Costing the National Programme for Secondary Prevention of Cervical Cancer: Myanmar, 2020–2024

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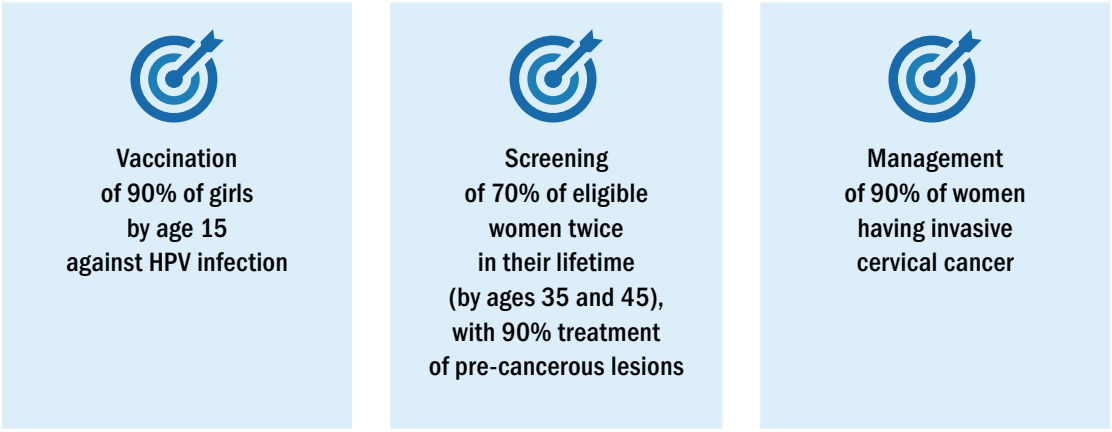
CONSIDERATIONS FOR PLANNING ELIMINATION OF CERVICAL CANCER AS A PUBLIC HEALTH PROBLEM

The objective of this costing exercise, which began in 2018, is to assist refinement and implementation of Myanmar's national plan for secondary prevention of cervical cancer (screening and pre-cancer treatment) and to support the development of new plans that include primary and tertiary prevention, aimed particularly at cervical cancer elimination efforts.

To achieve elimination at the global level, the World Health Organization (WHO) has recommended targets in the Global Strategy towards Eliminating Cervical Cancer as a Public Health Problem (Fig. 1). Increasing existing capacity and resources required to meet future targets should be taken in to consideration — notably, availability and access to cancer treatments, which would likely need to be extended beyond the current single cancer treatment center in the country.

Fig. 1. Targets of the Global Strategy towards Eliminating Cervical Cancer as a Public Health Problem



HPV: human papillomavirus.
Source: World Health Organization (2020) *(1)*.

Myanmar might take these targets into consideration for planning a comprehensive cervical cancer control programme.

The results reported below illuminate the additional resources and expenditures required only for the planned 2020–2024 secondary prevention programme, and so is a limited view of the resources needed in a comprehensive programme. It is noted that the extra cost of building up the infrastructure for screening services has not been included, and it is advised that a more detailed costing exercise be done to capture these costs to help mobilize adequate resources. Additionally, the cost of treating newly identified cases of invasive cancer detected through expanded screening services would need to be met immediately.

Ideally, to help plan for the considerable acceleration of service provision that will be needed to align with a cervical cancer elimination strategy a follow-up detailed costing study would be conducted for coordinated primary, secondary and tertiary prevention activities.

BACKGROUND

In 2018 cervical cancer had the highest incidence rate of all cancers among women in Myanmar, contributing 18% of all new cancer cases, with an age-standardized incidence rate of 21.5 per 100,000 women and an estimated total 6,472 cases *(2)*. Mortality due to cervical cancer is quite high in Myanmar, with 3,856 deaths and an age-standardized mortality rate of 13.1 per 100,000 women in 2018 *(2)*. Late diagnosis is a significant contributing factor to the high mortality rates in Myanmar: according to data from Central Women's Hospital in Yangon, two thirds of all new cervical cancer cases are inoperable *(3)*. Additionally, there is limited understanding of the national prevalence of human papillomavirus (HPV) but is estimated to be 11%[1] based on the cervical cancer screening programme at the Central Women's Hospital.

