate	7.7	10.8	5.9	6.9	9.0

Source: Ngwa, W. et al. (2022)

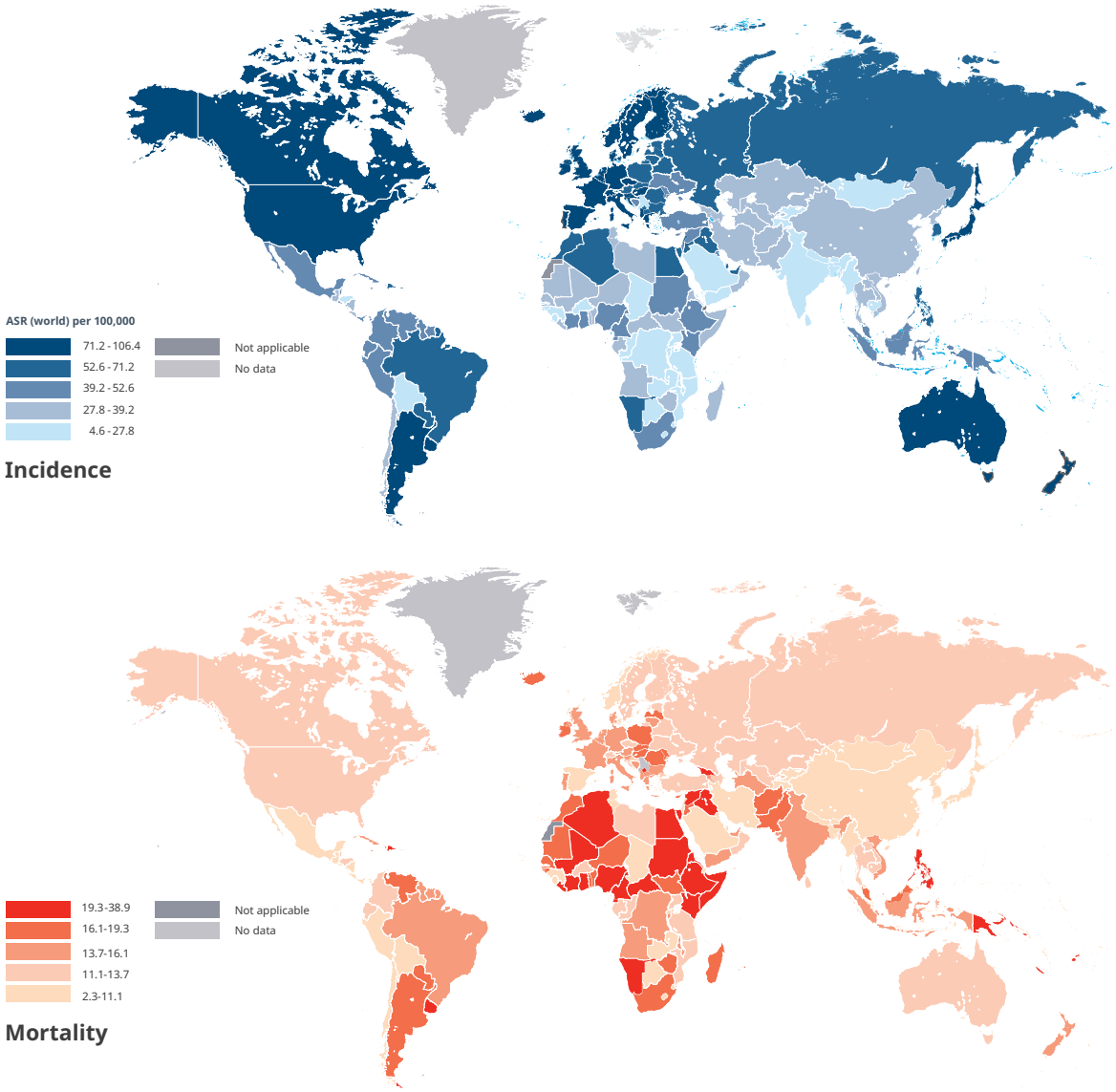
Survival rates are also much lower in Africa compared to those of other geographies. While the five-year survival rate of women with breast cancer in Europe is 82%, in countries like Uganda, Algeria and Gambia it drops to 46%, 39% and 12%, respectively.[22] Beyond limited access to treatment, all types of cancer cases are usually detected at later stages due to lack of awareness and difficulties in access to diagnostics, shrinking the possibility of recovery. In countries like Tanzania, for instance, this was the case for 90% of diagnosed patients in 2022.[23]

Zooming in: Breast and cervical cancer

The specific types of cancer this paper examines in more detail, breast and cervical, have the highest incidence and mortality rates across the African continent.

Available data indicates that the incidence of breast cancer in sub-Saharan Africa, while lower than in many high-income countries, is growing considerably. Registries in Uganda and Zimbabwe reveal average annual increases in incidence of close to 5%. Even when diagnosis is timely, inaccurate or delayed disease profiling, usually connected with inappropriate use of therapeutic solutions, exposes patients to greater risk for unfavorable outcomes. Moreover, the high presence of hormone receptor negative or triple negative cases in the region makes prognosis less encouraging.[24]

