

Strengthening African Healthcare Systems: Lessons from Cervical Cancer for Local Innovation, Digital Solutions, Holistic Healthcare, and Sustainable Investment

Carly Burmeister

Faculty of Health Sciences, University of Cape Town, South Africa, ORCID: 0000-0001-5843-9970
Email: carlyburmeister6@gmail.com

Abstract: This essay explores the structural and systemic challenges facing healthcare systems in Africa, using cervical cancer as a case study to examine broader health inequities and opportunities for reform. Despite being largely preventable and treatable, cervical cancer remains a leading cause of cancer-related deaths among African women, underscoring gaps in public health education, vaccine access, treatment availability, and policy implementation. Drawing on both scientific research and personal experience, the essay highlights how issues such as limited screening infrastructure, weak pharmaceutical production, restrictive intellectual property laws, lack of education, and cultural hesitancy contribute to preventable mortality. Key solutions are proposed, including investing in local drug manufacturing, expanding digital health tools, integrating traditional and modern medical systems, and prioritising public health education. While cervical cancer serves as the focal point, the insights presented are applicable to a wide range of high-burden diseases, both communicable including HIV, tuberculosis, and non-communicable including cancer, diabetes, and hypertension. Ultimately, the essay advocates for an African-led approach to healthcare innovation that is equitable and sustainable.

Keywords:

1. Cervical Cancer
2. Healthcare Access
3. Intellectual Property Rights
4. Local Pharmaceutical Manufacturing
5. Global Health Equity

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1. Introduction: Understanding the Landscape of Health Inequities in Africa

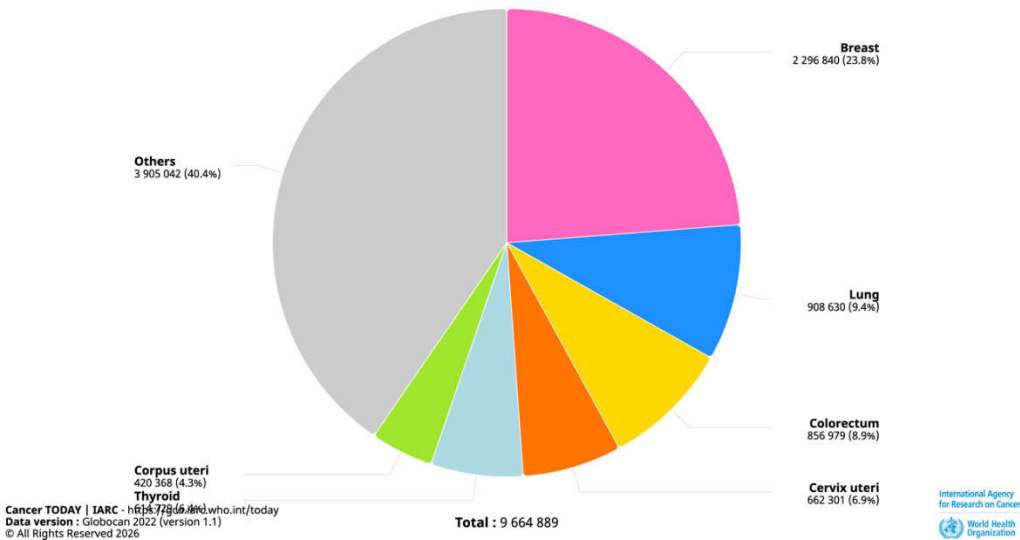
Africa faces significant healthcare challenges, characterised by high disease burdens, fragmented health systems, and limited access to essential healthcare infrastructure and therefore disease prevention and treatment. These challenges are particularly evident in the rising incidence of non-communicable diseases (NCDs) such as cancer, diabetes, and hypertension, alongside the persistent burden of infectious diseases like human immunodeficiency virus (HIV) and tuberculosis

(TB) (Addo et al., 2024; Boutayeb, 2010; WHO, 2022; Eike et al., 2022; Levitt et al., 2011). While substantial progress has been made in reducing mortality caused by communicable diseases, NCDs are now emerging as leading causes of death across the continent, placing additional strain on healthcare systems already struggling with inadequate infrastructure, financial limitations, workforce shortages, and cultural hesitancy (WHO, 2022; Owolade et al., 2022). For example, in 2020 alone, an estimated 10 million cancer-related deaths were reported globally, making it one of the leading causes of mortality worldwide. Although this number is predicted to increase worldwide, the rise is expected to occur predominantly in low- and middle-income countries (LMICs), as they currently face the greatest challenges in tackling the cancer burden (Sung et al., 2021; Wild et al., 2020). Among all cancers, cervical cancer stands out as a particularly urgent public health issue. Globally, cervical cancer is the fourth most common cancer in incidence and mortality among females, behind breast, lung, and colorectal cancer, accounting for approximately 660,000 new cases and 340,000 deaths annually (Figure 1) (Arbyn et al., 2020; Cohen et al., 2019; Sung et al., 2021).

Importantly, in 2022, about 94% of the 340,000 deaths caused by cervical cancer occurred in LMICs, making it the leading cause of cancer-related deaths in 36 LMICs, placing a significant burden on these already inadequate healthcare systems (Arbyn et al., 2020; Sung et al., 2021). Specifically, the highest rates of incidence and mortality were reported in sub-Saharan Africa, Central America, and South-East Asia (Arbyn et al., 2020; Cohen et al., 2019). Although LMICs account for a high percentage of the global population, GLOBOCAN 2022 reported that sub-Saharan Africa had the highest age-standardised cervical cancer mortality rate globally at, on average 22.1 per 100,000 women, more than ten times that of North America (2.2 per 100,000) (Figure 2) (Wu et al., 2025). In Eswatini and Malawi, mortality rates are 62.3 and 54.1 per 100,000 respectively, the highest cervical cancer mortality rates globally (Figure 3) (Wu et al., 2025). It is in these LMIC regions that women present with advanced-stage disease, and, despite important advances in our understanding of cervical cancer as a potentially preventable disease, there have yet to be major improvements in patient survival to reduce the disease burden (Cohen et al., 2019).

Cervical cancer was the focus of my PhD research at the University of Cape Town, for which I have dedicated several years to investigating the molecular mechanisms of cervical cancer. It is through growing up, living in, and studying in Africa that I have witnessed first-hand, through my personal experiences, my research, and my teaching and outreach, the devastating toll this disease takes on individuals, their families, and entire communities. Beyond the biological intricacies of this disease, I have also seen how systemic healthcare barriers, such as limited access to screening, lack of treatment options, cultural hesitancy, and financial constraints exacerbate health disparities and lead to poor outcomes. These experiences have reinforced my belief that while cervical cancer is a preventable and treatable disease, its high mortality rate in Africa reflects deeper structural failures within healthcare systems. Thus, this essay will use cervical cancer as a case study, an area of my expertise, to explore the broader reforms needed to improve healthcare accessibility across the continent. Many of the challenges and solutions presented, such as education on health, pharmaceutical sovereignty, digital health expansion, holistic approaches, and IP law reform, are not exclusive to cervical cancer but can be adapted to address other high-burden diseases, including other cancers, diabetes, cardiovascular disease, HIV, and TB. By addressing those systemic weaknesses through policy change, investment in local solutions, and community-driven healthcare strategies, African nations can transform their healthcare systems to provide more equitable, sustainable, and effective care for all diseases, not just cervical cancer.