Currently, there is no organized national cervical cancer screening programme in Myanmar, although some opportunistic screening services are offered in selected hospitals and in pilot programmes, mostly carried out by non-governmental organizations (NGOs). Prior to the launch of the National Guidelines on Secondary Prevention of Cervical Cancer in 2018, government hospitals and implementing partners employed various types of screening tests (including visual inspection with acetic acid (VIA) and cytology), treatment methods (cryotherapy for treatment of pre-cancerous lesions), and management algorithms for pre-cancer and invasive cancer. Together, these efforts have screened less than 1% of the 7.6 million women aged 30–49 in Myanmar who are eligible for screening *(4)*.

Table 1. Overview of cervical cancer disease burden

Cervical Cancer Age-standardized Incidence Rate in 2018[a]	21.5 per 100,000 women
Cervical Cancer Age-standardized Mortality Rate in 2018[a]	13.1 per 100,000 women
HPV Prevalence in adult women[b]	11.02%
HIV Prevalence (Females aged 15–49)[c]	0.6%

HPV: human papillomavirus; HIV: human immunodeficiency virus.
Sources: [a]International Agency on Research for Cancer (2018) *(2)*. [b]Based on HPV-DNA tests at Central Women's Hospital in Yangon in 2018. [c]UNAIDS (2020) *(5)*.

[1] Based on HPV-DNA tests at Central Women's Hospital in Yangon in 2018, HPV prevalence was 11.02%; this rate was applied nationally for this costing exercise after confirmation with stakeholders and obstetrician-gynecologists.

Myanmar is a member of the United Nations Joint Global Programme (UNJGP) on Cervical Cancer Prevention and Control and, as recommended by UNJGP, National Guidelines on Secondary Prevention of Cervical Cancer for Public Health Sector Facilities were disseminated in 2018 *(4)*. Resulting from a collaboration between the Myanmar Ministry of Health and Sports (MoHS), the WHO, and the Clinton Health Access Initiative (CHAI), here we provide a summary costing report of the 5-year (2020–2024) secondary prevention measures (screening and pre-cancer treatment) in the Myanmar National Programme for Secondary Prevention of Cervical Cancer. The report is presented from the public provider perspective in terms of financial costs (actual expenditures) and economic costs (financial costs plus monetary value of resources used for the programme). The Myanmar Cervical Cancer Control Plan also provides for primary prevention through increased access to HPV vaccination as well as tertiary prevention including cancer treatment and palliative care, but these interventions will be costed at a later point and are not taken into account in this report. All costs were calculated using the WHO Cervical Cancer Prevention and Control Costing (C4P) tool *(6)*and are reported in 2019 United States (US) dollars. Technical notes on costing methodology can be found in Annex 1.

INTERVENTIONS

SECONDARY PREVENTION – Screening and Pre-cancer Treatment

The National Programme for Secondary Prevention of Cervical Cancer is planned to launch and expand in a phased manner over a 5-year period, from 2020–2024, through the Maternal and Reproductive Health (MRH) Division. Myanmar's cervical cancer programme will target HIV-negative women aged 30–49 years and all HIV-positive women *(4)*. HPV DNA tests will be utilized for screening the rural population, where the samples will be collected at rural health facilities and sent to labs at district health facilities. VIA screening will be offered to urban populations who have access to township or district health facilities. This hybrid approach – HPV DNA testing for rural areas and VIA for urban areas – will be applied across the national programme until sufficient resources are available to deploy HPV DNA testing for both urban and rural areas. Screen-positive women will be treated with ablative methods (cryotherapy or thermal ablation) by a trained doctor or with excisional methods such as loop electrosurgical excision procedure (LEEP) by a trained gynecologist. All eligible HIV-negative women will be screened every five years, while HIV-positive women will be screened every three years. Women who are treated for pre-cancer will be re-screened one year following completion of pre-cancer treatment.