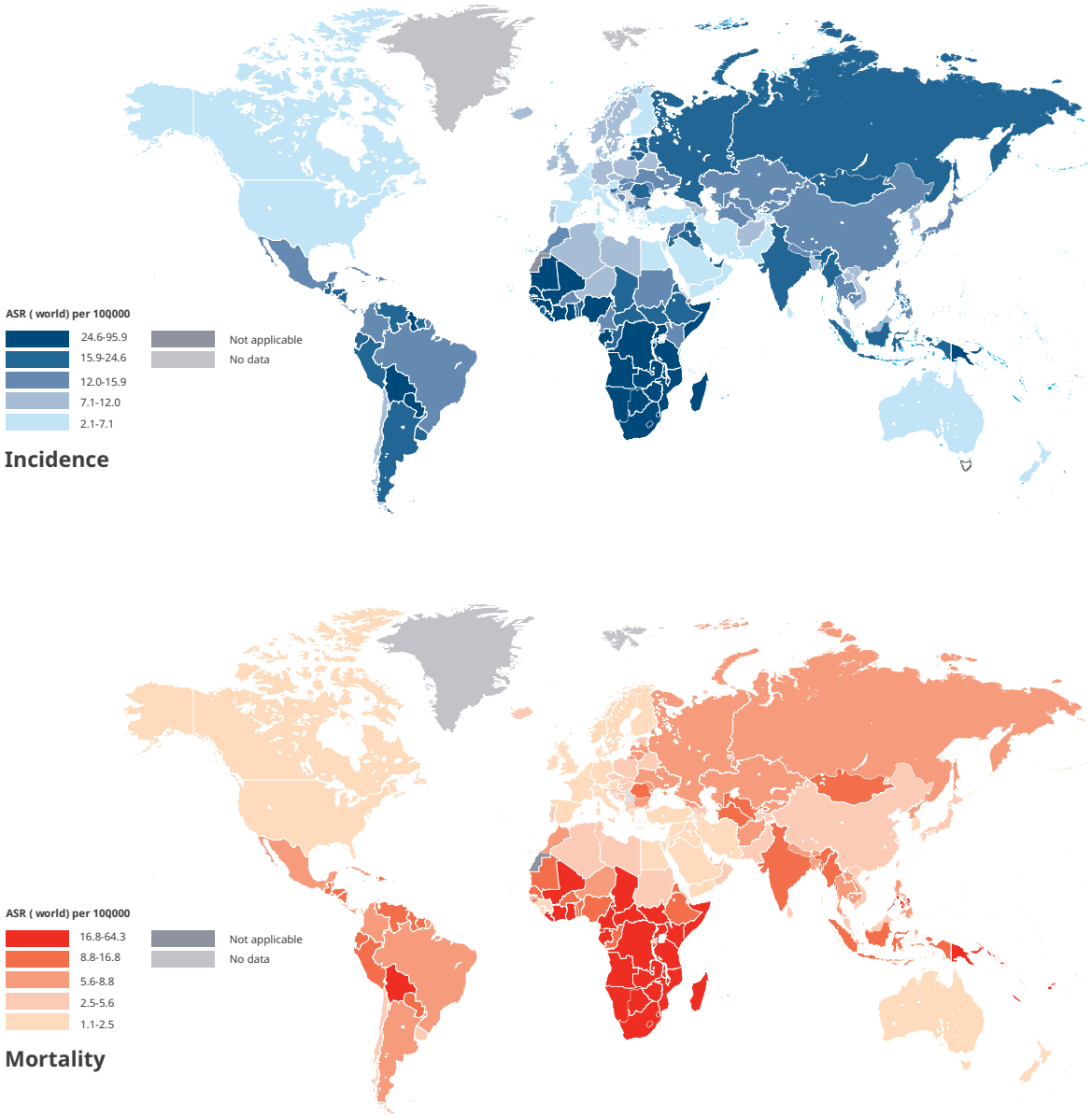
Figure 4. Breast cancer global data heatmap for incidence and mortality (2022)



Source: International Agency for Research on Cancer (generated with IQVIA parameters)

Cervical cancer is the second most common cancer in sub-Saharan Africa and the leading cause of cancer-related deaths among women in the region. Incidence and mortality are particularly high in Eastern Africa, exceeding those at the global level, counting Malawi (67.9 and 51.5), Tanzania (62.5 and 42.7) and Zambia (65.5 and 43.4) among the worst age-standardized rates per 100,000 people in the continent.[25] This type of cancer is considered an AIDS-defining illness and is present in 24.9% of cases of HIV-positive women, usually seen in combination with recurrent infections from two oncogenic HPV strains, namely HPV-16 and HPV-18.[26,27] In AIDS-related situations, 63% of cases affect women under 45 years old.[28] The highest HPV prevalence continues to be in sub-Saharan Africa, representing 24% of global cases.[29]

Figure 5. Cervical cancer global data heatmap for incidence and mortality (2022)



Source: International Agency for Research on Cancer (generated with IQVIA parameters)

Age standardized mortality rates for both cervical and breast cancer are higher in Africa than any other region, despite having one of the lowest incidence rates for breast cancer.[30] Evidence indicates that for most common cancer types, breast and cervical included, the mortality-incidence ratio (MIR) strongly correlates with a country's ranking on the HDI and other socioeconomic measures.[31] MIR variance across regions shows deaths from these types of cancer are largely avoidable and curable with appropriate prevention and early diagnostic strategies. The MIR in Africa can be ascribed to several factors including late-stage presentation, disease management, and genetic factors.[32] Overall, cancer dynamics in Africa remain insufficiently studied and require a more detailed profiling vis-à-vis access, genetic predispositions, lifestyle changes, urbanization process, and dietary considerations. This signals a latent potential for improving patient outcomes if the relevant players can address the barriers impacting cancer care.

Access to oncological care in Africa: A focused view

Setting the scene

Oncological care in most African countries usually encounters a constellation of barriers associated with availability, affordability, accessibility and awareness. These barriers are not uncommon to healthcare access across the continent, but the inherent complexity of oncological conditions, considering the type of resources and settings they require, can place cancer patients even farther from the attention they need. Access dimensions are conceptualized differently across the relevant literature or disease-specific programmatic frameworks, and some of their variables tend to overlap.

The inherent complexity of oncological care, due to type of resources and settings they require, can place cancer patients even farther from the attention they need.

Availability, affordability, accessibility and awareness from a patient pathway perspective are defined as follows:

The **availability** of cancer care is often defined as the consistent and dependable presence of medicines and healthcare services to address patient needs. In some cases, it is also understood as market readiness to absorb and use specific therapies. Availability of some of these assets is limited due to the slow inclusion of routine and novel therapeutic solutions in national essential medicines lists, lengthy regulatory approvals, insufficient access to oncological agents through controlled clinical trials, sub-optimal demand forecasting, unreliable supply chains, and insufficient domestic manufacturing of medicines and health technologies. In addition to this, there is often limited capacity for surgery and radiotherapy alongside which oncological agents are required. From a medicine perspective, cost remains an important barrier to availability, especially when considering that between 70% and 90% of medicines in the continent are imported,[33] and this reliance on products manufactured elsewhere undeniably affects pricing. Some studies suggest that 61.5% of essential medicines are available through public and private distribution channels across Africa,[34] with essential cancer drugs ranging between 32% and 57.7%.[35] Beyond therapeutic solutions, private health providers, only accessible to a limited segment of the population, continue to have the highest level of availability for cancer care.

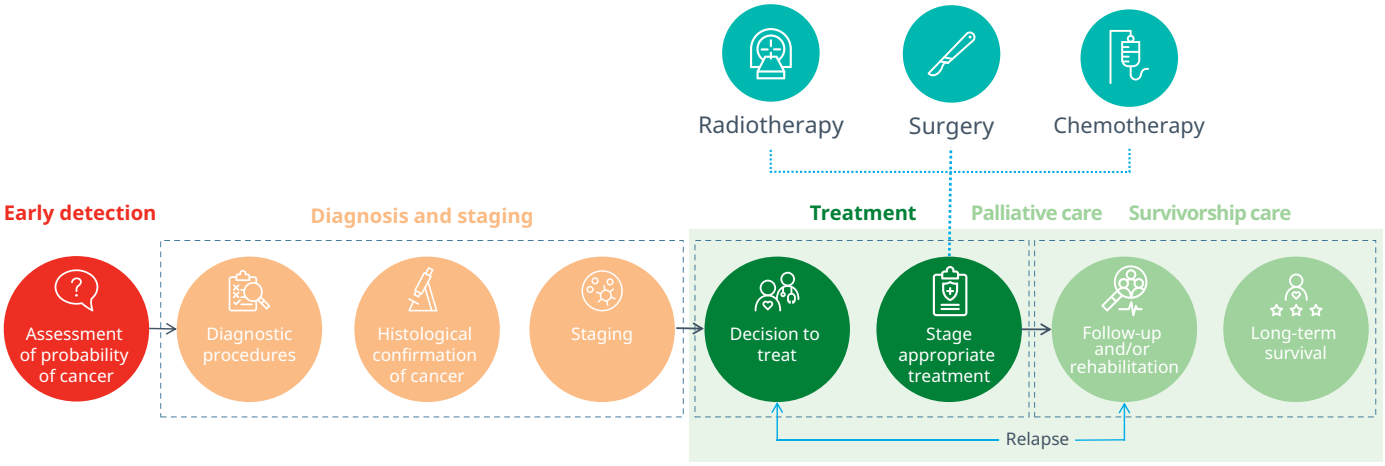
A key component of UHC, **affordability** touches upon the capacity of patients to pay for treatment or medical services without experiencing financial hardship or sacrificing basic needs. Cancer prevention, diagnosis and treatment in Africa are inadequately covered by national health insurance, thereby generating catastrophic out-of-pocket expenditures for the very few patients who can afford these services and jeopardizing the survival of those who cannot. Additionally, African countries often pay on average four times more for essential cancer medicine compared to other regions with similar demand and gross domestic products (GDP),[36] primarily due to