a)
Absolute numbers, Incidence, Females, in 2022
Continents



b)
Absolute numbers, Mortality, Females, in 2022
Continents

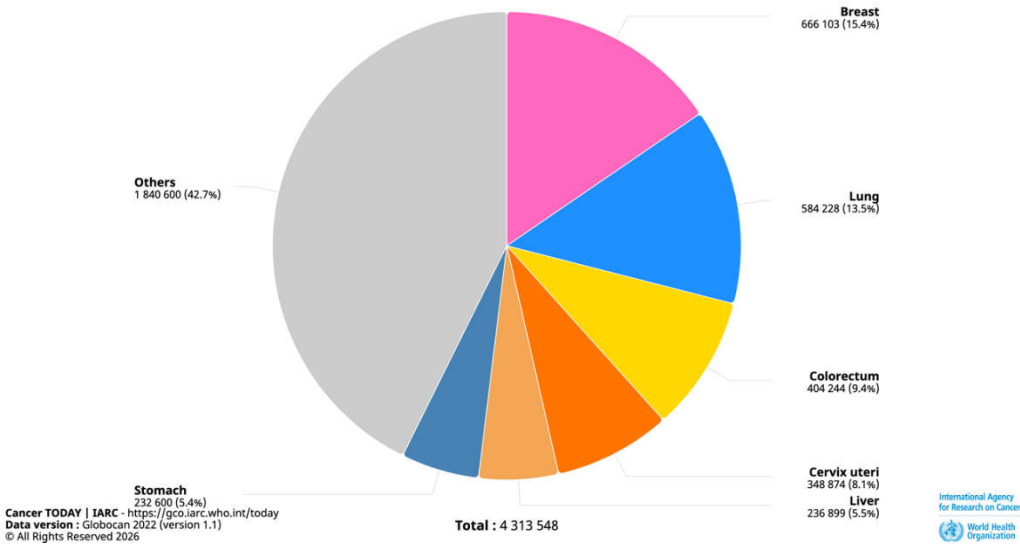


Figure 1. Global distribution of cancer (a) incidence and (b) mortality among females. Data obtained from GLOBOCAN 2022 via the IARC Cancer Today platform (Global Cancer Observatory).

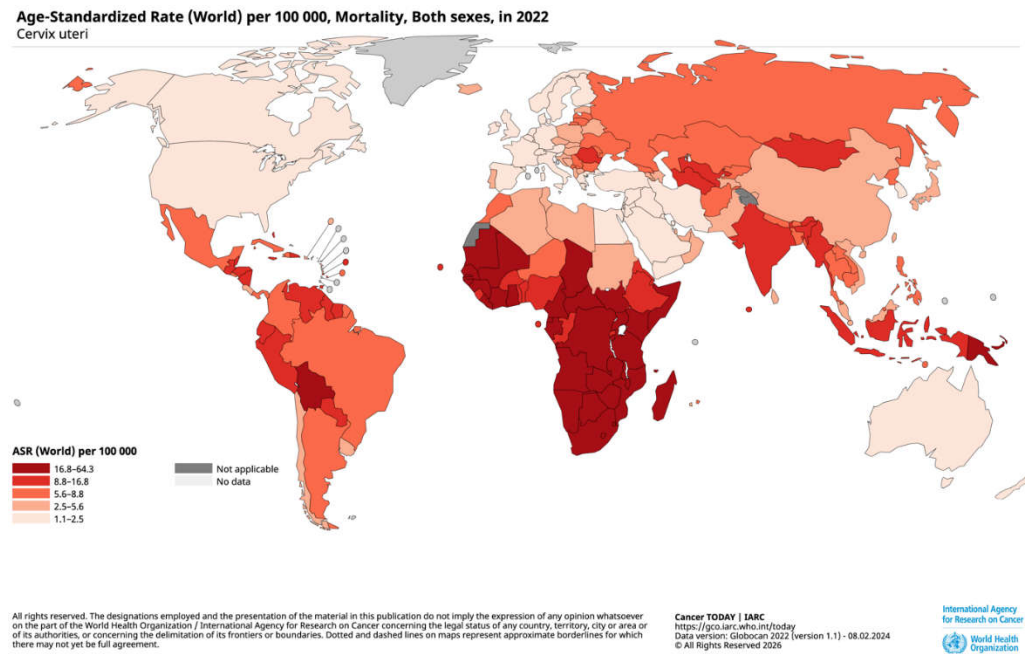


Figure 2. Global distribution of age-standardized mortality rates (per 100,000 population) for cervical cancer. Data obtained from GLOBOCAN 2022 via the IARC Cancer Today platform (*Global Cancer Observatory*).

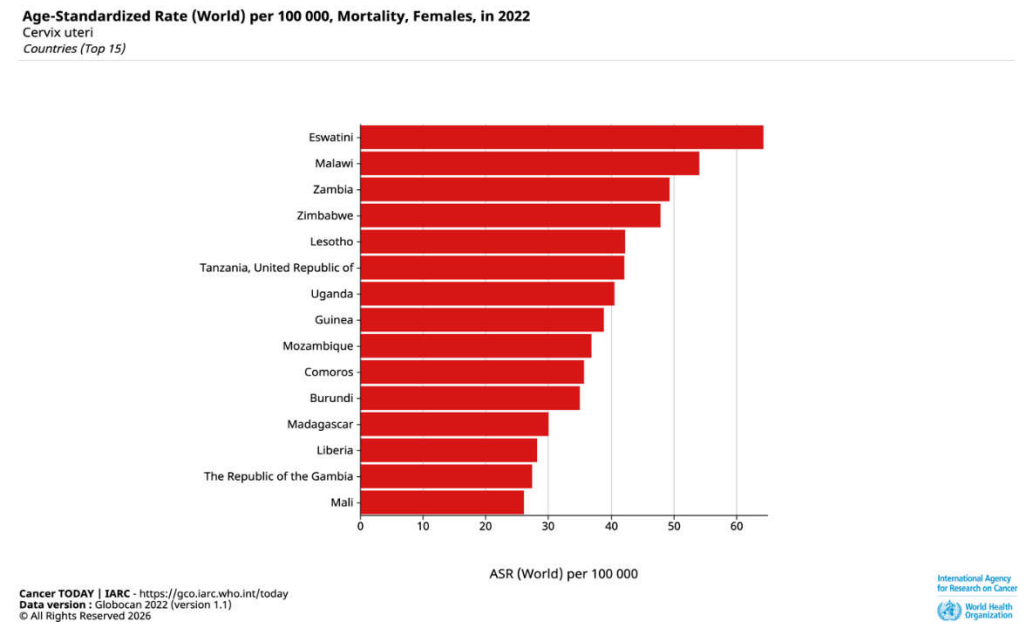


Figure 3. Countries with the highest age-standardized mortality rates (per 100,000 women) for cervical cancer among females globally. Data obtained from GLOBOCAN 2022 via the IARC Cancer Today platform (*Global Cancer Observatory*).

2. Cervical Cancer Prevention: Understanding the Role of HPV and Vaccination

The major etiological agent that leads to the development of cervical cancer is infection by high-risk types of the human papillomavirus (HPV) (Burd, 2003). HPV is a sexually transmitted virus with transmission primarily occurring through skin-to-skin contact, and its prevalence being particularly high in women younger than 25 years (de Sanjosé et al., 2007). HPV encompasses over 200 types, categorised into high-risk and low-risk groups based on their oncogenic (cancer-causing) potential. High-risk HPV types, such as HPV16 and 18, are strongly associated with the development of cervical cancer, while low-risk types, like HPV6 and 11, are primarily linked to benign (non-cancerous) conditions such as genital warts (Burd, 2003; Zur Hausen, 1999). The estimated worldwide prevalence of both high- and low-risk types of HPV among women with no signs of infection is 11.7%. However, there is considerable geographic variation, with sub-Saharan Africa having the highest HPV prevalence (24%) amongst women with no symptoms (WHO, 2024). Furthermore, over 70% of all global human immunodeficiency virus (HIV) positive individuals also reside in sub-Saharan Africa (Bruni et al., 2010), and there is compelling evidence that women living with HIV are at increased risk of persistent infection with multiple types of HPV at an early age (13–18 years) (Denny et al., 2014; Moodley et al., 2006, Moodley et al., 2009). Indeed, repeated infection with high-risk HPV types is responsible for up to 95% of cervical cancer cases (Cohen et al., 2019; Johnson et al., 2019), and individuals living with HIV have a six-times higher risk of developing cervical cancer when compared to the general population (Grulich et al., 2007). Importantly, a study in South Africa between 2001 and 2009 showed that the increase in cervical cancer incidence could be explained by the increased number of HIV infections observed during this period (Olorunfemi et al., 2018). Furthermore, the increased number of women living with HIV receiving anti-retroviral therapy results in improved life expectancy of women also living with HPV, compared to women living with HPV and not receiving anti-retroviral therapy. This indicates that access to treatment improves patient outcomes not just for HIV but for HPV as well (Ghebre et al., 2017). In addition to this, certain behavioural factors such as having multiple sexual partners and early initiation of sexual activity increase the risk of acquiring HPV (Panatto et al., 2012). Smoking has also been identified as a co-factor in cervical carcinogenesis, along with the use of some types of oral contraceptives and alcohol consumption, as these compromise immune function to allow persistence of high-risk HPV infections (Plummer et al., 2003; Veldhuijzen et al., 2010). Moreover, HPV is not limited to causing cervical cancer in women. It is also implicated in the pathogenesis of other anogenital cancers in both men and women, including vulvar, vaginal, penile, and anal cancers, as well as a growing number of oropharyngeal cancers such as head and neck cancer, highlighting its growing burden in disease development (Gillison, 2009; Timbang et al., 2019; Trottier & Burchell, 2009).

