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The Current Challenges and Future Impact of HPV Testing in Cervical Cancer Elimination Programmes in Africa

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Virtual Think Tank (VTT) Panel

Frost & Sullivan, The Growth Pipeline[™] Company, recently assembled a select group of thought leaders to participate in 3 VTTs to discuss the challenges and future impact of human papillomavirus (HPV) testing in the cervical cancer elimination programmes in Africa. Sujith Eramangalath, senior vice president of consulting and global healthcare and life sciences practice area leader at Frost & Sullivan, moderated the sessions that included providers from leading healthcare organisations.

The purpose of the VTTs was to understand the challenges to implement and scale-up HPV testing services in Africa and uncover innovations that will counter these difficulties. Although different groups met at various times, they discussed similar topics and recurring themes emerged. This summary document will highlight their insights and underscore the areas in the patient experience that need improvement.

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Participants:

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Introduction

HPV causes almost all cases of cervical cancer. According to the World Health Organization (WHO), 19 out of the 20 highest-burden countries are in Africa. Cervical cancer is curable if diagnosed and treated early, but many African countries experience limited access to prevention, screening, and treatment.¹ In 2020, there were approximately 604,127 global cases of cervical cancer, which killed 341,464 women.² Cervical cancer is the most common female cancer in half of all sub-Saharan countries in Africa³ and in East Africa, age-standardised rates reached 40 new cases of cervical cancer diagnosed and 30 deaths per 100,000 person-years in 2018⁴.

In November 2020, WHO launched a global strategy to accelerate the elimination of cervical cancer, and 194 countries committed to this preventable cause. The programme highlighted 3 strategic pillars of cervical cancer elimination: 1) vaccinations, 2) screening and 3) treatment⁵.

To meet the following targets by 2030, committed countries on the path towards elimination will need to achieve the following:

- Vaccinate 90% of girls with the HPV vaccine by 15 years of age
- Screen 70% of women using a high-performance test by age 35 and again by 45
- **Treat 90%** of women with cervical disease (90% with pre-cancer treated and 90% with invasive cancer managed).

Achieving each target will require meticulous public health planning, coordinated logistics, as well as significant financial resources, human resources, and the political will and commitment to achieve the desired impact. While many countries in Africa are localising the WHO cervical cancer elimination strategy, the targets remain ambitious due to the difficulties of implementation and the scale-up of HPV testing. High-level challenges relate to demand creation (due to cultural norms, behaviours, and stigma), the high cost of HPV testing, and losing women who test positive but do not return for



treatment. By addressing these challenges cost-effectively, cervical cancer programmes across Africa can flourish when supported by an enabling environment.

Frost & Sullivan's VTT aims to highlight the current challenges in cervical cancer elimination and the future impact of HPV testing towards long-term prevention for the women of Africa.

¹ WHO: Building a future free of cervical cancer in Africa (June 2021)

² WHO: Global Cancer Observatory (Globocan) (2020)

³ International Atomic Energy Agency (IAEA): No Woman Should Die from Cervical Cancer in Africa (Sept 2020)

⁴ Cancer Medicine (Sept 2020)

⁵ WHO: A cervical cancer-free future: First-ever global commitment to eliminate a cancer (Nov 2020)

Current Challenges and Steps Towards Eliminating Cervical Cancer

The Virtual Think Tank session identified 3 main challenges with which key opinion leaders commonly identified. It then set out key steps required to overcome these specific challenges to meet cervical cancer elimination targets in Africa by 2030.

Exhibit 1: Challenges Identified During Think Tank Discussions



Establishing government vision and increasing involvement in programme set-up, co-ordination, scale-up, and sustainability

To achieve the targets (vaccinations, screening, and treatment) towards the global elimination of cervical cancer set forth by the WHO, governments must have a vision and show leadership. This vision should provide clear goals and objectives but also present robust thought-out guidelines that can be implemented and scaled-up from local to national levels. A one-sizefits-all approach to eliminating cervical cancer across Africa will not work, as government and local resources, community sensitivities, and patient needs and preferences vary across different settings. The additional challenge remains whether governments across Africa can harmonise the fragmented approach towards tackling cervical cancer within their own country by unshackling the disease that is often embedded in healthcare programmes, such as women's health, sexually transmitted infections (STIs), family planning, and cancer.