market size and procurement volumes, regulatory and fiscal hurdles, inflation, lack of incentives, trade issues, and last-mile distribution obstacles.[37] In most cases, even for countries with UHC like Kenya, Rwanda and Uganda, novel essential agents recommended by WHO to treat selected oncological illnesses are out of bounds for national budgets and this is before the costs of complex surgery or basic radiotherapy are estimated.[38,39] If other social determinants and macroeconomic challenges in Africa come into the picture, the ability of most patients to access cancer therapy, especially women, is practically nonexistent. Challenges around affordability can also trigger a greater demand for cheaper falsified and substandard medicines, creating additional threats to patient safety.

Obtaining medicines and reaching healthcare services without major physical, financial or cultural obstacles are core elements of **accessibility**. This includes the existence of well-equipped and properly staffed healthcare facilities (local health posts, health centers, and province, regional and national hospitals) and sufficiently stocked local pharmacies or dispensaries within reasonable proximity to patients in both rural and urban areas. Success in cancer management requires early detection, a qualified workforce, health settings with the right infrastructure to administer treatment, comprehensive disease registers and data collection platforms, and a reliable supply of medication, laboratory supplies, and equipment for imaging and treatment. Regarding the geographical location of care, efforts to shorten the distance between healthcare and patients should focus on strengthening local capacity at the rural level or bringing services to patients, deploying, whenever possible and feasible, screening and telemedicine tools. In most cases, due to the specialized nature of cancer treatment, oncology centers tend to be present in major urban settings. This is problematic in sub-Saharan Africa, where 250 million people live in rural areas, with 36% of this population settled more than 30 minutes away from the closest health center, normally one within 400 km^2.[40] A solution often proposed is the integration of preventive measures and oncological screening at the primary healthcare level, including regular testing for different infectious and non-communicable conditions and the administration of HPV vaccines for adolescents and women aged between 15 and 44 to curb potential cervical cancer cases.[41]

Finally, although outside the scope of this study due to methodological considerations explained in a following sub-section, deficient disease **awareness** is a major barrier to health. In many instances, due to misinformation, cultural practices, stigma or fear, patients may not recognize disease symptoms or simply do not seek much needed care. In other cases, patients may resort to traditional medicine practitioners and treatment, which can offer unsatisfactory solutions or exhort them to seek modern medicine, although at times too late. Illness is then caught at an advanced stage, affecting prognosis, reducing chances of survival and, within the realm of oncological conditions, perpetuating ideas around cancer fatalism. According to a recent IQVIA study on patient organizations in Africa, cultural factors can affect open conversations about certain diseases even with health workers, who are not immune to widely spread preconceptions and myths.[42] Women in sub-Saharan Africa are particularly vulnerable to these dynamics, as they frequently lack control over their health and may require permission or resources from a male figure in their families, and occasionally from their own communities, to seek medical attention.[43] Overall, 61.5% of women in the region face significant challenges to access healthcare, with variations contingent upon marital status, employment, health insurance coverage, mass media exposure and place of residence.[44] Issues of awareness may also affect physicians and other health professionals when not exposed to information about diseases and therapies.

Figure 6. Oncological care pathway

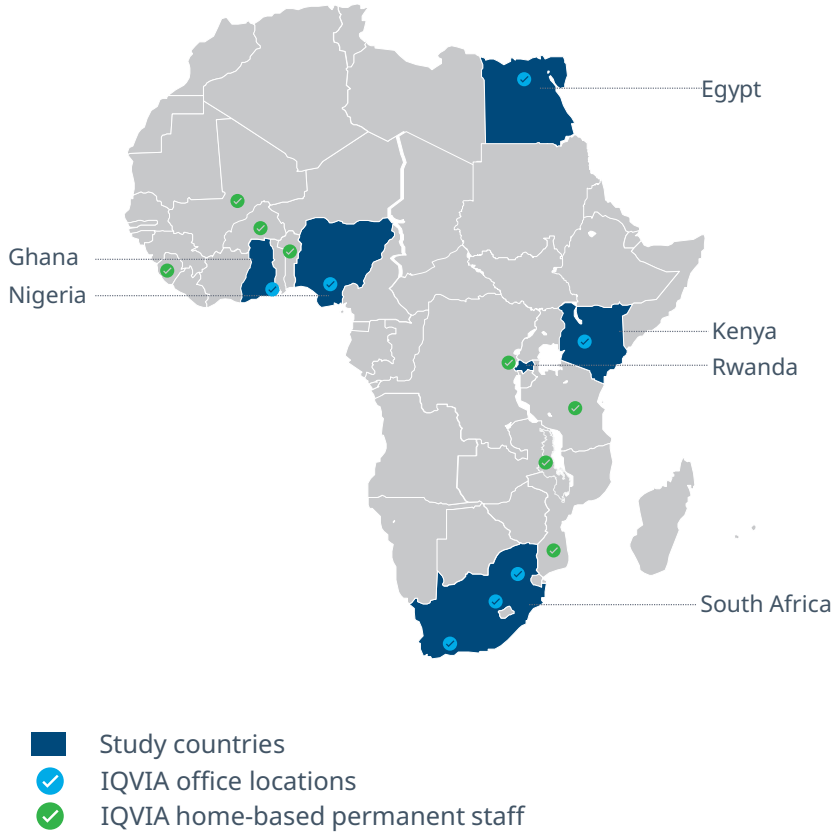


Source: World Health Organization (2024)[45]

Focused examination of access: Country selection and methodological approach

This study selected Egypt, Ghana, Nigeria, Kenya, Rwanda and South Africa to assess barriers to oncological care considering unmet need and suggest actions with the highest potential impact to address them.