SERVICE DELIVERY COSTS

From 2020 to 2024, Myanmar will increase capacity for VIA screening to 175 facilities in 26 districts and HPV DNA lab services available at district/specialist hospitals to attain a national coverage rate of 16% in 2024. It is expected that 1,505,415 screening services will be provided to eligible women, at a total financial cost of US$ 7.7 million, with average financial cost of US$ 6.00 per HPV DNA test, US$ 2.89 per VIA, and US$ 52.09 per follow-on re-screening, diagnostics, and referral for suspected cancer cases. Service delivery costs include annualized equipment costs, and VIA costs include both primary VIA screening and VIA triage for HPV-positive women.

Capacity for pre-cancer treatment with thermal ablation will also be increased to 175 facilities in 26 districts and LEEP will be available at district/specialist hospitals. An estimated 109,133 treatment services will be provided for pre-cancerous lesions, at a total financial cost of US$ 1.2 million. The average financial cost is US$ 3.27 per thermal ablation treatment and US$ 41.55 per LEEP.

The combined financial cost of service delivery for screening and pre-cancer treatment from 2020–2024 is estimated to be US$ 8.9 million.

Table 2. Costing summary of screening and pre-cancer treatment

SCREENING	2020	2021	2022	2023	2024	Total
Target screening coverage[a]	2%	4%	7%	11%	16%	N/A
Number of screening services provided	105,131	195,163	296,806	400,701	507,615	**1,505,415**[b]
Average financial cost per screening service provided (US$)[c]	5.12	5.13	5.13	5.13	5.12	**5.13**
Average economic cost per screening service provided (US$)[c]	5.62	5.63	5.62	5.62	5.62	**5.62**
PRE-CANCER TREATMENT	**2020**	**2021**	**2022**	**2023**	**2024**	**Total**
Number of pre-cancer treatment performed	7,621	14,148	21,516	29,048	36,799	**109,133**
Average financial cost per pre-cancer treatment performed (US$)[c]	11.18	11.21	11.13	11.07	11.03	**11.09**
Average economic cost per pre-cancer treatment performed (US$)[c]	13.80	13.84	13.72	13.62	13.56	**13.66**

[a] The screening coverage achieved before 2020 was assumed to be <1%.
[b] Includes initial screens, follow-up screens, and comprehensive screening, diagnostic, and referral services for cases suspicious for cancer.
[c] Average cost per screening service or treatment above is represented as the weighted average cost of the service based on expected distribution of screening or treatment methods.

PROGRAMME SUPPORT ACTIVITIES COSTS

Programme support activities were identified from a document review and interviews with key stakeholders from MoHS and implementing partners; the frequency of each activity was set for 2020–2024, as detailed in Annex 2. The programme support activities were categorized into four categories:

I	II	III	IV
Programme planning	**Training support**	**Sensitization, social mobilization and communication**	**Supervision, monitoring and evaluation**

The number, frequency, and unit cost of these activities were used to calculate the programme support activities cost. The programme support activities will require a total financial expenditure of US$ 0.5 million.

Table 3. Costing summary of programme support activities financial costs

	2020	2021	2022	2023	2024	Total
Programme Planning (US$)	12,469	12,469	12,469	12,469	12,469	**62,347**
Training Support (US$)	36,645	36,645	40,406	36,645	40,406	**190,749**
Sensitization, Social Mobilization and Communication (US$)	39,668	39,668	39,668	39,668	39,668	**198,340**
Supervision, Monitoring and Evaluation (US$)	8,497	8,497	8,497	8,497	8,497	**42,484**
Other Activities (US$)	10,000	10,000	10,000	10,000	10,000	**50,000**
Total	**107,280**	**107,280**	**111,040**	**107,280**	**111,040**	**543,920**

Note: Costs reported in 2019 United States dollars (US$) and include introduction costs annualized over 5 years and recurring costs.