Through extensive research into cervical cancer, it has become evident that tackling this crisis requires a multi-pronged approach to close the gap between disease burden and disease prevention and treatment in under-resourced regions. Such an approach must include improving and expanding education on health and disease, strengthening local pharmaceutical production, expanding digital health solutions, integrating traditional and holistic medicine into modern healthcare frameworks, and improving health financing models. While this discussion focuses on cervical cancer, the challenges it highlights — poor screening and treatment infrastructure, insufficient vaccine distribution, financial inaccessibility, cultural hesitancy due to lack of education, among others — are common to other diseases faced in the African context (Addo et al., 2024; WHO, 2022; Eike et al., 2022; Levitt et al., 2011). By applying the lessons

learnt from cervical cancer, broader healthcare reforms can be developed to improve disease prevention, early diagnosis, and treatment capacity across Africa.

3. Empowering Communities Through Education: Overcoming Barriers to Prevention and Treatment in Africa

Despite being highly preventable and treatable, cervical cancer continues to claim thousands of lives each year among African women due to a combination of limited awareness and education, misinformation, stigma, restrictive gender norms, and deep-seated cultural barriers (Brown et al., 2011; Ginjupalli et al., 2022; Omotoso et al., 2023). Addressing these challenges requires comprehensive community education that, by raising awareness and dismantling harmful myths, empowers women to make informed healthcare decisions.

Discussions surrounding HPV, a sexually transmitted infection that can lead to the development of cervical cancer, are taboo in many communities, particularly African communities. Parents, especially in conservative societies, frequently resist vaccinating their children due to fears that the HPV vaccine will encourage promiscuity. Similarly, many women avoid screening due to misconceptions that the procedure is painful, unnecessary, or even a sign of infidelity. In some rural areas, male partners and community elders exert significant influence over women's healthcare choices, making it difficult for women to independently access medical facilities, whether for screening, prevention, or treatment (Brown et al., 2011; Ginjupalli et al., 2022; Omotoso et al., 2023). These cultural barriers must be addressed through community-centred education initiatives that engage leaders, traditional healers, and local influencers within these communities — trusted voices that can help normalise discussions on cervical cancer as well as other prominent diseases.

South Africa provides a valuable case study in overcoming these challenges, largely due to the contributions of the distinguished gynaecologist and cervical cancer researcher, Dr. Lynnette Denny. Her pioneering work has significantly improved cervical cancer prevention and care, particularly in underserved communities. In 1995, Dr. Denny co-founded the Khayelitsha Cervical Cancer Screening Project, which initially operated from a mobile clinic and later evolved into a permanent health centre. Over two decades, this project screened more than 60,000 women, providing vital early detection services in a region with limited healthcare infrastructure (Jeronimo et al., 2017; Metelerkamp, 2022). Dr. Denny also championed the “screen and treat” approach, combining immediate treatment with screening to enhance patient outcomes. A number of studies have demonstrated that implementing this method in LMICs has led to a significant reduction in high-grade cervical lesions, a precancerous condition, among participants, underscoring its effectiveness in resource-limited settings (Shin et al., 2021; Wright & Kuhn, 2012). Furthermore, Dr Denny's research into alternative screening methods, such as visual inspection with acetic acid (VIA), offered cost-effective solutions for early detection. Indeed, a study involving 2,754 women in a peri-urban settlement outside Cape Town found that VIA could serve as a feasible alternative to the traditional screening approach, the Pap smear, especially in settings with limited medical infrastructure (Denny et al., 2002, 2005; Gaffikin et al., 2007). Through these initiatives, Dr. Denny has played a crucial role in increasing cervical cancer awareness, screening uptake and early treatment in South Africa, reducing the stigma associated with clinic visits regarding female reproductive health, which together provide a model for other African nations aiming to reduce stigma as well as cervical cancer mortality rates through localised, culturally sensitive approaches.

Beyond screening and vaccination, symptom awareness and early diagnosis are crucial for reducing cervical cancer mortality. Many women in Africa do not recognise the early warning signs of cervical cancer, such as abnormal bleeding, persistent pelvic pain, and unusual vaginal discharge. This leads to women seeking medical attention only when the disease has progressed to an advanced stage. Community health programs should actively educate women about these symptoms and emphasise the importance of seeking timely medical care. To break through the stigma and hesitancy surrounding cervical cancer, community engagement strategies must be tailored to the specific social and cultural dynamics of each region. Governments and health organisations should develop education campaigns in local languages, using familiar platforms such as radio, television, social media, and community meetings, to reach diverse populations. School-based initiatives such as educational talks, videos, and vaccination programs should be accompanied by parental education sessions to address any hesitancies. Additionally, door-to-door health education by community health workers can help build trust and encourage participation in screening programs and prevention. Men's involvement is also critical. Initiatives that educate husbands, boys, and male community leaders on the importance of cervical cancer prevention and screening can help change restrictive gender norms that limit women's healthcare autonomy.

Finally, integrating traditional medicine and holistic care can further strengthen cervical cancer education and prevention, which will be discussed in more detail below. Many African women seek care from traditional healers before turning to formal medical institutions. Collaborating with traditional health practitioners to incorporate accurate cervical cancer information into their practice can help bridge the gap between modern medicine and indigenous health beliefs. Additionally, holistic approaches such as nutritional guidance and lifestyle education can be promoted alongside medical interventions to encourage overall well-being and avoid exclusive reliance on medical interventions. Importantly, although these solutions are aimed towards African communities, many of them can be used across other cultural groups and can be tailored to ensure they are appropriate for addressing the relevant challenges.

4. Strengthening Local Pharmaceutical Production: Closing the Treatment Gap

Access to essential medication remains a major challenge in Africa, with many treatments either unavailable or limited by high costs (Yenet et al., 2023). Expanding local pharmaceutical production is crucial to addressing these shortages and strengthening healthcare systems. Equally important, as stated previously, is educating communities and healthcare providers about treatment options to ensure that patients can make informed decisions and access the care that they need. In the case of cervical cancer, many communities in Africa face a severe shortage of locally produced HPV vaccines, chemotherapy drugs, radiotherapy infrastructure, and alternative therapies for this disease. Indeed, despite the existence of highly effective HPV vaccines (such as Gardasil and Cervarix), the majority of African countries rely on international donations or expensive imports for these, which results in low vaccination coverage (Asgedom et al., 2024). Although in use in the private sector in many urban African settings, HPV vaccines were only introduced into the National Immunization Programs (NIPs) in 2011 when Rwanda became the first African country to successfully implement an HPV vaccination program (Fokom Domgue et al., 2024). Despite the WHO's recommendation for universal HPV vaccination, only 27 out of 54 African countries have incorporated the HPV vaccine into their routine immunization programs, and as of 2022, coverage of the first dose in these countries stands at only 33%, falling far short of the global target of 90% (WHO, 2024). This major shortfall is often

due to the extreme cost of HPV vaccination which varies considerably. In countries where the Vaccine Alliance, Gavi, supports improved access to immunization, such as Rwanda and Ethiopia, the negotiated price per dose of HPV vaccination between 2013 and 2017 was US\$4.50, subsidised through international partnerships (Kutz et al., 2023; Gavi, 2013). However, in non-Gavi-supported countries like South Africa and Botswana, where governments must purchase doses directly from manufacturers, the cost can exceed US\$40 per dose, or roughly US\$120 per full three-dose series (Amponsah-Dacosta et al., 2022). With the World Bank classifying 85% of Africans as living on less than \$5.50 per day and thus on monthly incomes below US\$200, even partially subsidised vaccination remains financially out of reach for many families (Aguilar et al., 2019). In Uganda, for example, the HPV vaccination is equivalent to nearly a week's income for someone earning minimum wage. This is made more challenging by the HPV vaccine in most African nations not being fully covered by public insurance schemes and hence having to be paid for out of pocket, except in select urban programs targeting school-aged girls in which vaccination is free.

