

Project outcomes

3.1 Screening with VIA

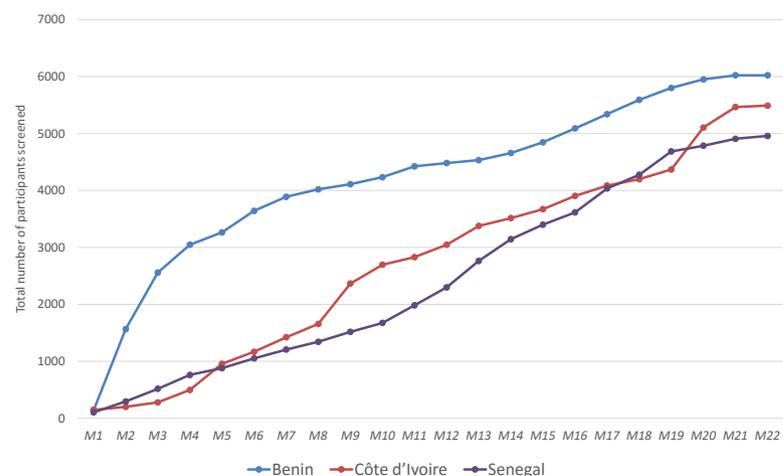
A total of 16 530 women were screened opportunistically in the three countries. The time required to screen 5000 women varied between the countries (Fig. 6). In Benin 6029 women were screened from January 2019 to January 2021 (25 months), in Côte d'Ivoire 5500 women were screened from July 2018 to June 2020 (24 months), and in Senegal, 5001 women were screened from April 2018 to June 2020 (27 months).

The number of women screened during the originally planned project duration of 18 months was 4482 in Benin, 3048 in Côte d'Ivoire, and 2299 in Senegal. The number of women screened per month during the first 12 months of the project ranged from 58 to 1423 in Benin, from 54 to 709 in Côte d'Ivoire, and from 105 to 314 in Senegal (Fig. 7).

Table 4 shows the number of women screened and the VIA outcomes by country and project site. A total of 1340 (8.1%) of the women screened were VIA-positive, and among them, 38 (0.2%) had lesions

suspicious of cancer on VIA. The VIA positivity rate varied between the project sites, from 17.6% at CHU MEL in Benin to 0.7% at Hôpital Général d'Abobo-Sud in Côte d'Ivoire. In general, the project sites in

Fig. 6. Cumulative number of women screened by month and country.



Senegal reported lower VIA positivity rates than those in the other two countries.

The VIA positivity rate did not vary much between the age groups in Côte d'Ivoire and Senegal (Fig. 8). In Benin, the VIA positivity rate was much higher in the age group 45–49 years (15.6%) than in the age group 25–29 years (10.4%). The proportion of women screened at age 25–29 years was 26.1% in Benin and 22.6% in Côte d'Ivoire.

Fig. 7. Number of women screened per month during the first 12 months of the project by country.

