original reports abstract

Lessons Learnt From Pilot Cervical Cancer Screening and Treatment Programmes Integrated to Routine Primary Health Care Services in Benin, Cote d'Ivoire, and Senegal

Farida Selmouni, PhD[1]; Catherine Sauvaget, MD, PhD[1]; Djima Patrice Dangbemey, MD[2]; Djoukou Denise Olga Kpebo, MD, MPH[3]; Ndeye Mbombe Dieng, MD[4]; Eric Lucas, MSc[1]; Youssef Chami Khazraji, MD[5]; Maria Bennani, PhD[5]; Rachid Bekkali, MD[5]; and Partha Basu, MD, PhD[1]

PURPOSE The project aimed to implement pilot screening and treatment services for cervical cancer integrated with existing primary health centers (PHCs) in Benin, Cote d'Ivoire, and Senegal and evaluate these services using implementation research outcomes such as reach, effectiveness, adoption, and acceptability.

MATERIALS AND METHODS The Ministry of Health in each country took the lead in setting up a stakeholder's group that designed a protocol tailored to the local context. The target age was 25-49 years in Benin and Cote d'Ivoire and 30-49 years in Senegal. Visual inspection with acetic acid (VIA) was the screening test, and thermal ablation (TA) was the ablative treatment of choice in all. The Ministry in each country identified 4-5 PHCs to set up screening and ablation services and one higher-level center for colposcopy referral. After a master-trainer led training program, nurses, midwives, or general practitioners screened opportunistically the eligible women attending the clinics. The VIA-positive women eligible for ablation were offered immediate treatment.

RESULTS Between May 2018 and January 2021, 16,530 women were screened opportunistically. VIA positivity was 8.1% with huge variability within and between countries. Sixty-one percent of all VIA-positive cases were eligible for immediate TA, and 88% of them accepted same-day treatment. Compliance to TA at PHCs was 99%. Majority of women treated with TA complained of minor side effects. Significant dropouts occurred as the women were referred to colposcopy clinics.

CONCLUSION Opportunistic screening provided as part of routine PHC service can screen many women and treat a significant proportion of screen-positive women with TA with minimal side effects. Primary concerns are the hard-to-reach women who remain out of opportunistic screening coverage and noncompliance of the screen-positive women referred to higher-level centers.

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INTRODUCTION

Approximately 88% of the total number of deaths reported annually from cervical cancer (CC) occur in low- and middle-income countries (LMICs), primarily because of their inability to implement effective CC screening programmes.[1] Breast and CCs kill women in their prime and for every 100 women dying of these cancers in sub-Saharan Africa; 14 children die before they reach 10 years of age.[2] Quality-assured screening and appropriate management of the screen-detected precancers and cancers are among the three strategic pillars to eliminate CC recently pronounced by the WHO.[3] It is well recognized that to ensure wider access to the eligible women and to minimize vertical investments, screening and treatment services should be integrated to the primary health care. The experience from Zambia has clearly shown the importance of initiating such integrated services as a small pilot and gradually scaling up as lessons are learnt and more resources are made available.[4] Similar to most other sub-Saharan African countries, Benin, Cote d'Ivoire, and Senegal did not have a time-bound plan to implement CC screening when the International Agency for Research on Cancer (IARC)/WHO approached the Ministry of Health (MoH) of each country to launch a pilot project through existing health care facilities. The objectives of the project were to collaborate with the MoH to implement an integrated CC screen and treat pilot service in each country and evaluate this service for implementation outcomes such as reach, effectiveness, adoption, and acceptability. IARC and the Foundation Lalla Salma, Cancer prevention and treatment, Morocco,

Author affiliations and support information (if applicable) appear at the end of this article.

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CONTEXT

Key Objective

What are the opportunities/challenges of implementing an opportunistic visual inspection with acetic acid (VIA) screen and treat approach as part of routine primary health care services?

Knowledge Generated

This approach can screen a considerable number of women, with some investment in infrastructure improvements, provider training, and continued mentoring. Though the age range specified in the protocol for screening was rigorously maintained, the VIA-positivity varied widely across the clinics even within the same country. More than 60% of VIA-positive women were treated immediately with thermal ablation with minor side effects. However, a low compliance was observed among women referred to diagnosis centers. Screening and treatment services were well-accepted by the providers in general, but some of them did complain of increased work load.

