Integrating cervical cancer screening and preventive treatment with family planning and HIV-related services

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Abstract
Cervical cancer is a leading cause of mortality in Sub-Saharan Africa—in large part because of inadequate coverage of screening and preventive treatment services. A number of programs have begun integrating cervical cancer prevention services into existing family planning or HIV/AIDS service delivery platforms, to rapidly expand “screen and treat” programs and mitigate cervical cancer burden. Drawing upon a review of literature and our experiences, we consider benefits and challenges associated with such programs in Sub-Saharan Africa. We then outline steps that can optimize uptake and sustainability of integrated sexual and reproductive health services. These include increasing coordination among implementing organizations for efficient use of resources; task shifting for services that can be provided by nonphysicians; mobilizing communities via trusted frontline health workers; strengthening management information systems to allow for monitoring of multiple services; and prioritizing an operational research agenda to provide further evidence on the cost-effectiveness and benefits of integrated service delivery.

KEYWORDS
Cervical cancer; Family planning; HIV; Integration; Service delivery; Sub-Saharan Africa

1 | INTRODUCTION
Cervical cancer is the fourth most common female cancer worldwide, with 85% of incident cases occurring in low-resource regions.¹ The incidence rate for cervical cancer is highest in Sub-Saharan Africa (34.8 per 100,000 women, age-standardized), where it is the leading cause of cancer among women in 23 of 48 countries in the Sub-Saharan African region.¹

Cervical cancer is largely preventable because it progresses slowly after initial infection with oncogenic types of human papillomavirus (HPV), and because we have the ability to detect and treat precancerous lesions early.² Evidence-based global guidelines for early detection and treatment of precancerous lesions are available to support program planning, implementation, and evaluation,² ³ but screening coverage remains limited in low- and middle-income countries (LMICs). Several global initiatives have recently been launched or expanded to address these gaps and to improve women’s access to cervical cancer prevention services in high-burden countries.¹ ³–²²

Integration of cervical cancer prevention services through existing reproductive health networks can promote rapid uptake of cervical cancer prevention services.²³–²⁷ The WHO defines integrated service delivery as: “the management and delivery of health services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health system.”²⁸ By placing the client at the center of service delivery, integrated health services ensure that the health needs of the client are met comprehensively. This differs from vertical programs, which are usually disease-centered in their approach to service delivery.

Integrated service delivery offers several potential benefits, including improved quality of care, improved efficiency in service provision, increased uptake of a range of sexual and reproductive health (SRH)
services, cost-effective use of resources, and increased client satisfaction.\textsuperscript{14,15} Yet for this approach to be successful, integration must be reflected across all dimensions of the health system, including policy, finance, governance, staffing, training, monitoring and evaluation, and supply chain management.\textsuperscript{15} Coordination must span multiple providers and service delivery points in order to provide a seamless experience for the consumer. At the service delivery point, integration can be categorized at the level of the provider or the facility. Provider-level integration occurs when the same provider offers a range of services (e.g. family planning, cervical cancer screening, HIV testing and counselling) during the same consultation. Facility-level integration happens when a range of services are available at the service delivery point but may not be offered by the same provider.\textsuperscript{13}

Both family planning and programs for HIV are viewed as natural entry points for integration of cervical cancer prevention into existing SRH services, and the renewed global focus on addressing the unmet need for family planning and HIV services through global initiatives—such as Family Planning 2020 and UNAIDS 90-90-90—provides a robust platform for leveraging synergies between these complementary health areas. Both HPV and HIV are sexually transmitted, and women living with HIV have an increased risk of HPV co-infection, resulting in higher incidence and accelerated progression of cervical neoplasia.\textsuperscript{2,16} Integration of cervical cancer services into existing family planning programs can help increase opportunistic screening coverage, owing to the predominance of family planning programs across all levels of the health system.\textsuperscript{8,9} Despite these synergies, challenges to integrated SRH service delivery remain; notably, the target populations for family planning services and/or HIV services may only partially overlap with women targeted for cervical cancer screening, those aged 30–49 years.\textsuperscript{17} Supplies and services must be well coordinated, and therefore, integration must be actively promoted and practiced across all levels of the health system to be effective.