In contrast, LMICs with established local vaccine production, such as India, have dramatically reduced vaccine costs. Cervavac, which is locally manufactured by the Serum Institute of India, is available for under US\$5 per dose. This is more than eight times cheaper than in many African markets (Rahman, 2022; Johnson, 2024). This striking difference highlights how local manufacturing capacity directly affects affordability and accessibility. According to the WHO, while HPV vaccination has led to a significant reduction in cervical cancer incidence in high-income countries, many African nations that are struggling or just able to reach 30% coverage among eligible girls results in millions of women vulnerable to developing a largely preventable disease (Cohen et al., 2019; Ebrahimi et al., 2023). Strengthening local pharmaceutical and vaccine production could therefore be one of the most promising solution to this burden by substantially reducing vaccine cost, improving coverage, and enhancing healthcare sovereignty across the continent.

Investing in local vaccine production will allow immunisation programs in Africa to reach more young girls before they become sexually active. This would also alleviate the expense of implementing vaccination programs into schools, a key area that African governments should be focusing on to drive the target of 90% vaccine coverage among girls and women. In this regard, Africa has taken strides in vaccine manufacturing which could be enhanced and expanded. This includes South Africa's mRNA technology hub, which already produces COVID-19 vaccines and could be expanded to produce HPV vaccines (WHO, 2023). Egypt, Kenya, Senegal, and others are examples of countries developing pharmaceutical production capabilities. Indeed, Egypt leads North Africa in this regard, with extensive vaccine manufacturing (including hepatitis B and rabies) through state-owned facilities like Vacsera, and it possesses high technological capabilities in formulations. Kenya is ranked among the most notable pharmaceutical producers in sub-Saharan Africa. It is expanding its capacity for medicine production and has been identified as a site for technology transfer for mRNA vaccines. Lastly, the Institut Pasteur de Dakar in Senegal is a key continental hub, known for producing yellow fever vaccines for Africa and global markets. It is part of the WHO's mRNA technology transfer hub initiative. While these efforts remain in their early stages, they illustrate the growing feasibility of regional pharmaceutical self-sufficiency and the continent's capacity to reduce dependency on imported vaccines (Saied et al., 2022; Banda et al., 2022; WHO, 2021).

Nations including Nigeria, Ghana, and Morocco have also announced strategic plans to develop local vaccine and drug manufacturing hubs by 2030, underscoring a continent-wide

movement toward medical industrialisation. This development is urgently needed, given that only 33% of girls in sub-Saharan Africa have received even a single HPV vaccine dose and fewer than 20% complete the full vaccination series. This contrasts with the 80–90% coverage in most high-income countries (WHO, 2024). Such disparities underscore why expanding local manufacturing is not merely an industrial goal but a public-health imperative, essential to improving affordability, supply stability, and equitable access across the region. For translating vaccine production into high population coverage with real impact, parallel investment and financing in program development and delivery is required.

Beyond prevention, but with the same challenges, the gold standard chemotherapy drugs, including cisplatin and paclitaxel, remain prohibitively expensive, with frequent shortages limiting their availability in public hospitals (Denny et al., 2017; Okunade, 2020). Furthermore, the equipment and expertise required to perform radiotherapy, an essential treatment for over 50% of cervical cancer patients, are severely lacking (Grover et al., 2016; Hope-Johnson et al., 2025; Rhee et al., 2020). The International Atomic Energy Agency (IAEA) reports that 30 African countries have no radiotherapy services at all, and where they do exist, there is often less than one machine per 5 million people. For context, the U.S. has one per 120,000 people (VCDNP, 2022; IAEA, 2022). With regards to chemotherapy, the full course of standard chemotherapy (cisplatin + paclitaxel) costs over \$1,500–\$3,000 USD in private facilities (statistics gathered from Nigeria and Kenya as examples), with availability often limited to urban centres (Higgins et al., 2026; Okunade, 2020). Moreover, chemotherapy is aggressive and leads to debilitating side effects and potential drug resistance, which can result in disease relapse for many patients (Burmeister et al., 2022). To counter this, targeted therapies and immunotherapies are becoming more prominent, including bevacizumab (Avastin) and pembrolizumab (Keytruda). Bevacizumab is known as a monoclonal antibody used to inhibit the development of blood vessels that “feed” tumours and is often used in combination with chemotherapy drugs. Bevacizumab improves survival in advanced cases but costs around \$2,000 per infusion, which makes the full course cost over \$20,000 USD. This is entirely out of reach for most patients in LMICs (Liu, 2021). Pembrolizumab, an immune checkpoint inhibitor also used to treat advanced cervical cancer, can be even more expensive, costing between \$12,000 and \$30,000 for a full course, with significant regional clustering throughout the US (Pajeroski, 2025). Despite the targeted therapies and immunotherapies showing improved survival in advanced cervical cancer, their exceptionally high cost places them out of reach for most patients, which further widens the treatment gap (Tewari et al., 2014; Weaver, 2025). Indeed, these figures equate to more than 30 times the average annual income in many African nations, effectively excluding the vast majority of patients from access to life-saving therapy. Without urgent intervention, these disparities will continue to drive high mortality rates, even as effective treatments remain available elsewhere.

In order to provide more cost-effective options, governments can implement compulsory licensing mechanisms to enable the generic production of high-cost cancer treatments such as bevacizumab and pembrolizumab (Bognar et al., 2016). Compulsory licensing, a flexibility permitted under the World Trade Organisation’s (WTO) Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, allows governments to authorise the production or importation of generic versions of patented medicines during public health emergencies (WTO, 2017). For example, generic bevacizumab manufactured in India by companies such as Hetero Biopharma and Reliance Life Sciences retails at under US\$150–200 per infusion, representing a potential 90% price reduction. Similarly, Chinese and Indian biosimilar pembrolizumab products, currently in late-stage clinical development, are projected to cost US\$300–500 per dose, roughly one-tenth of the brand price (Ebrahimi et al., 2023; WHO, 2023).

Compulsory licensing can be used beyond cancer treatment. Some African nations, including Zimbabwe and Zambia, have previously used it to improve access to antiretroviral drugs for HIV, providing a model for this approach. For example, in 2002, Zimbabwe faced a severe HIV/AIDS crisis, with a significant portion of its population requiring antiretroviral (ARV) therapy. To combat this public health emergency, the Zimbabwean government issued a compulsory license allowing local companies to produce generic versions of patented ARV drugs (Raja, 2002). This initiative led to a substantial reduction in the cost of ARVs, decreasing the average price from \$100–\$150 per month to around \$30 a month, effectively cutting the price by at least 75% (Aidsmap, 2004). Similarly, the Zambian government also confronted a growing HIV/AIDS epidemic by issuing a compulsory license in 2004 to import generic ARV medications. This measure aimed to improve access to life-saving treatments for those affected by HIV/AIDS (Mohara, 2017; T’Hoen et al., 2018). By utilising compulsory licensing, African nations could improve access to affordable cancer treatments, particularly emerging targeted and immunotherapies, thereby enhancing cancer care and patient outcomes across the continent.

Several African nations already possess the manufacturing infrastructure required to operationalise compulsory licensing. Indeed, South Africa has biomanufacturing facilities capable of producing monoclonal antibodies and vaccines (Biovac Institute; Afrigen Biologics). Egypt has a long-established pharmaceutical sector with biologics production capacity, while Morocco and Senegal have both partnered with the WHO and the African Union to expand vaccine and biosimilar manufacturing hubs by 2030 (Saied et al., 2022; WHO, 2021). These countries could serve as regional production nodes, ensuring equitable distribution across sub-Saharan Africa. By leveraging compulsory licensing and regional biomanufacturing, African governments could reduce prices for biologic therapies by up to 80–90%, improve treatment accessibility, and significantly narrow the gap between high- and low-income nations in cervical cancer survival outcomes. This strategy could build upon the successful precedent set during the HIV/AIDS epidemic, when similar mechanisms lowered antiretroviral costs by more than 75%, transforming the continent’s response to a once-intractable health crisis. However, while this is one potential solution reducing the cost of these therapies, even if adopted under compulsory licensing, such reductions still may not make these therapies affordable in LMICs. Therefore, more needs to be done to reduce these costs further.