"HPV and cervical cancer interventions suffer a bit when it comes to ministries and how they are organized because sometimes you see them within a cancer program, sometimes you see them within a NCD program. Sometimes you may see them within a women's health program. And so that fragmentation really serves to undermine the whole point of trying to coordinate and get buy-in at the highest level." —Dr Heather White, TogetHER for Health Government and local stakeholders require a coordinated approach, with the government taking the lead in creating and sustaining the vision to eliminate cervical cancer. This vision should filter directly to regional or local health institutions, non-governmental organisations, and every governmental department with the ability and power to impact health, such as the ministries of finance, social welfare, healthcare, and social security, where the government is central in its commitment to screen, diagnose, and treat patients and to provide financial and social security to create high-impact value for women in local communities by implementing programmes with sustainability and scalability in mind.

"I think one of the most important things is to increase the level of knowledge and understanding. A sensitisation of communities, not just of women, but all communities, so that there is acceptance to prevent cervical cancer. That needs to be understood right through all communities, whatever the process in a country is, for it to cascade down through traditional authorities and village headmen, I think is really important." —Dr Heather Cubie, University of Edinburgh



Exhibit 2: Coordination Efforts for Cervical Cancer Screening Programmes

- Call for advocacy towards how best to adapt the cervical cancer elimination strategy with current country capacity and capability
- Identifying relevant KPIs to create compelling investment case
- Increasing public access to financial assistance tools and social protection schemes
- Promote need for publicprivate engagement
- Develop framework and timelines for technology development to strengthen mobile health (m-Health)
- Memorandum of understanding to ensuring programme continuity and sustainability
- Guidelines and initiatives to transition to patientcentred service delivery models that empower local primary health systems
- Assess existing infrastructure that can help facilitate achieving cervical cancer elimination targets



- Support advocacy for the need for HPV testing and importance of eliminating cervical cancer
- Provide KPIs evidence to demonstrate investment case
- Identifying individuals that require access to financial assistance tools and social protection schemes
- Guide government to where public-private partnerships will be best served and much needed
- Assist government to identify what aspects of patient care and HCP workflows will need digital health interventions
- Work with government to develop guidelines and patient-centred delivery models
- Use on the ground local knowledge and expertise to help identify pre-existing testing infrastructure, frameworks and systems that can help HPV testing to scale more efficiently

Achieving Greater Coordination

Call for advocacy

Governments must do more to build the political willpower to create, develop, and sustain mechanisms to eliminate cervical cancer. It is necessary to support and guide governments around patient needs, preferences, costs, logistics, funding support, and scenario planning to encourage political advocacy. This support would help governments and their respective ministries understand upfront concerns, create greater transparency and visibility to commit investments, and instil confidence to mobilise resources to help communities in need. Eliminating cervical cancer requires political advocacy.

Identifying relevant KPIs to create a compelling investment case

The next aspect is to identify relevant KPIs sensitive to stakeholders within the political, financial, and healthcare spheres of influence. Identifying KPIs would help governments and their respective ministries see the impact of disease prevention programmes and enable healthcare stakeholders to discuss investments with the ministry of finance, highlighting the economic impact on the gross domestic product (GDP) in 5 to 10 years if the country follows the path of underinvesting in disease prevention programmes. KPIs include reduction in out-of-pocket expenses, access to financial assistance models, penetration of social protection schemes, health outcomes, uptake of screening appointments, and treatment referrals. Presenting such data to the ministries of finance and health will direct funding appropriately and quantifies the impact of interventions. Impact funding also provides the opportunity to attract more resources (internal or external) to improve programmes.



Exhibit 3: Potential KPIs Identified

"What I hear most from ministries and decision-makers is how much is it going to cost? And then we start worrying about, how do I get it? Who do I ask? How do we maintain it? How do we get the supply chain in? What are the customs issues? Those are all things that really start to overwhelm the leadership. And then that makes it very easy to say, well, let's just don't do it. It's too much."

-Dr Patti E. Gravitt, University of Maryland School of Medicine

Enhancing public access to financial assistance tools and social protection schemes

Governments need to reduce OOP costs associated with HPV testing. Often the focus is on the test alone, but attention should also be on indirect costs, such as transportation expenses, lost working hours, and the time investment for follow-up appointments and/or treatment. Greater access to financial support tools or social protection mechanisms could ease the patient's burden and encourage attendance for screening or testing.