Figure 7. Map of selected countries, including location of IQVIA operations



Source: IQVIA EMEA Thought Leadership

Table 2. Variables considered for country selection

COUNTRY	AGE-STANDARDIZED INCIDENCE	AGE-STANDARDIZED MORTALITY	MORTALITY-INCIDENCE RATIO	HEALTHCARE ACCESS AND QUALITY INDEX
Egypt	159.4	108.6	0.66	61
Ghana	115.9	80.6	0.66	49.7
Kenya	149.2	103.2	0.64	48.7
Nigeria	110.4	74.8	0.63	51.3
Rwanda	113.9	81.4	0.68	47.8
South Africa	209.5	111.7	0.53	52

Source: African Cancer Registry Network; GLOBOCAN (2022); and Healthcare Access and Quality Index (2019). Compilation by IQVIA EMEA Thought Leadership.

To determine **unmet need** in healthcare more broadly, the Healthcare Access and Quality Index (HAQI) was used as a reference to prioritize countries with high levels of inequality. To address unmet need in cancer more specifically, national burden information was factored in, covering age standardized incidence and mortality rates of cervical and breast cancer as measured by the African Cancer Registry Network (AFCRN) and GLOBOCAN. Table 2 presents all variables underpinning country selection.

Consequently, **potential impact** was broken down into representativeness and feasibility, keeping in mind variables such as regional representation of the African continent (north, south, east and west) and socioeconomic representation (lower, lower-middle, middle and upper middle). Countries were then cross-referenced with a map of IQVIA presence and data availability to ensure the feasibility of the study. This information includes IQVIA clinical sites, current data assets, and location of offices and home-based staff. Countries selected for assessment had high levels of unmet need and satisfied the representation and feasibility criteria.

Based on the defining elements of access, each country was examined against the key dimensions of affordability, availability and accessibility. Awareness was excluded from the scope of this analysis as it referenced cultural issues that were less relevant to the core aspects of the study. Each dimension was broken down into variables that could be used to measure the respective maturity level of each country, particularly when delving into access to essential medicines.

Table 2. Key dimensions, variables and evaluation metrics to gauge access

DIMENSIONS	VARIABLES	EVALUATION METRIC
Availability	Commercial market access	Regulatory maturity
	Commercial market access	Ease of reimbursement
	Commercial market access	Time to launch
	Commercial market access	Cancer essential medicines list coverage
	Logistics and operations	Supply chain security
	Logistics and operations	Manufacturing capacity
Affordability	Funding availability (philanthropy)	Donor NCD funding*
	Funding availability (government)	Government spending (percentage of GDP target)
	Funding availability (government)	UHC
	Funding availability (private)	Micro-loans and private medical insurance
	Funding availability (innovative)	Public-private partnerships or other novel financing vehicles
	Commercial landscape	Pharmaceutical market growth
Accessibility	Resource and capacity	Number of oncologists per 100,000 people
	Resource and capacity	Number of specialty cancer hospitals
	Resource and capacity	Availability of radiotherapy equipment
	Resource and capacity	Number of surgeons per 100,000 people
	Digital infrastructure	Data infrastructure and availability (electronic records)
	Detection and prevention measures	HPV vaccine coverage (first dose)

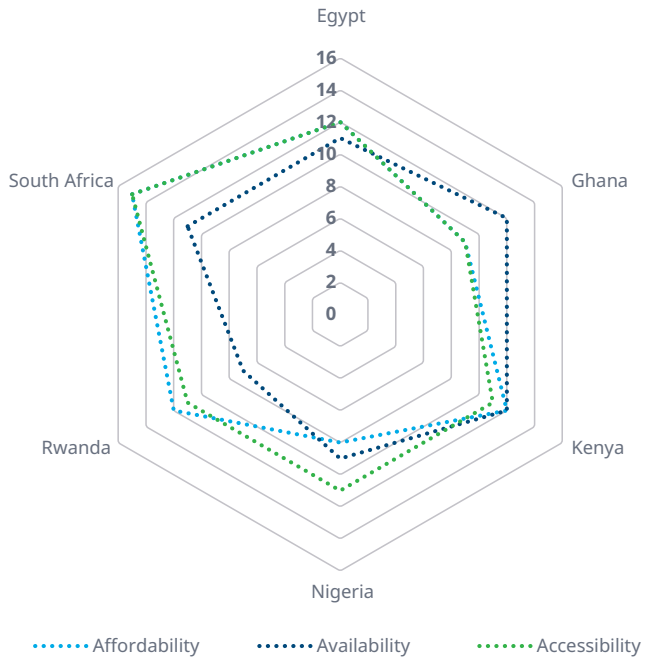
(*) Donor-generated NCD funding is insufficient. Variable used as a proxy.

The study scored and aggregated metrics to provide a quantitative measurement to each dimension of access, facilitating the relative comparison of countries in terms of access gaps and the identification of unique access dynamics. The scoring process combined primary and secondary sources, including primary market research and consultations with 20 healthcare experts throughout IQVIA's Africa-based operations. This covered the analysis of transcripts from interviews and workshops using a coding framework to generate country-level descriptors and insights.

Study findings

By directly comparing the scores of each country represented in the access matrix in figure 8, relative differences across the key access dimensions become clear. While treatment availability is a more universal challenge, showing less variability across scores, there are much larger discrepancies across affordability and accessibility.

Figure 8. Country access matrix



Source: IQVIA EMEA Thought Leadership

Countries such as South Africa and Egypt have relatively high accessibility scores, mainly due to greater investment in hospital infrastructure and skilled specialty workforce. For example, both countries have the highest number of clinical oncologists, with approximately 1,500 in Egypt and 40 in South Africa, whereas most African countries have less than 5.[46] Similarly, Egypt and South Africa have more mature healthcare systems with greater access to diagnostics, radiotherapy equipment and the greatest number of specialty cancer hospitals.[47] However, many of the hospitals offering specialty cancer care and access to advanced technologies are private facilities in urban centers. In South Africa, this means that 80% of skilled doctors work in hospitals only accessible to those who can afford private medical care, roughly 20% of the population.[48] In rural areas, care is fragmented and poorly financed.

Despite high overall scores in accessibility, both Egypt and South Africa had low scores on HPV immunization coverage and digital health infrastructure. A more granular analysis reveals that while health system maturity is a strength in more economically advanced African countries, they still fail to address key issues relating to accessibility of quality healthcare. By comparison, countries with lower overall accessibility scores like Nigeria and Rwanda achieve much better rates of first dose HPV vaccination, possibly reflecting their stronger ability to address infectious diseases rather than NCDs.

Ultimately, health system maturity and resource accessibility are related to the proportion of public and private investments focused on strengthening healthcare provisions. In the context of cancer care, it could be argued that countries that have pivoted investments to NCDs have more connected and established care delivery pathways, although truly progressive cancer care means working towards equitable access across the entire population. Otherwise, the rising cancer burden will derive into catastrophic health expenditures, mainly high out-of-pocket payments and transportation costs.[49]

Ghana is the only country to have a lower accessibility score by comparison to all other dimensions. It is also the only country to score poorly on cancer resource metrics as well as first-dose HPV vaccinations, despite a positive pilot program initiated by Gavi more than 10 years ago.[50] However, it was recently announced that the government would launch a national vaccination campaign in 2025.[51]

Unsurprisingly, the metric with the lowest performance is the maturity of the digital health infrastructure. This variable focused on digital health tools for disease monitoring and management, paying particular attention to the use of electronic health records and cancer registries. The only country to score satisfactorily on this measure was Rwanda, a testament to the recent investment in data-driven approaches to achieving healthcare goals.[52,53]

Similarly to the previous access dimension, the country with the highest **affordability** score is South Africa. Elevated scores also span across other metrics, including sustained government health spending as a percentage of the national gross domestic product and per capita,[54] a stable UHC scheme,[55] and a greater proportion of the population having access to private health insurance. Despite these positive results, including high levels of domestic and international investments, stark inequalities persist between urban and rural areas and across socioeconomic groups. Beyond the aggregate view the assessment provides, a more detailed country analysis may reveal that affordability of treatment access begins to resemble that of neighboring countries when explicitly focusing on deprived areas.