One long-term strategy to potentially combat the above challenge is investing in African-led cancer research to develop novel, low-cost therapies tailored to resource-limited settings. African research institutions should be supported through public and private partnerships to explore alternative treatment strategies, including natural plant- or marine-based anti-cancer compounds, repurposing drugs, and innovative drug delivery mechanisms that reduce costs while maintaining efficacy (Fletcher, 2024; Chunarkar-Patil et al., 2024; Egwu et al., 2024; Wainwright et al., 2022). Many African research institutions face challenges of limited funding, inadequate infrastructure, and emigration of highly skilled professionals from their home country to another country due to better opportunities, often leading to talent shortages in critical sectors like healthcare and research (otherwise known as “brain drain”). Public-private partnerships (PPPs) can bridge this gap by providing financial resources, technology transfer, and collaborative opportunities with global pharmaceutical and biotechnology companies. These partnerships can involve government agencies, non-governmental organisations (NGOs), private investors, and multinational corporations. Collaborative initiatives like the African Consortium for Cancer Research (ACCR) and partnerships with global organisations such as the Union for International Cancer Control (UICC) can accelerate the development of affordable,

regionally relevant cancer therapies (Fox Chase Cancer Center, 2023; UICC, 2025). Similarly, the Holistic Drug Discovery and Development (H3D) Centre at the University of Cape Town, led by Professor Kelly Chibale, is pioneering efforts to strengthen Africa's pharmaceutical research capacity. By focusing on developing locally relevant treatments and improving access to essential medicines, initiatives like H3D can play a crucial role in expanding affordable cancer care and driving innovation in African healthcare (Jewell, 2024).

Of particular interest to this, Africa has a rich biodiversity with many plants and marine organisms that have yet to be fully explored for their medicinal properties. A large number of studies have identified promising anti-cancer compounds from many African plants (Aboyade et al., 2014; Gouws et al., 2021; McKay & Blumberg, 2007). Similarly, marine-derived compounds, like those from sponges and algae, are being investigated for their cytotoxic effects on cancer cells (Saeed et al., 2021). Furthermore, traditional medicine plays a significant role in healthcare in Africa, and integrating indigenous knowledge with modern scientific research can lead to new breakthroughs. In addition to this, drug repurposing is also highly feasible in these settings, as it involves finding new uses for existing medications that are already approved for other conditions. This approach can significantly reduce research and development (R&D) costs and the time it takes these drugs to reach the patient, as these drugs have already passed safety trials. For example, metformin, a diabetes drug, has shown potential in inhibiting cancer cell growth and treating symptoms of polycystic ovarian syndrome (Attia et al., 2023; Hajjar et al., 2013; Sivalingam et al., 2014). Ivermectin, originally an antiparasitic, has been studied for its anti-tumour effects (Kaur et al., 2024; Tang et al., 2020). Therefore, given the economic constraints in many African countries and the proven possibility of repurposing existing drugs for secondary indications, this approach could provide cost-effective cancer treatment options.

Lastly, innovative drug delivery systems, such as nanoparticle-based delivery, liposomal formulations, and microneedle patches, offer more targeted therapy, reducing side effects and improving drug efficacy of currently available cancer therapies (Egwu et al., 2024). These technologies can also lower costs by reducing the required dosage and improving stability. African researchers are investigating locally adaptable and cost-effective delivery methods, such as nanomedicine formulations derived from indigenous materials, as these enhanced systems, if adequately supported, can transform cancer treatment strategies in Africa, making them more accessible and affordable for patients (Salie & Saidi, 2024). Beyond cervical cancer, strengthening local pharmaceutical production will have far-reaching benefits for other diseases. By reducing reliance on imports, African countries can improve access to critical drugs for other cancers, malaria, and TB, which also suffer from supply chain disruptions and high treatment costs.

5. The Role of Digital Health: Expanding Access to Screening and Treatment

Expanding digital health and telemedicine offers a transformative solution to the longstanding challenge of providing specialised care in Africa's rural and underserved communities. Many people, especially those in remote areas, live far from healthcare facilities, making travel for medical appointments expensive, time-consuming, and often impractical. In addition, hospitals and clinics are sometimes feared due to past negative experiences, cultural beliefs, or misconceptions about certain medical procedures. These barriers often result in delayed or entirely avoided care, which leads to worse/worsening health outcomes. Furthermore, doctor-to-patient ratios are often alarmingly low and healthcare facilities remain fragmented.

Telemedicine and digital platforms present a unique opportunity to bridge these gaps. Indeed, healthcare systems can offer a cost-effective, accessible, and less intimidating first step

toward both education and treatment through the use of telemedicine, which may contribute to individuals feeling more comfortable seeking care. However, in the specific context of cervical cancer, telemedicine cannot replace essential physical procedures such as VIA, Pap smears, or HPV testing, nor can it substitute for biopsy confirmation and in-person treatment. Instead, digital health should be viewed as a complementary tool that enhances early detection, follow-up, and patient education and engagement by informing women and linking them to appropriate screening and care services. Cervical cancer serves as a compelling case study for the potential of digital health. Recent advances in self-sampling HPV tests, combined with remote diagnostic platforms, have demonstrated significant improvements in early detection rates, particularly among rural populations that previously had limited access to preventive services (IBMS, 2024; Shafaghmotlagh, 2024; Daponte et al., 2023; Naikoo et al., 2025; Rebolj et al., 2022). The integration of digital tools into national screening programs enhances patient tracking, facilitates timely follow-ups, and minimises the loss to follow-up that has historically challenged disease management. Telemedicine consultations also allow for private, stigma-free discussions about reproductive health, which can be particularly beneficial in conservative communities where such topics are often considered taboo. Scaling up initiatives such as training community health workers to use AI-assisted diagnostic tools, deploying mobile health (mHealth) applications for chronic disease management and maternal care, and integrating e-health records would ensure patients receive continuous and coordinated care. This approach aims not to replace in-person clinical procedures but to extend the reach and efficiency of existing health systems. It reduces travel burdens and long wait times, while also fostering a more equitable distribution of quality healthcare services across regions (Alowais et al., 2023; Deniz-Garcia et al., 2023; Jones-Esan, 2024; Osei et al., 2021; Osei & Mashamba-Thompson, 2021). Successful digital interventions in cervical cancer screening will not only improve outcomes for a preventable disease but will also lay the groundwork for similar applications in maternal health, infectious disease surveillance, and chronic disease management.

The Flamingo Breast Cancer Project in Cape Town (<https://www.projectflamingo.co.za/>) offers a strong example of how digital health solutions can be successfully implemented in an African setting. The project utilises telephonic consultations, digital imaging, and AI-assisted diagnostics to streamline breast cancer screening and diagnosis, extending specialised care to communities that would otherwise struggle to access it. By allowing patients to have initial screenings closer to home, the project increases early detection rates and also builds trust in the healthcare system, making women more likely to seek in-person medical attention when necessary. Alongside similar innovations, such as Rwanda's Baby! Health (<https://www.babyl.rw/>), which uses AI-driven telemedicine to enhance rural healthcare access, and Nigeria's Helium Health (<https://heliumhealth.com/>), which has revolutionised hospital record digitisation, these initiatives highlight how digital health can bridge geographic and psychological barriers to medical care. By reducing the cost, fear, and logistical burden associated with traditional healthcare visits, digital health solutions offer a practical, patient-centred approach to improving public health. As African nations invest in expanding these innovations, they pave the way for more inclusive, efficient, and community-friendly healthcare systems that address both the structural and cultural barriers to medical care.