Bolster public-private engagement

There have been calls for greater involvement of the private sector or to bolster public-private engagement towards scaling up HPV testing. However, it is the government's responsibility to create the right operational and financial environment to attract private sector participation. Setting out testing targets will make it easier for the private sector to invest and create more sustainable access pricing. Furthermore, there have been partnership efforts by private hospitals and governments to strengthen the referral system and patient treatment posttesting by offering free cervical cancer screening tests. This has helped more women attend private hospitals, which enjoy a positive perception compared to public hospitals, and enables private hospitals to manage the referral system according to their current capacity.

Harnessing technology to promote m-health

Approximately 60% of Africa's population is under the age of 25 and, with mobile phone subscriber penetration anticipated to increase between 2019 and 2025⁶⁷, governments need to leverage technology adoption to promote m-health solutions. This could impact the age groups more likely to embrace digital solutions and serve as a channel to communicate (receive alerts, reminders, and results) and reduce potential programmatic challenges (demand creation and loss to follow up). The burden is on the government to establish an m-health roadmap to empower secondary prevention initiatives for cervical cancer and women's health.

"Over 20 years ago, when I was in Great Britain, I used to receive a notice every year in the post from a general practitioner saying that my cervical cancer or my Pap smear test was due. Here we are in 2021, in Zambia, and there is no reminder, and no usage. Even just to say the signs and symptoms of cervical cancer, nothing is being used. The bottom line is to harness technology to promote m-health." —Udie Soko, Zambian Cancer Society

6 Cities Alliance 7 GSMA

Ensuring health programme continuity

To ensure that the scale-up of HPV testing is successful long term, the right environment is necessary to enable programme continuity and sustainability. For example, several African countries have experienced political instability in recent years, which impacts the government's priorities, affecting its financial commitment to health programmes. The relationship between the political and healthcare spheres is often ignored but can have devastating consequences for disease prevention programmes. Solutions include strengthening political lobbying, creating a memorandum of understanding that is binding across administrations and moving from donor funding models to integral governmental budgeting to ensure sustained and uninterrupted development of disease elimination programmes.

Transition to patient-centred service delivery models that empower local primary health systems

The next approach would be to transition efforts to a patient-centred service delivery model where the government still leads the coordination efforts and processes but empowers and drives the measures into primary health systems that retain local-level knowledge, have established trust with communities and patients, understand the local resources, and demands deployment of an effective disease prevention programme. This way patient navigation is efficient, personal, and likely to include the patient in the cervical cancer elimination journey.

Leverage existing human immunodeficiency virus (HIV) infrastructure to scale-up efficiently

African governments could utilise pre-existing HIV infrastructures to scale up HPV testing effectively and efficiently, such as human resources, local health workers, volunteers, doctors, scientists, laboratory testing infrastructure, and networks, and the capacity to transfer data and results across health system tiers. Governments will need to coordinate these efforts and talk with outside donors if the HIV programmes are externally funded to optimise programme management and ensure the inclusion of priority diseases. Also, a need to centralise health information systems and standardise health reporting within countries in Africa would help track the progress of disease elimination programmes, which health and finance ministries could leverage for sustained investment and resource dedication.



2 Cervical Cancer Visibility and Stigma Challenges

Any ambition to scale up secondary prevention in Africa, which includes screening the at-risk population with a high-performance HPV test and treatment soon after detection of precancer lesions, is likely to face difficulties when implementing elimination strategies for cervical cancer. A standout challenge is that cervical cancer suffers from poor visibility and is often embedded within cancer programmes, women's health programmes or STIs programmes. This impacts the awareness penetration in communities and subsequent demand for services. Another challenge faced by health systems in Africa is the stigma around cervical cancer. It is often considered a sexually transmitted disease (STD) in local communities, which creates significant and sensitive barriers to HPV screening and testing. The narrative is at risk of being lost to the concept of sexuality when it is a preventable and treatable cancer. HPV testing also faces stigmatisation due to the invasive nature of the sampling requirements. In regions in Africa, where local community sensitivities remain high, invasive sampling can hamper elimination strategies.