Table 4. Costing summary of programme support activities economic costs

	2020	2021	2022	2023	2024	Total
Programme Planning (US$)	16,813	16,813	16,813	16,813	16,813	**84,064**
Training Support (US$)	49,224	49,224	54,318	49,224	54,318	**256,309**
Sensitization, Social Mobilization and Communication (US$)	42,702	42,702	42,702	42,702	42,702	**213,508**
Supervision, Monitoring and Evaluation (US$)	11,281	11,281	11,281	11,281	11,281	**56,407**
Other Activities (US$)	10,179	10,179	10,179	10,179	10,179	**50,893**
Total	**130,198**	**130,198**	**135,292**	**130,198**	**135,292**	**661,180**

Note: Costs reported in 2019 United States dollars (US$) and include introduction costs annualized over 5 years and recurring costs.

COSTING SUMMARY

The overall financial cost for 5 years is expected to be US$ 9.5 million in total, including US$ 0.4 million as introduction costs (annualized over 5 years) and US$ 9.1 million as recurrent costs. The majority (94%) of the total financial cost is for service delivery (screening and pre-cancer treatment) while the remaining 6% expenditure is for programme support activities as shown in Fig. 2.

Table 5. Summary of total financial costs of the national response by programme areas and by years

Programme Areas	2020	2021	2022	2023	2024	Total
Service Delivery Costs of Screening (million US$)	0.54	1.00	1.52	2.05	2.60	**7.72**
Service Delivery Costs of Pre-cancer Treatment (million US$)	0.09	0.16	0.24	0.32	0.41	**1.21**
Programme Support Activities Costs of Secondary Prevention (million US$)	0.11	0.11	0.11	0.11	0.11	**0.54**
Total	**0.73**	**1.27**	**1.87**	**2.48**	**3.12**	**9.47**

Note: Costs reported in 2019 United States dollars (US$) and include introduction costs annualized over 5 years and recurring costs.

Fig. 2. National response by programme areas over five years (financial cost)

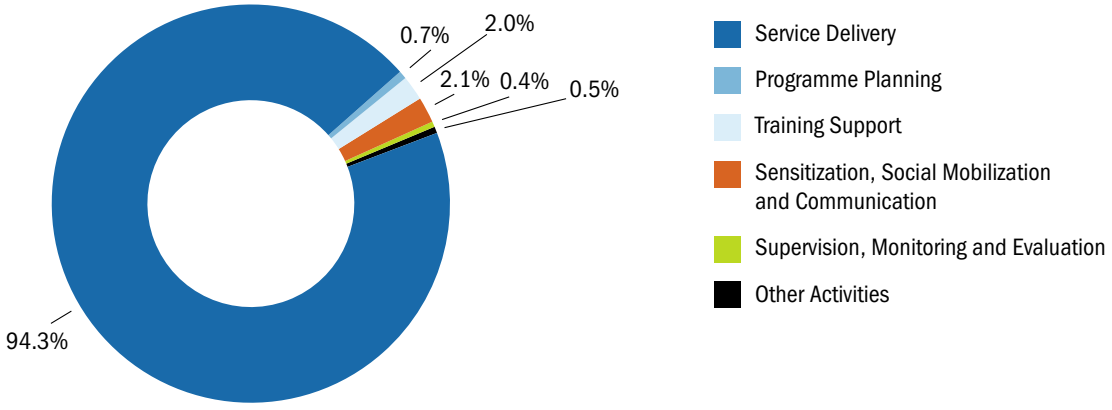


Table 6. Summary of total economic costs of the national response by programme areas and by years

Programme Areas	2020	2021	2022	2023	2024	Total
Service Delivery Costs of Screening (million US$)	0.59	1.10	1.67	2.25	2.85	**8.47**
Service Delivery Costs of Pre-cancer Treatment (million US$)	0.11	0.20	0.30	0.40	0.50	**1.49**
Programme Support Activities Costs of Secondary Prevention (million US$)	0.13	0.13	0.13	0.13	0.13	**0.66**
Total	**0.83**	**1.42**	**2.10**	**2.78**	**3.48**	**10.6**

Note: Costs reported in 2019 United States dollars (US$) and include introduction costs annualized over 5 years and recurring costs.