6. Bridging Healing Systems: Integrating Traditional, Holistic, and Modern Healthcare

Integrating traditional and modern medicine offers a powerful approach to improving healthcare accessibility, reducing cultural hesitancy, and expanding holistic treatment options across Africa. With around 70% to 80% of the population in Africa relying on traditional medicine, it remains a trusted and deeply rooted form of healthcare, especially in Africa (Anyikwa, 2024; WHO, n.d.). However, traditional healing often exists outside of formal medical systems, which leads to delays in diagnosis and treatment when individuals turn to hospitals as a last resort. Rather than viewing traditional medicine and modern healthcare as competing systems, national health ministries and medical councils should establish formal frameworks that recognise and regulate traditional healers. For example, ministries of health could introduce certification programs that train registered healers in basic diagnostic awareness and patient referral pathways, while medical schools could integrate traditional pharmacology and cultural health practices into their curricula. These steps would build a more integrated, culturally relevant healthcare model to bridge the gap between community-based and institutional care. In addition to this, modern medicine often overlooks preventive lifestyle interventions, focusing instead on pharmaceutical treatments that are expensive and often inaccessible to the broader population. By bridging traditional and scientific approaches, Africa can create a healthcare system that is both evidence-based and culturally familiar, ultimately reducing the stigma associated with hospital treatments and increasing trust in medical services.

Using cervical cancer as an example of this, it has been shown that many women first consult traditional healers before seeking hospital-based care, which often results in late-stage diagnoses and higher mortality rates (Dereje et al., 2025; Mwenda et al., 2024; Sophy & Mavis, 2008.). Rather than dismissing this practice, a collaborative approach, where traditional healers are trained to recognise early symptoms of cervical cancer (such as abnormal bleeding and pelvic pain) and refer women for screenings, would ensure that modern and indigenous knowledge work hand in hand to improve health outcomes. Implementation of such collaboration should be coordinated through existing structures, such as the African Centres for Disease Control (Africa CDC), WHO Regional Office for Africa, and national public health institutes, which could jointly develop training standards and referral protocols. Financing could come from a mix of domestic health budgets, WHO and African Union innovation grants, and public–private partnerships with pharmaceutical and biotechnology firms already investing in local research. Governments could further incentivise participation by providing tax breaks or research grants to companies that collaborate with universities and traditional healers on evidence-based studies of local medicinal plants. Indeed, African medicinal plants such as *Sutherlandia frutescens* has shown immune-boosting and anti-cancer properties, yet remains under-researched and underutilised in mainstream medicine. Dedicated national research funds, similar to South Africa’s Medical Research Council or Nigeria’s Tertiary Education Trust Fund (TETFund), could earmark competitive grants for traditional medicine research, promoting collaboration between healers, universities, and pharmaceutical companies. This would allow Africa to unlock the full potential of its natural remedies while creating affordable, locally available treatment options. Beyond cancer care, integrating traditional and modern medicine interventions can significantly improve the prevention and management of other diseases such as diabetes, hypertension, and maternal health complications. For instance, *Moringa oleifera* and *Vernonia amygdalina*, both widely used in African traditional medicine, have been shown to help regulate blood sugar and blood pressure levels, yet they remain underutilised in formal medical systems due to limited research funding and lack of policy integration. National drug regulatory agencies could work with regional bodies such as the African Medicines Agency

(AMA) to develop certification and quality control standards for validated herbal treatments. Developing clinical trials and certification programs for these herbal treatments could provide affordable, locally sourced alternatives for managing chronic illnesses while preserving indigenous knowledge.

An additional critical issue is that preventive health strategies, such as diet, exercise, and stress reduction, receive little promotion because they are not profitable in the same way that pharmaceuticals are. However, prioritising prevention and holistic care can significantly alleviate the disease burden, leading to economic and social benefits. Reduced mortality rates, improved education regarding health and disease, and a population that is physically and mentally healthier would drive economic growth by lowering healthcare costs and increasing workforce productivity. With fewer people debilitated by chronic diseases, employment rates would rise, and financial burdens on families and national healthcare systems would decrease. To implement these strategies, ministries of health, in partnership with education and sports ministries, should establish publicly funded wellness programs and integrate preventive health education into school curricula. Local governments can provide community-based facilities and partner with NGOs to deliver fitness, nutrition, and stress-management workshops. Development partners such as the World Bank and the African Development Bank could allocate funding under existing health systems strengthening grants, while private insurers and employers could co-fund preventive programs as part of occupational health schemes.

Furthermore, governments should promote evidence-based approaches such as strength training to improve insulin sensitivity and reduce inflammation, essential in preventing diabetes and cardiovascular disease; cardiovascular exercise to enhance circulation, oxygenation, and immune response, reducing the risk of hypertension and obesity-related cancers; and mindfulness and meditation practices to lower stress hormones, which are linked to cancer progression and chronic disease (Greenson & Chin, 2018; Pinckard et al., 2019; Shiroma et al., 2017; Vetrivel Venkatasamy et al., 2013; Wang & Zhou, 2020; Yoo et al., 2024).

Similarly, maternal and reproductive health outcomes could be vastly improved by embracing nutrition and physical activity as essential components of prenatal care. Tanzania's maternal health initiative, which introduced community-led nutrition programs and expanding access to healthcare, successfully reduced pregnancy-related complications by 35% (Gates Foundation, 2025; CDC, 2024). Expanding such programs across Africa would require joint coordination among ministries of health, of women's affairs, and local governments, supported by donor agencies such as UNICEF and UNFPA. Such partnerships could lower maternal and infant mortality rates, particularly in rural areas where access to hospitals and specialised prenatal care is limited. Knowing that there are accessible and culturally familiar healthcare options would reduce the fear and anxiety associated with seeking medical treatment, which could lead to better mental health and stronger community engagement in healthcare initiatives.

Holistic health approaches also offer significant economic benefits. Encouraging nutrient-rich diets and a shift away from processed, imported foods would stimulate demand for locally grown produce, thereby strengthening small-scale agriculture and local food industries. This would not only enhance national food security but also create employment opportunities and sustainable economic growth. Implementing policies such as taxing unhealthy processed foods and subsidising organic, locally sourced goods — similar to South Africa's sugar tax, which reduced sugary drink consumption by 28% — would incentivise healthier consumer choices while supporting local farmers and businesses (Boysen et al., 2019; Laar, 2021; Stacey et al.,

2017; University of Reading, 2025). Local markets should also be prioritised and supported through economic policies that favour small-scale farmers producing high-quality, nutrient-dense foods over industrialised, highly processed alternatives. Governments can subsidise organic, indigenous crops while restricting harmful food imports, thereby ensuring that healthy eating becomes both accessible and affordable for all communities. Again, by integrating healthy lifestyle promotion into economic planning, African nations could lower the burden of preventable diseases, reduce healthcare costs, and build a more resilient workforce, ultimately enhancing national productivity and long-term economic development.

The current healthcare model in Africa is predominantly reactive, focusing on treating diseases after they develop rather than preventing them from occurring. A fundamental shift in public health messaging is needed, one that prioritises education on proactive wellness strategies and ensures that healthcare budgets allocate as much funding to prevention as to treatment. Schools should integrate comprehensive health education into curriculums from an early age, teaching children about nutrition, the benefits of exercise, stress management, and the importance of regular health check-ups. Importantly, Africa is uniquely positioned to lead the way in holistic health, given its abundant access to fresh organic food, sunlight, and outdoor spaces. Studies show that regular exposure to sunlight enhances vitamin D levels, which is crucial for immune function, mental health, and reducing the risk of several cancers (Mead, 2008; Raymond-Lezman & Riskin, 2023; NCI, 2023). Unlike heavily urbanised regions where outdoor physical activity is limited, many African communities have vast open spaces that can be used to promote exercise and wellness programs.

However, urbanisation and corporate marketing of processed foods are shifting dietary habits away from traditional, nutrient-rich African foods toward unhealthy, high-sugar, and low-nutrient alternatives. This trend must be reversed through education programs that emphasise the value of local, organic produce and traditional cooking methods. Schools should teach children how to make healthier food choices, incorporating hands-on nutrition programs and sustainable agriculture lessons to foster lifelong healthy habits. To fully realise the benefits of integrating traditional medicine, lifestyle-based interventions, and modern healthcare, several key policy reforms must be implemented at these multiple levels. An example, which provides a roadmap for Africa, is China's successful integration of Traditional Chinese Medicine (TCM) into hospital settings. In China, TCM is widely accepted and incorporated into primary care, with patients having the option to receive herbal treatments, acupuncture, and dietary therapy alongside conventional medical interventions (Jia et al., 2024; Marshall, 2020; Shi et al., 2020). African nations could adopt a similar model, ensuring that traditional healers and herbal remedies are scientifically validated and formally included in healthcare policies. The success of China's integration of TCM into hospital settings demonstrates that modern and traditional medicine can work together to provide comprehensive, culturally relevant, and effective care.