The objective of this paper is to describe both benefits and challenges associated with integrated SRH programs in countries with a high cervical cancer burden in Sub-Saharan Africa. We also recommend actions that can increase coverage for integrated SRH services.

## METHODS

We conducted a desk review to identify programs in LMICs in Sub-Saharan Africa in which cervical cancer prevention services have been integrated into family planning or HIV/AIDS service delivery platforms. A Medline search was conducted using the key words: “cervical cancer,” “family planning,” “HIV,” and “integration.” Studies that did not specifically describe operational components of integrated service delivery were excluded. A search of the gray literature on integrated SRH programs was performed to identify case studies or other materials. Following the desk review, program reports were reviewed and semistructured telephone interviews were conducted with field teams from Kenya, Tanzania, Uganda, Zambia, and Zimbabwe responsible for developing and delivering integrated SRH services throughout the authors’ respective organizations.

## RESULTS

### 3.1 Integrating cervical cancer services and family planning programs

A total of six countries (Kenya, Nigeria, Tanzania, Uganda, Zambia, and Zimbabwe) were identified as having integrated cervical cancer services with existing family planning programs\textsuperscript{8,9,17} (program data, unpublished). One example of such a program is the Cervical Cancer Screening and Preventive Therapy (CCS&PT) initiative, which has provided over 1.8 million cervical screenings and 25,727 cryotherapy treatments for women with precancerous lesions, within large reproductive health networks operating throughout 484 service delivery points in Kenya, Nigeria, Tanzania, and Uganda. The CCS&PT program specifically focuses on the integration of family planning and cervical cancer prevention services through mobile outreach and static sites (CCS&PT, unpublished program data). Service delivery points are operated either by independent private sector health providers (known as social franchises) or through nongovernmental organizations. Services may be integrated at the facility or the provider level.

Integrated service delivery through this program has resulted in increased use of both cervical cancer and family planning services. In Uganda, following the introduction of cervical cancer screening and preventive treatment—into a program with a range of contraceptive method options—uptake for both intrauterine devices (IUDs) and implants among clients attending static clinics increased three-fold, suggesting a synergistic effect of offering multiple services. Among clients who participated in exit interviews, 77% reported having received additional services during their visit for cervical cancer screening; most commonly cited was receiving long-acting reversible contraception (LARC) or family planning counselling (CCS&PT, unpublished program data). In Uganda in 2015, social franchise clinics delivered over 94,000 family planning services (IUDs, tubal ligations, and short-acting methods). Among these clients, more than half (54%) of those who received any contraceptive method were also screened for cervical cancer. Dual service uptake was most common among women who chose IUDs, of whom 73% were screened for cervical cancer (CCS&PT, unpublished program data). These data highlight the benefit of integrated SRH service offerings, which ensure that women access services to meet all of their individual needs.

### 3.2 Integrating cervical cancer services and HIV/AIDS programs

Cervical cancer services were integrated into HIV/AIDS programming in six African countries: Ethiopia, Kenya, Malawi, Tanzania, Zambia, and Zimbabwe\textsuperscript{4,18–25} (program data, unpublished). In Zambia, Malawi, and Botswana, screening and cryotherapy services were integrated into existing national HIV/AIDS care and treatment programs, resulting in increased coverage of screening and treatment services for HIV-positive women.\textsuperscript{22–25} Supported by the President’s Emergency Plan for AIDS Relief (PEPFAR), Zambia’s cervical cancer prevention program initially focused on HIV-positive women, but the proportion of HIV-negative women accessing screening services also increased—
This increased use of cervical cancer services by the general population was due to the sustained efforts of providers and community mobilizers to educate all women within the target age group. In Ethiopia, programs that target women living with HIV for cervical cancer screening reported high service uptake in the pilot phase, but also recognized the challenge of scaling up within the broader health system.

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**4| BENEFITS OF INTEGRATED SRH SERVICES**

Integration of SRH services offers multiple benefits for both consumers and program planners alike, as outlined below.

**4.1| Improved targeting for high-risk populations**

Women living with HIV have a two- to four-fold higher rate of HPV infection than HIV-negative women and are more susceptible to an accelerated development of precancerous and cancerous cervical lesions. The integration of cervical cancer services into existing HIV programs can address the lack of screening and treatment services for HIV-positive women. It also provides a key entry point for women to access HIV testing and counselling services.