Relevance

Low- and middle-income countries could establish an opportunistic screening program supported by intensive community mobilization activities and appropriate program supervision and monitoring.

provided staff training, technical support, and medical equipment to the MoH to initiate the services.

MATERIALS AND METHODS

The project was implemented in three Francophone West African countries, each belonging to the low human development index category and having high age-standardized CC incidence rates (Benin—15.1/100,000, Cote d'Ivoire—31.2/100,000, and Senegal—36.3/100,000 person-years).[1] In each country, we approached the cancer control program coordinator or a MoH official of appropriate rank to explain the objectives, plan, and relevance of the project. The MoH created a national stakeholder's group that was involved in a two-day workshop to decide on the following:

- The protocol of CC screening and management of the screen-positive women
- The primary health centers (PHCs) that will be involved in providing screening and treatment services
- The center that will be upgraded to provide facilities for colposcopy and large loop excision of the transformation zone (LLETZ)
- Additional inputs required to improve the infrastructure
- The training plan for the service providers
- Data management and program supervision

The target age selected for screening was 30-49 years in Senegal and 25-49 years in Cote d'Ivoire and Benin. The target age group was decided by the local policymakers and experts on the basis of the WHO recommendation and the age-specific incidence and prevalence of CC in their country. Visual inspection with acetic acid (VIA) was the screening test of choice in each country. The protocol stipulated that the VIA-positive women would be assessed for ablative treatment using the criteria recommended by the WHO and were offered immediate treatment, if eligible.[3] Considering the challenges of ensuring regular supply of refrigerant gas, every country agreed to perform ablative treatment with a battery-driven portable thermal ablator rather than cryotherapy. Screen and treat services were organized in four PHC in Senegal and Cote d'Ivoire each and five PHCs in Benin. At each country, one secondary care facility was equipped to provide colposcopy and LLETZ services for the women referred from PHCs. The PHCs were selected on the basis of their ability to screen 5,000 women in 18 months, their proximity to the colposcopy center, and the availability of sufficient staff to provide screening and treatment services. It was decided that every age-eligible woman attending the PHCs will be counseled to undergo screening.

MoH from each country nominated two gynecologists from the health services as master trainers. Their training was organized by IARC in February 2018 at Nargis Dutt Memorial Cancer Hospital in India. The master trainers returned to their respective countries to train the nurses, midwives, and general practitioners (GPs) to perform VIA and thermal ablation (TA) and the gynecologists at the colposcopy center to perform colposcopy and LLETZ. Structured competency assessment was performed for each trainee before being certified. The master trainers were also responsible for regular supportive supervision and conducting at least one refresher training within a year. Supportive supervision included the following activities:

1. Assessing infrastructure of the clinic, condition of the equipment, supply of consumables, and infection control measures
2. Assessing performance of the service providers using a performance checklist and measurement of performance indicators
3. Assessing the quality and completeness of record-keeping
4. Receiving feedbacks from different categories of service providers
5. Discussing the supervision visit outcomes with the providers and local managers

The information on age, VIA findings, colposcopy results, treatment of precancerous lesions, and follow-up assessment were documented using paper-based forms. To avoid extra workload on the screening providers, we did not collect information not collected routinely at the clinics (eg, HIV status) and not useful for implementation or monitoring. Each woman undergoing screening was issued a card with a unique identification number. Study data were collected and managed in each study site using Research Electronic Data Capture, a secure, web-based software platform designed to support data capture hosted at IARC.[5,6] IARC investigators helped the site investigators to analyze the data periodically to measure some of the key performance indicators—number of women screened per week/month, % of women within the stipulated age range, screen positivity, % of VIA-positive women eligible for TA and receiving same day treatment etc. Any significant deviation led to supportive supervisory visits.

Limited amount of community mobilization was performed through community health workers. Banners and posters were designed and displayed to raise awareness about CC screening among individuals attending the PHCs. The MoH was supported by local civil society organizations for public awareness campaigns through print, radio, and electronic media.

The service providers rendered screening and treatment services as part of their routine work and did not receive any honorarium/incentive. Every woman participating in screening provided written informed consent. The screening and treatment services were free of charge. The project protocol was approved by the local Ethics Committee in each country and IARC's Ethics Committee. The project was registered in the International Standard Randomised Controlled Trial Number trials registry (registration number: ISRCTN21518741).