"Recognizing that cervical cancer in some regions has been framed as a sexually transmitted infection means we are taking people back into the concept of sexuality, which is not often discussed in our region."

-Benda Kithaka, KILELE Health Association

Raising cervical cancer awareness and reducing the associated stigma Improving cervical cancer visibility by creating greater awareness around women's wellbeing that sensitises communities and empowers women to take ownership

A consolidated effort between the government, primary healthcare workers, and stakeholders is effective for getting more women to attend screening programmes, follow-up appointments, and treatment. This will result in greater responsibility, accountability, and empowerment for their well-being. Enhanced awareness campaigns to shed light on the various testing options available will help women attend screening tests and empower them to ask for the test they want. Knowing the choices available allows women to make informed decisions and speaks to accountability for their health and wellbeing. Often, alternative cervical screening tests available to women are not communicated well or at all. Multilingual awareness campaigns to women and broader communities could also improve communication and encourage more women to get tested. Elimination efforts should focus on the complete well-being of African women and not only on HIV or cervical cancer because they suffer from various chronic diseases, such as diabetes, cardiovascular disease, and respiratory disease. A holistic view of health could help women take ownership and accountability sooner than only focusing on cervical cancer. Coordinated programme efforts that position health to women and the broader community could help scale up efforts because supported women are more inclined to look after their well-being earlier.

"If we approach health in a wholesome way, in a holistic way, then I believe that some of the barriers are in terms of talking about cervical cancer because it has to deal with the sexual organ or breast cancer has to do with the breast. But if we're talking about how being healthy is important, whether it's the cervix or the eye, or the brain, I think that can help to break down barriers because I'm more conscious of my health and the different elements that make up the healthy body." —Udie Soko, Zambian Cancer Society



"It is one thing to introduce HPV testing; it's another to be able to talk about the continuum of care for the woman and to be able to put across that for the women who have a negative high-risk HPV, we only need to see them in five years. And that's where the introduction of reminders would work well, that in three years, they're reminded, 'In two years, we need you to come and get tested again."

-Benda Kithaka, KILELE Health Association

To succeed and be sustainable, women, men, girls, and boys from local communities must start owning the elimination process. Personalising and supporting the journey will create highimpact value for women and their families and drive greater community awareness. They will become integral partners in solution-finding. Once local communities communicate via word of mouth, the conversation about prevention, screening, and treatment can begin.

"We come from a continent that believes in stories, where information has passed from one to another to another for decades, for years. Our history has been passed on by word of mouth, and so word of mouth is one of the best ways of communicating, by creating believable stories for people to own the cervical cancer prevention journey."

-Benda Kithaka, KILELE Health Association

Bi-directional education between local communities, government, donors, and implementation partners creates and harmonises knowledge between stakeholders. Moving away from topdown commands towards a coordinated knowledge transfer approach where all parties can leverage expertise to create strategies that eliminate cervical cancer provides a platform for shared decision making and government oversight and coordination. It also helps mobilise an on-the-ground healthcare workforce earlier for a more sustainable approach.

Improving education, knowledge, and understanding about cancer and health in general (such as the relevance of nutrition, exercise, and detrimental habits) will help the population consider health holistically instead of in disease-state silos. Existing resources such as universities, nursing schools, or clinics specialised in different health disciplines, should be utilised to greater effect to achieve greater penetration of cancer awareness among the population. Incorporating cancer education into the national curriculum could help women and their families take ownership of their health earlier and create demand for relevant health services.

"We have a plethora of universities that teach, and then there are nursing schools, and different health disciplines to educate about the importance of cervical cancer screening, health and wellness, or cancer and other diseases. Also, the talk about cancer should be brought into the curriculum so the students are made aware. I think this would help to spread the message and make people demand some of these services, so we bring pressure to bear on government."

"I don't think the social mobilization will be effective unless there is better education, knowledge and understanding within civil society, across the silos. If you educate them about cervical cancer, but you don't educate them about the relevance of general health, smoking and nutrition at the same time, then you don't cross the silos. So actually broad reaching education, leading to knowledge and understanding, I would put as top of the list, and that's across all populations, men and Women." —Dr Heather Cubie, University of Edinburgh

Removing the stigma associated with cervical cancer as an STD

HIV and acquired immunodeficiency syndrome suffered from a similar stigma as HPV, but efforts to safeguard communications helped destigmatise these diseases. Resonating with the community requires creating, controlling and staying close to a narrative early on and safeguarding how the message reaches the patient to ensure its acceptance. Women need to feel comfortable speaking about these issues, and men and the community must understand and support them. Multi-channel advocacy campaigns co-developed by government, partners, and civil society with regular community surveys to quantify reach and shift in sentiments will achieve this.

