THE MINISTRY OF HEALTH,
WELLNESS,
SOCIAL TRANSFORMATION
& THE ENVIRONMENT
OF ANTIGUA AND BARBUDA

ANTIGUA AND BARBUDA

NATIONAL GUIDELINES FOR CERVICAL SCREENING & TREATMENT OF PRE-CANCER LESIONS

FIRST EDITION
2024

ANTIGUA & BARBUDA

MINISTRY OF HEALTH, WELLNESS, SOCIAL TRANSFORMATION AND THE ENVIRONMENT (MOHWSTE)

Cervical Cancer Elimination Program

National guidelines for cervical screening and treatment of pre-cancer

February 2024

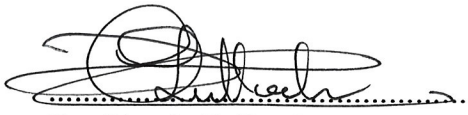
FOREWORD

In our ongoing commitment to public health, the Ministry of Health, Wellness, Social Transformation & the Environment (MOHWSTE) of Antigua & Barbuda, in collaboration with the Pan American Health Organization (PAHO) and Basic Health International (BHI), proudly presents the first national guidelines for cervical screening. These guidelines mark a significant step in our national strategy, incorporating the latest advancements in HPV testing and screening.

Our focus remains steadfast on the early detection and treatment of pre-cancerous conditions, offering a comprehensive approach to cervical cancer prevention. These guidelines are designed for a wide array of stakeholders – from healthcare providers to policymakers – ensuring a unified and effective response against cervical cancer.

We extend our gratitude to the numerous individuals and organizations who made the high-risk (hr) HPV Pilot Programme a success. Most notably we thank the Pan-American Health Organization (PAHO) and Basic Health International (BHI) who have contributed to the process of developing these guidelines. Their dedication and expertise have been instrumental in shaping a patient-centered approach that resonates with the needs of our community.

These guidelines are a living document, subject to biennial review and updates, ensuring that our strategies remain aligned with the latest in medical research and public health policy. Together, we stride towards a future where cervical cancer is no longer a threat to the women of Antigua & Barbuda.



Dr. Cherie Tulloch, MBBS, DM (O&G, UWI), FACOG
Consultant Obstetrician and Gynaecologist
Focal Point, The Cervical Cancer Elimination Program

REMARKS

Cervical cancer remains a formidable public health challenge in Antigua and Barbuda, with its profound impacts largely preventable through vaccination, screening, early detection and treatment. Recognizing this, our adherence to the World Health Organization's (WHO) elimination strategy by 2030 is not just a commitment but a priority action plan underpinned by robust, evidence-based interventions.

Central to our national response is the national Human Papillomavirus (HPV) vaccination programme which was implemented in 2018. This initiative targets the primary etiological factor of cervical cancer, aiming for widespread immunization among girls and boys to drastically reduce future HPV prevalence and, consequently, cervical cancer incidence. The vaccination strategy is complemented by our recent HPV testing pilot which leverages HPV DNA testing to enhance early detection rates. This dual approach aligns with the World Health Organization (WHO) '90-70-90' targets, aiming for 90% of girls fully vaccinated by 15 years, 70% of women screened twice by 35 and 45 years, and 90% of identified cases receiving treatment.

I am pleased that Antigua and Barbuda is the first country in the Caribbean Region to utilize the guidance and support of the Pan American Health Organization (PAHO) in implementing the pillars of cervical cancer elimination and to develop national guidelines based on this approach. The Ministry of Health, Wellness, the Environment and Social Transformation (MOHWSTE) and the government of Antigua and Barbuda extend deep appreciation to the partnership of the PAHO/WHO and Basic Health International. We are grateful to the members of the National Cervical Cancer Elimination Programme, officials in the MOHWSTE, our healthcare providers and other stakeholders for their commitment to this effort.

The Ministry of Health, Wellness, Social Transformation and the Environment urges all healthcare providers and relevant stakeholders to utilize these guidelines. As we embark on this ambitious journey towards cervical cancer elimination, our focus is unwavering: to implement a science-driven, equity-focused public health response that safeguards the health and well-being of all women in Antigua and Barbuda. Let us unite in this endeavour, embracing innovation and collective action to realize a future free from cervical cancer.

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Hon. Sir Molwyn Joseph

Minister of Health, Wellness, Social Transformation and the Environment

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ACKNOWLEDGEMENTS

The first edition of the Antigua and Barbuda National guidelines for cervical screening and pre-cancer treatment is made possible through the financial and technical support of the Pan American Health Organization (PAHO), Basic Health International (BHI), and the work of the team overseeing the National Cervical Cancer Elimination Programme at the Ministry of Health, Wellness, Social Transformation & the Environment. The high-risk HPV testing Pilot conducted from September 2022 to January 2023, provided an important basis for the guidance in this edition and was also made possible through the collaboration and support of PAHO and BHI.

Special thanks to Dr Anna Cabanes, PAHO Consultant, who worked closely with the team in formulating these guidelines. This edition would not have been possible without her guidance and expertise. We would also like to thank the following PAHO representatives: Dr Taraleen Malcolm, Advisor on Noncommunicable Diseases and Mental Health, Dr Mauricio Maza, Regional Advisor for Cancer Prevention and Control, Dr Sara Benitez, Cancer Project Coordinator, and Dr Gemma Chery, Country Programme Specialist, for ensuring that the National Cervical Cancer Elimination Programme was fully supported in the development of these guidelines. We would also like to recognise the Basic Health International team – Dr Rachel Masch, Chief Medical Officer, Eveline Mumenthaler, Chief Operating Officer, and Dr Karla Alfaro, Medical Director, who provided technical support during the high-risk HPV testing Pilot and the development of the guidelines.

We acknowledge the dedication of the Cervical Cancer Elimination team, led by Dr Cherie Tulloch, Focal Point and Programme Lead, Dr Kelly Hill, Administrative Lead, Nurse Juliette Michael, Primary Care Clinical Coordinator; and the support of the Ministry of Health, Wellness, Social Transformation & the Environment, in particular Dr Kamaria DeCastro, Chief Medical Officer (Ag), and Dr Teri-Ann Joseph, Deputy Chief Medical Officer. We are deeply indebted to the groups and individuals represented in the stakeholder meetings during the development of these guidelines.

ACRONYMS AND ABBREVIATIONS

AIS	Adenocarcinoma in situ
ASCU-US	Abnormal Squamous Cells of Undetermined Significance
ASR	Age-standardized rate
BHI	Basic Health International
CCTF	Cervical Cancer Taskforce
CKC	Cold knife conization
CIN	Cervical intraepithelial neoplasia
CSOs	Civil society organizations
ECC	Endocervical curettage
HC	Health Center
HF	Health facilities
HIC	High-income countries
HIS	Health Information systems
HIV	Human Immunodeficiency virus
HMIS	Health management information system
HPV	Human Papillomavirus
Hr HPV	High-risk HPV
LEEP	Loop electrosurgical excision procedure
LLETZ	Large-loop excision of the transformation zone
LMICS	Low- and middle-income countries
MOHWSTE	Ministry of Health Wellness, Social Transformation, & the Environment
NAAT	Nucleic acid amplification test
NCD	Non-communicable disease
NILM	Negative for intraepithelial lesion or malignancy
PAHO	Pan American Health Organization
SCJ	Squamocolumnar junction
STI	Sexually Transmitted Infection
TZ	Transformation zone
WHO	World Health Organization
WLHIV	Women living with HIV

CHAPTER 1: BACKGROUND

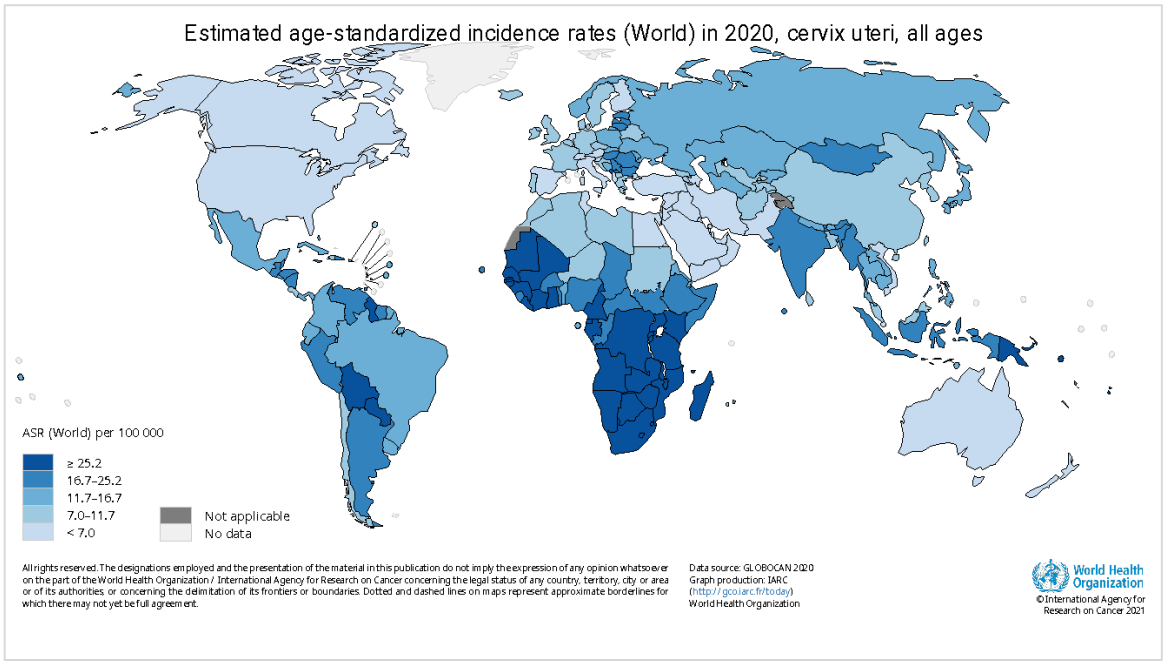
1.1 GLOBAL EPIDEMIOLOGY OF CERVICAL CANCER.

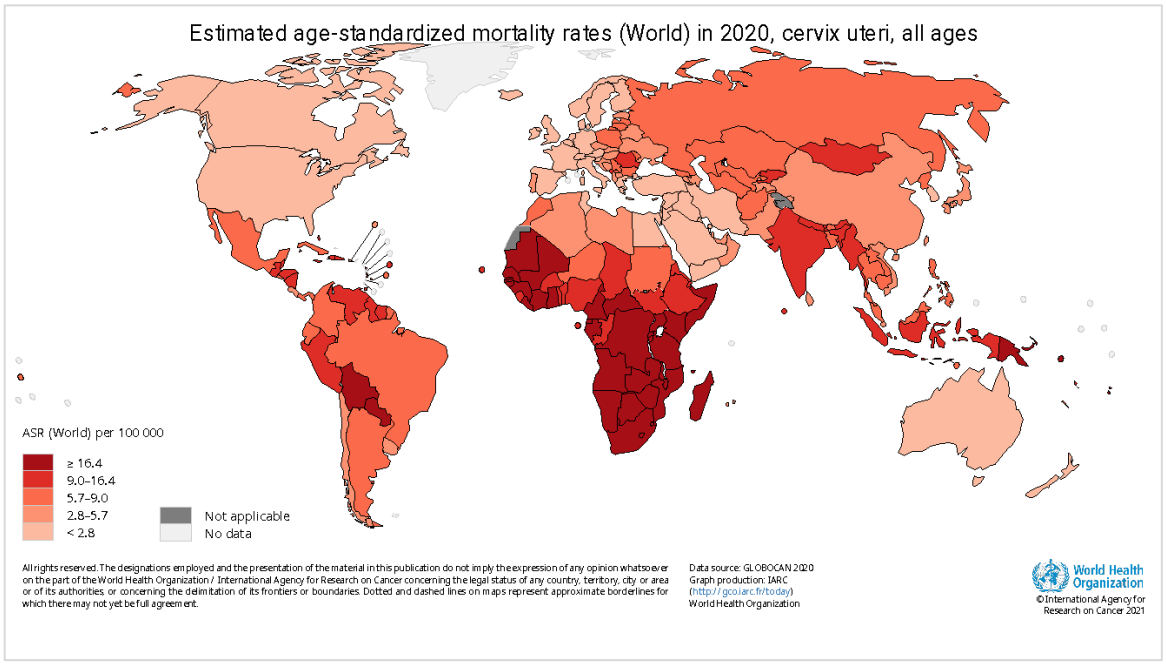
Cervical cancer is a preventable disease, and curable if detected early and treated appropriately. Yet, it is the fourth most common cancer in women globally. In 2020, an estimated 604,127 women were diagnosed with cervical cancer worldwide and about 341,831 women died from the disease (1). Few diseases reflect global inequities as much as cancer of the cervix. In low- and middle-income countries (LMICs), its incidence is nearly twice as high and its death rates three times as high as in high-income countries (HICs).

Cervical cancer is caused by infection with a high-risk or oncogenic Human Papilloma Virus (HPV) type (2), and it can largely be prevented through vaccination of young girls against HPV, or with screening followed by immediate treatment of the pre-cancerous lesions, which rely on simple, and easy-to-use tools that can be delivered at the lowest level of care.

In countries with high-quality, organized cervical cancer prevention programs, the early diagnosis and treatment of precancerous lesions has led to significant reductions in the burden of this disease over time. In these settings, the most common method used to screen women for cervical cancer has been cytology, also known as the Papanicolau test, Pap smear, or smear test. In countries with robust health systems, it has resulted in an average reduction of approximately 2.6% per year in cervical cancer mortality (3). However, this approach has proven less effective in LMICs, mainly because of requirements for laboratory infrastructure, equipment, and logistic challenges associated with the screening process; as well as the performance of the Pap test itself, which has shown sensitivity as low as 55% (4, 5).

Estimated age-standardized incidence and mortality rates of cervical cancer globally.