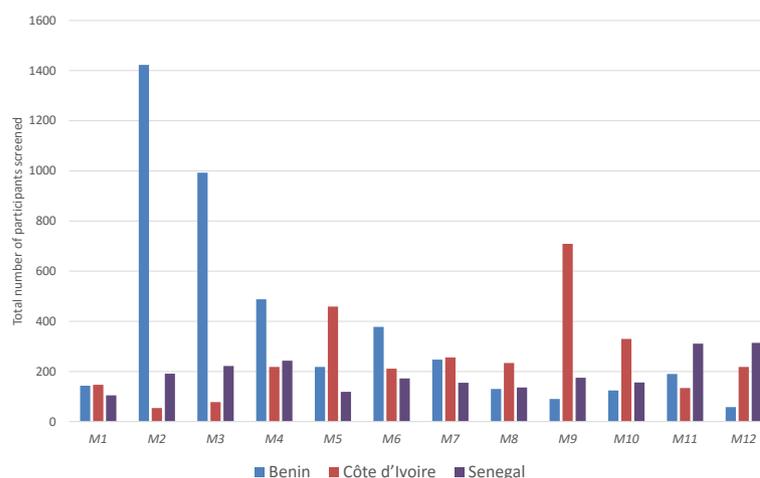


Table 4. Number of women screened and VIA outcomes by country and site

Country	Sites providing screening	No. of women screened	No. VIA-positive (%)	No. with suspected cervical cancer on VIA (%)
Benin	CHU MEL	1967	347 (17.6%)	8 (0.4%)
	Surulere General Hospital	1174	98 (8.3%)	2 (0.2%)
	PHC Missessin	899	76 (8.5%)	0 (0.0%)
	PHC Gbégamey	1035	104 (10.0%)	4 (0.4%)
	PHC Ahouansori	954	117 (12.3%)	6 (0.6%)
	All sites in Benin	6029	742 (12.3%)	20 (0.3%)
Côte d'Ivoire	Service de SMI/NIPH	3126	333 (10.7%)	1 (0.0%)
	CSU 220 Logements	1027	69 (6.7%)	5 (0.5%)
	FSU COM Edmond Basque	675	15 (2.2%)	0 (0.0%)
	Hôpital Général d'Abobo-Sud	672	5 (0.7%)	0 (0.0%)
	All sites in Côte d'Ivoire	5500	422 (7.7%)	6 (0.1%)
Senegal	Gaspard Kamara District Hospital	2620	77 (2.9%)	0 (0.0%)
	PHC HLM	669	45 (6.7%)	10 (1.5%)
	PHC Liberté VI	457	10 (2.2%)	2 (0.4%)
	PHC Maristes	1255	44 (3.5%)	0 (0.0%)
	All sites in Senegal	5001	176 (3.5%)	12 (0.2%)
Total		16 530	1340 (8.1%)	38 (0.2%)

CHU MEL, Centre Hospitalier et Universitaire de la Mère et de l'Enfant Lagune; FSU COM, Formation Sanitaire Urbaine à Base Communautaire; HLM, Habitations à Loyer Modéré; PHC, primary health centre; SMI/NIPH, Santé Maternelle et Infantile/National Institute of Public Health; VIA, visual inspection with acetic acid.

Source: Selmouni et al. (2022) [14]. Copyright © 2022, by the American Society of Clinical Oncology.

3.2 Treatment with thermal ablation

Table 5 shows the number of women treated with thermal ablation by country and project site.

Of the 1340 women with a positive VIA result, 813 (61%) were eligible for thermal ablation. Of those eligible for thermal ablation, 715 (88%) received the treatment on the same day as screening, 90 (11%) returned

to the clinic for treatment on a different date, and only 8 (1%) were lost to follow-up.

The proportion of VIA-positive women who were eligible for thermal ablation varied widely between the

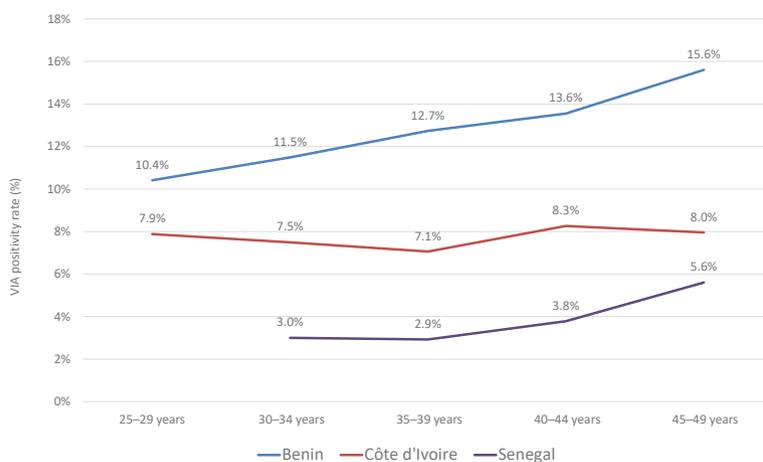
Table 5. Number of women treated with thermal ablation by country and site