Overcoming the stigma of invasiveness of HPV sampling through self-sampling

Discussions between the local health system, government, and manufacturers are focused on ensuring that self-sampling is accessible, feasible for the country context, and fit for use will help reduce barriers to HPV testing and empower women by creating a comfortable and secure environment. Manufacturers need to make sure the HPV tests they supply have a claim for self-sampling, and if countries want to roll out these tests, there needs to be a coordinated effort to map the patient journey from self-sampling to the results to ensure effective scale-up (see exhibits 4 and 5).



3 Patient Pathway and Service Delivery Challenges

There is currently an emphasis on strengthening secondary prevention screening and testing, but considering the treatment aspect of this (i.e., those patients who are about to enter the system after positive diagnosis or are in treatment) is necessary. Weak referral systems and poor patient navigation to treatment and aftercare will undermine any efforts to strengthen secondary prevention programmes. Evaluating the current infrastructure and capacity requires more effort. For example, is there an appropriate triage test (if needed) or enough thermal ablative equipment for treatment? Efforts to make service delivery more patient-centric by building screening programmes around the patient's needs and preferences will create a more conducive screening and self-sampling environment and enable a seamless patient journey from screening to post-treatment care.

"The whole referral system needs to be revamped. When women come to the cancer hospital, unfortunately, at the present moment, the situation is dire. The number of machines which are either not working or they're not working optimally, chemotherapy drugs are in short supply and so on and so forth." —Udie Soko, Zambian Cancer Society



"The problem is between time of presentation, diagnosis and when they start their first treatment, that can take many months. There's no point in presenting early, and then die just because their referral system doesn't work."

How to improve the patient pathway and overcome service delivery challenges

Exhibit 6: Cervical Screening Outlook in Africa



Efforts to enhance client-centred service delivery to improve patient navigation

Developing and enhancing a client-centred service delivery model requires a concerted effort. Any strengthening to screening and prevention systems must match a strengthened referral and treatment system (patient navigation) to reduce the time between presentation, diagnosis, and treatment. Hospitals and government health agencies will need to evaluate brick and mortar infrastructure and pharmaceutical and medical supplies, standardise screening and treatment guidelines, and assess healthcare professional capacity and skills to manage patient journeys post-screening in an efficient and coordinated manner. The goal is to shorten the time between the patient presentation, diagnosis, and treatment while improving the patient experience and health outcomes. Efforts to transfer knowledge and scale-up testing ensures sustainability, and stakeholders must back efforts for service delivery to move from donorfunded platforms to being an integral part of the government healthcare funding commitment.

Transition to HPV primary testing

Current guidelines state that HPV deoxyribonucleic acid (DNA) testing should be the primary screening test used in a screen and treat approach or a screen, triage, and treat approach.⁸ Currently, Africa uses visual inspection with acetic acid (VIA) and, to a lesser extent, cytology-based screening methods. These methods have limitations with quality, sensitivity, and scalability. ⁹As a result, the WHO recommends the use of HPV testing for its high level of performance and strong negative predictive value.¹

Cytology and VIA are the primary screening tools while countries build up infrastructure and capacity for HPV DNA testing. The latest WHO screening and treatment guidelines recommend a screen, triage, and treat approach for women living with HIV. In this approach, primary screening uses HPV DNA (preferred) or cytology with positives triaged using the appropriate test before treatment.⁸ As demand creation increases, local-level screening programmes can achieve higher testing coverage through coordination with a plan to transition to HPV DNA testing. A plan to improve the testing infrastructure will reduce testing backlogs and ensure that women receive the highest quality and most sensitive tests. Once a woman tests positive, appropriate treatment must be available and accessible in a clinically relevant time. Governments, health ministries, and local health systems need to coordinate efforts to align and standardise the testing and treatment pathway, so patients know the requirements with greater transparency and improved navigation through their treatment.