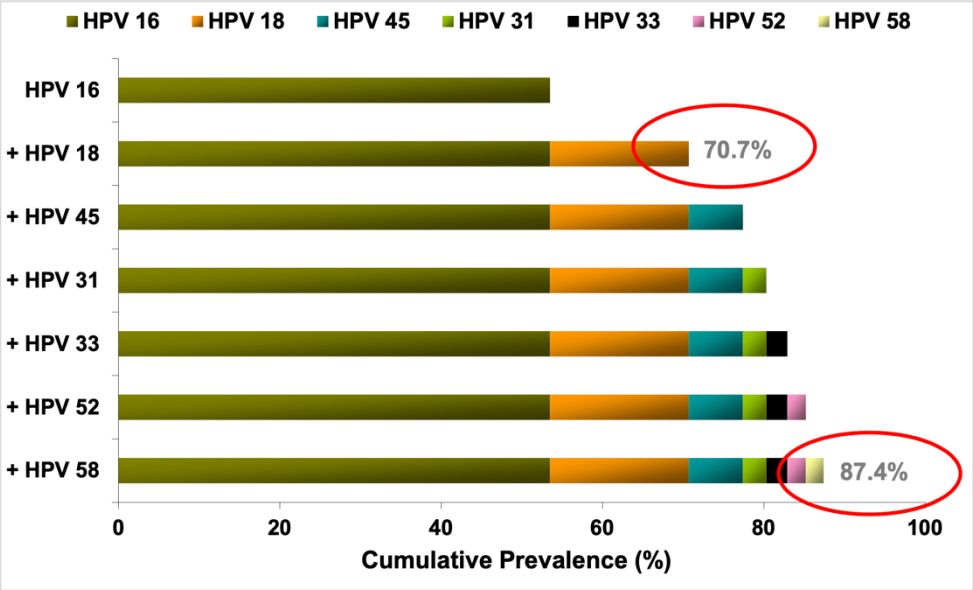
Source: Globocan 2020. Graph production: IARC (https://gco.iarc.fr/today). World Health Organization.

1.1.1 Human Papilloma Virus (HPV).

HPV is highly transmissible and is the most common sexually transmitted infection (STI). It is known to cause over 99% of cases of cervical cancer, and current estimates suggest that most sexually active individuals will get infected at some point of their lives (6).

Infection with some types of genital HPV can cause changes to cells within the cervix, which can sometimes lead to cervical cancer if left untreated. There are more than 100 genotypes of HPV, but only a small subset is considered oncogenic or high-risk HPV (hr HPV) and associated with cervical cancer. HPV types 16 and 18 are the most common types of HPV associated with cervical cancer, with type 16 consistently being the most oncogenic independent of the geographic location (7).

Cervical cancer cases attributed to HPV genotypes.



Source: Adapted by Mark Schiffman from Munoz et al (7).

Persistent infection with high-risk HPV is the most important risk factor in developing pre-cancer and cancer. The peak time of HPV infection is shortly after an individual becomes sexually active, occurring most commonly in teenagers and women in their early twenties, although most young women have an effective immune response that will clear infection quickly.

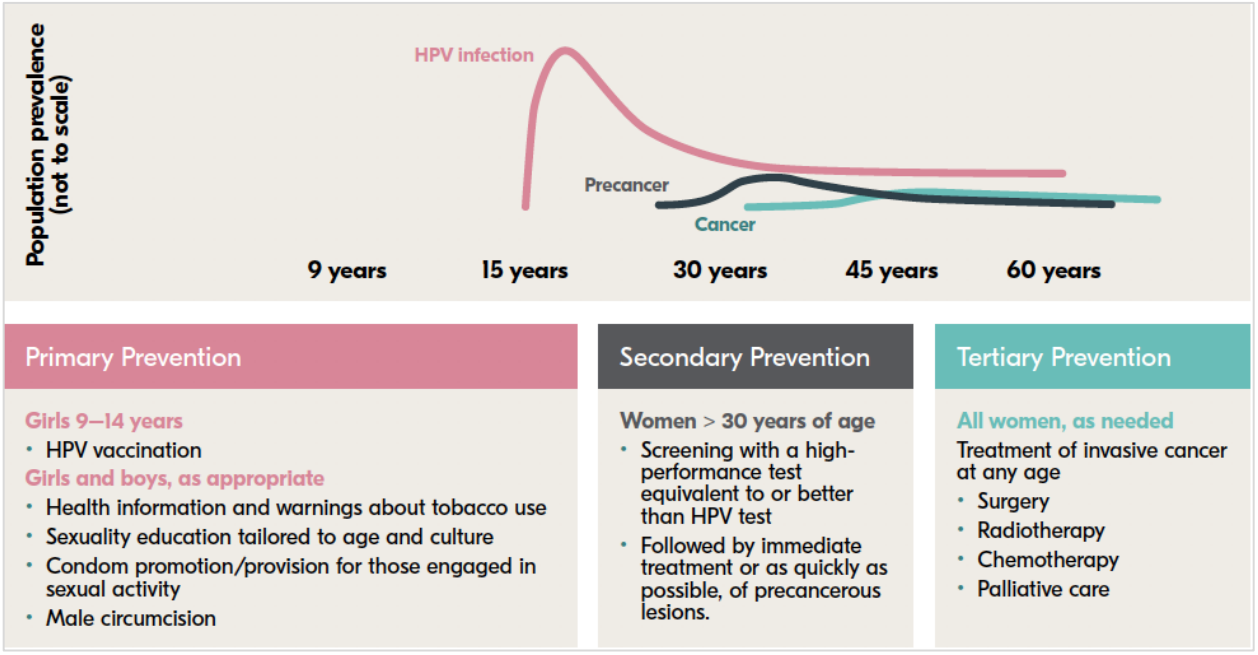
Persistent HPV may progress to cervical intraepithelial neoplasia (CIN), characterized by cellular changes in the transformation zone (TZ) of the cervix that are categorized as low-

grade squamous intraepithelial lesions, or CIN1 lesions (morphological correlates of HPV infections), and high-grade intraepithelial lesions, or CIN 2/3 lesions (correlates of cervical pre-cancer that may progress to cervical cancer if left untreated). When HPV is detected in women 30 years or older it most likely corresponds to persistent HPV with higher risk for more significant precancerous lesions (CIN2+) that are less likely to regress spontaneously (about 50%). If left untreated, these precancerous lesions can progress into invasive cervical cancer.

The progression from CIN2+ to invasive cervical cancer is relatively slow with an average of about 8–12 years. This prolonged period of the pre-cancerous stage offers excellent opportunities to detect the presence of pre-cancerous lesions and treat them to prevent progression to invasive cervical cancer.

The World Health Organization (WHO) recommends taking a life-course approach for effective cervical cancer prevention, with a simultaneous implementation of primary prevention, secondary prevention, and tertiary prevention, as well as palliative care, and all the activities that support these interventions.

Life-course approach to cervical cancer interventions.



Source: Global strategy to accelerate the elimination of cervical cancer as a public health problem. Geneva: World Health Organization; 2020 (8).

1.2 GLOBAL STRATEGY TOWARDS THE ELIMINATION OF CERVICAL CANCER.

The global strategy to accelerate the elimination of cervical cancer as a public health problem was developed by WHO in collaboration with different member states, with clear goals and targets for the period 2020–2030 (8). The strategy proposes a population-based approach that will enable countries to reach global targets for key interventions that, in turn, will lead to elimination of cervical cancer as a public health problem.

WHO has defined the threshold for elimination of cervical cancer as a public health problem as an age-standardized incidence rate of less than 4 cases per 100,000 women-years. To achieve elimination within a century, the following targets need to be met by 2030 and maintained beyond:

- 90% of girls fully vaccinated with the HPV vaccine by 15 years of age.
- 70% of women are screened with a high-precision test (HPV DNA test) at 35 and 45 years of age.
- 90% of women identified with cervical disease receive treatment and care (90% of women screened positive treated for pre-cancer lesions and 90% of invasive cancer cases managed).

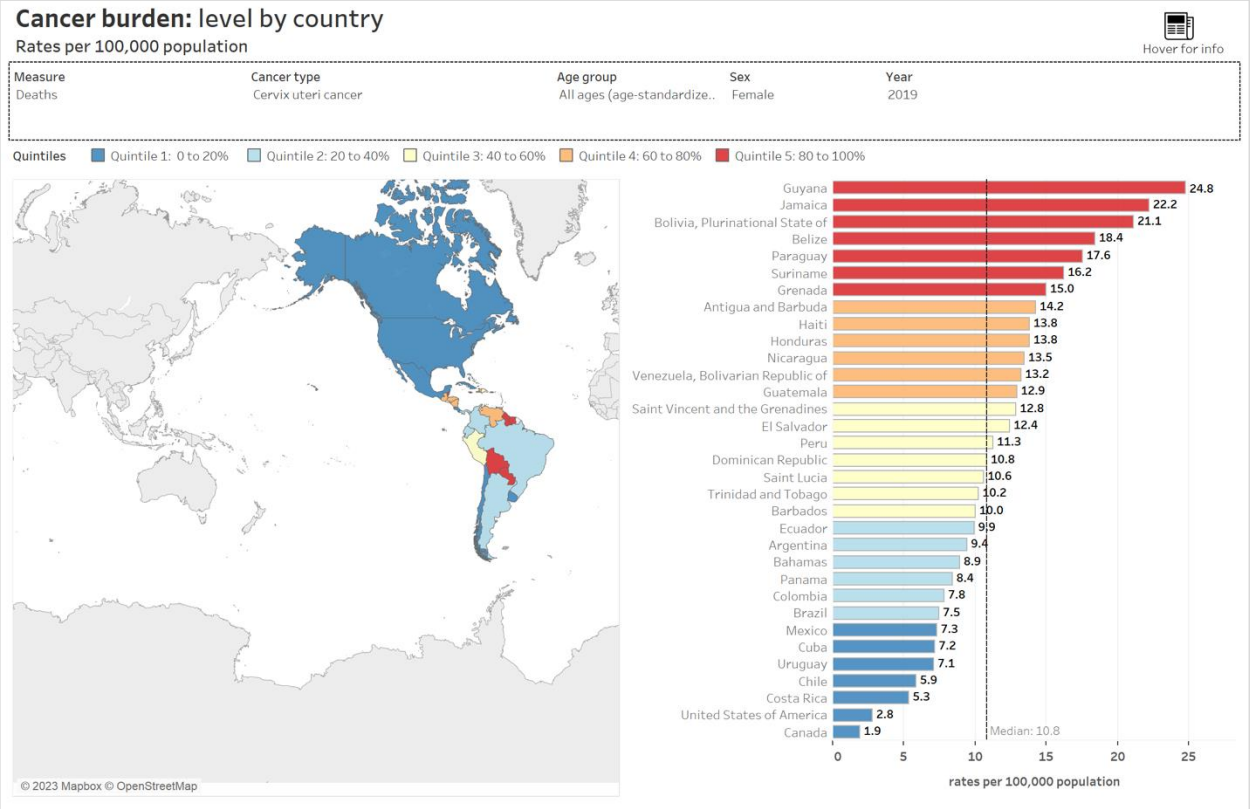
WHO recommends the simultaneous implementation of these three pillars to achieve a maximum impact (8). Countries can expect a decrease of cervical cancer mortality as access to treatment of invasive disease improves, coupled with a decrease of incidence resulting from implementation of population-based screening followed by treatment of the pre-cancerous lesions. Vaccination against HPV will offer protection against cervical cancer to future generations.

In the context of this global strategy, countries must develop national strategies for the elimination of cervical cancer and update their protocols for the prevention of cervical cancer and for the care and treatment of affected women either with pre-cancer lesions or with invasive disease, incorporating the latest scientific advancements and adapted to their context.

1.3 BURDEN OF CERVICAL CANCER IN ANTIGUA & BARBUDA.

Epidemiological data of Antigua & Barbuda is scarce. The estimated mortality of cervical cancer in Antigua & Barbuda in 2019 was 14.23 deaths/100,000 women. In relation to the countries of the region, this level of burden of disease ranks Antigua & Barbuda in the 4th quintile, 60-80% among all countries. Only seven other countries have higher mortality rates than Antigua and Barbuda in the region. From the year 2000 to the year 2019, there was a 31.2 % increase of mortality (9).

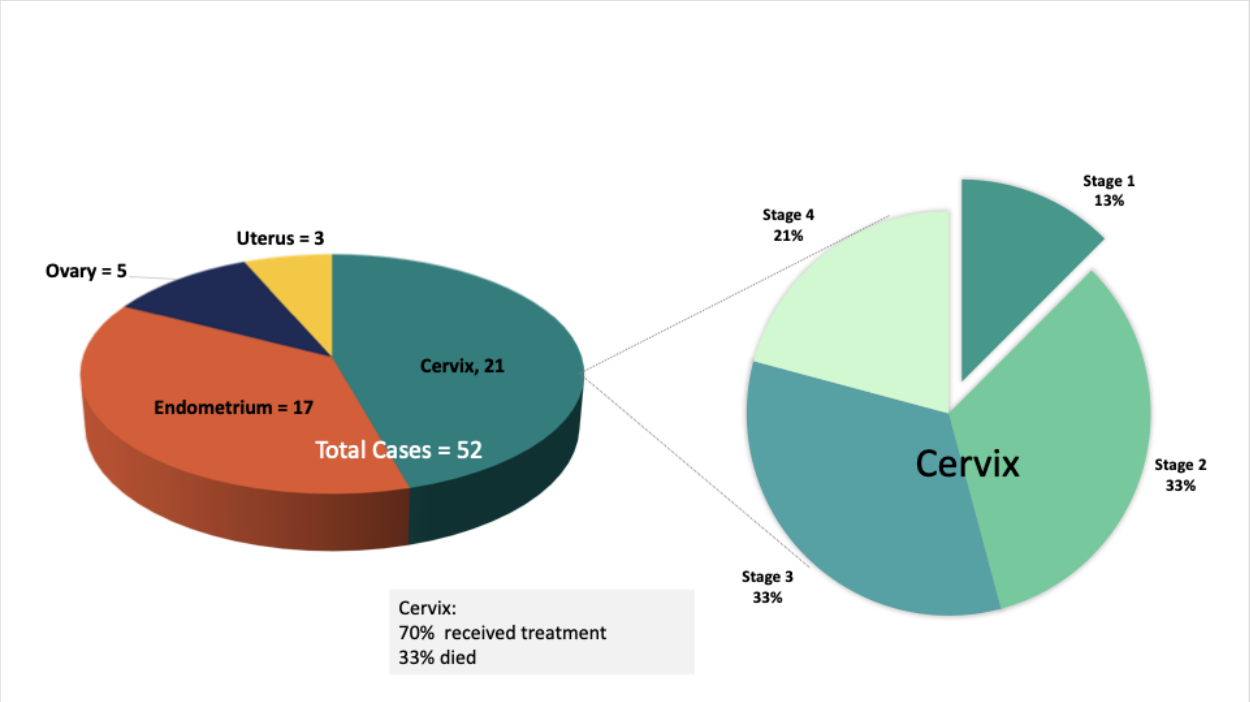
Deaths per 100,000 population in the region of the Americas.



Source: ENLACE: Data Portal on Noncommunicable Diseases, Mental Health, and External Causes. https://www.paho.org/en/enlace.

The Oncology department at Sir Lester Bird Medical Centre (SLBMC) has reported the number of cases of gynaecological cancer at different times in Antigua & Barbuda (10). Between 2016-2020 there were 52 cases of gynaecological cancers registered as shown in the figure below. The distribution of cervical cancer stages at diagnosis shows that more than 50% of the cervical cancer cases are diagnosed at an advanced stage.

