

Africa's Emerging Cancer Crisis: A Call to Action

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Executive Summary

Today, 60% more Africans die from cancer than succumb to malaria—and the number of cancer deaths is rising at an alarming rate. In 2030, the number of deaths from cancer will have increased almost 70% based on age demographics alone. African healthcare systems are struggling under the weight of this burgeoning cancer crisis. In fact, over 20% of African countries have no access to cancer treatments at all, while access is limited and sporadic in other countries. Large-scale mobilization of domestic and international resources is urgently needed. In 2014, health expenditures per capita in sub-Saharan Africa amounted to only US\$98—almost 100 times less than the United States. Further, only 5% of global funding for cancer prevention and control is spent in Africa and other low- and middle-income regions, yet these regions are home to 65% of cancer deaths and 75% of premature deaths due to cancer. Public-private partnerships involving African governments, healthcare leaders, non-profits, and industry from developed countries are urgently needed to build a sustainable system to address the emerging cancer crisis in Africa.

CANCER IS DEADLIER THAN MALARIA

60% more Africans die from cancer than malaria, and the number of cancer deaths is expected to increase almost 70% by 2030

"In Africa, cancer is nearly always fatal, and patients and their families have little or no hope that they will overcome the disease and be healthy again."

Introduction: Cancer is a Growing Public Health Threat in Africa

The remarkable success by the global community in battling infectious diseases illustrates how a concerted effort by multiple stakeholders can reduce disease burden, even in very low resource settings. However, another public health threat is now coming to the fore: cancer. An estimated 14 million people were diagnosed with cancer and over 8 million people died in 2012.¹ Over half the cases and nearly two-thirds of deaths occurred in Africa and other low- and middle-income regions. These numbers are expected to rise to nearly 22 million cases (60% in low- and middle-income countries) and 13 million deaths (70% in low- and middle-income countries) by 2030. The total annual global economic cost of cancer was estimated at US\$1.2 trillion in 2010, straining national and regional health budgets and causing substantial hardships for patients and families.

Comprehensive data on cancer incidence and mortality in Africa are not available. Only 2% of the continent's population is covered by International Agency for Research on Cancer (IARC)-compliant cancer registries as of 2014, and there is evidence that some cancers are under-reported. "The data fail to accurately convey the devastating reality in Africa," according to Dr. Funmi Olopade, Professor of Medicine and Human Genetics, University of Chicago. "Here, cancer is nearly always fatal, and patients and their families have little or no hope that they will overcome the disease and be healthy again."

¹Unless noted otherwise, data on overall cancer incidence, prevalence, and mortality exclude non-melanoma skin cancer.

Despite their shortcomings, the limited statistics reveal important patterns and trends and make it clear that African governments, healthcare leaders, and the international community need to earnestly address the growing cancer burden in Africa:

Cancer is deadlier than malaria. According to GLOBOCAN forecasts, the number of estimated cancer deaths in 2015 (approximately 635,400) was 60% higher than the number of malaria deaths (approximately 394,000). Should current trends continue, Africa’s cancer burden is projected to reach an alarming 1.4 million new cases and 1 million deaths by 2030.

Progress in cancer control lags far behind developed countries. Although the number of new cancer cases in 2012 was nearly twice as high in the United States as in Africa (1.6 million vs. 847,000), the number of deaths was similar (617,200 vs. 591,200).

Late diagnosis is common. In Africa, most cancers are diagnosed at an advanced stage, whereas in the United States, 81% of prostate cancers and 61% of female breast cancers—the two most prevalent cancers other than skin cancers—are diagnosed at the localized (earliest) stages. This later-stage diagnosis in African patients contributes to poorer outcomes. For example, 5-year female breast cancer relative survival rates are 46% in Uganda and 12% in The Gambia, compared with 90% in the United States.

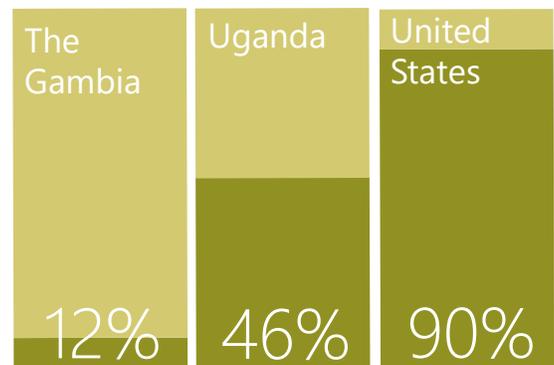
Rates of infection-related cancers are high. Nearly one-third of cancers in sub-Saharan Africa are related to infectious agents such as hepatitis B virus (HBV), hepatitis C virus, human herpesvirus type 8, human immunodeficiency virus (HIV), and human papillomavirus (HPV). Consequently, age-standardized incidence rates of Kaposi sarcoma are 14 times higher than in the United States, cervical cancer rates are four times higher, and liver cancer rates are 50% higher.