RESULTS

A total of 16,530 women were screened opportunistically in three countries. A total of 73 service providers were trained, although some of them were shifted to other departments or transferred soon after training. The time required to screen 5,000 women was variable across the countries. Senegal screened 5,001 women between April 2018 and June 2020 (27 months), Cote d'Ivoire screened 5,500 women between July 2018 and June 2020 (24 months), and Benin screened 6,029 women between January 2019 and January 2021 (25 months). The screened women were almost evenly distributed across the age groups (Table 1). Only 1.8% of the women screened in Senegal were outside the protocol-specified age group of 30-49 years. Otherwise, the age eligibility criteria were followed by all the countries.

The number of women screened by the country, study clinics, and VIA outcomes is shown in Table 2. The maximum number of women screened at a single clinic was

TABLE 1. Number of Women Screened in Benin, Cote d'Ivoire, and Senegal Stratified by Age Groups

Country	Facility	No. of Women Screened	25-29 Years, No. (%)	30-34 Years, No. (%)	35-39 Years, No. (%)	40-44 Years, No. (%)	45-49 Years, No. (%)	Outside the Screening Age Group, No. (%)
Benin	CHU MEL	1,967	389 (19.8)	397 (20.2)	410 (20.8)	407 (20.7)	325 (16.6)	39 (2.0)
	Local hospital Suru Lere	1,174	294 (25.0)	272 (23.3)	251 (21.4)	206 (17.5)	118 (10.1)	33 (2.8)
	Missessin	899	298 (33.1)	262 (29.1)	195 (21.7)	83 (9.2)	42 (4.7)	19 (2.1)
	Gbegamey	1,035	230 (22.2)	212 (20.5)	215 (20.8)	198 (19.1)	162 (15.7)	18 (1.7)
	Ahouansori	954	365 (38.3)	232 (24.3)	154 (16.1)	117 (12.3)	77 (8.1)	9 (0.9)
	All sites in Benin	6,029	1,576 (26.1)	1,375 (22.8)	1,225 (20.3)	1,011 (16.8)	724 (12.0)	118 (2.0)
Cote d'Ivoire	Service de SMI/INSP	3,126	709 (22.7)	681 (21.8)	704 (22.5)	646 (20.7)	367 (11.7)	19 (0.6)
	CSU 220 Logements	1,027	239 (23.3)	283 (27.6)	220 (21.4)	177 (17.2)	108 (10.5)	0 (0.0)
	FSU Edmond Basque	675	122 (18.1)	154 (22.8)	162 (24.0)	138 (20.4)	98 (14.5)	1 (0.1)
	Hôpital Général d'Abobo-Sud	672	174 (25.9)	163 (24.3)	146 (21.7)	116 (17.3)	68 (10.1)	5 (0.7)
	All sites in Côte d'Ivoire	5,500	1,244 (22.6)	1,281 (23.3)	1,232 (22.4)	1,077 (19.6)	641 (11.7)	25 (0.5)
Senegal	Gaspard Kamara	2,620		1,015 (38.7)	706 (26.9)	451 (17.2)	393 (15.0)	55 (2.1)
	HLM	669		219 (32.7)	176 (26.3)	144 (21.5)	94 (14.1)	36 (5.4)
	Liberté VI	457		146 (31.9)	114 (24.9)	91 (19.9)	88 (19.3)	18 (4.0)
	Maristes	1,255		486 (38.7)	337 (26.9)	239 (19.0)	175 (13.9)	18 (1.4)
	All sites in Senegal	5,001		1,866 (37.3)	1,333 (26.7)	925 (18.5)	750 (15.0)	127 (2.5)
All countries, all sites		16,530	2,820 (17.0)	4,522 (27.4)	3,790 (22.9)	3,013 (18.2)	2,115 (12.8)	270 (1.6)

Abbreviations: CHU MEL, University Hospital Center MEL; CSU, Urban Primary Health Center; FSU, Urban Primary Health Center; HLM, low rent flats; SMI/INSP, Mother and Child Services/National Institute of Public Health.

in Cote d'Ivoire (Service de SMI/INSP-3126) and minimum number in Senegal (PHC LiberteVI-457). VIA positivity was 8.1%; an additional 0.2% had lesions suspicious of cancer. The VIA positivity varied widely within and between the countries, from 17.6% at University Hospital Center MEL in Benin to 0.7% at Hôpital Général d'Abobo-Sud in Cote d'Ivoire. In general, the study sites in Senegal reported lower VIA positivity compared with the other two countries. VIA positivity increased with age in Benin and Senegal while remained almost constant across age groups in Cote d'Ivoire (Fig 1).

