Cervical Cancer: Open Access

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HPV-DNA Screening as a Primary Cervical Cancer Screening Modality in Zimbabwe: Obstacles and Recommendations

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Abstract

The World Health Organisation's 90-70-90 cancer strategy is premised upon the implementation of human papillomavirus deoxyribonucleic acid (HPV-DNA) testing as the primary cervical cancer screening modality. The ultimate aim is to reduce the age-standardized incidence of cervical cancer to less than 4 per 100 000 by the end of the 21st century and eliminate the disease as a significant global health concern. Zimbabwe, like other countries in sub-Saharan Africa, has a high burden of cervical cancer, with data from the Zimbabwe National Cancer Registry showing that cervical cancer is the leading cause of cancer deaths among women. This is despite visual inspection of the cervix with acetic acid (VIA) and cytology being available as screening modalities. These programs have suffered several implementation challenges, and the success of implementing HPV-DNA screening programs will depend partly on addressing the challenges that have been faced by these pre-existing programs. Additionally, other challenges unique to HPV-DNA testing must be anticipated with adequate measures put in place to avert these potential challenges. This calls for a close collaboration between academia, clinicians, public health stakeholders, policymakers, and implementing partners to ensure the success of the program and avert cervical cancer deaths.

Keywords: Cervical cancer; Screening; Human papillomavirus; HPV-DNA

Introduction

Decades of research have advanced our understanding of the natural history of invasive cervical cancer development from the time of initial HPV infection. It has been proven that the carcinogenic process generally occurs over a period of 10 years or more. This has given public health agencies a unique opportunity to detect changes that lead to cancer and provide curative treatments before invasive cancer develops. This secondary prevention through screening tools such as cytology and visual inspection is used worldwide and has significantly reduced the burden of cervical cancer in countries with advanced screening programs. However, implementation of comprehensive testing programs in resource-limited countries in sub-Saharan Africa faces several challenges and barriers that limit their effectiveness from a public health perspective. Therefore, despite the availability of screening programs, the burden of cervical cancer in Zimbabwe continues to increase.

The development of a safe and effective HPV vaccine represents a welcome advance in the prevention of cervical cancer. Bivalent, tetravalent, and non-avalent HPV vaccines are available and used to varying degrees in different countries depending on resource availability. Zimbabwe has a national HPV vaccination program for adolescent girls, which was launched in 2018 after pilot projects in Beitbridge and Marondera in 2014 achieved vaccination coverage of over 80% of the target population Introduced It is hoped that the combination of primary prevention through HPV vaccination and secondary prevention through screening using high-performance tests will ultimately lead to the eradication of cervical cancer. These preventive measures are important public health measures that will reduce the age-standardized incidence to less than 4 cases per 100,000 by the end of the 21st century. The

HPV DNA test is a high-performance cervical cancer screening method currently recommended by the World Health Organization (WHO) as a primary screening method and has several advantages over VIA and cytology methods. HPV DNA using VIA and colposcopy as a triage method for HPV DNA-positive individuals for treatment and thermal ablation strategies as part of the implementation of WHO's 90-70-90 strategy to eliminate cervical cancer Countries are strongly encouraged to move to base screening. . In line with WHO recommendations, the Zimbabwe Ministry of Health and Child Care (MoHCC) plan to move to nationwide rollout of HPV DNA testing as a primary screening method for cervical cancer. This article explains why VIA and cytology face implementation challenges in Zimbabwe and other resource-constrained environments. We discuss the benefits of HPV DNA testing compared to traditional screening methods, the challenges countries may face in implementing HPV DNA testing, and provide recommendations for evolving the use of HPV DNA screening [1-4].

Methodology

For this article, we conducted a literature review on available cervical cancer screening programs, the challenges of implementing these programs in low-resourced countries, the advantages of HPV-DNA screening over traditional screening modalities, HPV-DNA implementation challenges, and the recommendations to address the challenges, with special focus on Zimbabwe. We searched for articles published in English from the WHO website, and peer-reviewed articles from ScienceDirect, Google Scholar, SCOPUS, MEDLINE, Africa Journals Online (AJOL), and PubMed databases. The keywords that were used in the literature search were 'cervical cancer', 'screening modalities', 'screening programs', 'implementation challenges', 'HPV-DNA screening advantages', 'recommendations', 'low-resourced countries', and 'Zimbabwe'. Boolean operators 'AND' and 'OR' were

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used to retrieve articles that have both terms and either term, thereby delimiting the search. We used wildcard and truncation symbols to expand a search term to include all forms of the root word.