Cancer strikes more women than men. In contrast to the United States, Africa’s cancer burden is disproportionately borne by women, whose 5-year cancer prevalence is almost double that of men. This, in turn, adversely affects families and communities, as African women play pivotal roles in society as breadwinners and caretakers of children, elders, and the ill. Women also constitute the majority of small-scale farmers in most of sub-Saharan Africa and collectively produce 60-70% of the food.

Lack of Funding and Limited Access to Quality Care Underlie Africa’s Emerging Cancer Crisis

The growing cancer crisis in Africa is attributable to many complex and interrelated factors, including:

- Healthcare system inadequacies, specifically lack of access to definitive diagnosis and life-saving medications.
- Disproportionately low health expenditures by African governments and international stakeholders. Health expenditures per capita in sub-Saharan Africa amounted to only US\$98 in 2014, compared with US\$9,400 for the United States. In the specific area of cancer prevention and control, only 5% of global funding is spent in Africa and other low- and middle-income regions.
- Absence of population-based cancer registries with accurate data that could serve as a foundation for robust national cancer control plans and policies.
- Inadequate infrastructure to support research on Africa’s unique cancer landscape to enable a better understanding of the disease and inform cancer control planning.
- Limited advocacy for political and social action in the area of cancer control.



5-year female breast cancer survival rates

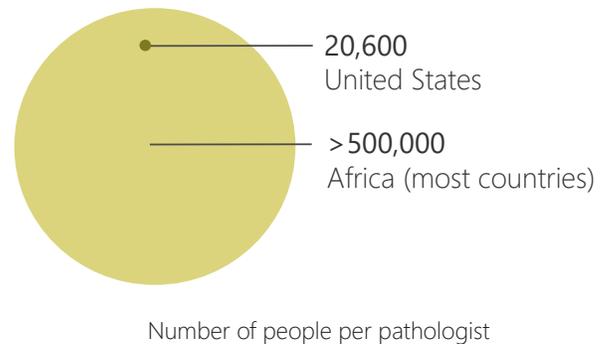
- Tumor biology. For example, the proportion of triple negative breast tumors—which are associated with poorer prognosis—is higher in some parts of Africa than in high-income countries.
- Demographic, societal, and cultural shifts, including population growth, population aging, and adoption of behaviors and lifestyles associated with economic development, such as smoking, unhealthy diets, physical inactivity, obesity, later childbearing, and fewer pregnancies and births per woman.

Although the importance of each of these factors cannot be minimized, this white paper focuses on healthcare systems issues that prevent Africans from accessing the oncology care they need when they need it:

Insufficient preventive care. The African continent has a high burden of infectious agents linked to cancer. Cervical cancer can be prevented by HPV vaccination, liver cancer can be prevented by immunization against HBV, and Kaposi sarcoma risk can be lowered by reducing the extent of the HIV epidemic. However, in-country healthcare budgets, infrastructure, and personnel are inadequate to support these and other prevention efforts.

Delayed and/or incomplete diagnoses. Most African cancer patients are diagnosed at later stages of disease, resulting in limited treatment options and poorer prognosis, due to an interplay of patient, financial, and systems factors. Lack of health literacy regarding cancer risk factors and symptoms, restricted availability of high-quality screening services, a tendency to first seek out alternative treatments, and high out-of-pocket costs all result in significant delays in visiting allopathic medical providers among patients exhibiting early signs of cancer. Inappropriate medical care by providers who are not knowledgeable about cancer is a further barrier to early diagnosis. In a study of Nigerian breast cancer patients, multiple women reported being treated with antibiotics or other ineffective medications for months or years before diagnosis.