Of the 1,340 women with positive VIA, 813 (61%) were eligible for TA. The proportion of women considered to be eligible for TA varied widely within and across the countries—ranging from 9% at a clinic in Senegal to 96% at a clinic in Benin (Table 2). Eligibility for TA gradually decreased with age in all countries (Fig 2).

Of those eligible for TA, 88% were treated on the same day as screening, 11% returned to the PHC for treatment on a different date, and only 1% was lost to follow-up. Overall, 95.7% were treated with TA within 1 week of screening, and there was no significant difference between the countries. The number of women agreeing to treatment on the day of screening was less in Senegal (61%) compared with Benin (91%) and Cote d'Ivoire (90%; Table 2).

A total of 500 VIA-positive women were referred to colposcopy, and only 335 (67.0%) attended the designated colposcopy centers. The compliance was even lower (21 of 38; 55.3%) among the women suspected to have cancer on VIA. Of the total 356 women undergoing colposcopy, cervix was normal on colposcopy in 156 (43.8%) while high-grade lesions and cancers were suspected in 55 (15.4%) and five (0.1%) women, respectively. The protocols in all the countries specified treatment of suspected low- and high-grade lesions on the basis of colposcopy findings. Only 49.7% (83 of 167) of the women with colposcopically suspected low- or high-grade lesions were treated at the colposcopy clinic, 12.0% (20 of 167) were referred to higher level centers, and the rest had cervical biopsy taken only. Interestingly, 78.3% (65 of 83) of the women were treated with TA by the colposcopist demonstrating the possible inaccuracy of determining eligibility for ablative treatment by the VIA providers.

Of the 167 VIA-positive women with colposcopically suspected low- or high-grade lesions, histopathology reports were available for 120. Fourteen high-grade lesions and three cancers were detected among them. None of the women with low-grade colposcopic lesions had cancer.

Table 3 shows the side effects reported by women during or immediately after TA. Only 6 (0.7%) of the 809 women

TABLE 2. VIA Outcomes and Treatment by Thermal Ablation by Country and Site

Country	Facility	No. of Women Screened	No. of Women Positive on VIA (%)	No. of Women Suspected to Have Cancer on VIA (%)	No. of Women VIA Positive Eligible for Ablation (%)	No. of Women Accepted Same Day Treatment (%)	No. of Women Accepted Treatment Later (%)
Benin	CHU MEL	1,967	347 (17.6)	8 (0.4)	122 (35.0)	112 (92.0)	7 (6.0)
	Local hospital Suru Lere	1,174	98 (8.3)	2 (0.2)	84 (86.0)	78 (93.0)	5 (6.0)
	Missessin	899	76 (8.5)	0 (0.0)	26 (34.0)	24 (92.0)	1 (4.0)
	Gbegamey	1,035	104 (10.0)	4 (0.4)	100 (96.0)	89 (89.0)	10 (10.0)
	Ahouansori	954	117 (12.3)	6 (0.6)	108 (92.0)	90 (83.0)	18 (17.0)
	All sites in Benin	6,029	742 (12.3)	20 (0.3)	440 (59.0)	393 (89.0)	41 (9.0)
Cote d'Ivoire	Service de SMI/INSP	3,126	333 (10.7)	1 (0.0)	281 (84.0)	254 (90.0)	27 (10.0)
	CSU 220 Logements	1,027	69 (6.7)	5 (0.5)	30 (43.0)	27 (90.0)	3 (10.0)
	FSU Edmond Basque	675	15 (2.2)	0 (0.0)	15 (93.0)	11 (79.0)	3 (21.0)
	Hôpital Général d'Abobo-Sud	672	5 (0.7)	0 (0.0)	4 (80.0)	4 (100.0)	0 (0.0)
	All sites in Côte d'Ivoire	5,500	422 (7.7)	6 (0.1)	329 (78.0)	296 (90.0)	33 (10.0)
Senegal	Gaspard Kamara	2,620	77 (2.9)	0 (0.0)	10 (13.0)	4 (40.0)	6 (60.0)
	HLM	669	45 (6.7)	10 (1.5)	4 (9.0)	3 (75.0)	1 (25.0)
	Liberté VI	457	10 (2.2)	2 (0.4)	2 (20.0)	0 (0.0)	0 (0.0)
	Maristes	1,255	44 (3.5)	0 (0.0)	28 (64.0)	19 (68.0)	9 (32.0)
	All sites in Senegal	5,001	176 (3.5)	12 (0.2)	44 (25.0)	26 (59.0)	16 (36.0)
All countries, all sites		16,530	1,340 (8.1)	38 (0.2)	813 (61.0)	715 (87.9)	90 (11.0)