Country	Site	No. VIA-positive	No. eligible for ablation (%)	No. accepted for same-day treatment (%)	No. accepted for treatment later (%)
Benin	CHU MEL	347	122 (35%)	112 (92%)	7 (6%)
	Surulere General Hospital	98	84 (86%)	78 (93%)	5 (6%)
	PHC Missessin	76	26 (34%)	24 (92%)	1 (4%)
	PHC Gbégamey	104	100 (96%)	89 (89%)	10 (10%)
	PHC Ahouansori	117	108 (92%)	90 (83%)	18 (17%)
	All sites in Benin	742	440 (59%)	393 (89%)	41 (9%)
Côte d'Ivoire	Service de SMI/NIPH	333	281 (84%)	254 (90%)	27 (10%)
	CSU 220 Logements	69	30 (43%)	27 (90%)	3 (10%)
	FSU COM Edmond Basque	15	15 (93%)	11 (79%)	3 (21%)
	Hôpital Général d'Abobo-Sud	5	4 (80%)	4 (100%)	0 (0%)
	All sites in Côte d'Ivoire	422	329 (78%)	296 (90%)	33 (10%)
Senegal	Gaspard Kamara District Hospital	77	10 (13%)	4 (40%)	6 (60%)
	PHC HLM	45	4 (9%)	3 (75%)	1 (25%)
	PHC Liberté VI	10	2 (20%)	0 (0%)	0 (0%)
	PHC Maristes	44	28 (64%)	19 (68%)	9 (32%)
	All sites in Senegal	176	44 (25%)	26 (59%)	16 (36%)
Total		1340	813 (61%)	715 (88%)	90 (11%)

CHU MEL, Centre Hospitalier et Universitaire de la Mère et de l'Enfant Lagune; FSU COM, Formation Sanitaire Urbaine à Base Communautaire; HLM, Habitations à Loyer Modéré; PHC, primary health centre; SMI/NIPH, Santé Maternelle et Infantile/National Institute of Public Health.

Source: Selmouni et al. (2022) [14]. Copyright © 2022, by the American Society of Clinical Oncology.

Fig. 8. Rates of positive results on visual inspection with acetic acid (VIA) by age group and by country. Source: Selmouni et al. (2022) [14]. Copyright © 2022, by the American Society of Clinical Oncology.



countries, ranging from 25% in Senegal to 78% in Côte d'Ivoire. Eligibility proportions for thermal ablation decreased gradually with age in all three countries (Fig. 9).

Most eligible women (88%) received thermal ablation on the same day as screening and were treated immediately. Overall, 96% of eligible women were treated within 1 week of

screening, and there was no significant difference in this proportion between the countries. The proportion of women who were treated on the same day as screening was lower in Senegal (59%) than in Benin (89%) and Côte d'Ivoire (90%) (Fig. 10).

3.3 Management of VIA-positive women who are not eligible for thermal ablation

The women who had lesions suspicious of cancer and those who were not eligible for thermal ablation were referred to a higher-level health facility for further evaluation and treatment. Fig. 11 shows the outcomes of further management for the 38 women with suspected cervical cancer on VIA. Only 21 women (55%) were documented to have undergone further investigation at the colposcopy clinic. Very few of the women

Fig. 9. Eligibility proportions for thermal ablation by age group and country. Source: Selmouni et al. (2022) [14]. Copyright © 2022, by the American Society of Clinical Oncology.

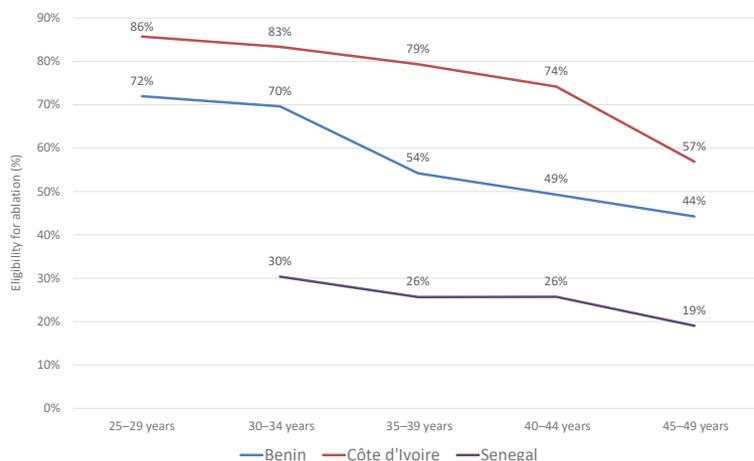
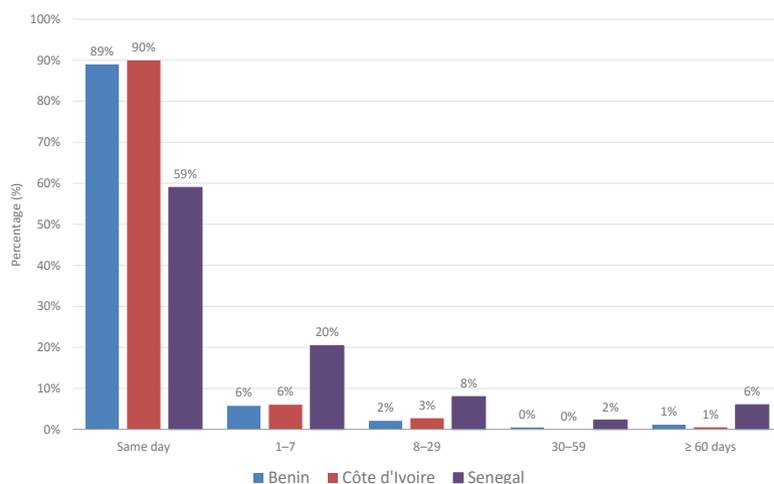