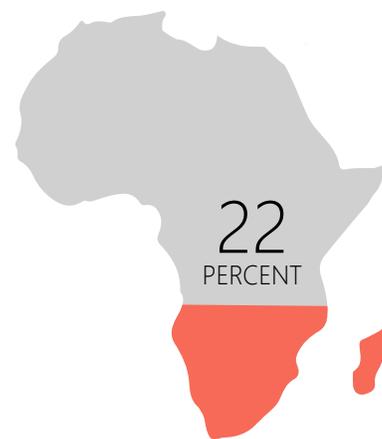
Much of sub-Saharan Africa also lacks sufficient pathology capacity to accurately diagnose and stage cancers to ensure that appropriate treatments are prescribed. A 2012 survey of 33 African countries found that all but two (Botswana and South Africa) had fewer than one pathologist for every 500,000 people, and many had fewer than one pathologist for every 1 million people. At best, the number of pathologists per person is 10% that of high-income countries such as the United States, which had one pathologist for every 20,600 people in 2010. In the absence of efficient and reliable pathology services, patients may suffer delays in diagnosis or be prescribed medications that are expensive yet ineffective in treating their particular type of cancer. In countries lacking capacity to test for hormone receptor expression in breast tumors, patients are blindly prescribed hormonal therapies (such as tamoxifen, aromatase inhibitors, or luteinizing hormone-releasing hormone agonists), when only a portion of such patients would be expected to respond to this treatment. In settings where accurate assessment of breast tumor HER2 status is impossible or difficult due to limited diagnostic capacity, HER2-negative patients may be treated inappropriately with trastuzumab, while HER2-positive patients may not be prescribed the medication they need.



Inadequate treatment services. Approximately 22% of the 54 countries in Africa have no access to cancer therapies, which include medications (hormonal therapy, molecularly targeted therapy, and chemotherapy), surgical oncology, and radiotherapy. This lack of access is compounded by substantial out-of-pocket expenses and shortages of highly trained personnel to administer treatments. The number of physicians

practicing in Africa (145,000) is only 16% of the United States total (923,300), and only a fraction of those physicians specialize in oncology care. Considering Africa has almost four times the United States population (1.2 billion vs. 322 million), the gap in physicians is staggering.

- **Hormonal therapy:** This class of drugs, indicated for hormone receptor-positive breast cancer, has high response rates, translating into improved cancer control and survival. “Generic, low-cost tamoxifen is often readily available, yet ensuring quality and consistent supply to every patient are major concerns. Access to and availability of affordable aromatase inhibitors are also limited. A number of manufacturers have developed drug access programs and initiatives, but these tend to be for a limited period, and tend to cater to a finite group of patients. There is a need for broader coordination and partnerships to ensure consistency and sustainability of access models in Africa,” according to Dr. Miriam Mutebi, Surgical Oncologist, The Aga Khan University Hospital, Nairobi, Kenya.
- **Molecularly targeted therapy:** “Drugs like Herceptin (trastuzumab) have historically been too expensive for patients and health systems in sub-Saharan Africa to afford without support from governments and national insurance schemes. Moreover, there have been few oncology clinical trials on the continent testing how African patients respond to these life-saving cancer medicines. With trastuzumab biosimilars recently approved by the United States Food and Drug Administration (FDA) and the European Medicines Agency (EMA), these medicines must be tested in African patients. We are building the capacity and research infrastructure necessary to include women in Africa in oncology clinical trials that will help governments and third-party payers prioritize these important investments,” according to Dr. Funmi Olopade, Professor of Medicine and Human Genetics, University of Chicago.
- **Chemotherapy:** A 2011 study of a Tanzanian cancer clinic illustrates the situation in many treatment centers across Africa. Only about 50% of the medicines prescribed were available, and thus over 70% of patients did not receive the drugs they needed from the clinic. Purchasing the drugs at a private pharmacy cost patients between one and seven months of income.
- **Surgical oncology:** A 2010 review found that the number of surgeons in many African countries was approximately less than two per 100,000 inhabitants, compared with 54.7 per 100,000 in the United States. As a result, in many district hospitals, oncology surgery and anesthesia are performed by non-physician personnel.
- **Radiotherapy:** Radiotherapy is typically recommended for 52% of cancer patients, but this figure is likely to be higher in low- and middle-income countries due to different distributions of tumor types and stages at presentation. A 2010 study by the International Atomic Energy Agency (IAEA) found that only 23 of the 52 African countries surveyed offered cancer radiotherapy services. Only 277 external-beam radiotherapy machines were identified across the continent, 60% of which were located in Egypt and South Africa. Even when radiotherapy is available, the high demand for limited resources often results in treatment delays. For comparison, the United States had 12.5 radiotherapy machines (including linear accelerators, cobalt-60 units, cesium-137 therapy units, low to orthovoltage x-ray units, high dose and low dose rate brachytherapy units and conventional brachytherapy units) per 1 million inhabitants in 2012, or nearly 4,000 machines total using the United States Census Bureau’s 2012 population estimate of 314 million.
- **Pathology:** In addition to its critical role in cancer diagnosis and staging, high-quality pathology support is vital for guiding surgical resections and tracking responses to treatment. As described earlier, the continent suffers from extreme shortages in trained personnel and infrastructure.