Abbreviations: CHU MEL, Lagoon Mother and Child University Hospital Center; CSU, Urban Primary Health Center; FSU, Urban Primary Health Center; HLM, low rent flats; SMI/INSP, Mother and Child Services/National Institute of Public Health; VIA, visual inspection with acetic acid.

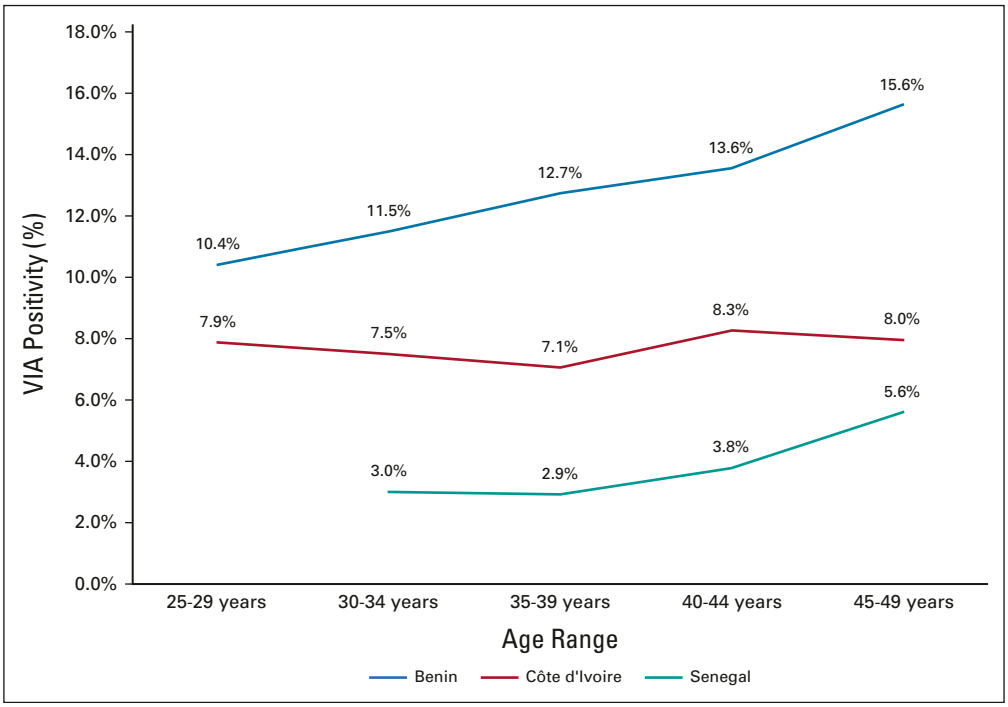

FIG 1. VIA positivity by age groups and by countries. VIA, visual inspection with acetic acid.

treated with TA complained of severe pain; the treatment was abandoned in four of them.

DISCUSSION

The study implemented in three Francophone West African nations clearly demonstrated the advantages and the various challenges of VIA-based opportunistic screening delivered as a service integrated to routine primary health care. High acceptability and low complication rates of TA so far demonstrated only in controlled trial settings could be replicated in real-life situations.[7] The project also highlighted the need for establishing a contextually appropriate mechanism to strengthen the referral mechanism between the PHCs and the colposcopy services set up at a higher level of facility.