Gynaecological cancers diagnosed at the Oncology Department of SLBMC between 2016-2020 and stage at diagnosis.



Source: Oncology Department, SLBMC.

1.4 CERVICAL CANCER CONTROL IN ANTIGUA & BARBUDA.

In 2018, the Ministry of Health Wellness and Environment (MOHWSTE) created the Cervical Cancer Task Force (CCTF), a cross-sectoral group aimed at strengthening the Cervical Cancer Prevention and Control Program.

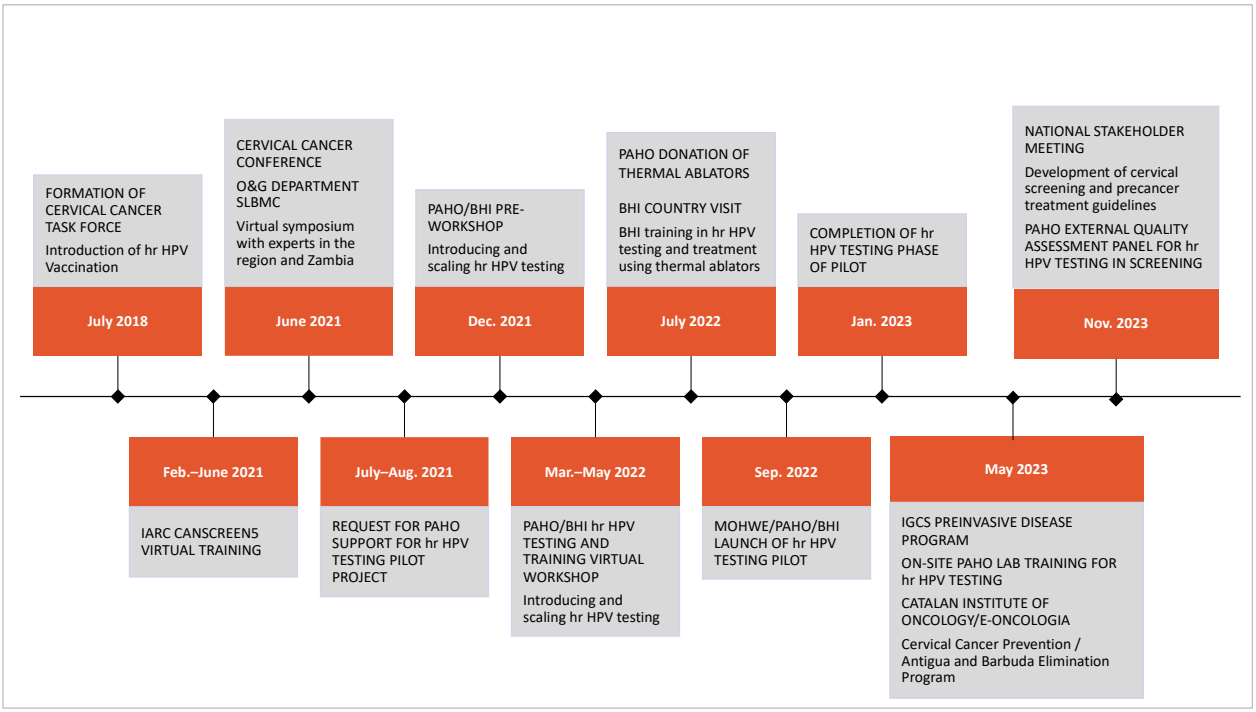
The initial focus was on the introduction of HPV vaccination in the target group of 9-13 years-old boys and girls, taking a community-based approach in clinics and paediatrician offices with the goal to eventually transition to the school-based immunization program. It was accompanied by intense public education and sensitization.

The vaccination programme achieved a coverage of 18% of the primary target group in the first year. However, the rates of vaccination significantly declined during the Covid pandemic.

In 2020, the World Health Assembly adopted the global strategy for cervical cancer elimination. This strategy identifies targets at the 3 levels of prevention: 90% vaccination of all girls by the age of 15; screening 70% of women with a high-performance test, once by the age of 35 and again by 45; and treating 90% of women with precancerous disease and cervical cancer.

In looking at the status of these three targets up to 2021, less than 50% of the eligible women in Antigua and Barbuda were being screened for cervical cancer. The existing screening programme offers opportunistic screening using the Pap test to women from age 21 to 65. Although most local obstetricians and gynaecologists report using guidelines from the American College of Obstetricians and Gynaecologists, it was observed that many women undergo annual cytology. The standard screening follow-up approach involves repeating cytology after 1-3 years after having normal results, while women with abnormal results are referred for colposcopy. These inconsistencies are because there are no clear guidelines to follow currently.

Antigua and Barbuda's path to cervical cancer elimination.



In view of the increasing number of women being diagnosed with cervical cancer, the predominance of advanced disease at diagnosis, the challenges with increasing cervical screening coverage, and the lack of national guidelines, the MOHWSTE recognized the importance of strengthening programs for prevention and early detection. The MOHWSTE, with the support of the Pan American Health Organization (PAHO) and Basic Health International (BHI), embarked on introducing hr HPV testing for cervical cancer control, followed by the development of guiding documents based on the results of the demonstration project.

1.4.1 Hr HPV Pilot.

In the year 2020, PAHO formally partnered with Basic Health International (BHI), a non-state actor with experience in HPV test implementation in the region, to develop and deliver the training based on the PAHO/WHO Guidance on Introducing hr HPV testing in Cervical Cancer Screening Programs and provide technical support for the cervical cancer screening pilot implementation.

In September 2021, with support from PAHO, Antigua procured and provided approximately 1,500 hr HPV tests, media, consumables and a GeneXpert machine to support the introduction of this screening technology. BHI delivered a training programme to allow for the implementation of the project. This training in Antigua and Barbuda was the first of its kind in the region to apply the PAHO/WHO guidance document to initiate hr HPV testing in a national screening program.

For the programme to provide and sustain effective high-quality screening and treatment, it was important to build country capacity through training of a wide range of health care providers. The goal of the training system is to provide a constant flow of competent trainers and providers who are trained to perform to standard. The table below summarizes the different trainings conducted in the country as part of the strategy to eliminate cervical cancer.

Capacity building and training	
Training	**Date**
Introducing and Scaling High-risk Human Papillomavirus (HPV) Screening as Part of a Comprehensive programme for Prevention and Control of Cervical Cancer (Virtual), PAHO/BHI	March - May 2022
BHI Training: HPV Testing and thermal ablation	July 2022
Cervical Cancer Prevention / Antigua and Barbuda Elimination Program, Catalan Institute of Oncology/ E-Oncologia	February - May 2023
HPV Testing Implementation On-site Lab training, PAHO	May 2023
Pre-invasive disease- IGCS colposcopy training program	May 2023

The coordination and standardization of the training activities was led by the Cervical Cancer elimination team at the MOHWSTE, which developed criteria for scale up of the training activities, determining how to expand. This unit maintains an inventory of people trained under the cervical cancer prevention program.

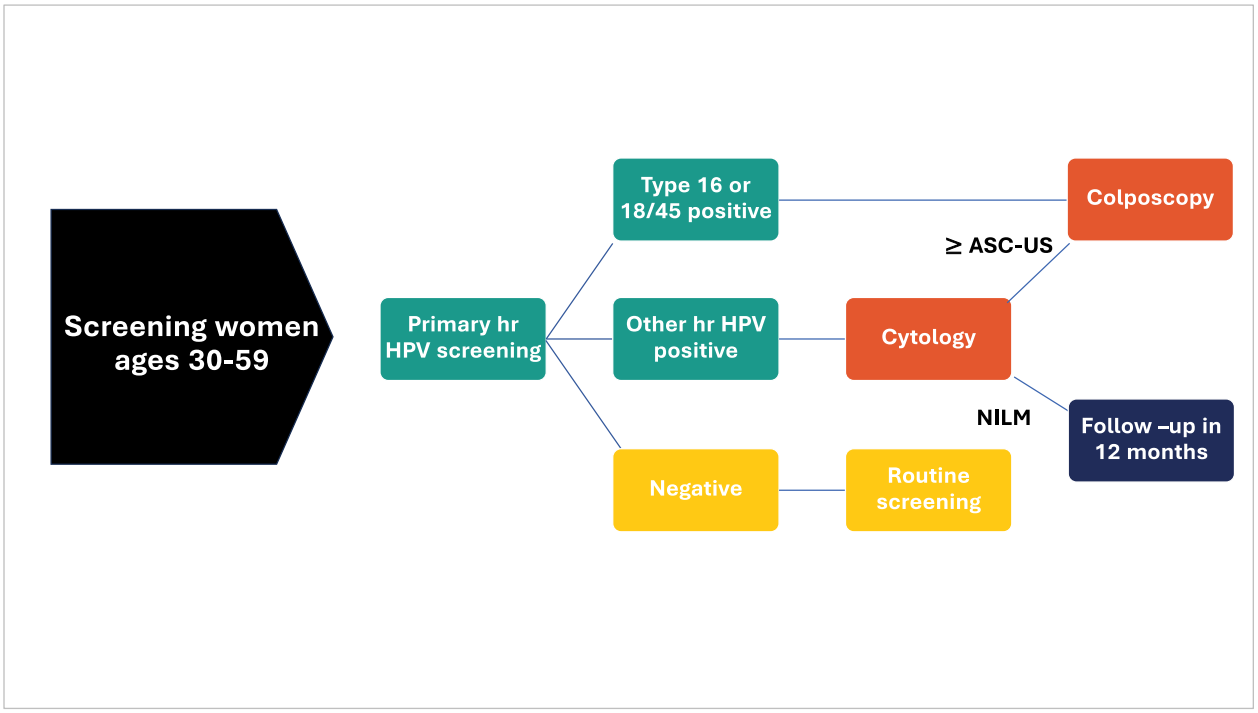
1.4.1.1 Methods.

The aim of conducting the pilot was to screen 1,500 women between the ages of 30-59 using hr HPV DNA testing over a 6-month period, which represented 11.6% of the target population. The implementation took place in the following 5 health centres: All Saints, Clare Hall, Jennings, Gray's Farm, and Browne's Avenue.

The screening approach for the different target groups were:

- Women aged 30-59: hr HPV DNA primary screening, followed by cytology triage if positive for hr HPV subtype different than 16,18 and 45.
- Women aged 21-29 and 60-65: Cytology primary screening, followed by hr HPV triage if ASCUS.

Screening algorithm



1.4.1.2 Results.

During the pilot 1545 women were screened with the hr HPV test, which surpassed the target number set at the beginning of the project. Hr HPV positivity rate was 21.7 %. This rate is similar to the rates reported from other Caribbean countries (11-13).

- Of the 116 women positive for hr HPV 16/18/45 subtypes, 109 had colposcopy. Of those, 44 were positive for high grade lesions, and 4 cases of cervical cancer were diagnosed. 92% of the women had their follow up.
- 220 women tested positive for other hr HPV, 91 had colposcopy and 49 had high grade lesions and required treatment.

Comparing the results of this pilot with what was done before in 2019 and 2020, during the pilot Antigua improved efficiency in identifying the women who need colposcopy, not just any women.

Loss to follow up was 9% for the hr HPV 16/18/45 positive whereas it was much higher (33%) for the other high-risk types. While it is key to minimize the number of women lost to follow up, it is especially important for women HPV positive for high-risk 16/18/45 subtypes, because they are the ones at greatest risk of cervical cancer.

Results of the Pilot hr HPV DNA screening	
Number women screened	1545
Hr HPV positive results	336
Hr HPV positivity rate	21.7%
Hr HPV 16,18/45	
16,18/45 Positive results	116
16,18/45 Positivity rate	7.5%
16,18/45 HPV positive that received colposcopy	109/116
CIN2+	44 (40.4%)
Treatment	40/44 (90.9%)
Follow up	105 (90.5%)
Cancer	4 (9%)
Other high-risk HPV	
Other high-risk HPV positive results	220
Other high-risk HPV positive that received colposcopy	91
CIN2+	49 (53.8%)
Cytology	190 (86.4%)
Abnormal cytology	93 (48.9%)
Treatment	31/49 (63.3%)
Follow up	147 (66.8%)
Cancer	0 (0%)
Overall colposcopy	200
Overall CIN2+	93 (46.5% of women who had colposcopy)
Overall cancer	4 (2% of women who had colposcopy)

Regarding time indicators, the lab was excellent at getting the hr HPV results back in 3 days. On average, colposcopy results were returned within 30 days of screening.

The total time between hr HPV test and treatment was 117 days for women positive for hr HPV 16/18/45. In contrast, it was 175 days for women positive to other hr HPV types, which had to undergo triage with cytology. Detailed results are shown below.

Time indicators (number of days)	
	Median days
Time between screening and WOMAN receiving results	18.0
Time between screening and lab making results available	3.0
Time between screening and colposcopy performed (hr HPV 16/18/45)	30.0
Time between hr HPV test and treatment (hr HPV 16/18/45 and other hr HPV)	135.0
Time between hr HPV test and treatment (hr HPV 16/18/45)	117.0
Time between hr HPV test and treatment (Other hr HPV)	175.0
Time between colposcopy and treatment (hr HPV 16/18/45)	69.5
Time between colposcopy and treatment (Other hr HPV + tests)	83.5
Time between screening and Pap triage (Other hr HPV + tests)	24.0
Time between pap triage and result being available from lab (other hr HPV + tests)	31.0
Time between receiving Pap result and colposcopy performed (other hr HPV + tests)	22.0

The results of the pilot showed that hr HPV screening is possible in Antigua and have been used to project the monthly workflow for the scale up of screening to be able to achieve WHO's elimination targets.

CHAPTER 2: CERVICAL CANCER SCREENING AND TREATMENT OF PRE-CANCER.

Cervical cancer screening	
Definition	Screening is a public health intervention provided to an asymptomatic target population to identify individuals with increased probability of having a disease or the precursor of the disease.
Goal	The reduction of cervical cancer by detecting and treating cases of pre-cancer before they progress to cancer. Additionally, screening can detect early-stage cervical cancer.
Recommendation	Screen the largest proportion of women in the target group and ensure appropriate management for all who have positive or abnormal test results.

2.1 ELEMENTS OF SECONDARY PREVENTION.

Secondary prevention aims at preventing invasive cervical cancer by detecting and treating precancerous lesions of the cervix before they progress to cancer. These premalignant lesions or cervical intraepithelial neoplasia (CIN) are characterized by cellular changes in the transformation zone (TZ) of the cervix that are categorized as low-grade squamous intraepithelial lesions, or CIN1 lesions (morphological correlates of HPV infections), and high-grade intraepithelial lesions, or CIN 2/3 lesions (correlates of cervical pre-cancer that may progress to cervical cancer if are left untreated) (2). By detecting and treating these lesions through screening, we can prevent cervical cancer. Additionally, screening can detect cervical cancer at early stages, when the cancer can be successfully treated if cases are timely referred to receive appropriate management.