Low scores on affordability for countries representing West Africa, namely Ghana and Nigeria, may be related to substandard domestic investments and efforts to achieve UHC.[56] Additionally, both countries receive the lowest amount of international aid for NCDs and development assistance for healthcare per capita.[57,58] Keeping these factors in mind, Ghana is making a decisive shift toward public-private partnerships and developing more innovative funding pathways to reduce dependence on foreign capital. The same can be said of Kenya and Rwanda as they explore more sustainable and innovative funding mechanisms, especially in relation to NCDs. Interestingly, this is not in lieu of limited government investment as both Kenya and Rwanda have high UHC scores and the Rwandan government has impressive levels of health spending relative to GDP.[59]

In terms of **availability**, South Africa has the greatest disparity between this dimension and the previous two. This is indicative of issues relating to supply chain security and manufacturing capacity. In contrast, Ghana scored highly across all metrics, which demonstrates the recent progress in developing mature regulatory frameworks and the focus on accelerating market access pathways. Both Kenya and Egypt also scored well due to their regulatory maturity and availability of essential cancer medicines.

Countries that have pivoted investment to NCDs have more connected and established care delivery pathways, although truly progressive cancer care means working towards equitable access across the entire population. Otherwise, the rising cancer burden will translate to higher catastrophic health expenditures through out-of-pocket expenses and transport costs.

Rwanda has the lowest availability score, but this is driven by unfavorable commercial conditions rather than regulatory barriers. The main issue is limited access to essential cancer medicines, low manufacturing capacity, and difficulty registering and reimbursing novel treatments.[60] However, partnerships and agreements with pharmaceutical companies to introduce systemic access planning and inclusive business models will improve the speed of market authorization and medicines availability.[61]

Recommendations to improve access to oncological care

There is broad agreement on the critical actions to improve oncological care in Africa, which this study reinforces, including (1) increasing the availability and proximity of well-equipped and fit-for-purpose points of care and clinical infrastructure, with a particular focus on prevention and screening; (2) developing and strengthening workforce capacity; (3) ensuring a reliable and predictable supply of medication; (4) encouraging domestic manufacturing and optimizing sourcing mechanisms to reduce prices of essential medicines and novel therapies; (5) expanding UHC to include cancer treatment reimbursements; (6) integrating patient- and community-focused approaches to healthcare; and (7) delivering awareness interventions that empower vulnerable and at-risk groups, particularly women and people with a cervix. In the same vein, addressing

cancer comprehensively in Africa also demands, among other factors, the active management of comorbidities and malnutrition, the provision of psychological and palliative care, and sufficient funding to ensure long-term sustainability.

In addition to these well documented recommendations, this study was able to identify new insights based on the aggregation and coding of primary and secondary research data using an artificial intelligence tool. A nominal group technique refined these outputs to ensure coherence with other quantitative and qualitative factors.

Based on these considerations and analysis of the countries selected, this study found that stakeholders working on improving access to oncological care should:

1. **Utilize surveillance and screening data to better support national campaigns to detect illness earlier and enforce prevention:**

   Stronger and more interconnected surveillance systems, linked to electronic health records, can shed light on disease burden, calibrate awareness interventions, and inform prevention efforts. An important vehicle to achieve this virtuous circle starts with the integration of cancer screening in primary healthcare settings, particularly for demographic groups with greater risk for certain conditions. Successful experiences in Burkina Faso and Cote d'Ivoire show that incorporating integral diagnostics solutions in family planning services and gynecological and HIV clinics, paired with the use of digital tools for better case registration and patient education, can timely flag potential cancer cases and provide valuable insights for action.[62] With a clearer panorama of how cancer or other health conditions are evolving through reliable data, decision-makers are better equipped to understand the scale and nature of prevention initiatives, moving from opportunistic to population-based action. In the case of cervical cancer, WHO's goal is to have at least 90% of people with a cervix checked by age 35 and then again at age 45, shoring up immunization programs to provide universal access to HPV vaccines for adolescent girls.[63] Information campaigns to debunk myths around cervical cancer, HPV and HIV, associated in some cultures with promiscuity, should accompany these preventive measures.

2. **Engage policymakers to advocate for regulatory architecture reform and harmonization across African countries, considering avenues to accelerate and streamline the approval of essential cancer medicines, including biosimilars:**

   The maturity of African medicines regulators is crucial for improving speed and access to lifesaving therapies, and cancer drugs are not the exception. The insufficient harmonization of regulatory standards across African countries contributes to the duplication of efforts and additional delays in the market entry of lifesaving drugs, not to mention the greater circulation of falsified and substandard medicines. Only Tanzania, Ghana and Nigeria are functioning at maturity level 3 for medicines, typically alluding to an advanced state of regulatory and capabilities, while Egypt and South Africa are doing so for vaccines.[64] Bearing in mind that establishing more coherent continental regulatory frameworks is a long and complex undertaking, as the experience of the Africa Medicines Agency (AMA) and other initiatives show, the role of manufacturers in investing time and effort to navigate registration transitional arrangements and other changes is extremely important. Greater engagement between life sciences companies and policymakers around the design of more streamlined and robust regulatory frameworks could significantly change market dynamics and patient access. As part of these efforts, the AMA is creating an enabling environment for innovative solutions, facilitating the engagement of local and international stakeholders, and setting the standards for the development of safe and high-quality products.

3. **Explore and recommend innovative funding models by collaborating with governments, private sector entities and international organizations to develop sustainable funding mechanisms that ensure ongoing access to essential cancer medicines:**

   Despite national efforts to establish and strengthen UHC, out-of-pocket payments for healthcare continue to move patients and their families into poverty across LMICs. In low-income countries, out-of-pocket spending represents 44% of healthcare spending.[65] Cancer faces this challenge due to the high cost of medicines and other relevant oncological care services, lower external funding versus other disease areas, and insufficient national coverage and reimbursement for novel therapies. When non-curative and palliative care is considered, the investment case becomes even more challenging. IQVIA's perspectives on cancer and chronic disease financing indicate that innovative funding models are necessary to supplement government initiatives.[66] Among them, options include public-private resource pooling alliances, sales-linked donations, fundraising partnerships, health mutual funds, top-up insurance schemes, and voluntary and compulsory medical savings accounts, all of which can benefit from data that cross-references outcomes with expenditures to measure performance and returns. Solutions should consider unmet need and specificities for each market and foster partnerships across policymakers, multilateral bodies, public and private donors, scholars, patient organizations and other civil society actors, life sciences companies, clinicians, and community health workers. In terms of supply costs, alternatives to improve affordability and access include tiered pricing, pooled procurement at the regional level, and tariff reductions.

