

Introduction

1.1 The Care4Afrique project in the context of cervical cancer elimination in sub-Saharan Africa

Cervical cancer is the fourth most common cancer type in women worldwide and is responsible for many premature deaths, especially in countries in sub-Saharan Africa. Every year, more than 300 000 women die from cervical cancer globally. More than 85% of the deaths from cervical cancer occur in low- and middle-income countries (LMICs), which do not have adequate health-care resources to implement effective cervical cancer screening programmes [1]. Most deaths from cervical cancer occur in women of childbearing age. A mother's death is associated with increased child mortality; for every 100 women who die from cervical cancer in

sub-Saharan Africa, at least 14 children die before age 10 years [2].

The World Health Organization (WHO) recently announced a comprehensive strategy to eliminate cervical cancer as a public health problem globally [3]. To eliminate cervical cancer as a public health problem, all countries must reach and maintain an incidence rate of fewer than 4 new cases of cervical cancer per 100 000 women per year. To reach the elimination target, every country must ensure that at least 70% of eligible women are screened with high-performance screening tests, that at least 90% of women with cervical precancer are treated and 90% of women with invasive cervical cancer are managed, and that at least 90% of girls are fully vaccinated against human papillomavirus (HPV) by age 15 years. Each country should meet these targets by 2030 to be on the

path towards cervical cancer elimination within the next century.

Currently, the situation in Africa with respect to cervical cancer screening is highly variable. Some countries, such as Morocco, Zambia, and Zimbabwe, have made concerted efforts to introduce and scale up cervical cancer screening based on visual inspection with acetic acid (VIA). However, most countries in sub-Saharan Africa have low-volume opportunistic screening of doubtful quality, and very limited facilities for management of cervical precancer. These countries require a contextually appropriate model of cervical cancer screening and treatment services that is feasible, acceptable, and integrated in the existing primary health-care system. The third edition of *Disease Control Priorities* recommended opportunistic screening with VIA and treatment of

precancerous lesions – a screen-and-treat approach – as part of an essential package of cost-effective health interventions (to be delivered through primary care) in low-income countries, because of the high cost of the model of systematic invitation-based screening [4]. The integration of cervical cancer screening in primary health-care services will ensure wider reach of the programme and lower costs for the health system; this will make the programme sustainable.

The success of cervical cancer screening depends on the ability of the programme to ensure appropriate treatment of any precancers and cancers detected by screening. Treatment is the weakest component of the cervical cancer screening programmes in LMICs. It is impractical to implement in LMICs the model that is used in high-income countries, which relies heavily on colposcopy, histopathology, and large loop excision of the transformation zone (LLETZ) for treatment. Therefore, WHO strongly recommended immediate ablative treatment for selected screen-positive women without waiting for colposcopic or histopathological verification. Even this single-visit screen-and-treat approach, which aims to improve compliance with treatment, faced a major challenge in sub-Saharan Africa. WHO initially recommended cryotherapy as the ablative technique of choice, but this requires a supply of refrigerant gas (nitrous oxide or carbon dioxide). It may be challenging to ensure a regular supply of refrigerant gas in primary care settings in countries in sub-Saharan Africa, and this limits the capacity to scale up cryotherapy. Two meta-analyses by researchers from the International Agency for Research on Cancer (IARC), published in 2014 and 2019, demonstrated that the use of thermal ablation (previously known as cold coagulation)

as an ablative treatment for cervical precancers was not only safe and acceptable but also as effective as cryotherapy [5, 6]. IARC and partners subsequently developed and evaluated an inexpensive, battery-operated, portable thermal ablator through a research project supported by the United States National Institutes of Health [7]. In 2019, WHO recommended thermal ablation as a method of choice for ablative treatment [8].

IARC and the Lalla Salma Foundation for Cancer Prevention and Treatment (LSF) launched the Care4Afrique pilot project in November 2017, when very few countries in the world had adopted thermal ablation as a method of treatment. The project aimed to evaluate the feasibility, safety, and acceptability of the new approach (VIA followed by thermal ablation) in real health-care settings where the intervention would be provided by many health-care providers with variable levels of expertise. Experience gained from wide-scale use of VIA followed by thermal ablation in primary care settings and shared with health professionals, programme managers, and health policy-makers is likely to convince them to adopt the new technology and scale up its use. Moreover, about 30% of screen-positive women are not eligible for treatment with any ablative technique and would require treatment with LLETZ, preferably under colposcopic guidance. Colposcopy and LLETZ facilities linked to the screening centres were set up through the Care4Afrique project to ensure complete care of the women undergoing cervical cancer screening. This experience and expertise will be extremely valuable for the focus countries as they plan to scale up cervical cancer screening and treatment.

Only 1.2% of the female population aged 10–20 years in sub-Sa-

haran Africa had been vaccinated against HPV by 2019 [9], and cervical cancer screening and treatment programmes in the region must be improved if countries are to remain aligned with the WHO strategy to eliminate cervical cancer. The experience gained from the Care4Afrique pilot project in three different countries can be used to inform pragmatic decision-making by policy-makers to scale up cervical cancer screening and treatment.