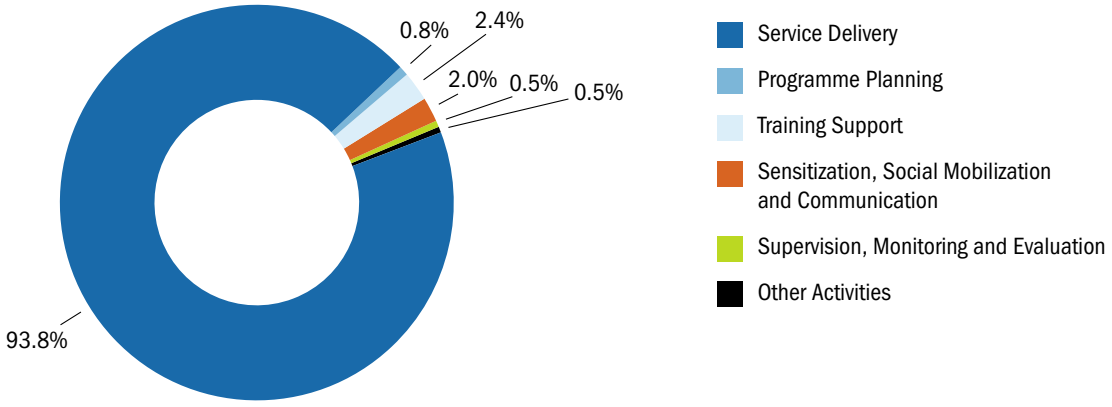


Fig. 3. National response by programme areas over five years (economic cost)

Table 7. Overall summary of Myanmar's National Programme for Secondary Prevention of Cervical Cancer, 2020–2024 (five-year totals and averages)

TOTAL COST OVER FIVE YEARS	
Total financial cost of National Programme for Secondary Prevention of Cervical Cancer over five years	**US$ 9,470,176**
Total economic cost of National Programme for Secondary Prevention of Cervical Cancer over five years	**US$ 10,617,177**
SCREENING	
Delivery strategy and interventions	• Hybrid screening approach: HPV DNA testing as primary screening for rural areas (70% of population) and VIA for urban areas (30% of population) • VIA for triaging and for determining treatment modality after HPV DNA testing
Target coverage	16%

SCREENING	
Number of services provided	1,505,415 (includes initial screens, follow-up screens, and comprehensive screening, diagnostic, and referral services for cases suspicious for cancer)
Cost per service (financial)	US$ 6.00 – HPV DNA US$ 2.89 – VIA US$ 52.09 – follow-on re-screen, diagnostics, and referral for suspected cancer cases
Cost per service (economic)	US$ 6.31 – HPV DNA US$ 3.74 – VIA US$ 53.96 – follow-on re-screen, diagnostics, and referral for suspected cancer cases
Total service delivery cost (financial)	US$ 7,715,729
Total service delivery cost (economic)	US$ 8,465,309
PRE-CANCER TREATMENT	
Delivery strategy and interventions	• Thermal ablation for women with small lesions • LEEP for women who are ineligible for thermal ablation
Target coverage	100% of all women presenting with lesions
Number of services provided	109,133
Cost per service (financial)	US$ 3.27 – thermal ablation US$ 41.55 – LEEP (including biopsy and histopathology)
Cost per service (economic)	US$ 4.78 – thermal ablation US$ 48.24 – LEEP (including biopsy and histopathology)
Total service delivery cost (financial)	US$ 1,210,528
Total service delivery cost (economic)	US$ 1,490,688
PROGRAMME SUPPORT ACTIVITIES COSTS	
Total programme support activities costs for screening and pre-cancer treatment (financial)	US$ 543,920
Total programme support activities costs for screening and pre-cancer treatment (economic)	US$ 661,180

HPV: human papillomavirus; DNA: deoxyribonucleic acid; VIA: visual inspection with acetic acid;
LEEP: loop electrosurgical excision procedure.
Note: costs reported in 2019 United States dollars (US$) and include introduction and capital costs annualized over 5 years and recurring costs.