Although not designed as a typical implementation research study, our study could demonstrate some of the implementation research outcomes such as reach,

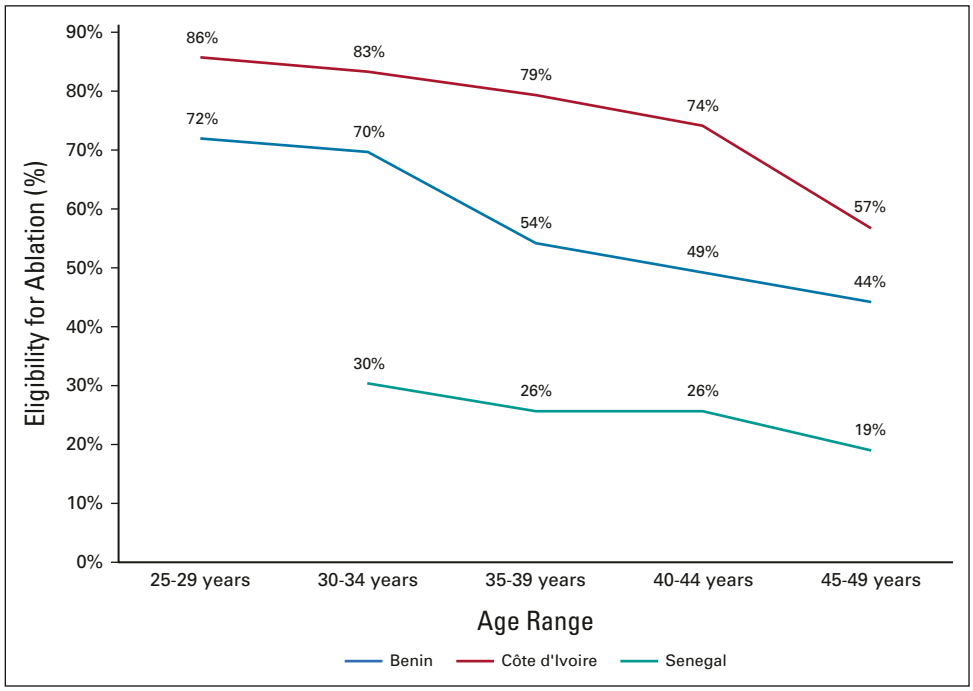

FIG 2. Eligibility for ablation by age groups and by countries.

TABLE 3. Side Effects During or Immediately After Thermal Ablation by Countries

Side Effect	Benin (N = 438[a]), No. (%)	Cote d'Ivoire (N = 329), No. (%)	Senegal (N = 42), No. (%)	All Countries (N = 809[a]), No. (%)
None	204 (46.6)	97 (29.5)	24 (57.1)	325 (40.2)
Mild pain/cramp	200 (45.7)	225 (68.4)	17 (40.5)	442 (54.6)
Moderate pain/cramp	18 (4.1)	6 (1.8)	1 (2.4)	25 (3.1)
Severe pain/cramp	6[a] (1.4)	0	0	6[a] (0.7)
Light bleeding	1 (0.2)	2 (0.6)	1 (2.4)	4 (0.5)
Moderate bleeding	1 (0.2)	0	0	1 (0.1)
Vaginal burning	8 (1.8)	0	0	8 (1.0)
Others	5 (1.1)	0	0	5 (0.6)

[a]Treatment was abandoned in four women. Several side effects may be reported by the same woman (total of 816 side effects among 809 women).

adoption, and acceptability. High number of women could be screened opportunistically within a limited period, and high proportion of the screen-positive women could be managed appropriately (reach); subjectivity in assessment resulted in wide variation in VIA positivity and treatment eligibility (adoption) although the providers followed the age recommendation (fidelity); and point-of-care TA performed by nurses, midwives, or GPs was well-accepted by the women as evident by their high participation (acceptability).