Screening by itself has no preventive value unless it is linked to effective and timely treatment. It is thus key to ensure this linkage to minimize the number of patients with abnormal screening results being lost to follow-up and not receiving appropriate treatment—a major cause for low programme impact in certain countries. This linkage is clinically and programmatically important. (14-16).

2.2 TARGET POPULATION AND SCREENING FREQUENCY.

Current recommendations on the population to target for screening are based on the natural history of HPV infection and cervical pre-cancer, current scientific evidence, and local epidemiological data available. High-risk HPV infections are very common in young women, but most of them are eliminated spontaneously, and only a small percentage will persist and progress to pre-cancer, and even a smaller percentage will lead to invasive cancer.

Given that cervical cancer usually develops slowly from precancerous lesions to invasive cancer (>10 years) and that cervical cancer is uncommon in women younger than 30 years of age, it is recommended that the target age group for screening is women above 30 years of age. Depending on the primary test used and the population group, if the screening test is negative, recommendations for rescreening vary from 3-10 years.

Based on epidemiology data and the results of the hr HPV DNA demonstration project, the target groups for screening and the screening frequency recommended are the following.

Target population groups for screening and screening frequency

Target groups	Age groups	Screening method		Screening frequency		
		Primary	Triage	Negative screening	Positive screening NOT requiring treatment	Positive screening requiring treatment
General population	30-65 years	Hr HPV DNA	Cytology	5 years	1 year	6-12 months
	25-29 years	Cytology	Hr HPV DNA	3 years	1 year	6-12 months
WLHIV start at age 21 or within 2 years of sexual activity	21-24	Cytology	Hr HPV DNA	3 years	1 year	6-12 months
	25-65 years	Hr HPV DNA	Cytology	3 years	1 year	6-12 months

Since HIV-positive women are at a higher risk and present a faster rate of progression of lesions, the Cervical Cancer Taskforce recommends following ASCCP Guidance and screen for hr HPV infection all women living with HIV (WLHIV) starting at 21 years of age to 65 years, or within 2 years of sexual activity (whichever one comes first). WLHIV are not only more likely to be infected with HPV. They are more likely to have persistent HPV infection leading to precancerous lesions; tend to have larger, more difficult to treat precancerous lesions; and have higher recurrence rates of precancerous lesions following treatment (17, 18). If women are under 21 years old, screen with cytology every 3 years until age. At age 25 WLHIV begin hr HPV DNA screening.

Because of this increased risk, the frequency of screening should also be increased. Women HIV-positive with negative screening results should be rescreened within 3 years. Women who have received treatment for pre-cancer, should be rescreened within 6 months.

Hr HPV-based testing is the recommended screening test offered during pregnancy since it is less likely that the test causes bleeding from the cervix.

Screening should not be denied to any woman who desires screening. However, women younger than the target age group (except those who are HIV-positive), should be counselled on their risk factors and recommendations for screening. This presents an excellent opportunity for education on HPV infection reduction, as well as STI screenings, family planning and HPV vaccination. Women outside of these age ranges should be counselled and their risk factors assessed.

Hr HPV testing follow up of women with high grade lesions	
● Persons with CIN 2 preceded by hr HPV different than 16/18/45 (Hr HPV Type Others)	1 year
● Women living with HIV ● Women treated for any high-grade lesions which was preceded by hr HPV 16/18/45 ● Women who were treated for CIN 3	6 months
● Persons treated for high grade lesions require 3 negative tests before they return to the screening process	Hr HPV testing every 3 years for the next 25 years (ASCCP recommendation)

2.3 SCREENING METHODS FOR CERVICAL PRE-CANCER.

The screening methods most frequently used to identify women who have or are at risk for cervical cancer are molecular tests - mainly hr HPV DNA-based tests, cytology, and visual inspection with acetic acid (VIA).

2.3.1 HPV DNA testing.

High-risk HPV DNA testing	
Definition	High-risk HPV DNA tests are molecular tests nucleic acid amplification tests (NAAT) that identify a group of high-risk carcinogenic HPV genotypes. Testing for hr HPV offers superior specificity, and its strong negative predictive value means that women who test negative only need to be retested after a minimum interval of five years
Goal	Identify women between the ages of 30- 65 years of age that have an hr HPV infection and therefore are at higher risk for pre-cancer and cancer
Recommendation	Use hr HPV DNA as a primary screening method followed by triage with cytology to determine treatment for women 30-65 years old. If there is limited hr HPV testing availability, use hr HPV tests only for women aged 30-49
Additional reference: WHO guidelines for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition. Geneva: World Health Organization; 2021. Geneva: World Health Organization; 2021 (19). (https://apps.who.int/iris/bitstream/handle/10665/342365/9789240030824-eng.pdf) (16) and Web Annex. Evidence-to-decision framework for mRNA testing for HPV. In: WHO guidelines for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition: use of mRNA tests for human papillomavirus (HPV). Geneva: World Health Organization; 2021 (20).	

Molecular HPV testing methods are based on the detection of DNA from high-risk HPV types in vaginal and/or cervical samples. High-risk HPV DNA tests identify a group of high-risk carcinogenic HPV genotypes. HPV tests can either detect the high-risk HPV genotypes in bulk without distinguishing the individual types or can detect separate HPV types via genotyping capacity.

Several in vitro diagnostic medical devices for HPV NAAT have been developed to specifically detect the most common oncogenic genotypes, HPV types 16/18, to identify those women at the highest risk of developing cervical cancer, but most laboratory tests can detect up to 15 HPV types.

High-risk HPV testing can be used as a primary screening test followed by a secondary modality to identify women most likely to have or be at risk for developing pre-cancerous cervical cells or cervical cancer. It can also be used as a follow-up test to further evaluate women diagnosed with inconclusive cell changes on their Pap tests, after a colposcopy and biopsy, or for women treated with LLETZ or thermal ablation for pre-cancer lesions to determine whether the intervention has been effective.

Numerous studies have demonstrated that HPV testing has much higher test sensitivity for primary screening than other methods (21-24). The MOHWSTE recommends introducing hr HPV DNA testing as a primary screening method for women between the ages of 30 and 65 years old, followed by either (a) colposcopy for women that screen positive for the hr HPV subtypes 16/18/45; or (b) cytology among women with positive results for other hr HPV subtypes, to assess the extension of precancerous lesions and determine the type of treatment.

Strengths of hr HPV DNA tests:

- Testing for HPV offers superior specificity, and its strong negative predictive value means that women who test negative only need to be retested after a minimum interval of five years. The effect of the HPV vaccination effort to reduce the prevalence of HPV will affect the characteristic positive and negative predictive values of HPV tests, and thus these recommendations will have to be re-evaluated to take this into consideration as more women who have been previously vaccinated move into the age ranges for cervical cancer screening.

- Existing technological platforms that are being used in countries to test for HIV, tuberculosis and other infections can also be used for HPV testing, enabling rapid scale-up.

- HPV testing does not require a pelvic examination or visualization of the cervix. Both self-sample collection and provider-initiated sample collection can be offered to women.

2.3.2 Cytology-based screening tests.

Cytology-based screening tests	
Definition	Cytology-based screening tests identify atypical cells on the TZ of the cervix through the preparation and interpretation of slides using microscopy by a trained expert
Goal	Identify women that have cervical lesions indicative of pre-cancer or cancer
Recommendation	These guidelines recommend the use of cytology as a primary screening test for women aged 25-29 years; and as a triage test to assess the need for treatment after a hr HPV DNA test positive for other high-risk HPV types different than 16/18/45*
WHO guidelines for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition. Geneva: World Health Organization; 2021. Geneva: World Health Organization; 2021 (19). (https://apps.who.int/iris/bitstream/handle/10665/342365/9789240030824-eng.pdf) *If cytology results are not available within 1 month of the cytology sample being taken, women should proceed to colposcopy.	

Cytology-based screening tests identify atypical cells on the cervix through the preparation and interpretation of slides using microscopy by a trained expert. The best known is the Papanicolau test, Pap smear, or smear test. When cytology results are positive, the diagnosis is confirmed by colposcopy and the appropriate treatment is informed by biopsy of suspicious lesions for histological diagnosis.

Cytology based screening can use either the conventional Pap smear or liquid-based cytology. The Papanicolaou (Pap smear) or liquid-based smear test checks whether cells in the cervix are abnormal. Cells are collected via speculum examination with a brush and swab and placed either directly onto a slide to which a fixative is added (conventional cytology) or placed in a bottle with a liquid storage media (liquid-based cytology). If abnormal cervical cells are found it may mean that there are pre-cancer changes in the cervix that may lead to cervical cancer.

Cytology-based programs have been successful in reducing mortality due to cervical cancer, when implemented as part of national programs with high coverage and in settings where resources exist for patient follow-up, additional diagnostic tests (colposcopy and pathology) and disease management. Cytology-based screening programs have been difficult to implement in certain settings, and where they have been implemented, screening coverage is low.

Use cytology only when follow up can be guaranteed. Cytology-based tests require multiple steps and face significant challenges, especially in low-resource settings. The specimen must be properly collected, fixed/preserved, safely delivered to the laboratory, accurately processed, and interpreted, and the results relied back to the provider. The patient needs to receive the results and have the necessary follow-up or treatment.

2.3.3 Colposcopy.

Colposcopy	
Definition	Colposcopy is a way of looking at the cervix, vagina, and vulva through a special magnifying device called a colposcope. A colposcope can greatly enlarge the normal view. This exam allows an obstetrician–gynaecologist to find problems that cannot be seen by the eye alone.
Goal	Colposcopy is done when results of cervical cancer screening tests show abnormal changes in the cells of the cervix. Colposcopy provides more information about the abnormal cells.
Recommendation	Colposcopy is recommended for all women with hr HPV tests positive for 16/18/45 subtypes, and HPV positive for other high-risk subtypes with Pap test results ASC-US or greater. Colposcopy is also recommended for all persons with LSIL or higher at cytology. At colposcopy, do endocervical curettage (ECC) on all patient except during pregnancy.
WHO guidelines for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition. Geneva: World Health Organization; 2021. Geneva: World Health Organization; 2021 (19). (https://apps.who.int/iris/bitstream/handle/10665/342365/9789240030824-eng.pdf)	

Colposcopy with biopsy is performed to determine whether a patient with abnormal screening test results has a precancer or cancer. Colposcopy involves a close examination of the cervix using magnification and usually multiple biopsies of the cervical transformation zone.

Endocervical curettage (ECC) or the sampling of cells from the cervical canal is recommended for all women, except if they are pregnant.

While colposcopy and biopsy are safe in pregnancy, management options should always be discussed with pregnant women including potential risks to the foetus. It can be difficult to distinguish pregnancy-associated changes in the cervix from cancer at colposcopy. Biopsy at colposcopy should be reserved for suspected high-grade lesions.

2.3.4. Visual inspection with acetic acid (VIA).

Visual inspection with acetic acid	
Definition	Visual inspection of the cervix with acetic acid involves naked eye examination of the uterine cervix under bright light after application of acetic acid to detect early cell changes
Goal	Identify women that have cervical lesions indicative of pre-cancer or cancer
Recommendation	VIA is NOT recommended because the quality of such visual inspection depends heavily on the provider and its sensitivity is variable
WHO guidelines for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition. Geneva: World Health Organization; 2021. Geneva: World Health Organization; 2021 (19). (https://apps.who.int/iris/bitstream/handle/10665/342365/9789240030824-eng.pdf)	

Visual inspection with acetic acid is a direct visual assessment of the cervix using a 3–5% acetic acid solution to visibly whiten cervical lesions, which temporarily produces an acetowhite lesion, which appears after 1 minute and lasts 3–5 minutes in the case of CIN2/3 and invasive cancer. VIA is appropriate to use in women whose transformation zone (TZ) is visible (typically in those younger than 50 years). This is because once menopause occurs, the TZ, where most pre-cancer lesions occur, frequently recedes into the endocervical canal, and prevents it from being fully visible.

Evidence from studies throughout the world and in diverse settings report VIA sensitivity in detecting precancerous lesions of the cervix equal to or greater than Pap smear. VIA requires less resources, uses local supplies (vinegar and cotton) and does not rely on laboratory services. It can be performed by trained providers at different levels of the health system.

Although relatively easy to establish, the quality of such visual inspection depends heavily on the provider and its sensitivity is variable. It is therefore difficult to establish and maintain quality assurance with VIA programs. VIA used as a single screening method is not recommended by WHO and should be restricted to settings where resources are not available to implement HPV screening.

2.4 TREATMENT OF PRECANCEROUS LESIONS.

Cervical cancer screening requires a matching increase in capacity for treatment of the detected lesions, as screening women without access to treatment is unethical. Available common treatment methods for precancerous cervical disease are thermal ablation, cryotherapy, and large-loop excision of the transformation zone (LLETZ) or loop electrosurgical excision procedure (LEEP).

Pregnant women identified as having CIN 2 or CIN 3 in pregnancy should undergo surveillance via colposcopy and cytology every 12-24 weeks. Repeat biopsy is recommended if progression or cancer is suspected. Women with adenocarcinoma in situ (AIS) should be referred to a gynaecologic oncologist. If a gynaecologic oncologist is not available, then the managing team should consult remotely with a gynaecologic oncologist to determine management. Treatment or repeat biopsy should be deferred until after delivery (no sooner than 4 weeks postpartum). Repeat diagnostic evaluation can also be offered postpartum. Excision should only be offered if cancer is suspected.

2.4.1 Thermal ablation.

Thermal ablation	
Definition	Thermal ablation is a procedure used to treat women with abnormal cells on their cervix by destroying the abnormal cells with a heated probe
Goal	To remove abnormal cervical tissue
Recommendation	Provide thermal ablation to women screened positive and who are eligible for ablative treatment (see below eligibility criteria). This recommendation applies to all age groups. In WLHIV, we recommend that CIN 2 lesions are treated with excision rather than ablation. Thermal ablation is preferred to cryotherapy
Additional reference: WHO guidelines for the use of thermal ablation for cervical pre-cancer lesions. Geneva: World Health Organization; 2019 (25). https://apps.who.int/iris/bitstream/handle/10665/329299/9789241550598-eng.pdf	

Thermal ablation refers to the destruction of abnormal cervical tissue by extreme temperature, commonly used for hyperthermia (elevated tissue temperatures of at least 100°C). In these guidelines, we refer to thermal ablation as the application of a reusable metallic probe that is electrically heated to approximately 100 °C, leading to epithelial and stromal destruction of the lesion.