Fig. 10. Percentage of women eligible for thermal ablation who were treated on the same day as screening or at various time intervals (in days).



(4; 19%) had suspected cancer on colposcopy. The remainder of the women had either a normal cervix or suspected cervical precancer. Women with suspected precancer were treated by the colposcopists.

Of the 500 VIA-positive women referred to a colposcopy clinic, only 335 (67.0%) attended the clinic to undergo the examination. In 145 (43.3%) of the women who underwent examination, no abnormality was detected on colposcopy. Among the VIA-positive women, 114 (34.0%)

had suspected low-grade lesions on colposcopy, 53 (15.8%) had suspected high-grade lesions on colposcopy, and 3 (0.9%) had lesions suspicious of cancer on colposcopy. It should be noted that the colposcopy result is unknown in 20 women (6%) (Fig. 12).

Most of the suspected low-grade or high-grade lesions were treated with thermal ablation or LLETZ on the basis of the colposcopic diagnosis. A substantial number of women were treated with thermal ablation by

the colposcopist even though they were considered by the VIA provider to not be eligible for thermal ablation. A few of the women with low-grade or high-grade lesions were referred to higher-level centres for LLETZ or cold knife conization because the lesions were too large to be managed at the secondary care level.

For the women with suspected low-grade or high-grade lesions on colposcopy who underwent biopsy, histopathology reported 3 cases of cervical intraepithelial neoplasia grade 2 or 3 (CIN2/3) in women with suspected low-grade lesions (Fig. 13) and 11 cases of CIN2/3 and 3 cases of cancer in women with suspected high-grade lesions (Fig. 14).

Of the 167 VIA-positive women with suspected low-grade or high-grade lesions on colposcopy, only 17 (10.2%) were found to have CIN2 or worse lesions on histopathology.

A total of 806 VIA-positive women were treated with thermal ablation by nurses or midwives at PHCs; an additional 83 women were referred and treated with thermal ablation or LLETZ by gynaecologists, and 3 women with cervical cancer were referred to oncology centres. A total of 892 VIA-positive women were treated.

3.4 Side-effects of thermal ablation

Table 6 shows the side-effects reported by women during or immediately after thermal ablation. Moderate or severe pain or cramping during or after treatment was reported by 31 women (3.8%); 24 of them were in Benin. All 6 women who reported severe pain were in Benin. In 4 of them, treatment could not be completed because of pain. The same provider had attempted to treat 3 of the 4 women who abandoned thermal ablation. No other major side-effects or complications were reported in the 805 women treated.

Fig. 11. Investigation and treatment of women with lesions suspicious of cancer on visual inspection with acetic acid (VIA).

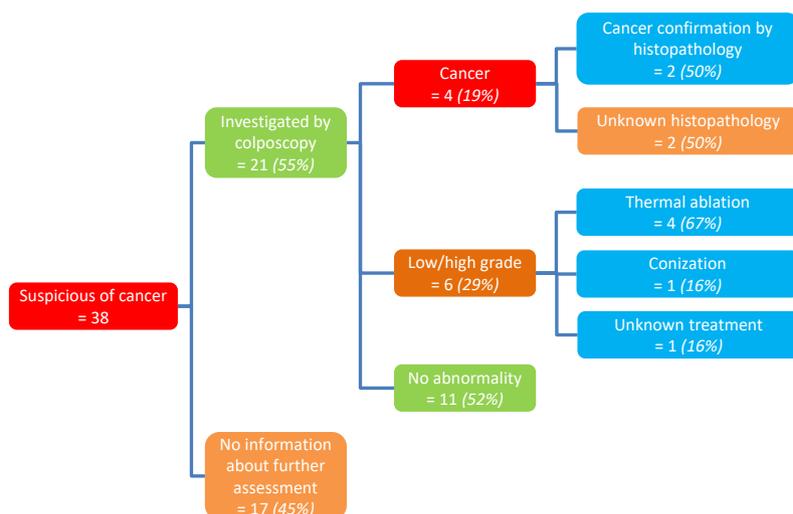


Fig. 12. Colposcopy outcomes for the women who were referred for colposcopy because of a positive result on visual inspection with acetic acid (VIA).