Current cervical cancer screening programs

Visual inspection with acetic acid (VIA) and conventional cytology (Papanicolaou smears) are the most commonly utilized cervical cancer screening modalities in SSA. Only 20% of African nations had nationwide cervical cancer screening programs as of 2019, including South Africa, Botswana, Rwanda, and Zimbabwe. The majority of these had screening coverage of less than 10%.

Discussion

Screening accuracy and specificity

One of the key advantages of HPV-DNA screening is its high sensitivity in detecting HPV infections, which are the primary cause of cervical cancer. However, the challenge lies in achieving an appropriate balance between sensitivity and specificity. High sensitivity may result in the detection of transient, non-clinically significant HPV infections, leading to unnecessary anxiety and follow-up tests for women. Zimbabwe must establish clear guidelines for managing HPV-positive results, including the incorporation of triage tests like cytology or visual inspection with acetic acid (VIA) to determine the risk of cervical precancer or cancer. This will help identify women who require immediate intervention while reducing unnecessary procedures. Implementing HPV-DNA screening requires a well-developed laboratory infrastructure capable of processing and analyzing samples accurately and efficiently. Zimbabwe, like many low- and middle-income countries, may face challenges in building and maintaining such laboratory capacity. Investment in laboratory infrastructure and training of laboratory personnel is imperative. Partnerships with international organizations and the establishment of reference laboratories can help ensure the quality and reliability of screening services.

Cost and accessibility

The cost of HPV-DNA screening can be a barrier, particularly for low-income individuals. Ensuring affordability and accessibility to all women, regardless of socioeconomic status, is crucial for the success of the screening program. Subsidizing the cost of HPV-DNA screening for underserved populations and integrating it into existing healthcare programs can enhance accessibility. This approach should be accompanied by strategies to reduce or eliminate out-of-pocket expenses for patients. Effective communication with patients about the benefits, limitations, and implications of HPV-DNA screening is essential. Informed consent is critical, and ensuring that women understand the screening process and its significance is paramount. Develop culturally sensitive and clear educational materials and consent forms. Train healthcare providers to engage in respectful and informative conversations with patients, addressing concerns and questions to facilitate informed decision-making. Managing a large volume of HPV-DNA screening data requires robust information systems and safeguards to protect patient privacy. Data breaches or mishandling could undermine trust in the screening program.

Recommendation: Invest in secure health information systems and ensure strict data protection protocols are in place. Compliance with international data privacy standards is essential [6-10].

Conclusion

The adoption of HPV-DNA screening as the primary cervical cancer screening modality in Zimbabwe holds great promise in the fight against this preventable and often deadly disease. However, the successful implementation of this screening approach depends on addressing several critical challenges and considerations. Zimbabwe faces the need to strike a balance between the high sensitivity of HPV-DNA screening and the specificity required to avoid unnecessary anxiety and procedures for women. Clear guidelines and triage protocols are essential to ensure that women with HPV-positive results receive appropriate follow-up and treatment. Investment in laboratory infrastructure and the training of laboratory personnel is vital to maintain the accuracy and reliability of screening services. Collaborations with international organizations and the establishment of reference laboratories can help achieve these goals. To ensure equitable access to screening, Zimbabwe must work to make HPV-DNA screening affordable and accessible to all women, regardless of their socioeconomic status. Subsidization and integration into existing healthcare programs are potential solutions. Patient education and informed consent processes are necessary to empower women to make informed decisions about their health. Clear, culturally sensitive educational materials and well-trained healthcare providers are essential components of this effort. Lastly, robust data management and privacy protection measures must be in place to secure patient information and maintain public trust in the screening program. In conclusion, by addressing these challenges through a comprehensive strategy, Zimbabwe can harness the full potential of HPV-DNA screening to detect cervical cancer at an early stage, reduce its incidence, and ultimately save lives.

Conflict of Interest

None

Acknowledgment

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