7. Rethinking IP Rights: Unlocking Access to Essential Medicines in Africa

At the core of limited access to and affordability of medication in Africa is the global intellectual property (IP) regime, governed by agreements such as TRIPS under the WTO which was introduced earlier. These agreements grant pharmaceutical companies exclusive rights to manufacture and sell patented drugs for at least 20 years, which limits the production of generic alternatives and makes essential treatments prohibitively expensive for many African countries. While TRIPS do include legal flexibilities intended to protect public health, these mechanisms remain underutilised, particularly in Africa. Specifically, compulsory licensing allows governments to authorise the production or importation of generic versions of patented

medicines without the consent of the patent holder, typically in exchange for a royalty payment. Similarly, parallel importation enables countries to procure patented medicines from international markets where they are sold at lower prices, thereby bypassing domestic monopoly pricing. In principle, these tools provide a legal pathway for improving medicine affordability and access. However, African nations have struggled to utilise these flexibilities effectively due to a combination of legal, economic, and political barriers. Legally, many countries lack robust IP frameworks or the technical expertise required to navigate the complex procedural requirements associated with issuing compulsory licences or implementing parallel importation policies. Economically, limited domestic pharmaceutical manufacturing capacity and weak supply-chain infrastructure constrain the ability to produce or distribute generic medicines even when licences are granted. Politically, governments often face external pressure from high-income countries and multinational pharmaceutical companies, as well as constraints imposed by “TRIPS-plus” provisions in bilateral trade agreements, which can discourage the use of these flexibilities. In principle, each country must have its own domestic production capacity to manufacture generic drugs under licence, and one country’s compulsory licence does not automatically permit another to import its generics. Although a mechanism known as the “Paragraph 6 system” was established in 2003 to allow countries without manufacturing capacity to import generic medicines from others, it has proven extremely cumbersome. Indeed, it has only been successfully invoked once, when Rwanda imported the antiretroviral drug Apo-TriAvir from Canada’s Apotex in 2008 (WTO, 2008). This complexity has deterred further use, effectively rendering the system impractical for most LMICs. To address this limitation, African nations should pursue regional approaches to compulsory licensing through the African Continental Free Trade Area (AfCFTA) and the African Medicines Agency (AMA). By establishing regional manufacturing hubs and joint licensing agreements, countries could legally share production and distribution rights, enabling more efficient access to affordable generic medicines across borders. Without such cooperative reform, Africa will remain dependent on costly foreign suppliers, leaving millions without access to essential, life-saving treatments.

Limited access to medical treatments and technologies exacerbates healthcare disparities, increases mortality rates, and weakens overall economic productivity as more women, who form a significant part of the workforce, succumb to preventable diseases. With South Africa’s presidency of the G20 and the African Union’s (AU) permanent seat in the G20, African nations now have a rare opportunity to influence global health governance and push for IP reforms that prioritise public health over profit. Reforming IP laws is a legal necessity because international law already recognises the right of states to protect public health over commercial interests. The Doha Declaration on the TRIPS Agreement and Public Health (2001) reaffirmed that WTO members have the legal right to use TRIPS flexibilities to ensure access to affordable medicines. Similarly, the International Covenant on Economic, Social and Cultural Rights (Article 12) obliges states to take steps to realise “the right of everyone to the highest attainable standard of health.” Thus, IP reform is not only a matter of policy choice but a legal obligation derived from both international and regional commitments to protect health and human rights. Reforming IP laws to facilitate local production of generic medicines, reduce drug costs, and enhance access to innovative treatments is not just a legal necessity but a moral imperative. Without decisive action, cervical cancer, one of the most preventable and treatable cancers will continue to devastate communities.

Beyond these challenges, patent evergreening presents another major obstacle to affordable medicine access in Africa. This practice allows pharmaceutical companies to extend

the life of drug patents by making minor modifications to existing formulations/therapies, such as adjusting dosages, combining compounds, or making minor chemical modifications to existing drugs, to secure additional years of market exclusivity. For example, the primary patent on the monoclonal antibody trastuzumab (brand name Herceptin) used in HER2-positive breast cancer expired in 2012. The manufacturer filed and held secondary patents on a subcutaneous formulation of the drug (rather than the original intravenous form) that are still valid into the 2030s in many LMICs (MPP, 2025). Essentially, evergreening remains effective because, although generic manufacturers are now able to produce the original formulation once the primary patent expires, pharmaceutical companies often create “patent thickets”. This is a process whereby numerous secondary patents are filed around a single medicine, covering modified formulations, dosing schedules, manufacturing processes, or delivery methods. Although the original patent on the active drug may expire, these overlapping patents can continue to block or delay generic competition for years and can create legal and regulatory uncertainty that discourage generic or biosimilar market entry. Furthermore, healthcare providers frequently transition to the newer patented formulation before generic competition emerges, reducing demand for the older version. In the case of trastuzumab, the introduction of a subcutaneous formulation offered shorter administration times and greater convenience compared to the original intravenous version, encouraging clinical uptake of the newly patented product. As a result, even after expiry of the original patent, lower-cost competitors may struggle to gain market entry, allowing pharmaceutical companies to maintain high prices and prolonged market dominance.

In South Africa, civil society groups reported ongoing secondary patents covering dosage changes or combinations of drugs such as trastuzumab that would delay generic/biosimilar entry until a later date, specifically 2027–2033 for trastuzumab, as these tactics keep essential medicines, including chemotherapy agents and newer immunotherapies, artificially expensive and out of reach for many African patients. This means that rather than allowing lower-cost biosimilars to compete once the original molecule’s patent has expired, the secondary patents keep the cost of the drug high and limit access in LMIC contexts. Several countries have historically navigated restrictive IP laws to expand access to essential medicines, offering valuable lessons for Africa. For example, India’s Patents Act of 1970 abolished product patent protection for pharmaceuticals, enabling Indian manufacturers such as Cipla to produce generic versions of life-saving drugs and transform the country into a global leader in affordable medicine production (UNDP, 2013). Notably, Cipla gained international recognition in the early 2000s for significantly lowering the cost of antiretroviral therapy for HIV treatment in LMICs. Although the introduction of TRIPS obligations now limits the ability of countries to fully replicate this approach, the Indian experience demonstrates how strategic IP policies, voluntary licensing, and patent oppositions can still be leveraged to improve access to essential medicines in LMICs. Similarly, Brazil issued a compulsory license in 2007 to import generic versions of the antiretroviral drug efavirenz after price negotiations with the patent holder failed, prioritising public health over pharmaceutical monopolies. This action successfully reduced the price of efavirenz by approximately 70%, significantly expanding access to treatment for people living with HIV and demonstrating that compulsory licensing can be an effective tool for LMICs to overcome patent-related barriers to essential medicines. Thailand also utilised compulsory licensing to authorise generic competition against the consent of pharmaceutical companies, notably for the antiretroviral drugs efavirenz in 2007 and lopinavir/ritonavir in 2008, ensuring access to essential medications for its population (Alcorn, 2007; Rosenberg, 2014). These examples demonstrate that with strong legal frameworks, decisive political action, and investment in domestic pharmaceutical production, countries can successfully override patent

barriers and increase access to critical medicines. If African nations follow these examples by reforming their patent laws, they can significantly improve access to treatments for high-burden diseases while boosting pharmaceutical sovereignty (WHO, 2024; MPP, 2024; Ragavan & Vanni, 2020; Schull, 2000; Taghavi et al., 2020).