Eligibility for thermal ablation should be assessed by colposcopy. With visual inspection, clinicians assess whether the TZ is fully visible, if the full lesion is visible, or if the lesion extends to the endocervix. In general, thermal ablation is used when lesions are not extending into the endocervical canal and do not occupy more than 75% of the surface of the cervix.

Clinicians can guide their assessment using the International Federation for Cervical Pathology and Colposcopy's classification of three types of TZ, characterized by the size and site.

- A type 1 TZ is completely ectocervical and is therefore fully visible.
- A type 2 TZ is partially endocervical but is still fully visible. It may be shallow and within range of an ablative probe or may extend beyond reach of an ablative probe.
- A type 3 TZ extends out of view up the endocervical canal, i.e., the squamocolumnar junction (SCJ), and is not fully visible.

Eligibility for thermal ablation:

Following assessment as described above, women who screen positive, but there is no suspicion of invasive or glandular disease, (adenocarcinoma or adenocarcinoma in situ (AIS)), are eligible for ablative therapy if:

- the TZ is fully visible, the whole lesion is visible, and it does not extend into the endocervix, or
- the lesion is type 1 TZ, or
- the lesion is type 2 TZ where the probe tip will achieve complete ablation of the SCJ epithelium, i.e., where it can reach the upper limit of the TZ. Sometimes the SCJ can be seen high in the canal, but a probe tip would not reach it.

Women who screen positive are not eligible for ablative therapy if:

- there is any suspicion of invasive or glandular disease, (adenocarcinoma or AIS)
- the TZ is not fully visible because it is endocervical (Type 3 TZ); or
- it is a Type 2 TZ where the SCJ is out of reach of the probe tip.

Since women living with HIV (WLHIV) have a higher risk for recurrence and progression to cancer, we recommend managing CIN 2 lesions in WLHIV with excision rather than ablation regardless of the type of HPV.

Considerations for healthcare providers when conducting thermal ablation.	
Before giving thermal ablation	**After giving thermal ablation**
- Patient has been informed about the procedure and she has signed the informed consent form before the procedure begins. - The lesion meets the criteria for thermal ablation and the patient has not received thermal ablation twice previously. - The device is set at the temperature and time stated by the manufacturer.	- All acetowhite areas have been ablated. - All equipment is properly decontaminated or disposed of. - The patient understands post ablation instructions. - A sanitary pad is provided

All women who have received treatment should receive post-treatment follow up at 6 months.

Criteria for ablative treatment:

- There is no suspicious of cancer.
- The provider can see the entire extent of the lesion, and the lesion occupies < 75% of the cervix.
- The thermal probe covers the lesion (< 2mm of lesion extends beyond edge of thermal prob)
- There is no anatomical deformity of the cervix that prevents the correct application of the thermal probe.
- The patient is not pregnant.
- The patient is more than 12 weeks postpartum.

Thermal ablation is preferred to cryotherapy. Overall, the differences between benefits and harms of providing thermal ablation and cryotherapy in a screening programme are small, but there are likely large resource savings with the use of thermal ablation, since it does not require the need for refrigerant gas, a major limitation of cryotherapy. Thermal ablation is also more acceptable to providers because it is more simple, lightweight, and easily portable, and therefore more feasible to provide than cryotherapy as part of a screening programme in some settings. It is also more acceptable to patients since it requires a shorter treatment session.

2.4.2 Large-loop excision of the transformation zone (LLETZ).

Large-loop excision of the transformation zone	
Definition	LLETZ is the removal of abnormal areas from the cervix using a loop made of thin wire powered by an electrosurgical unit
Goal	Remove the cervical lesion and the entire transformation zone
Recommendation	Use LLETZ for precancerous lesions that are not eligible for thermal ablation
Additional reference: WHO guidelines for treatment of cervical intraepithelial neoplasia 2–3 and adenocarcinoma in situ: cryotherapy, large loop excision of the transformation zone, and cold knife conization. Geneva: World Health Organization; 2014 (26). https://iris.who.int/bitstream/handle/10665/104174/9789241506779_eng.pdf?sequence=1	

LLETZ is an excisional method for the treatment of CIN. A wire loop electrode powered by an electrosurgical unit is used to resect the TZ along with the lesion. It removes the entire TZ along with an adequate extent of normal adjacent epithelium, to ensure there is a disease-free margin of at least 2–3 mm and the full depths of the crypts in the TZ have been removed. LEEP/LLETZ is used for both diagnostic and therapeutic interventions.

LLETZ should be reserved for precancerous lesions that are not eligible for thermal ablation but should not be performed when severe cervicitis is present, the client is pregnant or she is less than 12 weeks postpartum, where the patient is allergic to local anaesthetic agents, has haemorrhagic disorders or is on anticoagulation or where the patient has certain cardiac pacemakers.

LLETZ requires local anaesthesia and is to be performed only in settings that can handle potential urgent complications related to the procedure (for example, heavy bleeding), and by those who have demonstrated clinical competence in the procedure.

The tissue excised during LLETZ should be sent for histologic examination to certified labs providing pathology services. Follow-up screening with hr HPV DNA test should be conducted in six months for patients where the pathology examination showed no signs of invasive cancer that required oncologic treatment (surgical or radiotherapy).

Factors to be considered for selecting ablation vs excision.	
Ablation should be offered:	**Excision should be offered:**
• Hr HPV type others (not 16/18/45) and CIN 2 • Meets the criteria for ablation i.e., type 1 transformation zone, • lesion does not extend to the endocervix. • lesion does not occupy more than 75% of cervix. • Not previously treated with ablation • The above applies regardless of the woman's age	• CIN 2+ and positive for hr HPV 16/18/45 • All CIN 3 lesions

2.4.3 Other, less used methods of treatment.

Other treatment options for precancerous lesions include cold knife cervical conization (CKC) and simple total hysterectomy, but these procedures are technically more difficult to perform, require hospitalization and have higher rates of complications.

Other treatment for precancerous lesions	
Small-loop electrosurgical biopsy	A small loop (3–5 mm diameter) excision as a directed diagnostic biopsy, as an alternative to punch biopsy, especially where cancer, microinvasive cancer or glandular disease is suspected
Cold knife conization (CKC)	CKC is the surgical removal of the central cervix, including portions of the outer (ectocervix) and inner cervix (endocervix) using a scalpel. It is usually performed with anaesthesia in a hospital. The amount of tissue removed will depend on the size and site of the TZ and the likelihood of finding invasive cancer

Total hysterectomy (TAH) should not be routinely offered to women with high grade lesions. TAH can be offered if the cervix is flushed with the vagina, and if there is presence of other gynaecological pathology that support the need for surgery.

Cold knife conization is indicated where there is suspected microinvasive squamous carcinoma or to rule out adenocarcinoma in-situ where specimen margins must be maintained, and thermal artifacts avoided. Cold knife conization should be strongly considered where a LLETZ specimen had positive margins, the patient had a LLETZ within the last year and follow-up biopsy reveals CIN 3 and in situations where the position of the cervix or anatomy make LLETZ more difficult.

Apart from the established indications for conization, CKC should be strongly considered where :

- A patient had LLETZ with positive margins with CIN 3.
- A patient had LLETZ for treatment in the previous year for CIN3.
- A patient already had a repeat LLETZ for positive margins.
- A patient had LLETZ with positive margins for CIN 2 preceded by hr HPV 16/18/45.

Contraindications to CKC include haemorrhagic disorders or anticoagulation therapy and contraindications to regional or general anaesthesia.

2.4.4 Complications of treatment.

Thermal ablation and LLETZ have been shown to be safe procedures when performed by qualified providers, with low rates of complications, especially severe ones (27). Still, a small percentage of women will develop some, and therefore it is important that they are counselled about these potential complications and the warning signs, and that providers have the knowledge and skills to manage them or refer patients appropriately.

Pain, vaginal discharge, bleeding, and infection are the most reported side effects or complications associated with thermal ablation and LLETZ. Mild-moderate pain, watery or non-purulent discharge and very light bleeding are not uncommon side effects from treatment with the three methods. These side effects usually resolve without intervention, though pain should be managed with non-narcotic pain relievers.

Possible complications of treatment of pre-cancer.	
Early warning signs (first 2-4 weeks)	**Late warning signs (1-3 months following the procedure)**
- Fever for more than two days - Severe lower abdominal pain, especially if you have fever. - Foul-smelling or pus-coloured discharge - Bleeding heavier than heaviest days of menstrual bleeding for more than two days - Bleeding with clots	- Later onset of lower abdominal pain with fever - Severe menstrual cramping with minimal or no menstrual bleeding - Leaking of urine or faeces through vagina

The following are early and late warning signs women should be counselled to look for, and to seek care if any of these occur. If a woman returns with any of these symptoms, the health provider needs to investigate the cause and treat according to standard protocol.

- Cervicitis: a localized infection of the cervix, where women may complain of vaginal discharge, lower abdominal pain, or pain during sexual intercourse. At the gynaecological examination, the cervix may show purulent discharge or signs of inflammation or localized infection like ulcers or necrosis. If there are no signs of upper reproductive tract infections (such as pelvic inflammatory disease, endometritis, or salpingitis) cervicitis should be treated as vaginal discharge. Rates are slightly higher for LLETZ compared to thermal ablation, generally less than 5%.

- Upper reproductive tract infection: lower abdominal pain can be caused by an upper reproductive tract infection (e.g., pelvic inflammatory disease, endometritis, or salpingitis). It is a more serious complication than cervicitis and requires more intensive treatment.

  The symptoms are lower abdominal pain and fever. During the gynaecological examination there may be discharge and the patient will complain of pain when the examiner moves the cervix sideways. The diagnosis should exclude appendicitis and ectopic pregnancy. If the symptoms persist refer to a higher level of care. It is not very common after thermal ablation and LLETZ, involving less than 1% of women treated.

- Bleeding: prolonged or heavier than expected bleeding that requires intervention is uncommon following thermal ablation, although the frequency and severity with LLETZ vary. In very few cases, there may be severe bleeding following LLETZ, (immediate or late) and uncontrollable with the above measures. In these cases,

bleeding can be controlled with i) suture in the clinic, ii) packing for 24 hours (or for stabilization for transport to hospital), or iii) suturing in the operating theatre. It is essential, therefore, that LLETZ is performed only by qualified providers and in a setting that can handle this rare major complication.

- Necrotic plug syndrome consists in severe pain and cramping, associated with little or no menstrual bleeding that can occur following thermal ablation or LLETZ. This uncommon condition presents at least one month following the procedure and is thought to be due to unusually high extension of the freeze into the endocervical canal from cryoprobes with long tips, or by over cauterization of the LLETZ bed near the endocervical canal. The necrotic plug can be easily removed by passing an endocervical Pap smear brush, or with cervical dilation, to facilitate drainage of menstrual blood.

- Fistula: vesicovaginal or rectovaginal fistula is a very rare, late-appearing major complication following thermal ablation or LLETZ treatment. It occurs following inadvertent freezing or burning of the vagina overlying the bladder or rectum, with subsequent breakdown of that tissue creating a fistula. Women will present with complaints of involuntary loss of urine or faeces into their vagina, with or without pain or signs of infection. Women with this condition require referral to an experienced gynaecologic surgeon for evaluation and treatment.

- Other obstetrical complications such as cervical stenosis or infertility related to thermal ablation or LLETZ are uncommon. Preterm labour following LLETZ, though not thermal ablation, has been demonstrated. The risk of preterm labour appears to be twice as high in women who have undergone LLETZ as compared to women who have not and can be five times more frequent in women undergoing multiple LLETZ treatments. The risk appears to be present for all women undergoing LLETZ but is especially correlated to the depth of the LLETZ or volume of tissue removed (28).

2.5 LINKING SCREENING WITH TREATMENT APPROACHES.

Linking screening with treatment	
Definition	To effectively prevent cervical cancer, positive screening must be linked with effective and timely treatment, either using: ● Screen-and-treat approach: treatment is provided based on a positive primary screening test alone, without triage. ● Screen, triage, and treat approach: the decision to treat is based on a positive primary screening test followed by a positive second test – triage test – with or without histologically confirmed diagnosis
Goal	To prevent invasive cervical cancer by detecting and treating precancerous lesions of the cervix before they progress to cancer
Recommendation	Use screen, triage, and treat approach for all women. The proposed screening protocols are as follows: ● Cytology with hr HPV triage every three years for women aged 25-29 years; and hr HPV test as primary screening test for women aged 30-65 years, every five years. ● Positive results for hr HPV genotypes 16/18/45; positive for other hr HPV with cytology results ASCUS or higher; cytology results of ASCUS with HPV infection; or cytology results of LSIL or higher, must be referred for colposcopy to determine the eligibility for thermal ablation or LLETZ treatment.
Additional information: WHO guidelines for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition. Geneva: World Health Organization; 2021 (19) (https://www.who.int/publications/i/item/9789240030824). Jeronimo J, Castle PE, Temin S, Denny L, Gupta V, Kim JJ, et al. Secondary Prevention of Cervical Cancer: ASCO Resource-Stratified Clinical Practice Guidelines. Journal of Global Oncology [Internet]. 2016 (29) Oct 12 [cited 2021 Aug 30]; Available from: https://ascopubs.org/doi/pdf/10.1200/JGO.2016.006577 (26)	

For cervical cancer prevention to be effective, positive screening must be linked with effective and timely treatment. The following two approaches are recommended by WHO for detecting and treating precancerous lesions of the cervix before they progress to cancer. Depending on each context, one approach may be better suited than the other.

2.5.1 Screen-and-treat approach.

The screen-and-treat approach utilizes a primary screening test that can provide immediate results, and that allows for treatment of the women after positive screenings. Although it reduces the chances of loss- to follow up, a lack of diagnostic steps can lead to overtreatment of false-positive results. Thus, concerns about overtreatment must be weighed against the potential losses of women that treatment of pre-cancer.

2.5.2 Screen, triage and treat approach.

In the screen, triage and treat approach, the decision to treat is based on a positive primary screening test followed by a positive second test, with or without histologically confirmed diagnosis.