4. **Standardize digital health infrastructure and use of electronic health records in the context of oncology and complex NCDs:**

   Available data on the incidence and mortality for both breast and cervical cancer across Africa fails to provide an accurate picture of the real situation due to a lack of standardized information, weak cancer registries, and poor reporting to governmental authorities. Keeping track of cancer burden and making the right investments in disease and geographically appropriate areas require the deployment of a robust digital health infrastructure comprised of interoperable systems, well-trained users, a strong legal framework, predictable funding, and data storage capabilities. IQVIA research on digital health systems in Africa suggests that the successful use of electronic health records should also be coupled with extensive physician and patient education, consistency across systems, and gradual implementation across primary and secondary healthcare for both infectious and non-communicable diseases.[67]

5. **Utilize data to identify opportunities for effective, high-impact public-private partnerships, and construct a framework to assess and evaluate their impact and effectiveness across Africa:**

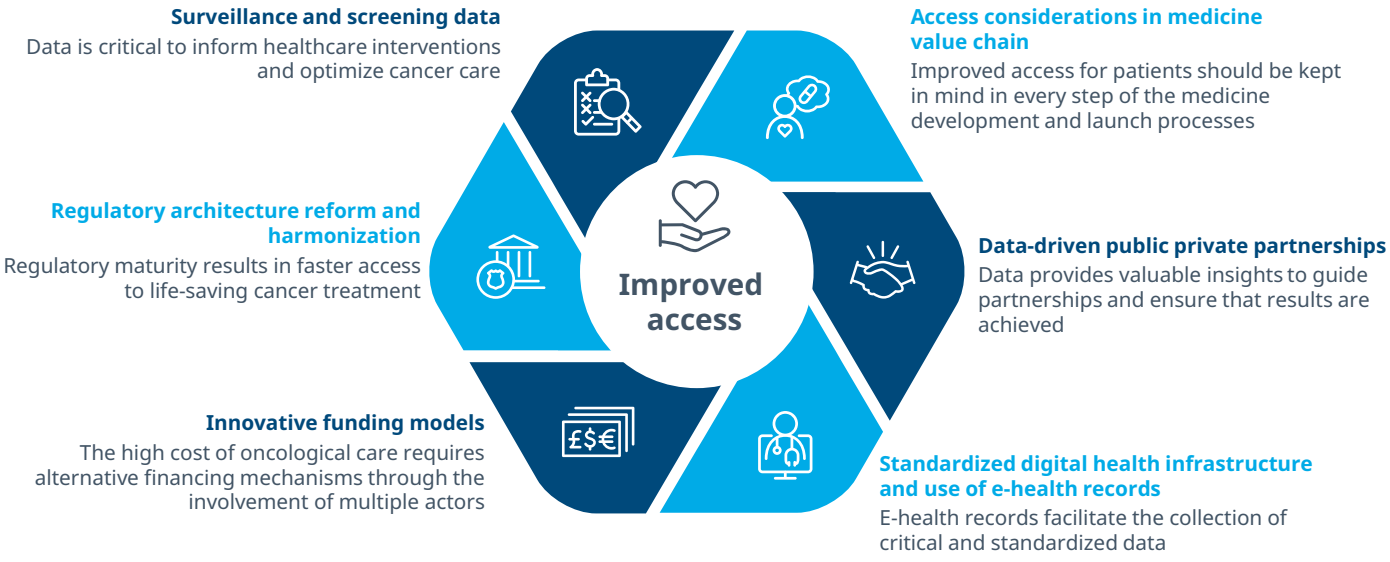
   If standardized, interoperable and reliable data plays a key role in informing decisions to improve cancer diagnostics, treatment, management and prevention. It can also drive and serve as the foundation for multi-sectoral partnerships, not only by identifying gaps and potential areas for collaboration but also by measuring results across the entire value chain. Realizing the ambitions of truly comprehensive oncological care in Africa calls for the engagement of a wide variety of stakeholders across sectors, articulated under the chapeau of data-informed business models. Real-world data and evidence are central to the care continuum, providing insights that simultaneously gauge changes in the health landscape, streamline healthcare interventions, strengthen digital health strategies, promote regional and international cooperation, and feed into monitoring and evaluation frameworks that shed light on the performance of cross-sectoral collaborations. Data also plays a pivotal role in delineating the market dynamics and unmet need that underpin the development of a strong, productive and competitive manufacturing capacity

in Africa. End-to-end diversified production in the continent, defined as a public-private endeavor by default, has the proven potential of positively transforming access, improving equity, and moving healthcare systems closer to achieving UHC.

6. **Address access issues within the medicines value chain to ensure that industry stakeholders can effectively tackle unmet need and contribute to the generation of public goods and win-win solutions:**

   Private sector actors, especially life sciences companies, can work with relevant stakeholders to remove barriers to access before an oncology-related product or service enters the market. Having clarity on unmet need, common patient challenges, regulatory hurdles, market behavior, procurement dynamics, distribution and dispensing channels, funding mechanisms, and clinical decision protocols, among many other factors, can significantly facilitate discussions across critical stakeholders and bring about solutions that speak to national and regional specificities. This differentiated approach needs to move in tandem with continental efforts to strengthen regulatory frameworks, incentivize more genetically diverse clinical research, shape economies of scale for local manufacturers, increase investments in local capacity, develop sustainable financing pathways, and refine regional trade agreements. Embedding the know-how and innovative approaches of private sector actors into the early stages of any healthcare optimization initiative in Africa, particularly within the realm of cancer, can improve access and catalyze better patient outcomes while generating additional positive economic and social externalities. Overall, the deliberate articulation of public and private action enhances the quality of the healthcare continuum, removes barriers to access, and gives way to the generation of public goods that benefit society as a whole. In the cancer medicines value chain, which is highly specialized and normally associated with high-value assets, corporate players can offer insights that improve access: from inclusive and community-driven clinical research and diagnostics, down to the revamping of diagnostic and prescribing protocols and dispensing channels.

Figure 9. Summary of recommendations



Source: IQVIA EMEA Thought Leadership

Conclusions

Healthcare interventions in Africa need to urgently curb the impact of NCDs and apply holistic approaches to avoid the aggravation of the continent's double disease burden. With that in mind, swift, evidence-based, multi-sectoral and well-funded action is necessary to address the increasing mortality rates and unmet need associated with preventable or highly treatable oncological conditions in Africa, especially breast and cervical cancer. Access to oncological care presents additional challenges for policymakers, industry actors and multilateral bodies due to the highly specialized attention that cancer requires, the high cost of existing and novel therapies, and the limited resources available for NCD conditions, often competing with those channeled towards infectious diseases. Despite these difficulties, public-private collaboration, the use of data analytics, and changes in the policy environment have the potential of scaling-up prevention, catalyzing innovation funding and local manufacturing, improving the understanding and mapping of disease trends, and strengthening health systems, all of which promotes greater availability, affordability and accessibility to lifesaving medicines and services. While access issues in the patient pathway continue to be the foundation of current and future healthcare optimization strategies, embedding access-related considerations in the development of new oncological solutions — looking into, for example, the medicine value chain, including pricing, reimbursement schemes, sourcing options, and distribution channels — should become the new norm.