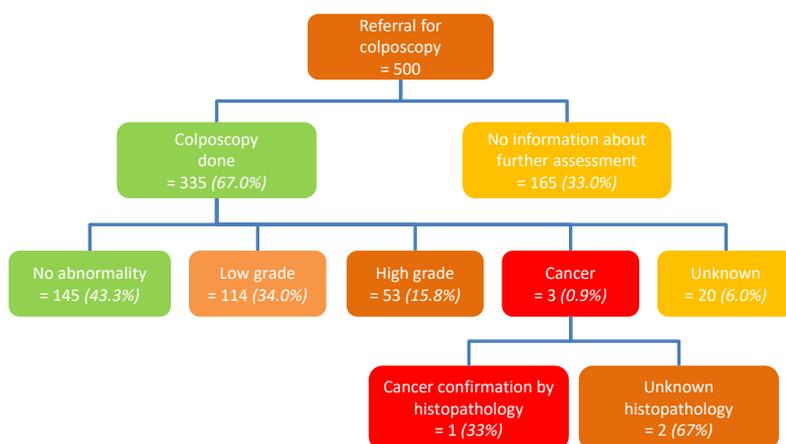


Table 6. Side-effects reported during or immediately after thermal ablation by project site^a

Side-effect	Benin (n = 438 ^b)	Côte d'Ivoire (n = 329)	Senegal (n = 42)	All sites (n = 809 ^b)
None	204 (46.6%)	97 (29.5%)	24 (57.1%)	325 (40.2%)
Mild pain or cramping	200 (45.7%)	225 (68.4%)	17 (40.5%)	442 (54.6%)
Moderate pain or cramping	18 (4.1%)	6 (1.8%)	1 (2.4%)	25 (3.1%)
Severe pain or cramping	6 ^b (1.4%)	0 (0.0%)	0 (0.0%)	6 ^b (0.7%)
Light bleeding	1 (0.2%)	2 (0.6%)	1 (2.4%)	4 (0.5%)
Moderate bleeding	1 (0.2%)	0 (0.0%)	0 (0.0%)	1 (0.1%)
Vaginal burning	8 (1.8%)	0 (0.0%)	0 (0.0%)	8 (1.0%)
Other	5 (1.1%)	0 (0.0%)	0 (0.0%)	5 (0.6%)

^a Several side-effects may be reported by the same woman (total of 816 side-effects in 809 women).

^b Of which 4 women abandoned treatment.

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3.5 Follow-up of women treated with thermal ablation

Table 7 shows the numbers of women who were treated with thermal ablation and who attended for follow-up.

The proportion of women who attended for follow-up 1 year after treatment with thermal ablation at the PHCs was very low: 35.9% in Benin and 4.6% in Côte d'Ivoire. None of the women treated in Senegal returned for follow-up. Overall, 18.8% of the treated women were found to be positive on VIA at follow-up and were referred for colposcopy.

3.6 Key implementation challenges identified

The following key implementation challenges were identified:

- It was difficult to continue to screen a large number of women through a purely opportunistic approach. Some of the women visit the PHCs repeatedly, whereas many do not visit PHCs unless they are very ill. Only a few of the project sites benefited from community mobilization (done by the community health workers and/or through local mass media campaigns).

Fig. 13. Histopathology outcomes and management of suspected low-grade lesions on colposcopy (treatment was performed on the basis of the colposcopic diagnosis). CIN, cervical intraepithelial neoplasia; LLETZ, large loop excision of the transformation zone; TA, thermal ablation.