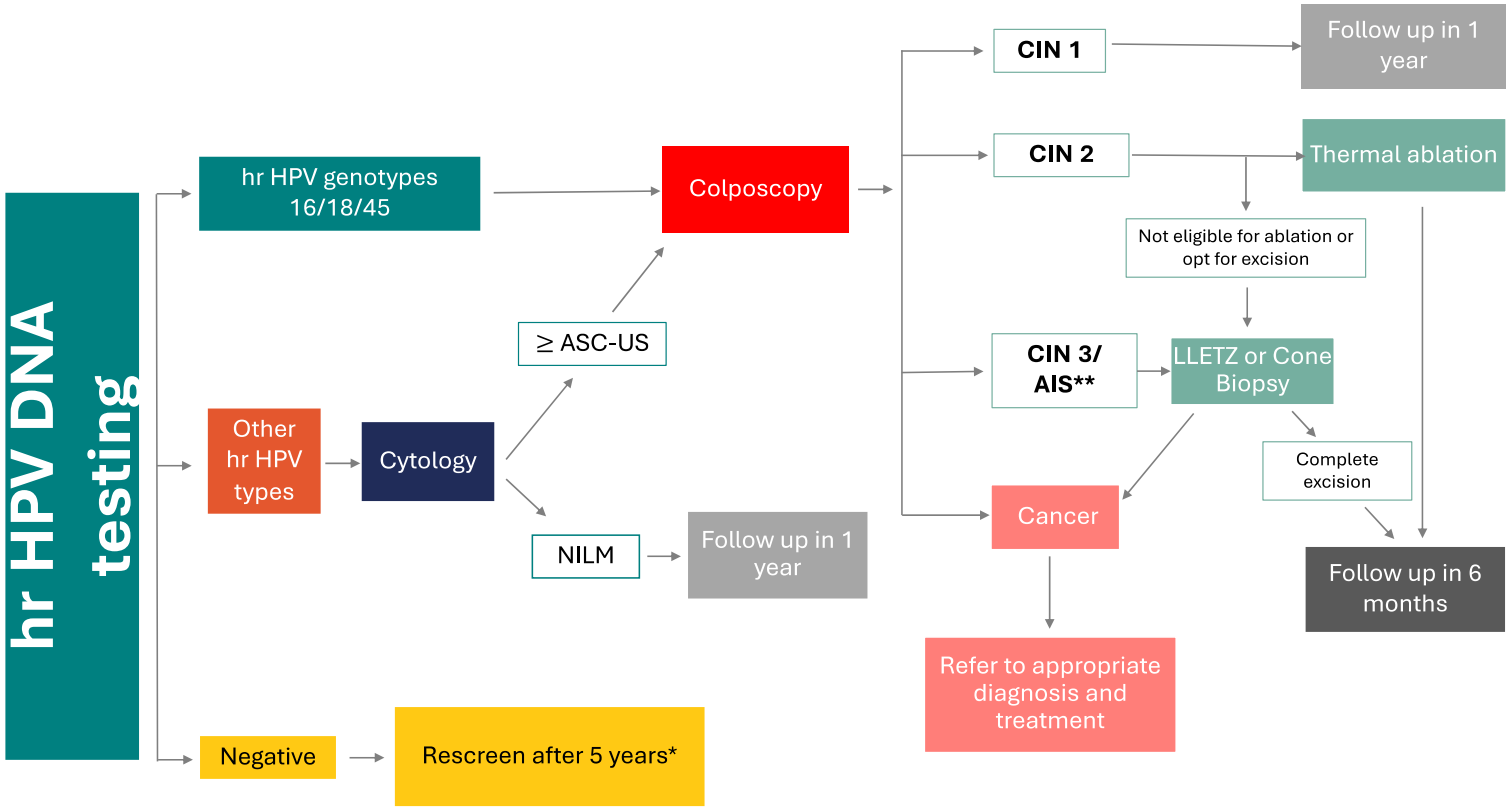
The proposed screen, triage and treat algorithms recommended by WHO are the following:

- High-risk HPV DNA as the primary screening test, followed by colposcopy triage, followed by treatment.
- High-risk HPV DNA as the primary screening test, followed by cytology triage, followed by colposcopy and treatment.
- Cytology as the primary screening test, followed by colposcopy triage, followed by treatment.

Considerations to select an approach to linking screening and treatment of precancerous lesions:

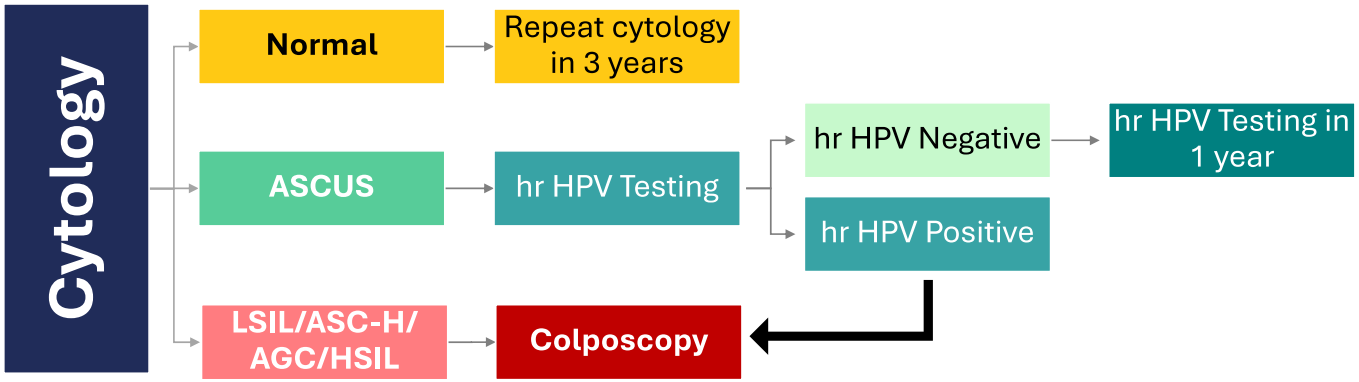
For many women, especially the ones from certain groups, transportation costs, distance, time away from work or home responsibilities contribute to high attrition rates or loss to follow-up in a multi-step process. Attrition rates of 10–25% for each step are not unusual, with reports of up to 50% of women not receiving recommended treatment due to loss to follow-up (27). Given these logistical issues, it is essential that programme managers consider addressing the potential for loss to follow-up at each step and try to minimize it.

High-risk HPV screening algorithm recommended in Antigua.



NILM: Negative for intraepithelial lesion or malignancy
ASC_US: Abnormal Squamous Cells of Undetermined Significance
CIN: Cervical Intraepithelial Neoplasia
AIS: Adenocarcinoma in-Situ
*Immunocompetent women with normal screening history

Cytology screening algorithm recommended in Antigua.

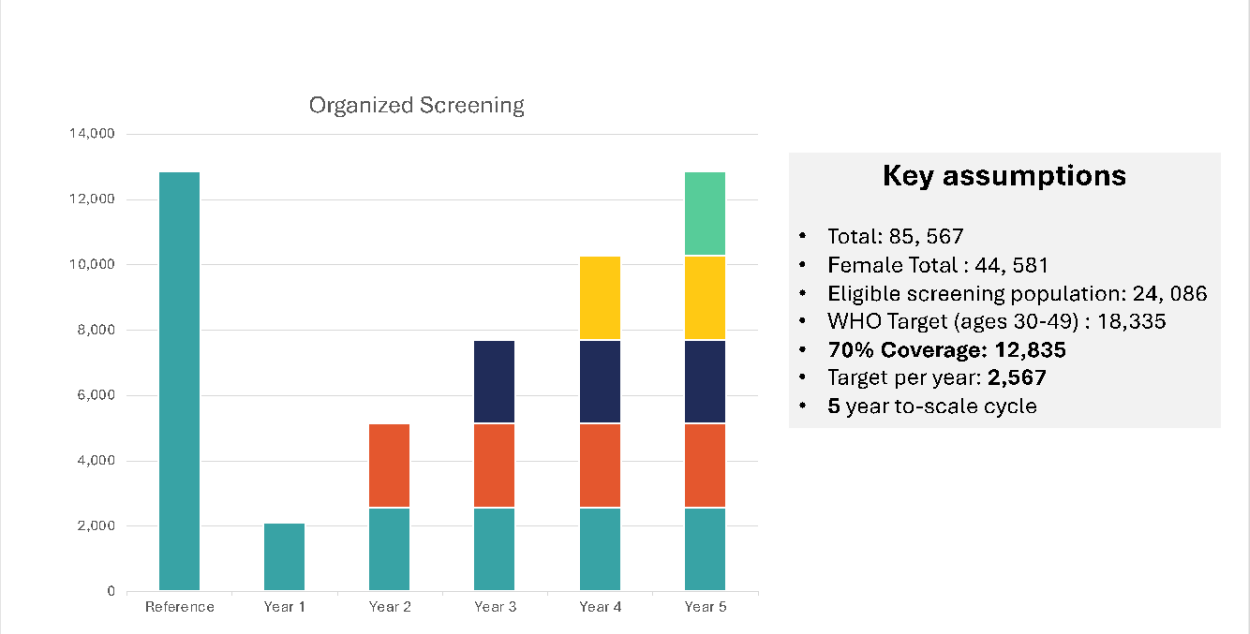


2.6 SCREENING COVERAGE.

High coverage rates (> 80%) are more important to the success of a cervical cancer prevention programme than frequency of screening. Modelling studies have shown that in a programme with high screening coverage rates and effective linkage with effective treatment, screening every 10 years with VIA as the screening method can reduce cervical cancer burden by 40-60%, assuming high quality of the test; every five years 85%; every three years 91%; and yearly 94%. Even a single lifetime screening at age 35 linked with effective treatment would reduce the incidence of cervical cancer by 26-32% (11-13, 28).

The Antigua & Barbuda MOHWSTE intends to make screening and treatment available for all eligible women by 2030, and the country will be developing a plan within the next 3 months to meet WHO's target of screening at least 70% of women in the target population in the next five years.

Scaling approach to meet WHO targets.
Planning for 70% coverage in 5-year intervals for ages 30 to 49.



Source: Basic Health International, Antigua and Barbuda Cervical Cancer Prevention programme Proposal

2.7 POPULATION-BASED SCREENING.

Current screening efforts in Antigua & Barbuda are opportunistic, which depend on the initiative of the individual woman and/or the healthcare provider, and often result in uneven screening coverage with heterogeneous quality, limited effectiveness, and reduced cost-effectiveness. In contrast, context appropriate, organized, population-based screening can significantly improve the accessibility and equity of screening access while simultaneously improving effectiveness and cost-effectiveness.

WHO considers an effective, organized screening programme to be one in which the participation rate (number of invitees screened) of the target population is over 70%. In the short-term, good measures of programme effectiveness can be high screening coverage, and low rates of loss to follow-up. Long-term measures include a reduction in the percentage of women presenting with late-stage disease, and a reduction in cervical cancer mortality ascertained through population-based registry data.

There are several requisites that must be accounted for before implementing organized, population-based cervical cancer screening. Such a programme should have a national team responsible for the implementation, quality assurance and improvement, coordination of the call/recall system, testing and diagnosis, follow-up after positive test results, and management of the data systems.

Although challenging, the implementation of functioning HPV-based cervical screening programs that are appropriate to a specific context, with accessible and effective treatment of precancerous lesions, coupled with HPV vaccination is the only way forward to reduce cervical cancer incidence and mortality that should eventually lead to the elimination of cervical cancer.

CHAPTER 3: COMMUNITY AWARENESS AND EDUCATION.

Community sensitization to generate awareness about cervical prevention, and support for all those in need of cervical cancer screening, are essential components of an effective cervical cancer prevention and control programme to ensure high screening coverage.

3.1 INCREASING THE USE OF CERVICAL CANCER PREVENTION AND CONTROL SERVICES.

Cervical cancer screening is a preventive health care service that saves lives. The cost of losing a woman to cervical cancer is enormous, both for her family and the community. An effective community mobilization, education and awareness can help people understand and manage their personal risk of illness, and that of their family members and friends, by accepting and using preventive care options such as screening.

Women face many barriers for screening that can range from fear of being diagnosed with an infection or disease, and feelings of shame around examination of the genital organs, to lack of time or affordable transportation to travel to the health care facility. Effective community mobilization, education, and counselling are key to overcoming these obstacles. Without these components, cervical cancer screening will not reach the women who need screening, diminishing the ability to achieve the set targets.

3.2 EDUCATION.

Health education is an essential tool for overcoming common challenges that impede access to and use of preventive care; including social taboos, language barriers, lack of information, and lack of transport to service sites. Health education ensures that women, their families, and the community at large understand that cervical cancer is preventable.

Strategies must be in place to reach and engage women who would most benefit from screening, as well as men and leaders in the community, and key stakeholders. The involvement of political, civic, traditional, cultural, and religious leaders, women's groups, HIV/AIDS associations, and civil society organizations is critical in helping dispel myths and misconceptions, providing accurate information to the population, and mobilizing women in the target age groups for cervical cancer screening and treatment. The cervical cancer prevention messages to communicate depend on the type of stakeholder. The table below

suggests what to communicate to the different groups.

What to communicate to different stakeholder groups.	
Core messages for ALL target audiences (including traditional community leaders).	**Messages for high level decision makers.**
• Basic information of cervical cancer and HPV infection • Universality of HPV infection • Cervical cancer burden in Antigua & Barbuda, prevention strategies and their proven effectiveness • Emphasis that both screening and vaccination are necessary	• Country-specific cervical cancer burden, and how it compares regionally. • Benefits of improved cervical cancer prevention, including health and financial benefits • Cost of scaling up screening and treatment on new health budgets and health systems. • Human and economic cost of not screening and late diagnosis – loss of breadwinner, displacement of children, loss of relationships, loss of employment.
Messages for managers and health care providers.	**Messages for women**
• Impact of significantly increasing screening on existing services, and benefits • Opportunities to leverage cervical cancer prevention and screening to promote other health services such as adolescent health, and sexual and reproductive health services. • Necessary system requirements (procurement, reporting, call and recall, quality control) • Service provision and counselling • Training needs related to cervical screening and treatment of precancerous lesions	• Raise awareness of cervical cancer • Disseminate the benefits of cervical screening. • Provide information on facilities where services are available, how to schedule them, target age and treatment options. • Information about HPV vaccine dosage, schedule required and target age. • Respond to rumours and misinformation with clear, evidence-based messages

Building community awareness involves exchanging information with different segments of the community to enhance knowledge and understanding and promote behaviour change. The community should be aware of the importance of cervical screening to prevent cervical cancer. They should also know specific early signs and symptoms, understand the urgency

of these symptoms, overcome fear or stigma, and be able to access health services where they can be evaluated and referred appropriately for diagnosis and treatment.

Awareness and education for cervical cancer control must be based on scientific evidence and translate into appropriate health seeking behaviour. In parallel, screening and treatment services must be accessible, affordable, and offered in a respectful, thorough, and considerate manner. Health education efforts should result in women and men being able to answer the questions below.