ASSUMPTIONS AND LIMITATIONS

The analysis presented in this report represents a cost estimate of implementing the 2020–2024 Secondary Prevention Plan in Myanmar as it was then conceived, and thus does not take into account current programming activities and their observed costs. The report is not intended to show actual expenditures or capacity but to give broad indications of cost distributions between interventions, patterns of expenditures over a 5-year programme cycle, and to identify possible gaps in planning or programming. In developing a comprehensive cervical cancer control strategy that also includes primary and tertiary prevention measures, particularly in regards to scaling-up services to achieve elimination targets, it is advised that a more detailed, comprehensive micro-costing study be undertaken. As noted above, this analysis does not include any costs associated with treatment of invasive cervical cancer identified through the programme screening.

Local estimates provided from government sources of costs and other inputs were used as much as possible, but some estimates were taken from key stakeholders at the MoHS as well as various NGOs and international NGOs. Key costs were validated at a consultation with members of the MoHS, stakeholders, and local cancer experts in October 2019. Because the model is from the health system perspective, patients' costs, such as for travel, lost wages due to screening and treatment or out-of-pocket payments for provider fees or medications, were not included.

The scope of this analysis is limited to public health system planning of secondary prevention services for cervical cancer and presents an indicative picture of the main resources required to scale-up current programming. However, it does not extend to ancillary services or equipment. Finally, the C4P was built as a modeling tool to assist countries with understanding potential costs associated with cervical cancer programming, but as with any model there is a level of uncertainty inherent in the results, which should be considered as estimates and not exact values. Details on relevant technical aspects of the C4P tool can be found in the Annex 1 of this report.

REFERENCES

1. Global strategy towards eliminating cervical cancer as a public health problem. Geneva: World Health Organization; 2020 (https://www.who.int/initiatives/cervical-cancer/strategy).
2. Myanmar Cancer Fact Sheet 2018. Lyon: Cancer Today — IARC; 2018 (https://gco.iarc.fr/today/data/factsheets/populations/104-myanmar-fact-sheets.pdf, accessed 22 October 2020).
3. Annual Hospital Report. Yangon: Central Women's Hospital; 2015.
4. Myanmar National Guideline on Secondary Prevention of Cervical Cancer for Public Health Sector Facilities. Disseminated October 2018.
5. Myanmar Fact Sheet 2019 [website]. Geneva: UNAIDS; 2020 (https://www.unaids.org/en/regionscountries/countries/myanmar, accessed 22 October 2020).
6. WHO Cervical Cancer Prevention and Control Costing (C4P) Tool. In: WHO/Immunization, Vaccines and Biologicals/Vaccines and diseases [website]. Geneva: World Health Organization; 2020 (https://www.who.int/immunization/diseases/hpv/cervical_cancer_costing_tool/, accessed 22 October 2020).

ANNEX 1

Technical note on the WHO cervical cancer prevention and control costing methodology

The Cervical Cancer Prevention and Control Costing (C4P) Tool is intended specifically to assist low- and middle-income country programme managers in planning cervical cancer control strategies and approximating the 5-year cost projections of such a comprehensive national cervical cancer programme at country level. The methodology used is a "bottom-up" or "ingredient-based" approach, whereby each additional resource required for the intervention is identified and valued. To the extent possible, country-specific data on resources use and prices are collected and/or expert opinion is used, allowing users to model future strategies of their national cervical cancer programmes.