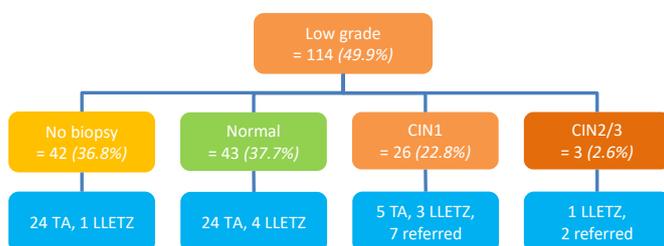
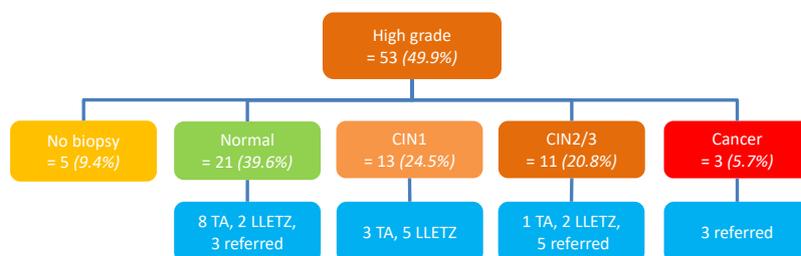


Fig. 14. Histopathology outcomes and management of suspected high-grade lesions on colposcopy (treatment was performed on the basis of the colposcopic diagnosis). CIN, cervical intraepithelial neoplasia; LLETZ, large loop excision of the transformation zone; TA, thermal ablation.



- Nearly one quarter of the women screened in Benin and Côte d'Ivoire were in the age group 25–29 years, because these young women tend to visit the PHCs more frequently than older women do. The older women were less accessible through such opportunistic screening.
- The acetic acid used was of variable concentration. The project recommended the use of 5%

diluted acetic acid. At some of the project clinics, it was not possible to obtain the glacial acetic acid required to prepare 5% acetic acid. Vinegar intended for cooking was used as a replacement. Those project clinics used only cooking vinegar with the concentration of acetic acid given on the bottle. However, a complicated formula was required to obtain the appropriate

dilution. In busy clinics, the nurses diluted the vinegar by adding an approximate amount of distilled water rather than by following the formula. In other clinics, the diluted acetic acid was purchased by the central pharmacy in bulk; therefore, it was not possible for the solution to be freshly prepared daily.

- The maintenance of colposcopy equipment was a major problem in some countries. At one of the referral centres, the colposcope could not be used for months because it was damaged and no maintenance engineer was available. The women who attended for colposcopy were referred to a tertiary care hospital, and this resulted in high loss to follow-up.
- At some of the PHCs, the thermal ablator developed mechanical problems. Each centre had only one device and could not offer treatment until the device was replaced.
- In some of the busy clinics, the routine workload of the nurses was very high. Initially, the nurses were very enthusiastic in counselling eligible women to undergo screening. However, the high workload meant that the nurses working in the busier clinics gradually became less able to find enough time and energy to counsel women to undergo screening. As a result, the number of women screened per month decreased with time. One

Table 7. Follow-up of women treated with thermal ablation by project site

Country	No. treated with thermal ablation	No. who attended for follow-up (%)	No. VIA-positive at follow-up (%)
Benin	434	155 (35.9%)	32 (20.6%)
Côte d'Ivoire	329	15 (4.6%)	0 (0%)
Senegal	42	0 (0%)	–
Total	805	170 (22.3%)	32 (18.8%)

PHC decided to open a cancer screening clinic with dedicated midwives and a specific room.

- The VIA positivity rates were extremely variable between the project sites, irrespective of the age group of the women. The VIA positivity rate was very high (up to 50%) at some of the PHCs when the nurses started the project. The VIA positivity rate decreased as the nurses became more experienced. However, in one country the VIA positivity rate remained low, probably as a result of technical issues (overdi-

lution of the acetic acid solution, and examination of the cervix too soon after the application of acetic acid).

- Despite the efforts of the project team to counsel the women adequately, it was difficult to ensure high compliance with colposcopy of the women referred to a colposcopy clinic.
- Compliance with follow-up after treatment was very low.
- In one country, the colposcopists received very few referrals; this made it difficult for them to maintain their skills adequately.

Some of the colposcopists felt that the training provided was not adequate.

- Histological confirmation was unaffordable at some sites, because of the limited budget of the local team.
- The implementation of an information system, the collection of questionnaires from the PHC, and the entry of data into the database required organization and the recruitment of an additional staff member. This is not sustainable.