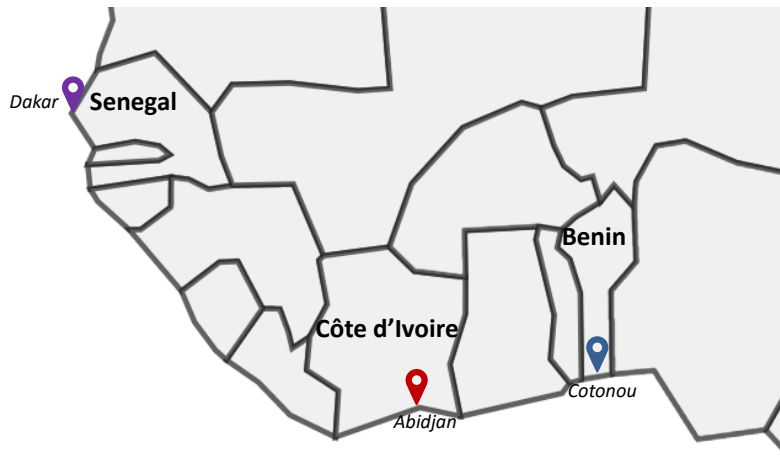
1.2 The implementation sites for the Care4Afrique project

The Care4Afrique pilot project was implemented in three Francophone countries in West Africa: Benin, Côte d'Ivoire, and Senegal (Fig. 3). All three countries are in sub-Saharan Africa.

Benin has a total female population of 5.5 million and a Human Development Index (HDI) value of 0.545 (category: low) [10]. Cervical cancer is the second most common cancer type in women in the country. In 2020, there were an estimated 560 new cases of cervical cancer and 368 deaths from the disease in Benin; the age-standardized incidence rate of cervical cancer was 15.1 per 100 000 woman-years, and the age-standardized mortality rate was 10.4 per 100 000 woman-years [11]. The Care4Afrique project was implemented in the capital city of Cotonou.

Côte d'Ivoire has a total female population of 11.7 million and an HDI value of 0.538 (category: low) [10]. Cervical cancer is the second most common cancer type in women in the country. In 2020, there were an estimated 2067 new cases of cervical cancer and 1417 deaths from the disease in Côte d'Ivoire; the age-standardized incidence rate of cervical cancer was 31.2 per 100 000 woman-years, and the age-standardized mortality rate was 22.8 per 100 000 woman-years [11]. The Care4Afrique

Fig. 3. Implementation sites for the Care4Afrique project in Benin, Côte d'Ivoire, and Senegal.



project was implemented in the capital city of Abidjan.

Senegal has a total female population of 7.8 million and an HDI value of 0.512 (category: low) [10]. Cervical cancer is most common cancer type in the country. In 2020, there were an estimated 1937 new cases of cervical cancer and 1312 deaths from the disease in Senegal; the age-standardized incidence rate of cervical cancer was 36.3 per 100 000 woman-years, and the age-standardized mortality rate was 26.0 per 100 000 woman-years [11]. The Care4Afrique project was implemented in the capital city of Dakar.

The implementation site in each focus country was selected by the ministry of health (MoH) of the country in consultation with other national stakeholders. Before the project began, a few women were being screened with VIA at some of the sites, but the VIA-positive women were not being treated with thermal ablation at any of the sites.

1.3 Aims and objectives of the Care4Afrique project

The primary aim of the Care4Afrique project was to engage with the key officials of the MoH in each focus country and support them to start opportunistic cervical cancer screening and treatment as an integrated primary health-care service with VIA and thermal ablation. The project provided technical support only, by organizing training for health-care providers of different levels, supplying essential equipment, and developing an electronic database for record-keeping. The ambition was that the project sites would continue to provide the services even after the completion of the project and would consider gradual scale-up.

The specific objectives of the pilot project were:

1. to assess the feasibility of establishing a fully functional VIA-based screen-and-treat service at selected primary health

centres (PHCs) in the focus countries;

2. to assess the feasibility of establishing a fully functional colposcopy and precancer management service linked to the screening service in the focus countries;
3. to evaluate the feasibility, acceptability, and safety of treatment with a new battery-operated, portable thermal ablator in primary health-care settings by nurses and general practitioners (GPs);
4. to assess the feasibility of developing and implementing an electronic record-keeping system that would be useful to monitor and evaluate the cervical cancer screening and treatment services;
5. to generate a pool of master trainers in cervical cancer screening and treatment who will catalyse the continued development of human resources in the country.

This report summarizes key events and activities that have taken place since the inception of the pilot project in three African countries: Benin, Côte d'Ivoire, and Senegal. The aim of this report is to highlight observations and conclusions, particularly in relation to the feasibility and acceptability of this approach in the real health-care settings of these three countries. Finally, lessons learned are discussed and recommendations are made for the scale-up of services.