**4.2| Efficient and cost-effective use of resources and infrastructure**

Integrating cervical cancer services into existing HIV and family planning programs promotes increased efficiencies through use of common health personnel and infrastructure, compared with vertical SRH programming. Significant global investments have been made to increase provision of HIV testing, treatment, and care, and these investments can be maximized by adding cervical cancer prevention services. In 2015, the Global Fund for AIDS, Tuberculosis and Malaria announced that it will allow countries to include cervical cancer services in their Global Fund requests, opening the door to increased funding for these services.

**4.3| Increased access and uptake of SRH services**

Integration of cervical cancer and family planning services can increase access, demand, and uptake of both services. In addition, providing integrated mobile outreach services can help to maximize coverage of SRH services among isolated and rural populations.

**4.4| Increased knowledge and improved skills of formal and informal service providers**

Integration of SRH services offers training opportunities for service providers to increase their functional skills and knowledge on complementary SRH-related topics. Increasing the proportion of providers who know how to insert an IUD and also screen for cervical cancer, for example, helps to ensure that women can access a range of SRH services from either the same provider or during the same visit.

The deployment of frontline health workers, including community health workers (CHWs), is crucial in identifying and educating women who are eligible for SRH services. When trained to promote multiple SRH services, CHWs—who are well-known, trusted community health agents—can bolster community support for integrated services.

**4.5| Strengthening an enabling environment for integrated service delivery**

Buy-in from key government and community leaders and other influential stakeholders has been a central component in the successful introduction of cervical cancer services. In Sub-Saharan Africa, cancer prevention is supported by the African First Ladies Coalition, many of whom are vocal champions for cervical cancer prevention.

**5| CHALLENGES FOR INTEGRATED SRH SERVICES**

Integrated SRH service delivery also brings a unique set of operational challenges that must be addressed to provide sustainable, high-quality services. These are outlined below.

**5.1| Limited availability of client-level data**

SRH services are typically funded through vertical programs with unique monitoring and evaluation requirements. As a result, clinics record service data in accordance with donor and government requirements, creating separate data registers at each service delivery point. The lack of integrated health management information systems prevents program managers from collecting client-level data, making reporting on integrated service delivery difficult (CCSPT program, unpublished program data).

**5.2| Lack of availability of cervical cancer treatment services**

Numerous Sub-Saharan African countries promote a single-visit approach for cervical screening and preventive treatment. If this approach is not feasible (e.g. if not all health facilities are outfitted with cryotherapy units; or if there is a need for referral to higher-level facilities), clients are referred to other facilities for treatment services. The limited availability of treatment sites and lack of coordination among treatment facilities has a negative impact on treatment rates.

For women who require higher-level care (such as biopsy, surgery, or radiotherapy) the dearth of trained providers, lack of equipment, high cost of services, and lack of a standardized referral system have a significant impact on morbidity and mortality of women. In Nigeria, nearly 70% of VIA-positive women were unable to access treatment services at tertiary facilities owing to high financial costs of treatment. Often treatment for invasive cervical carcinoma is only
available at a single tertiary facility, located in the capital.\textsuperscript{19} The availability of higher-level services is even more critical for HIV-positive women, as they are more likely to have extensive lesions that do not meet the criteria for treatment with cryotherapy.\textsuperscript{16,25,30}

5.3 | Fragmented funding environment

Service delivery organizations are mainly financed through a diverse range of bilateral, multilateral, and private sector funding streams. As a result, these donor funds usually finance vertical and segmented SRH programs with specific requirements, comprising defined target populations, program priorities, and outcome indicators. The fragmented approach to program funding makes it difficult to provide integrated SRH service delivery; for example, the lack of overlap between the target age group for cervical cancer screening programs (30–49 years) and family planning programs (women of reproductive age) can result in missed opportunities.

5.4 | Shortage of SRH commodities and equipment

Integrated service delivery inevitably will result in increased demand for multiple services, which in turn increases the need for a robust supply chain for all SRH-related goods and services. The ability to adequately forecast, plan, and manage inventory is essential for integrated service delivery.