About the authors

DANIEL MORA-BRITO
Engagement Manager, Global Public Health, EMEA Thought Leadership, IQVIA

Based in Geneva, Switzerland, Daniel is an Engagement Manager in IQVIA's EMEA Thought Leadership team. Daniel's work focuses on exploring current and emerging trends within the realms of global health security, health system strengthening, and equity in access to life-saving commodities and services. Daniel has close to 20 years of experience in the multilateral sector, having occupied advisory positions in the Global Fund to Fight AIDS, Tuberculosis and Malaria, the United Nations system, the Organization of American States, and a host of civil society organizations. His expertise covers areas such as and health policy, development operations, public-private partnerships and multi-stakeholder coordination. Daniel holds graduate degrees in public management and social policy and development from the *Universidad Metropolitana* in Caracas, Venezuela, and the University of Texas at Austin, respectively, with training in health policy and economics at the London School of Economics and Political Science.

TEMIS VASILI
Principal Consultant, Global Public Health, IQVIA

Temis is a Principal Consultant in IQVIA's Global Public Health team based in London. Throughout her career, she has been focused on addressing unmet patient needs, particularly through the lens of health equity, rare diseases, and women's health.

Temis has 10 years of experience in life sciences and healthcare, working with global pharmaceutical, biotech and medtech companies, as well as governments and NGOs. She has previously held positions in clinical research, real world evidence, business development and consulting.

Temis holds graduate degrees in Neuroscience from University College London and Business Management from Imperial College London.

Credits

The authors would like to thank Natalia Hudziak, Rami Madbouli, Sally McManus and Tom Benians from Imperial College Business School, who contributed to the design and implementation of this research and the analysis of its results.

References

1. Ngwa, W. et al. (2022). Cancer in sub-Saharan Africa: A Lancet Oncology Commission. The Lancet Oncology, 23(6), E251-E312. https://doi.org/10.1016/S1470-2045(21)00720-8.
2. International Agency for Research on Cancer (2022). Absolute numbers for cancer mortality in both sexes [illustration]. https://shorturl.at/juO47.
3. Union for International Cancer Control (2022, July 11) How to address the gaps in cancer care in sub-Saharan Africa [Press release]. https://www.uicc.org/news/how-address-gaps-cancer-care-sub-saharan-africa.
4. Nature Africa (2023, February 9). Sub-Saharan Africa ramps up efforts against cancer [Press release]. https://www.nature.com/articles/d44148-023-00041-2.
5. See reference 1.
6. See reference 2.
7. Sung, H. et al. (2021). Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: A Cancer Journal for Clinicians. https://doi.org/10.3322/caac.21660.
8. World Health Organization (2024, April 17). Noncommunicable diseases. https://www.afro.who.int/health-topics/noncommunicable-diseases.
9. World Health Organization (2022, April 11). Death from noncommunicable diseases on the rise in Africa [Press release]. https://www.afro.who.int/news/deaths-noncommunicable-diseases-rise-africa.
10. World Health Organization (2023). Communicable and non-communicable diseases in Africa 2020-2021. Brazzaville: WHO Regional Office for Africa. https://www.afro.who.int/sites/default/files/2023-08/Disease%20outlook%20report_BLF_revised_190823_AHN.pdf.
11. Integrated African Health Observatory and World Health Organization (December 2022). Analytical fact sheet [Fact sheet]. Africa Region. https://shorturl.at/MTZ69.
12. Shi, J. et al. (2023). Addressing global health challenges requires harmonized and innovative approaches to the development of assistance for health. BMJ Global Health, 8(5). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10254933/.
13. World Health Organization (2024, April 21). Global NCD Compact 2020-2030. https://www.who.int/initiatives/global-noncommunicable-diseases-compact-2020-2030
14. See reference 12.
15. Mushasha, R. and El Bcheraoui, C. (2023). Comparative effectiveness of financing models in development assistance for health and the role of results-based funding approaches. Globalization and Health, 19(39). https://shorturl.at/eoIKX.
16. Organization for Economic Cooperation and Development (2024, April 21). Official development assistance (ODA). https://shorturl.at/jmHL2.
17. World Health Organization. Global cervical cancer elimination forum: Advancing the call to action. https://www.who.int/initiatives/cervical-cancer-elimination-initiative/cervical-cancer-forum

18. World Health Organization (2024, March 5). Wave of new commitments marks historic step towards the elimination of cervical cancer [Press release]. https://www.who.int/news/item/05-03-2024-wave-of-new-commitments-marks-historic-step-towards-the-elimination-of-cervical-cancer.

19. World Health Organization (2022, February 3). Cancer [Fact sheet]. https://www.who.int/news-room/fact-sheets/detail/cancer.

20. See reference 1.

21. Ferlay, J. et al. (2019). Estimating the global cancer incidence and mortality in 2018: GLOBOCAN sources and methods. International Journal of Cancer, 144: 1941–53. https://pubmed.ncbi.nlm.nih.gov/30350310/.

22. Stefan, D. C. (2015). Cancer care in Africa: An overview of resources. Journal of Global Oncology, 1(1), 30-36. https://doi.org/10.1200/JGO.2015.000406.

23. World Health Organization (2022, September 26). WHO applauds new Lancet Report on Cancer in sub-Saharan Africa. https://www.afro.who.int/countries/united-republic-of-tanzania/news/who-applauds-new-lancet-report-cancer-sub-saharan-africa.

24. Sharma, K. et al. (2023). Advancing oncology drug therapies for sub-Saharan Africa. PLOS Global Public Health, 3(6), e0001653. https://doi.org/10.1371/journal.pgph.0001653.

25. World Cancer Research Fund International (2024, 21 April). Cervical cancer statistics. https://shorturl.at/npxLX.

26. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10298775/

27. Ibrahim Khalil, A. et al. (2022). Age-specific burden of cervical cancer associated with HIV: A global analysis with a focus on sub-Saharan Africa. International Journal of Cancer, 150(5), 761-772. https://doi.org/10.1002/ijc.33841

28. See reference 27.

29. World Health Organization (2022). Human papillomavirus vaccines: WHO position paper (2022 update). https://iris.who.int/bitstream/handle/10665/365350/WER9750-eng-fre.pdf?sequence=1

30. Sharma, R. et al. (2022). Mapping cancer in Africa: A comprehensive and comparable characterization of 34 cancer types using estimates from GLOBOCAN 2020. Frontiers in Public Health, 10, 839835. https://doi.org/10.3389/fpubh.2022.839835

31. See reference 30.

32. Abdulrahman, G. and Rahman, G. (2012). Epidemiology of breast cancer in Europe and Africa. Journal of Cancer Epidemiology, 2012, 915610. https://doi.org/10.1155/2012/915610.