CC screening to be accessible to the women, especially those belonging to the socioeconomically disadvantaged groups, should be incorporated in the basic health packages delivered through primary care.[8] Our study has demonstrated that it is possible to screen a large number of women in sub-Saharan Africa opportunistically through PHCs within a relatively short period. Most PHCs, as routine facilities to examine women, have nurses, midwives, and GPs who are usually well-versed in performing speculum examination and minor procedures such as insertion of intra-uterine contraceptive devices, etc. Age-eligible women attending PHCs for minor illnesses, follow-up visits, and accompanying children or other family members need to be counseled and motivated to get screened. Some additional investments are necessary to develop the infrastructure for screening and ablative treatment in those settings. Training of the health providers in adequate number and periodic supervision are the key requirements to successfully initiate and maintain opportunistic screening at the PHCs, especially because of the high turnover of the providers.[9,10] Despite the fact that opportunistic screening can be initiated with minimum additional investments, such an approach can achieve a limited coverage of the population.[11] Opportunistic screening will miss the women who seldom visit the health facilities, and many of them may be at higher risk of CC.[12] The reality is that most LMICs do not have resources to implement an invitation-based screening and must rely on opportunistic approach, despite its shortcomings. Incorporating some mechanisms to mobilize the community in parallel with scaling up of services will help to improve participation. At the PHCs involved in our project, such mobilization was performed through the community health workers, mass media campaign, and special events (eg, the First Lady of Benin launching the CC screening program). However, the most important factor to improve women's participation was the effort and enthusiasm of the health staff to counsel and motivate all eligible women to undergo screening. Supportive supervisory visits were organized whenever the number of women being screened per week dropped in a particular clinic, and the participation invariably improved after that. The fidelity of the VIA providers to the screening protocol was high, as is evidenced by the small proportion of women being screened outside the specified age and almost no refusal of treatment by the providers. A very encouraging observation of our study was that almost all the women advised to undergo ablative treatment at the PHCs complied, even if some of them had to return to the clinic on a later date.

The major challenge of our implementation model was to ensure compliance of the women referred to centers outside the PHCs. As the facilities for colposcopy and LLETZ were almost nonexistent outside of our study, the noncompliant women were unlikely to have received appropriate management somewhere else. There may be various reasons for the women not willing to go to a higher-level health facility, including lack of trust and familiarity. Physical distance was unlikely to be a significant factor in our study as the colposcopy facilities were set up at hospitals not far away from the screening clinics. A context-specific solution is needed to keep track of these women and navigate them to reach the colposcopy centers as they are at the highest risk of having or progressing to CC.[13]

VIA is indeed a simple and affordable test, feasible to be implemented in primary care settings of the LMICs. The point-of-care nature of the test allows offering treatment to more than 60% of the test-positive women on the same day (as has been shown in our study). However, our study has highlighted the most important limitation of the test, which

is high variability of performance depending on training, experience, and skill of individual provider. The subjective nature of VIA is the biggest hurdle to scale up VIA-based screening with appropriate quality assurance.[14] Intensive effort is needed to ensure training and periodic retraining of the providers. Moreover, the providers should be able to perform adequate number of tests on a regular basis to keep their skills level high. Mentoring by a more skilled provider on a regular basis is also key to improve VIA performance.[15]

A key finding is that the assessment of VIA-positive women for ablative treatment being subjective can be highly variable, and there is room for inaccuracies as well. The three countries where our study was conducted have similar population profile, HIV prevalence, and prevalence of other risk factors for CC. Almost none of the women in the study had been screened for CC earlier. We expected VIA positivity and proportion of VIA-positive women being eligible for ablation by age groups to be similar. Yet, there was a huge variation, and many of the women considered as ineligible by the VIA provider was subsequently found to be eligible for TA by the colposcopists. Of course, the colposcopists had the advantage of having a better light source and magnification.

We have shown how systematic data collection can ensure implementation of quality assurance even in opportunistic setting. The principal investigators were responsible for continuous monitoring of activities. Whenever they identified major quality issues (eg, low number of screening in a month, too high or too low VIA positivity rate, and low treatment rate), they arranged meetings with clinics in-charge, service providers and the IARC team to identify the problems and solve them.

Implementation of opportunistic screening encountered several system- level challenges. In some of the centers, nurses and midwives complained of extra workload. Transfer of trained staff required training of new ones, and services were kept in abeyance till that happened. Regular supply of glacial acetic acid (required for VIA) was a challenge in some centers that had to rely on table vinegar of doubtful concentration to tide over the crisis. Nonavailability of technician to install the colposcope at one of the countries delayed initiation of the project. Aggregating data from different levels of health care to summarize outcomes of services provided to individual women required additional human and financial resources. The pandemic caused by severe acute respiratory syndrome coronavirus 2 could not affect the screening activities directly as the targeted numbers were screened in all the countries before the pandemic struck Africa. Nonetheless, we had to abandon the plan to hold a virtual refresher training in Benin because of poor internet connectivity, a common problem in many other African countries.