Leveraging affordable technology to improve access for women to present themselves

With the development of telehealth solutions globally, continued communication infrastructure developments in Africa, and increased technology penetration among Africans, an opportunity arises for women to leverage m-health solutions to overcome stigmatisation, lack of awareness, and infrastructure gaps to cervical cancer screening. m-health solutions provide private communication with healthcare professionals when presenting, requesting tests, arranging sample drop-offs, and receiving results while keeping privacy and dignity intact. This solution empowers the individual to take ownership of their health and well-being. Governments and health agencies must evaluate the potential impact m-health solutions could have on their population by improving health outcomes and overcoming resource limitations in health systems and realise the long-term economic impact and contribution to GDP.

⁸ WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention (2021)
9 Broutet N et al. Implementation Research to accelerate scale-up of national screen and treat strategies towards the

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Self-sampling drive, testing simplification, and onboarding tech partners to support innovation

Exhibit 7: How to Improve Front-end Diagnostics to Improve Patient Experience



Self-sampling is an effective strategy for improving access to HPV screening and testing for African women. However, there is a need to develop simplified and non-invasive cervical cancer detection tests that give quicker diagnoses and overcome the stigmatisation barrier of invasive sampling, (thereby increasing testing access). Field opinion leaders have encouraged the private sector (manufacturers and/or technology partners) to create simplified and non-invasive cervical cancer tests and, at the least, to add self-sampling claims so that HPV self-sampling is on-label. Greater advocacy efforts for generating real-world evidence and private sector support of pilot programmes would build a compelling business investment case for both public and private sectors. They could then begin innovation processes to simplify tests and create a conducive client-testing environment that enables greater access, achieves higher testing volumes, and leads to enhanced health outcomes.

"Any technology owner who wants to make a lasting change in Africa needs to think about pilot scalability. Our governments will not touch anything until they've seen it's possible and they see the benefit of it. If we invest in the pilot and heavily ensure end-to-end service delivery, show proof, cost and that it works, and make a business case to say, 'This is what is needed as an investment, and it can be scaled at the touch of a button because we thought through the process.' If that can be done, for me, we have the technology, and we have the political goodwill, especially in Kenya." —Benda Kithaka, KILELE Health Association

"The innovative technology should be urine sampling, not swabs, which will be even easier for women. And I would also say that I've been disappointed that the major HPV production companies have not invested more in looking at the needs for self-sampling in low-income countries, with regard to the cost of sample collection. And that's true for the urine developments too at the moment, but those are the things that I would say are essential for any future affordable program." —Dr Heather Cubie, University of Edinburgh

Conclusion

The commitment shown by African governments to eliminate cervical cancer according to WHO 2030 targets is a step in the right direction, but achieving this requires overcoming hurdles and challenges.

The first step is for strong leadership to create a country vision that includes stakeholders with a vested interest in eliminating cervical cancer. This will enable governments to deploy wellthought-out and informed national guidelines that align with stakeholders at the federal and local levels, ensuring greater coordination for successful secondary prevention programmes. Strengthening advocacy, promoting discussion between the government and the private sector, harnessing technology, focusing on patient-centred services, and leveraging the existing infrastructure will contribute towards a sustainable, efficient, and impactful approach to eliminating cervical cancer.

Second, enhancing cervical cancer visibility and eliminating its stigma will improve outreach efforts, enable women (and men) to become invested in their well-being, and strengthen screening and testing efforts for secondary prevention programmes. This can be achieved through increased education and awareness, multichannel advocacy campaigns, and a more conducive and accommodating testing environment that encourages/promotes self-sampling.

Third, strengthening and improving the patient pathway to centre around their needs and preferences will encourage women to invest in their health and improve navigation from self-sampling to treatment. Achieving this requires leveraging affordable technologies to improve access for women;

engaging with manufacturers; working with local communities to simplify, strengthen, and drive the message for selfsampling; and ensuring that secondary and tertiary health facilities can accommodate



Identifying the challenges, establishing a vision, and ensuring coordinated efforts will enable African governments to begin eliminating cervical cancer and give women a better future for themselves, their families, and future generations.



Exhibit 8: Proposed Steps to Overcome Current HPV Testing Challenges and Its Future Impact in Cervical Cancer Elimination Programmes

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