Basic knowledge about cervical cancer prevention.
● WHAT is the cervix and where is it? ● WHAT is cervical cancer? ● WHAT is pre-cancer? ● HOW can cervical cancer be prevented? ● WHO should be vaccinated? ● WHO should be screened? ● WHICH are the screening methods available in Antigua & Barbuda? ● WHICH prevention services are available locally? ● WHERE and WHEN can these local services be accessed?

Healthcare providers play a central role in preventing and managing cervical cancer by increasing the use of screening services among those who are most likely to benefit. Nurses, midwives, and medical doctors, even if they do not directly provide cervical screening services, can be excellent resources for community mobilization and education, as can cervical cancer survivors, and community leaders.

3.3 KEY MESSAGES FOR CERVICAL CANCER OUTREACH AND EDUCATION.

Providing accurate, easy-to-understand information is the first step in helping women and families access services that can prevent cervical cancer. The following specific messages are the most important ones to convey within communities (Adapted from (29)).

Who is at risk?

- Cervical cancer is a leading cause of cancer death in women.
- Women 30–49 years old are most at risk for cervical cancer. Women living with HIV or immunocompromised are at risk at earlier ages.
- Any woman who has had sexual relations is at risk of developing cervical cancer.

HPV infection:

- Cervical cancer is caused by infection with a virus called HPV. This virus is passed during sexual relations and is very common among men and women.
- Almost all men and women will be exposed to HPV in their lifetime. Most HPV infections go away in a short time without treatment.
- In some women, HPV infection persists and can slowly change the cells on the cervix. These changes are called pre-cancer. If not treated, they can develop into cancer of the cervix.

Cervical cancer is a disease that can be prevented with vaccination, early detection, and treatment of pre-cancerous lesions:

- There are tests to detect early changes in the cervix (known as pre-cancer).
- There are safe and effective treatments for pre-cancer. Without treatment, pre-cancer may lead to cancer.
- All women aged 25–65 years should be screened for cervical cancer.
- There is a vaccine for girls that can help prevent cervical cancer.

Vaccination:

- All boys and girls ages 9-14 years old should be vaccinated with the HPV vaccine, as well as a secondary group of 15-26 years.
- Vaccination with Gardasil 9 can be administered to women up to the age of 45 after discussion with their physician. It is important to note that vaccination at older ages is less effective and the focus should remain on screening and early detection of pre-cancer.
- Vaccination prevents the infection with the types of HPV that cause most cervical cancers.
- The HPV vaccines are safe and effective. Adverse reactions, when they occur, are usually minor.
- The HPV vaccine has no impact on a girl's fertility; it does not affect her capacity to become pregnant and have healthy children later in life.
- The HPV vaccine, to be most effective, should be administered in accordance with the number and timing of doses as advised in the manufacturer's instructions.
- Even after vaccination, all women aged 25–65 years will require cervical cancer screening, as the vaccine prevents most, but not 100% of cervical cancer cases.

Screening and treatment:

- There are cervical screening tests that can detect early changes of the cervix (pre-cancer).
- The screening tests for cervical pre-cancer are simple, quick, and do not hurt.
- If the screening test is positive, it means that there could be early changes (pre-cancer) that can be treated. A positive screening test outcome DOES NOT automatically mean cancer.
- To prevent cervical cancer, all women with positive screening tests should receive treatment.

- It is important to follow the recommendation of the health care worker as to when to return for screening.
- Women living with HIV are at higher risk for cervical cancer; they should start screening at the age of 21 years.

Signs and symptoms of cervical cancer:

- There are no signs or symptoms for pre-cancer. Screening is the only way to determine if you have pre-cancer.
- Occasionally, cervical cancer (instead of pre-cancer) is detected during screening.
- In early stages, cervical cancer may not cause any symptoms and signs. For those who do have symptoms, they may include foul-smelling vaginal discharge, vaginal bleeding, bleeding after sexual intercourse, or any bleeding after menopause. These symptoms can present in other common gynaecologic conditions other than cervical cancer. Women with these symptoms should be carefully examined and referred for further evaluation.
- Women with these symptoms should be encouraged to seek medical care promptly.

Making decisions about health:

- Women have a right to make their own decisions about their health. To make informed decisions, women need correct information.
- Women may wish to involve their partners or families in their decision making.
- Although screening for cervical cancer and treatment of pre-cancer are highly recommended, women should understand that they are free to refuse any test or treatment.

Reaching the women is a gradual process, which requires the use of different channels of communication to transmit messages to the target audiences. Using clear, sensitive language to convey key messages with consistent, accurate, and evidence-based information can make a positive difference in the number of women who decide to have cervical cancer screening.

Regarding the development of the educational content, it is important to consider the different levels of literacy as well as language, age, and culture. To effectively develop the key messages on disease prevention, HPV infection, cervical cancer, screening/screening process and screening sites, a multidisciplinary body will be designated to develop the educational content. It should include teachers, healthcare providers, health promotion unit, sign language translator, and representatives of the Spanish community.

For effective communication and mobilization, multiple channels and methods of communication, and a variety of strategies can be utilized and tailored to specific age ranges within the population.

- Interpersonal communication: This involves face-to-face interaction individually or in a small group between a health worker and a person.

- Mass media involves the use of electronic (radio, TV, talk shows) and print media channels (newspapers and advertisements in appropriate languages) to deliver messages on cervical cancer screening and treatment is recommended for people in older age groups (55+ years of age). Although the list is not exhaustive, a few examples of potential channels are:
    - Folk or traditional media, which includes music, dance, drama, stories, and puppet shows.
    - Community film shows, which involves the use of cinema vans which have audio-visual equipment for showing outdoor films.
- Social media, which is more likely to reach a younger population is highly recommended for Antigua.
- Age-appropriate educational campaigns done inside the schools to help establish the link between cervical cancer and vaccines. These students could now go home and help inform their parents.
- E-health
- Printed materials or educational materials in electronic format in clinics, doctors' offices, and the public library.
- Electronic billboards
- Videos on the monitors in the Medical Benefits Pharmacies, the hospital and banks will reach a wide cross section of the population as they visit these places for service.
- Town Hall meetings.
- Messages in church bulletins, on church radio stations will also reach a wide audience.
- Public announcements delivered from bullhorns attached to vehicles that drive through various communities (similar to what obtains during general election and advertising of certain fetes).
- Professional development days in schools/PTA meetings can be used to get the message out to teachers and parents.
- In the hospitality industry, some hotels have lunch-time educational sessions that can be used as an avenue for cervical screening awareness.

At the end, the success of these educational interventions will depend on the support and ownership of the community, as well as an inclusive social and policy environment for community participation at national, district, and local levels.

3.4 SPECIAL GROUPS.

Some specific population groups are hard to reach and may require additional efforts. For the Spanish community, church visits and the Spanish radio station will be effective communication channels. Since Antigua has a large Spanish community, all the strategies directed to the general population should have a Spanish version.

Other vulnerable groups, such as persons living with HIV, persons living with mental health issues, or hearing and physically impaired will be best sensitized through their specific organizations or associations.

Finally, social welfare/counsellors should be educated with a view to reach the women who have been sexually assaulted and struggle with the idea of screening.

The strategies used during any year may vary depending on the target audience at the time. This should be informed by the screening patterns being observed. For example, if the screening data is suggesting that the 40-49 age groups are underrepresented then the most effective strategies for that age group would be emphasized.

3.5 RUMORS AND MISINFORMATION.

Rumours and misinformation about the HPV vaccine and cervical cancer screening are among the most serious threats to the success of primary and secondary prevention. Once rumours and misinformation start, they can be very hard to stop. Rumours are started by people who lack knowledge on the subject or who may have vested interests in the failure of the services being provided.

Regarding screening, rumours refer to negative information about techniques and the entire prevention programme whose intention is to tarnish the good name/image and benefits of screening by stopping women from receiving screening and being treated if lesions are detected early.

Misconceptions refer to wrong thinking or incorrect perceptions of a certain situation or subject. Misinformation refers to giving false information either accidentally or deliberately. This can be in the form of a belief, which is not necessarily true about the subject.

Addressing cervical cancer control requires that the community is informed, educated, and empowered to make decisions about their health. To this effect, the ministry will engage the community in dialogue and decision-making to improve the relevance and efficiency of cervical cancer control interventions. The effectiveness is likely to depend upon identification of explicit methods for involving individuals and communities, clearly defined roles and responsibilities, training for policymakers and clients, and adequate funding.

Health workers at all levels of service delivery will be trained to prevent and counteract rumours in a community. A comprehensive response to rumours should comprise, among others, identifying the people and organizations responsible for fabricating and spreading the rumours, determining the reasons behind the creation of the rumours, identifying appropriate occasions to disseminate facts about cervical cancer screening and treatment, involving organizations known to respect peoples' values to disseminate information on cervical cancer screening and treatment, assessing if the rumour is so significant that a

mass media campaign is necessary, and mobilizing communities by empowering local people to address and take responsibility for the issue, demystify rumours about cervical cancer screening and treatment through education using various channels of communication.

Staff at the local level must be trained to refer rumours to the national level immediately so they can be monitored.

How to respond to rumors and misconceptions?

Health workers at all levels of service delivery will be trained to prevent and counteract rumors in a community. A comprehensive response to rumors should comprise the following steps:

- Act swiftly to identify the source of the rumors and understand their contents (extent of the rumor, type of messages circulating about immunization and screening and treatment of pre-cancer).
- Identify the people and organizations responsible for fabricating and spreading the rumors.
- Determine the reasons behind the creation of the rumors.
- Target key and credible opinion leaders in the affected area (community leaders, religious leaders, elders, clan leaders), and seek their support in mobilizing for cervical cancer screening and treatment promotion.
- Identify appropriate occasions to disseminate facts about cervical cancer screening and treatment, such as village meetings, religious gatherings, cultural and social functions. Train community-based structures like parish mobilisers, the media personnel so they can support you in disseminating correct information at various venues.
- Involve NGOs and CBOs known to respect peoples' values to disseminate information on cervical cancer screening and treatment.
- Assess if the rumor is so significant that a mass media campaign is necessary.
- Mobilize communities by empowering local people to address and take responsibility for the issue, demystify rumors about cervical cancer screening and treatment through education using various channels of communication.
- Train staff to respond to rumors with evidence-based information and convey them to the national level immediately so they can be monitored.
- Develop strong relationships and trust with your community in advance (religious, social and media groups).

3.6 CONFIDENTIALITY.

Patient confidentiality refers to the right of patients to keep their information private and represents health professionals' moral and legal obligations in handling patients' sensitive medical and personal information. Patient confidentiality is important for both patient and healthcare professionals. It protects patients from having their data misused and allows doctors to establish relationships with patients based on trust and open communication, resulting in better quality of care.

The issue of confidentiality is important to improve cervical screening rates since there are persons who are eligible for hr HPV screening but refuse to get it done at the public clinics. Since they are unable to pay a private lab, they prefer to remain unscreened because of the lack of confidentiality (whether perceived or real) within the public setting.

The MOHWSTE is committed to protect patients' privacy and data by ensuring that healthcare providers, particularly the ones working at the screening clinics, are trained in maintaining confidentiality. All patient data to be used outside of the screening clinics for the purposes of monitoring and evaluating the programme will be de-identified and assigned a unique code.

Additionally, women should be allowed to screen at any clinic as many women exhibit a bit more confidence in the healthcare providers outside of their community since they may not be known to them.

CHAPTER 4: SERVICE DELIVERY AND PROGRAMME COORDINATION.

4.1. HEALTH SYSTEM LEVEL AND SERVICES.

Cervical cancer services in Antigua & Barbuda are provided through a mix of public and private facilities.

- Cervical cancer screening as well as colposcopy is offered at public clinics/health centres as well as private facilities. Colposcopy and preinvasive disease treatment are available at private gynaecologists and at Sir Lester Bird Medical Centre (SLBMC). Colposcopy, thermal ablation, LLETZ, and cone biopsy are also offered at SLBMC.
- Pathology services are available at the SLBMC and in one private lab. There are 2 pathologists on the island. Healthcare providers also have the option of sending samples to pathology labs overseas.
- Regarding cervical cancer treatment, chemotherapy and surgery are offered at the Oncology department of SLBMC, where more than 70% of patients receive treatment. There are three private facilities that also offer cancer surgery.
- Radiation therapy is available through the support of the Medical Benefits Scheme. Patients were able to access external-beam radiation therapy through The Cancer Centre, Eastern Caribbean, but there has been an interruption in this service. Patients are supported by the country's Medical Benefits Scheme when they must receive radiation therapy overseas.

The screening process consists in identifying eligible women through community outreach; clinic records; population data; or online requests. Screening is scheduled either by invitation or opportunity using an electronic platform (Cellma platform) or telephone contact. Patients are called and reminded about their appointment.

On arrival at the clinic, patients are registered and undergo individual or group counselling about the testing process. Patients are then called individually to complete the screening registration information and undergo testing. Patients will be asked their preferred way of receiving the results, by phone or in person.

Samples are collected at the end of the screening session and verified that labels match the data on accompanying forms. Forms and samples are then transported to a central location for processing, and then transported to SLBMC laboratory. A log form is also generated, which will be used to document results and other indicator information.

In the lab, the results of the hr HPV test are uploaded to the electronic platform (Cellma). Patients with positive results are contacted by central location using the contact method

they selected during registration. They are counselled and scheduled for further evaluation either a triage pap smear or referral to colposcopy clinic. Negative results are forwarded to the patient portal so that patients/ health care providers can access results and are communicated to the women by phone.

The acceptable time frame for women to receive their tests results are:

- Hr HPV DNA test: 2 weeks
- Cytology: 4-6 weeks
- Colposcopy: 4-6 weeks

4.3 REFERRAL SYSTEM.

The integration of health services and the establishment of linkages with other health services is a key consideration for an effective prevention of cervical cancer. A well-functioning referral network includes linkages between the screening clinics and other services.

To develop or improve a referral network, it is essential to:

- Identify which are the services and facilities to be included in the referral network.
- Establish a communication system between the facilities using forms/letters, telephone, health information system, e-mail, or other consultation.
- Establish two-way communication with the clients so they receive the appropriate information that allows them to obtain medical care without unnecessary delays, which can have a large impact on outcomes.
- Develop referral protocols and guidelines, develop standardized referral and counter-referral forms, and ensure dissemination of these standardized protocols, guidelines, and referral forms.
- Monitor the referral network to ensure continuity and quality of care. An efficient referral system is an essential component of a high-quality, comprehensive cervical cancer prevention and control program.