5.5 | Increased responsibilities for service providers and high staff turnover

Additional SRH services generate an increased workload for service providers, and can result in low morale and staff burnout.\textsuperscript{19} In LMICs, the situation is further exacerbated by the perpetual shortage of trained service providers required to adequately meet the SRH needs of the population, as well as frequent rotation of trained staff within the public health system.\textsuperscript{18,25,31}

5.6 | Limited access to target populations

In some settings, integration of cervical cancer services into stand-alone HIV programs can limit access to screening services for women in the general population, resulting in sub-optimal coverage of the target population. This can be due to the stigma of HIV, or to lack of awareness of screening services.\textsuperscript{32} In addition, as already noted, the target populations for family planning services only partially overlap with those for cervical cancer screening.\textsuperscript{5,17}

6 | RECOMMENDATIONS

The integration of cervical cancer services into existing family planning and programs for HIV has been documented across several countries in Sub-Saharan Africa. This is a promising strategy to increase access and coverage of cervical screening services, as well as uptake of family planning and HIV-related services. The following steps can help to further increase coverage for integrated SRH services.

6.1 | Increased coordination among existing implementers

National cervical cancer prevention programs are difficult to implement in many low-resource settings owing to a lack of finances, which results from competing health priorities, fragmented health infrastructure, lack of trained providers, and limited physical access to the target populations. Although some international donors are working with government, private, and nongovernmental organizations in many of the same countries, the separate and distinct funding streams received by each partner mean that cervical cancer programming is not routinely coordinated. By leveraging existing in-country programmatic capacity for cervical cancer service delivery, governments can identify where synergies or gaps exist and optimize resources to increase access to cervical cancer prevention and treatment services.

6.2 | Training of nonphysician service providers in higher-level treatment services (task shifting)

The training of nonphysician providers in cryotherapy has been shown to be a successful approach for increasing treatment rates for pre-cancerous lesions.\textsuperscript{2} Expanding and sustaining training of these providers is critical to increasing access to treatment services. The limited number of referral facilities providing higher-level treatment services, such as loop electrosurgical excision procedure (LEEP), also increases cervical cancer morbidity and mortality. A proposed solution to improve care is to train and mentor nonphysician providers (e.g., clinical officers) in LEEP and providing services at secondary level facilities.

6.3 | Continued community engagement

Increasing knowledge and awareness, and in particular, dispelling myths and misconceptions associated with cervical cancer, is key to generating informed demand for services. Integrated service delivery offers the opportunity to increase knowledge and awareness among a wider range of women by incorporating information on cervical cancer into broader SRH education and mobilization activities. Training should be provided to frontline health workers, such as CHWs, to bolster community engagement and awareness.

6.4 | Introduction of robust health management information systems

Routine data collection capturing the number of services provided at the facility-level is often sufficient to meet donor requirements. However, developing and collecting client-level indicators will allow effective monitoring and measuring of the scale and quality of integrated service delivery. These data can then be used by program managers to support programmatic decision making, improve the quality
of services, and identify which SRH services are common entry points for clients accessing screening services to further increase coverage.

6.5 | Conducting implementation research to address outstanding questions

While the feasibility of integrated SRH services has been demonstrated, several operational research questions remain on how to best deploy services to ensure their quality and uptake. Research questions include: What models of integrated care are most efficient, productive, and cost-effective? What service delivery points are most effective for enhancing uptake of multiple services? What components of integrated services are most important to both patients and providers, to ensure high uptake of complementary SRH services?

7 | CONCLUSION

Integrated service delivery holds promise for increased coverage of complementary SRH services. Based on firsthand experience through the CCS&PT program and on examples from Sub-Saharan Africa, integration of cervical cancer prevention services is feasible and can result in higher uptake of both family planning and HIV-related services for women. While integrated SRH service delivery brings its own set of challenges, these can be addressed through a targeted operational research agenda that aims to improve efficiency, increase cost-effectiveness, and deliver high quality care.

AUTHOR CONTRIBUTIONS

HW contributed significantly to the research and writing of the manuscript; AM contributed to content development, as well as review and editing of the manuscript; RC and ON contributed to development of both the content and editing of the manuscript.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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