22% of African countries lack access to cancer therapies

CALL TO ACTION:

Addressing Africa's Emerging Cancer Crisis through Public-Private Partnerships

To halt Africa's growing cancer crisis, the international community must act now, through alliances of African governments, healthcare leaders, non-governmental organizations (NGOs), and global biotechnology and pharmaceutical companies that manufacture oncology drugs and technologies. Driven by the self-identified needs of countries and hospitals, partners must cooperate to expand access to oncology care. Programs that develop sustainable mechanisms to strengthen healthcare infrastructure, improve healthcare provider capacity, and provide access to life-saving medications are imperative for the African people.

Such initiatives must involve:

- Tailored business models and access agreements that align country and hospital needs and priorities with companies' oncology portfolios to deliver cancer treatments and technologies.
- Investment in high-quality surgical, radiotherapy, and pathology equipment for African healthcare facilities, along with trained technical staff and infrastructure support needed for the effective use of this equipment.
- Advanced training of African oncologists and other healthcare providers, to empower them to deliver better educational, diagnostic, and treatment services to their patients.
- Implementation of clinical trials to evaluate efficacy and safety of currently available cancer therapeutics in African patients and settings.
- Expansion of Africa's oncology research enterprise through scientist training and laboratory equipment placement.

Importantly, these initiatives will enable the development and execution of cancer control strategies that meet the continent's unique priorities and needs. "In Kenya, we have just developed our new five-year National Cancer Control Strategy and plan, which outlines our government's commitment of financing and resources to reduce the growing burden of cancer. Effective partnerships and collaboration will be critical to implement our research, prevention, diagnosis, treatment, and palliation initiatives for all Kenyans," stated Dr. Anne Ng'ang'a, Head, National Cancer Control Program, Kenyan Ministry of Health.

Africa's emerging cancer crisis is a developing tragedy that can no longer be ignored. African leaders and the global community must mobilize now to develop sustainable solutions.

Africa's emerging cancer crisis is a developing tragedy that can no longer be ignored. African leaders and the global community must mobilize now to develop sustainable solutions. Cooperation, capacity and innovative business models are critical to providing access to cancer care for patients in Africa.

Adia's Story

Adia (not her real name) was a 37-year-old single mother and clothing vendor living in East Africa when she first felt the lump in her breast. She worked long hours to support herself and her two young children, and attending to her own health was not a high priority. She had limited understanding of the importance of regular clinic visits and screenings for cancer and other illnesses, and even more limited time and money to seek care. When she found the lump—accidentally, not through a breast self-exam—she did not believe it was serious because it was small and painless. However, when it did not disappear after a few weeks, she tried herbs from her traditional healer, which she believed had helped with a breast problem previously. The herbs were ineffective, leaving Adia with no choice but to sacrifice a half-day of income to visit her local clinic, where the healthcare worker gave her antibiotics and told her that she would be fine. Greatly relieved, she returned to her family and her work.

Adia took the antibiotics as prescribed, but with time, her lump grew larger, ulcerated, and began to bleed. The clinic did not have the resources to perform diagnostic tests, so she had to wait until her brother was available to take her to the distant national hospital, where she was diagnosed with Stage III breast cancer. Her oncologist recommended chemotherapy, a mastectomy, and radiotherapy, but treatment was delayed four weeks while she attempted to secure financial assistance from the national health insurance agency and a private organization. When this funding did not come through due to bureaucratic delays, her brother gave her money for treatment, but by that time the cancer had spread throughout her body.

While undergoing chemotherapy, Adia developed anemia and infections, and as her condition deteriorated she was admitted to the hospital twice. The second time, she was very weak; the doctors and nurses were unable to stabilize her condition. Adia passed away, leaving her heartbroken young children in the care of a father whom they barely knew.

Adia's story is not unique. She was only one of the hundreds of thousands of African cancer patients who lost their battles with the disease in 2016. Adia's experience also highlights some of the reasons why cancer outcomes are so poor in Africa: limited patient and healthcare provider awareness of cancer, lack of regular preventive care and cancer screening, and challenges in accessing diagnostic and treatment services due to cost and geographic distance.

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About BIO Ventures for Global Health (BVGH)

BIO Ventures for Global Health (BVGH) is a non-profit organization working at the crossroads of the private and public sectors to advance research and improve health. BVGH connects people, resources, and ideas across biotechnology and pharmaceutical companies, governments, and non-profits to solve global health issues.

About the African Organisation for Research and Training in Cancer (AORTIC)

AORTIC seeks to become the continent's pre-eminent non-profit organisation working for cancer control. AORTIC will achieve this through the facilitation of research and training as well as the provision of relevant and accurate information on the prevention, early diagnosis, treatment, and palliation of cancer. The organisation is dedicated to providing all Africans with these benefits, as well as to increasing public awareness of cancer and reducing the stigma associated with it.