33. Buckholtz, A. (2021). Inside Africa's push to make its own medicines. https://www.ifc.org/en/stories/2021/africa-pharma-manufacturing-hubs-en.

34. Yenet, A., Nibret, G., and Tegegne, B. (2023). Challenges to the availability and affordability of essential medicines in African countries: A scoping review. ClinicoEconomics and Outcomes Research: CEOR, 15, 443-458. https://doi.org/10.2147/CEOR.S413546.

35. Rurangwa, C., Ndayisenga, J., Sezirahiga, J. et al. (2023). Availability and affordability of anticancer medicines at cancer treating hospitals in Rwanda. BMC Health Services Research 23, 717. https://doi.org/10.1186/s12913-023-09706-y.

36. Cuomo, R., Seidman, R. and Mackey, T. (2017). Country and regional variations in purchase prices for essential cancer medications. BMC Cancer, 17, 566 (2017). https://doi.org/10.1186/s12885-017-3553-5.

37. Ocran Mattila P. et al. (2021). Availability, affordability, access, and pricing of anti-cancer medicines in low- and middle-income countries: A systematic review of literature. Front Public Health, 9:628744. https://doi.org/10.3389/fpubh.2021.628744.

38. Kizub, D. A. et al. (2022). Access to and affordability of World Health Organization essential medicines for cancer in sub-Saharan Africa: Examples from Kenya, Rwanda, and Uganda. The Oncologist, 27(11), 958-970. https://doi.org/10.1093/oncolo/oyac143.

39. Union for International Cancer Control (2022, July 11). How to address the gaps in cancer care in sub-Saharan Africa. https://www.uicc.org/news/how-address-gaps-cancer-care-sub-saharan-africa.

40. Pietro, F., Freire, S. and Melchiorri, M. (2023). Estimating geographic access to healthcare facilities in sub-Saharan Africa by degree of urbanization. Applied Geography, 160, 2023, 103118, ISSN 0143-6228. https://doi.org/10.1016/j.apgeog.2023.103118.

41. UNICEF (2024, April 5. Protection from cervical cancer: All you need to know about the HPV vaccine and the school-based vaccination campaign. https://www.unicef.org/southafrica/parents-frequently-asked-questions-hpv-cervical-cancer.

42. Madelung, M., Johnson, S. and Chaves, B. (2023). Climbing the mountain one step at a time: How patient organizations in Africa are advancing healthcare [White paper]. IQVIA, EMEA Thought Leadership. https://www.iqvia.com/-/media/iqvia/pdfs/mea/white-paper/iqvia-patient-organizations-in-africa-white-paper.pdf

43. See reference 39.

44. Seidu, A. (2020). Mixed effects analysis of factors associated with barriers to accessing healthcare among women in sub-Saharan Africa: Insights from demographic and health surveys. PloS One, 15(11), e0241409. https://doi.org/10.1371/journal.pone.0241409.

45. World Health Organization (2020, November 26). Cervical cancer is curable [Infographic]. 2020-11-26_ Infographic_AH (who.int).

46. Mathew, A. (2018). Global survey of clinical oncology workforce. Journal of Global Oncology, 4, 1-12. https://doi.org/10.1200/JGO.17.00188.

47. See reference 46.

48. International Citizens Insurance (2024, 1 April). Understanding South Africa's healthcare system. https://www.internationalinsurance.com/health/systems/south-africa.php

49. Haakenstad, A. et al. (2022). Comparative health systems analysis of differences in the catastrophic health expenditure associated with non-communicable versus communicable diseases among adults in six countries. Health Policy and Planning, 37(9), 1107-1115. https://doi.org/10.1093/heapol/czac053.

50. Nartey, Y. et al. (2018). Recommendations for cervical cancer prevention and control in Ghana: Public education and human papillomavirus vaccination. Ghana Medical Journal, 52(2), 94-102. https://doi.org/10.4314/gmj.v52i2.6.

51. Apenkroh, S. (2024, February 7). Nationwide vaccination against human papilloma virus to begin by close of year: Ghana Health Service. 3news. https://3news.com/health/nationwide-vaccination-against-human-papilloma-virus-to-begin-by-close-of-year-ghana-health-service/#google_vignette.

52. Tran Ngoc, C. et al. (2023, May 3). Data-driven development: How Rwanda is pioneering health information systems for improved SDG monitoring. World Health Organization. https://www.who.int/news-room/feature-stories/detail/data-driven-development-rwanda-pioneering-health-information-systems-improved-monitoring.

53. Nyakabau, M. R. (2021). Digital-first integrated care: Rwanda's innovative digital health care service. Transform Health. https://transformhealthcoalition.org/insights/digital-first-integrated-care-rwandas-innovative-digital-health-care-service/.

54. Parikh, N. et al. (2024, March 15). Health financing. One data and analysis. https://data.one.org/topics/health-financing/#few-low-and-lower-middle-income-countries-in-africa-are-spending-us86-per-capita-or-more-on-health.

55. World Health Organization (2022). Tracking universal health coverage in the WHO African region. https://www.afro.who.int/publications/tracking-universal-health-coverage-who-african-region-2022.

56. See reference 55.

57. World Health Organization (2024, April 1). Official development assistance (ODA) for medical research and basic health sectors per capita, by recipient country. https://shorturl.at/moEO7.

58. Institute for Health Metrics and Evaluation (2024, April 1). Financing global health. https://www.healthdata.org/data-tools-practices/interactive-visuals/financing-global-health.

59. See reference 54.

60. Access to Medicine Foundation (2022, November 15). 2022 Access to Medicine Index. https://accesstomedicinefoundation.org/resource/2022-access-to-medicine-index.

61. See reference 60.

62. Denny, L. et al. (2024, February 1). The world must tackle cervical cancer faster. Here's how. Nature Magazine, 626.

63. World Health Organization (2024, March 15). Cervical Cancer Elimination Initiative. https://www.who.int/initiatives/cervical-cancer-elimination-initiative

64. Hwenda, L. (2024, March 5). The role of WHO maturity benchmarking in improving African medicines regulatory agencies. Medicines for Africa. LinkedIn. https://www.linkedin.com/pulse/medicines-africa-i-role-who-maturity-benchmarking-vhnre/.

65. World Health Organization (2022, May 20). World Health Statistics 2022. https://www.who.int/news/item/20-05-2022-world-health-statistics-2022

66. IQVIA (2019). Innovative funding models for treatment of cancer and other high-cost chronic noncommunicable diseases. A global landscape study of funding trends and innovations [White paper], https://www.iqvia.com/-/media/iqvia/pdfs/library/white-papers/innovative-funding-models-for-treatment-of-cancer-and-other-highcost-chronic-noncommunicable-disease.pdf.

67. Arias, A., Wright, A. and Waszak, J. (2023). Digital health systems in Africa: A convergence of opportunities [White paper]. IQVIA, EMEA Thought Leadership. https://www.iqvia.com/-/media/iqvia/pdfs/mea/white-paper/iqvia-digital-health-system-maturity-in-africa.pdf.

CONTACT US

iqvia.com