Costs are presented in two ways:

1. financial terms to assist in analysis of monetary and budgetary flows;
2. economic terms for analysis of sustainability and resource allocation.

Financial costs (sometimes referred to as "bookkeeping costs") are defined here as actual payments or expenditures made to acquire inputs and resources for developing and implementing the national (cervical cancer control) programme. Economic costs include additionally the value of resources that are already in place in the healthcare system and are diverted for the programme. Economic costs also include volunteer time, donations or subsidies provided for programme inputs; that is, expenditures made by parties other than the national government. Thus, economic costs provide a more complete and accurate picture of the resources used by the cervical cancer control programme.

In the C4P Tool a distinction is made between two broad categories of costs:

1. service delivery costs, for direct inputs needed to provide patient services, including staff, supplies, infrastructure and capital costs;
2. programme support activities costs, such as training, microplanning, social mobilization, and supervision, monitoring and evaluation.

Another distinction is annualization versus non-annualization of costs. Annualization is applied to resource items that have a useful "lifetime" of more than one year. This adjustment reflects that although the items may have been paid for in a single year, they are actually used over multiple years. In the service delivery category annualization is applied to both financial and economic costs of infrastructure and equipment without excess capacity and, in the programme support activities category,

to the financial and economic introduction (or set up) costs portion of the individual activities. Recurrent costs of these activities are not annualized; they are simply reported in the year in which they are incurred.

In the case of financial costs, the extent of annualization stops at dividing the financial item cost by its number of years of use or useful life to yield equal annual costs assuming straightline depreciation. However, economic costs require further treatment to reflect the opportunity cost of money, that is, tying it up for inputs for the cervical cancer programme instead of say, investing it. This leads to the concept that having money today is more valuable than having it in the future. To express this, economic costs are discounted, giving less value to costs in the future. To streamline the two aspects of annualization and discounting, the economic item cost is divided by an annualization factor incorporating the number of useful years and the discount rate to yield the annual cost. In this report the useful life of relevant inputs is extended over the five years of the programme and a discount rate of 10% is used, with a resulting annualization factor of 3.79.

All costs were calculated using the version of the C4P Tool that was current in 2018. It should be noted that the C4P is constantly updated to reflect new cervical cancer prevention and screening guidelines, updated input data, and model fixes.

The C4P tool including its manual can be downloaded here: https://www.who.int/immunization/diseases/hpv/cervical_cancer_costing_tool.

ANNEX 2

Programme support activities

Programme planning	2020	2021	2022	2023	2024
Stakeholder consultation workshop – National Operational Plan	1	0	0	0	0
Launching National Operational Plan for secondary prevention of Cervical Cancer	1	0	0	0	0
Annual review and work plan meeting	1	1	1	1	1
Development of training package – screening and pre-cancerous lesion treatment	1	0	0	1	0
Development of M&E framework – screening, treatment and referral	1	0	0	1	0
Training support	**2020**	**2021**	**2022**	**2023**	**2024**
Training of Trainers (TOT) – screening and pre-cancerous lesion treatment service	1	0	0	1	0
Multiplier training – screening and pre-cancerous lesion treatment service	5	5	5	5	5
Training for Lab technician – HPV DNA testing service	1	1	1	1	1
Training for basic health staff – sample collection services	30	30	30	30	30
Refresher training for MO, lab technician at district level	0	0	1	0	1
Sensitization, Social Mobilization and Communication	**2020**	**2021**	**2022**	**2023**	**2024**
Social outreach campaign at district level	5	5	5	5	5
National programme communication support	1	1	1	1	1
Advocacy visit to district/township hospital for project expansion	5	5	5	5	5
Supervision, Monitoring and Evaluation	**2020**	**2021**	**2022**	**2023**	**2024**
National supervision team visits	6	6	6	6	6
Regional supervision team visits	20	20	20	20	20
Implementation research	1	1	1	1	1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