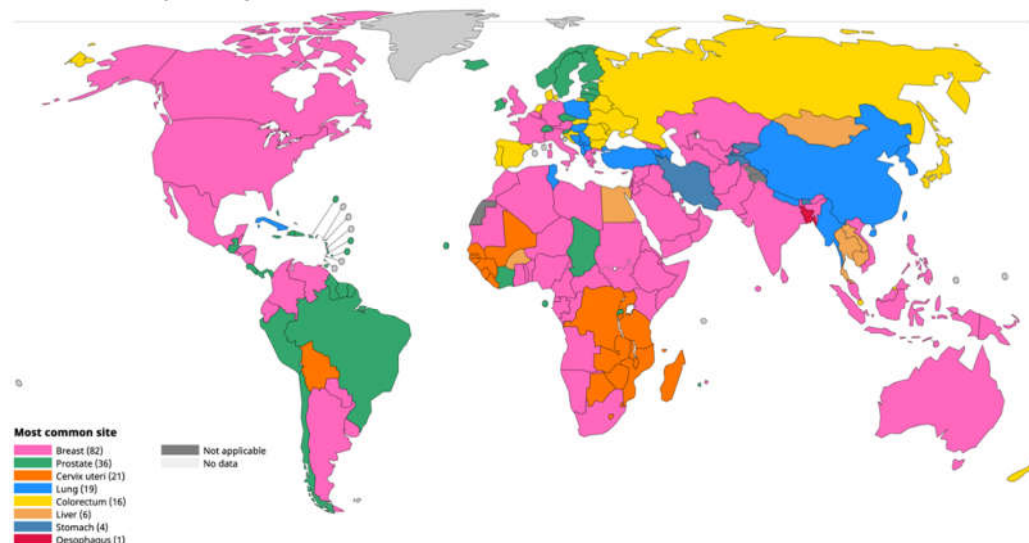
Beyond legal reforms, African nations must utilise the AfCFTA as a strategic platform to negotiate better pharmaceutical trade agreements. A key priority should be the joint procurement of essential medicines to reduce costs and expand availability, alongside efforts to establish regional drug manufacturing hubs that can serve multiple countries. To illustrate the scale of the problem: in South Africa, the cost of cervical cancer diagnosis and treatment has been estimated at roughly R 24 997 for stage 1 and R 55 997 for stage 4 (Maleka, 2021). With such a range, even modest mark-ups translate into major barriers for patients. Indeed, studies in sub-Saharan Africa show that retail mark-ups on medicines can reach 30 %-50 % and cumulative mark-ups exceed 200 % of the landed cost (Mhlanga & Suleman, 2014; Ngozwana, 2016). An example specific for advanced or recurrent cervical cancer is the monoclonal antibody bevacizumab which has been estimated to cost more than US\$21 000 per extra month of life in LMIC settings, making it unaffordable in countries where gross national incomes per capita are often under US\$3 000. Similarly, the immune checkpoint inhibitor pembrolizumab costs approximately US\$11 700 for just one 28-day cycle in high-income settings and is even less likely to be economically accessible in African contexts (NCBI, Pembrolizumab (Keytruda), Table 3, 2022). Even with large price reductions, modelling suggests cost-effectiveness thresholds are still not met. These figures demonstrate how monopolistic pricing and patent-protected exclusivity create prohibitive cost-barriers for cervical cancer treatments in Africa, underlining the urgency for coordinated policy action (e.g., joint procurement, regulatory harmonisation, IP reform) to drive down prices and broaden access. By harmonising regulatory standards under the AfCFTA, African governments can streamline drug-approval processes, improve distribution efficiencies and thereby bring down the total cost burden to patients. Furthermore, at the global level, African leaders should push for a TRIPS waiver on a number of treatments, similar to the COVID-19 vaccine waiver proposed by India and South Africa. Proposed in 2020, the waiver aimed to allow LMICs to produce generic versions of COVID-19 vaccines and therapeutics without patent restrictions, thereby increasing supply and reducing costs (Médecins Sans Frontières, 2020; Chang, 2023; Kohler et al., 2022; Loft, 2022). Proponents argued that this was essential to ensure global vaccine equity, as wealthier nations had secured the majority of vaccine doses, leaving African and other developing nations struggling with shortages. Despite widespread support from developing countries and public health advocates, pharmaceutical companies and some high-income nations (e.g., the U.S., EU, and UK) resisted the waiver, arguing that it would discourage innovation and investment in new treatments (Kohler et al., 2022; Mchau et al., 2024). After prolonged negotiations, a limited waiver was approved in June 2022, but it only applied to vaccine patents and did not cover diagnostics or treatments, reducing its impact. However, if a TRIPS waiver was extended to cervical cancer treatments it could enable local manufacture and generic production of HPV vaccines, chemotherapies and immunotherapies, potentially lowering treatment costs by half or more. An example from one initiative, which achieved ~59 % savings on a portfolio of 26 cancer drugs in Africa/Asia (Amin & Kesselheim, 2022; Clinton Health Access Initiative, 2020). However, pharmaceutical-industry resistance, regulatory-capacity constraints and global-trade negotiations at the WTO remain major hurdles. Strong advocacy from African governments, alongside investment in domestic

manufacturing and supply-chain infrastructure, will be required if the AfCFTA strategy is to result in affordable access to life-saving cervical cancer treatments across the continent.

8. From Pilot to Policy: A Scalable Model for Broader Healthcare Solutions

While this discussion has focused on cervical cancer, the structural weaknesses in Africa's healthcare system — limited healthcare infrastructure, weak pharmaceutical supply chains, poor public health education, cultural hesitancy, and the dominance of profit-driven pharmaceutical companies — are challenges that affect many other preventable diseases. For instance, breast cancer is now the most commonly diagnosed cancer in Africa, amongst both men and women, with ~186 598 new cases recorded in 2020 and incidence rising rapidly (Figure 4) (Anyigba et al., 2021). However, it remains largely untreated due to a lack of screening programs and affordable therapies. Similarly, non-communicable diseases are surging: in the African Region, diabetes affects ~10.5 % of adults (2022) and hypertension's pooled prevalence is ~28.5 % among adults, while cardiovascular disease is the largest component of NCD deaths (Barry et al., 2025). Furthermore, the lack of health literacy and limited awareness of holistic preventive approaches to disease prevention such as traditional medicine, nutritional therapy, and physical activity, means many people seek costly pharmaceutical treatments after disease progression rather than preventive care (Lordan & Grant, 2023; WHO, 2025; Sun et al., 2024).

Most common site per country, Absolute numbers, Incidence, Both sexes, in 2022 (excl. NMSC)



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 Data version: GLOBOCAN 2022 (version 1.1) - 08.02.2024
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International Agency
 for Research on Cancer
 World Health
 Organization

Figure 4. Global map of the most diagnosed cancer types by country based on absolute incidence numbers (excluding non-melanoma skin cancer). Data obtained from GLOBOCAN 2022 via the IARC Cancer Today platform (*Global Cancer Observatory*).

In summary, despite 80% of Africans using traditional medicine, and instead of leveraging the trust and accessibility of traditional healers, modern healthcare systems have often sidelined them, missing an opportunity to bridge the gap between medical science and community-based healthcare. By partnering with traditional healers, governments could improve early disease detection, increase community trust in modern medicine, and encourage the use of holistic, culturally accepted treatments alongside evidence-based medical care. At the same time, pharmaceutical corporations' focus on profit rather than public health continues to drive medicine prices beyond the reach of most Africans. Companies use patent monopolies and evergreening tactics to extend exclusive rights on drugs, keeping generic alternatives off the market and prioritising financial gains over saving lives. Without reforms that prioritise public health over corporate interests, Africa will remain dependent on expensive imported medicines while millions continue to die from preventable and treatable diseases. The solutions proposed in this essay — local pharmaceutical production, digital health expansion, traditional and holistic treatment integration, education, and public health policy reform — must be scaled beyond cervical cancer. If these strategies are implemented, they will not only reduce mortality rates for a single disease but also strengthen Africa's entire healthcare system, build a more resilient workforce, ultimately enhancing national productivity and long-term economic development, and allow it to better respond to future health crises and NCDs alike.

9. Conclusion: A Blueprint for African-led Healthcare Innovation

For true transformation, African nations must use their growing influence in global governance, particularly through the G20 and AU, to demand policy reforms that favour equitable healthcare access. Governments must also invest in community-based education programs to empower people with knowledge of disease prevention, lifestyle medicine, and early screening. Public-private collaborations should fund local pharmaceutical manufacturing, innovation in healthcare delivery, and partnerships with traditional healers, ensuring culturally relevant, accessible, and affordable care for all. By addressing cervical cancer as a starting point, Africa can create a roadmap for improving healthcare access across multiple diseases, reducing health disparities between African nations and high-income countries, and moving towards a self-sufficient, resilient, and equitable healthcare system. The time to act is now. Through bold policy decisions, investment in local solutions, and a commitment to holistic healthcare, African nations can break the cycle of medical dependence and build a healthcare system that truly serves its people.

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