The major limitation of the study was that we did not study the barriers faced by the service users and the service providers that are very important implementation research issues. We had plans to do such studies along with the study of sustainability using the Intervention Scalability Assessment Tool.[16] We had to abandon these activities because of worsening pandemic situation. The health providers, program managers, and policy makers became too occupied to participate in such studies, and our study team also could not travel.

Despite these limitations, our study has highlighted a few critical issues related to rolling out CC screening in sub-Saharan Africa and other LMICs where the current status quo is no screening. We have demonstrated that with appropriate infrastructural support, training, mentoring, and program supervision, it is possible to provide CC screening and treatment services opportunistically. Countries in Africa such as Morocco, Rwanda, and Zambia have followed the same strategy and have been able to roll out CC screening across the country.[14,17] Mass scale opportunistic screening helped these three countries to gradually augment infrastructure, generate critical number of trained providers, develop an information system for program monitoring, and learn important implementation lessons. Morocco, Rwanda, and Zambia are now committed to introduce human papillomavirus detection–based screening to replace VIA in a phased manner.[18-20] Human papillomavirus detection–based screening will definitely overcome the problem of subjectivity of VIA. However, the countries need to pragmatically decide whether to select screen and treat or screen, triage, and treat strategies as both have been recommended by the latest WHO guidelines.[3] Similar to earlier studies, we have demonstrated that providing TA at the point-of-care is the simplest and most effective option to achieve high compliance.[21] However, determining eligibility for ablation (requires application of acetic acid) is subjective, and adequate training is required for the test providers. Referring women to a different set up always has the risk of losing them in the pathway. In many of the screening clinics in Zambia, the nurses providing VIA are also trained to perform the LLETZ procedure in selected cases to overcome this problem.

To conclude, despite all its limitations opportunistic screening permits the LMICs to gradually scale up CC screening. Some of the countries have demonstrated that the vertical investments made to mitigate the pandemic can be gainfully used to introduce an information system to invite eligible women and track the screen positives.[22] Context-specific solutions need to be identified to gradually improve coverage and quality of CC screening. Strong advocacy and leadership within the countries are absolutely essential to sustain such a complex public health endeavor.

AFFILIATIONS

[1]Early Detection, Prevention and Infections Branch, International Agency for Research on Cancer, Lyon, France
[2]Department of Obstetrics and Gynaecology, Lagoon Mother and Child University Hospital Center, Faculty of Health Science, University of Abomey Calavi, Cotonou, Benin
[3]National Institute of Public Health, Abidjan, Cote d'Ivoire
[4]Division of Noncommunicable Disease Control, Senegal Ministry of Health and Social Action, Dakar, Senegal
[5]Foundation Lalla Salma, Cancer Prevention and Treatment, Rabat, Morocco

CORRESPONDING AUTHOR

Farida Selmouni, PhD, Early Detection, Prevention and Infections Branch International Agency for Research on Cancer, 150 Cours Albert Thomas, Lyon 69008, France; e-mail: selmounif@iarc.who.int.

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AUTHOR CONTRIBUTIONS

Conception and design: Farida Selmouni, Catherine Sauvaget, Youssef Chami Khazraji, Maria Bennani, Rachid Bekkali, Partha Basu
Financial support: Youssef Chami Khazraji, Maria Bennani, Rachid Bekkali
Administrative support: Djima Patrice Dangbemey, Djoukou Denise Olga Kpebo, Ndeye Mbombe Dieng, Youssef Chami Khazraji, Rachid Bekkali
Provision of study materials or patients: Djima Patrice Dangbemey, Djoukou Denise Olga Kpebo, Ndeye Mbombe Dieng, Youssef Chami Khazraji, Rachid Bekkali
Collection and assembly of data: Farida Selmouni, Catherine Sauvaget, Djima Patrice Dangbemey, Djoukou Denise Olga Kpebo, Ndeye Mbombe Dieng, Eric Lucas, Youssef Chami Khazraji
Data analysis and interpretation: Farida Selmouni, Catherine Sauvaget, Eric Lucas, Youssef Chami Khazraji, Maria Bennani, Partha Basu
Manuscript writing: All authors
Final approval of manuscript: All authors
Accountable for all aspects of the work: All authors

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