4.3.1 Referral protocol.

After hr HPV DNA screening, refer positive cases as follows:

- Positive cases for hr HPV genotypes 16/18/45, refer to colposcopy.
    - If colposcopic biopsy confirms CIN1, follow up in 1 year.
    - If colposcopic biopsy confirms CIN2, CIN 3 or AIS, refer women for excision.
- Positive for other hr HPV subtypes, refer to cytology.
    - If cytology results indicate >/=ASC-US, refer women to colposcopy.
    - If cytology results not available at 4 weeks, refer women to colposcopy.
    - If colposcopic biopsy indicates CIN 2, refer for thermal ablation if eligible.
    - If colposcopic biopsy confirms CIN 3, AIS or a woman has CIN 2 but isn't eligible for ablation then refer for excision.
    - If cytology is negative (NILM), follow up with the woman in 1 year.
- If cancer is suspected at any moment, refer for appropriate diagnostic procedure and treatment.

Women can be referred to have the following specific services:

- Cervical cytology (Pap Smear): It is recommended in situations where the squamocolumnar junction (SCJ) cannot be visualized, which is common in postmenopausal women, in addition or after a positive hr HPV DNA positive for HPV subtypes different than 16/18/45 (Hr HPV Type Others).

- Colposcopy: Colposcopy uses a special instrument (colposcope) that provides magnification and a strong light to visualize the cervix. It is typically used in conjunction with directed biopsies of abnormal appearing lesions of the cervix.
- Biopsy: Cervical biopsy is indicated when suspicious lesions are seen on the cervix on speculum examination.
- Histology: Histological diagnosis is always performed on biopsy and LLETZ tissue which is indicated for suspicious lesions or when lesions are beyond the indication for thermal ablation. After hr HPV DNA screening, refer positive cases as follows (also described in the algorithm):

4.3.2 Process and management of women with symptoms that may indicate cervical cancer.

Women with symptoms which may indicate the presence of cervical cancer should be properly assessed and referred for further evaluation even if hr HPV testing is done. A health care provider should have a high index of suspicion in women with a poor cervical screening history and a clinical history which indicate an increased risk. The possible symptoms of cervical cancer are outlined below. These symptoms mimic common benign gynaecological conditions such as uterine fibroids, endometriosis, and pelvic inflammatory disease. Patients are referred either for further gynaecological evaluation or colposcopy depending on the initial assessment.

Symptoms which can be seen in cervical cancer.

Unusual vaginal bleeding such as: - heavier menses - vaginal bleeding in between periods - bleeding after sex
Changes in vaginal discharge which may be heavier or offensive
Pain during sex
Lower abdominal or pelvic pain
Back pain
Difficulty passing urine or stool
Feeling weak or tired especially associated with significant weight loss

4.4 COUNSELING

Counselling refers to the process in which a knowledgeable person provides advice or guidance to another to facilitate decision making. Counselling is conducted confidentially and privately and involves a two-way conversation about available options.

Counselling before, during and after all services, using appropriate tools and appropriate language, is considered standard of care. Specifically, after hr HPV screening, post-thermal ablation, and post-LLETZ, women should be given instructions that promote health seeking behaviour, safe sexual practices to ensure healing of the cervix, and reduce infection (including HIV transmission. Men should be encouraged to take part in the counselling.

Situations involving cervical cancer screening that indicate the need for counselling and the appropriate messages.	
Situation	**Messages**
Women living with HIV	• Explain that women living with HIV are at increased risks of persistent HPV infection and development of cervical pre-cancer at a younger age.
Women that screened positive for cervical precancer and are eligible for thermal ablation or LLETZ	• Make sure that the client understands the purpose of the screening test and the possibility of preventing cancer through early treatment. • Explain that a positive test result indicates early abnormal cervical changes—only rarely indicates cancer. • Ask the person if she faces any difficulties returning for care, such as an unsupportive or uncooperative partner, lack of transport, or financial difficulties. If so, discuss possible solutions and help the client plan to obtain the services she needs.
Women for whom the result of the examination is suspicious for cancer	• Ask the woman if she has someone with her today that she would like to have present for the discussion. • Express concern about the seriousness of the findings—but do NOT tell the person she has cancer; it is too early at this point to be sure of that diagnosis. Do explain to the client that the screening result was positive, and that she needs to be referred for further testing/evaluation. • Reassure the woman that she will receive the help she needs. • Provide the person with clear information about where to go for diagnosis and treatment. • Invite her to return with any questions she may have.

CHAPTER 5: MONITORING AND EVALUATION (M&E).

Monitoring and evaluation	
M&E definition	Monitoring and evaluation (M&E) are the systematic means of capturing programme data, analysing it, and using the results to make strategic choices to improve performance and achieve results.
Goal	The successful implementation of a cervical cancer screening program. With M&E we can: ● Determine the extent to which the programme is meeting the stated goals, objectives, targets and make corrections accordingly. ● Make informed decisions regarding programme management and service delivery. ● Ensure the most effective and efficient use of resources.
Recommendation	● Collect and analyse M&E data at all levels of the health care system to assess the quality of the program. ● The core indicators for the quality of services provided must include both performance and impact indicators. ● Conduct site readiness assessments to ensure that all screening sites meet and pass minimum requirements to provide the appropriate services.

Improving access to cervical screening and treatment of pre-cancer of the cervix will reduce cervical cancer deaths in Antigua & Barbuda. As the country expands cervical cancer screening, M&E is an integral part of the implementation process, as it is the key to ensuring programme effectiveness, efficiency, and quality improvement to safeguard customer satisfaction, safety, and health.

5.1 HEALTH MANAGEMENT INFORMATION SYSTEMS (HMIS).

Effective HMIS are an essential tool for tracking clients and monitoring program's performance. The monitoring and evaluation system will be guided by clearly defined, valid,

and measurable indicators, standard data collection tools and methodologies, established procedures for filling out the forms, guidelines and protocols for data management including validity and consistency checks.

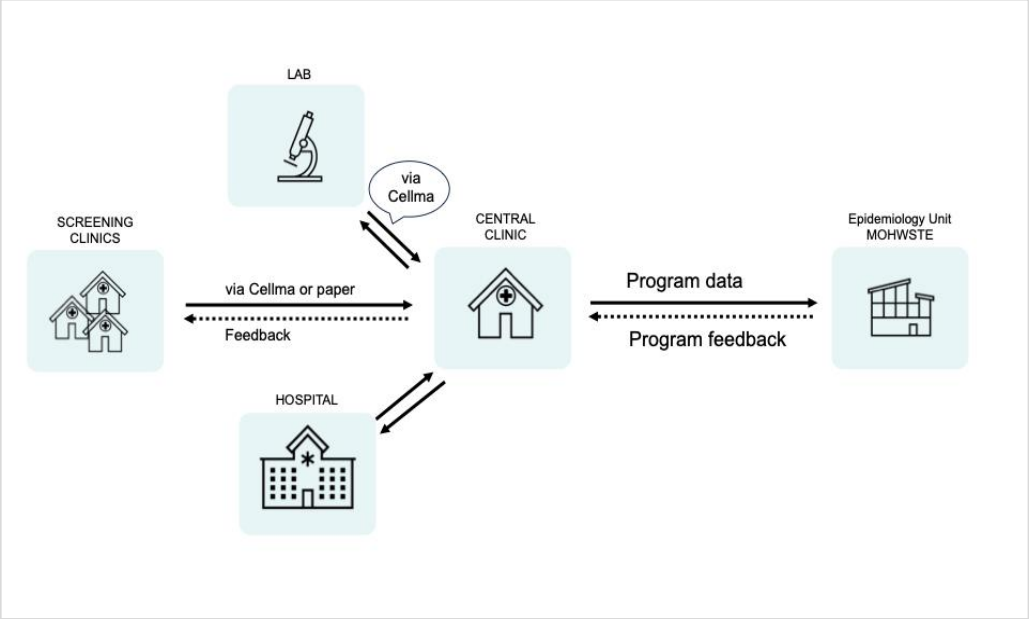
The key to HMIS effectiveness is the routine collection of essential data and the generation of regular monitoring reports. Data required to calculate the indicators should be collected on a weekly, monthly, quarterly, or annual basis. Indicators will be determined nationally by the National Cervical Cancer Elimination team and the Epidemiology Unit.

5.2 MONITORING AND EVALUATION FRAMEWORK.

5.2.1 Monitoring tools and data flow.

Client's data will be collected at registration in each screening clinic using the standard cervical screening form as well as the electronic health record system, Cellma, when the cervical cancer module is ready. The data from the screening facilities will be sent to the central clinic on a weekly basis from the registration forms or the electronic database. The data will be entered at the central clinic, and de-identified data forwarded monthly to the Epidemiology Unit of the MOHWSTE. Monthly reports will be compiled and submitted back to the central clinic for monitoring the performance of the program, which will be conducted by this Unit of the MOHWSTE. The unit will track facility indicators through the reporting system described above. Data aggregated across facilities, de-identified, will be used to calculate key national indicators for monitoring.

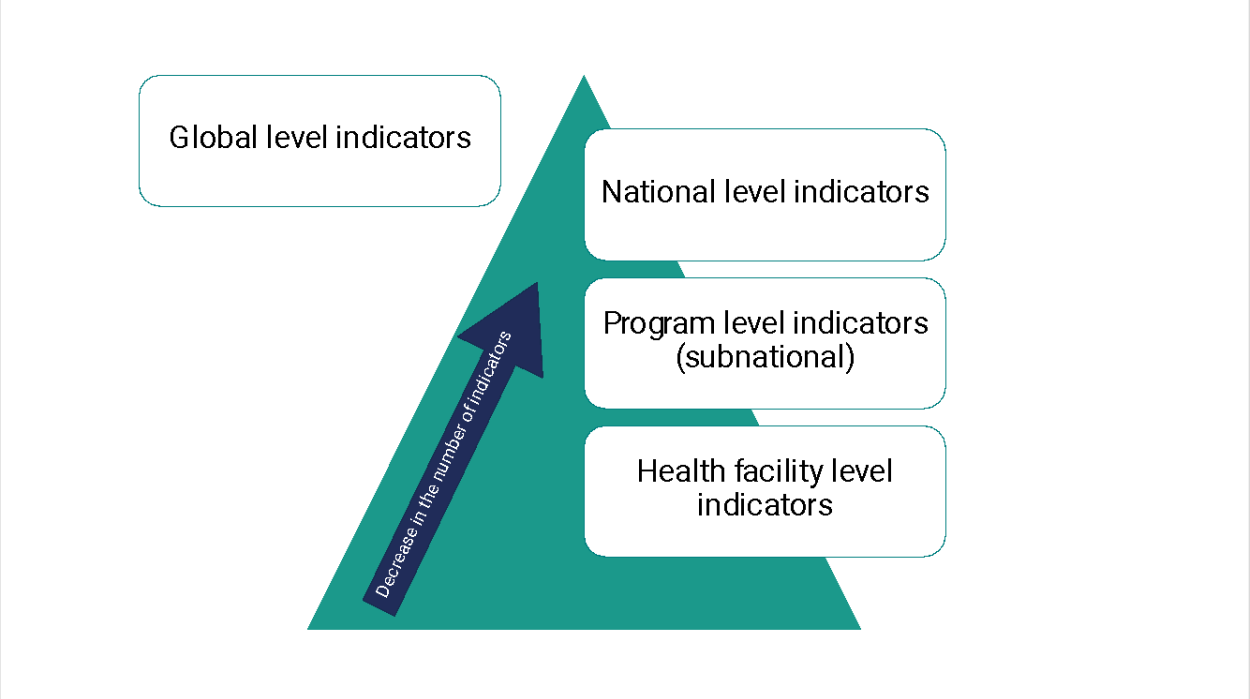
Flow of strategic information - Reporting protocol from the service delivery point, where cervical cancer screening is conducted (health-facility level) to the national level.



The Cervical Cancer Elimination team at the MOHWSTE, working in collaboration with the Epidemiology Unit, is responsible for ensuring that the cervical cancer preventive services provided are of high-quality, appropriate, affordable, accessible, and cost-effective. The specific tasks include:

- Assessing programme progress towards goals and targets, using clearly defined and measurable indicators.
- Ensuring that information is collected, summarized, and reported through the established and properly functioning HMIS.
- Using the data to implement corrective actions in a process of continuous performance improvement.
- Involving staff in the quality improvement process.
- Ensuring that data are of high quality and used at the facility level for decision-making.

Information flow and different dimension of relevant indicators.



Obtained from M. Maza (Presentation from March 28, 2022: Implementation roadmap and indicator mapping: monitoring and evaluation)

5.2.2 Facility and programme indicators

These are the indicators collected at the facility level, collated, and used to track programme objectives and target activities. The feasibility of collecting these indicators was assessed in the hr HPV pilot. The programme team will also use these indicators to monitor performance of each facility and identify areas needing improvement.

Facility and programme indicators. Shown in this table disaggregated by age group. Each indicator will be also disaggregated by HIV status. (*Time indicators)
Number of women applying through online application
Number of women scheduled for screening
Number of women screened
Number of women screened with hr HPV DNA test
Number of women screened with cytology
Number of women that tested negative
Hr HPV DNA screening
*Number of hr HPV results obtained within 2 weeks
*Number of women with positive results informed within 2 weeks of testing
Number of women with a positive screen for hr HPV 16/18/45
Screening positivity rate for hr HPV 16/18/45 (Number of women with a positive screen for HPV 16/18/45 / number of women screened with HPV test)
Number of women with a positive screen for hr HPV 16/18/45 that had a colposcopy
Number of women with a positive screen for hr HPV 16/18/45 who require treatment (CIN2+)
Number of women with a positive screen for hr HPV 16/18/45 who do not require treatment (<CIN2)
Number of women with a positive screen for hr HPV 16/18/45 who received treatment for dysplasia or cancer
Number of women with a positive screen for other hr HPV
Screen positive rate for other high-risk HPV (Number of women with a positive screen for other high-risk HPV / number of women screened with HPV test)
Number of women with a positive screen for other high-risk HPV that received triage cytology
Number of women with a positive screen for other high-risk HPV with abnormal cytology and require colposcopy
Number of women with a positive screen for other high-risk HPV that do not require colposcopy
*Number of women who receive triage cytology results in 4 weeks

*Number of women who had colposcopy within 1 month of hr HPV result
*Number of biopsy results received within 2 weeks of colposcopy exam
*Number of women treated within 4 weeks of first colposcopy exam
Number of women with positive hr HPV results (all types) who underwent colposcopy exam
Number of women with positive hr HPV results (all types) and received proper follow up
Number of women who received treatment for precancerous lesions
Frequency of precancerous lesions confirmed at colposcopy by CIN types
Cytology (primary) screening (women 25-29 years old)
*Number of cytology results obtained within 4 weeks
*Number of women with positive results informed within 4 weeks of testing
Number of women with abnormal cytology results
Screening positivity rate for cytology (Number of women with abnormal cytology results / number of women screened with cytology)
Number of women requiring triage hr HPV testing (ASCUS)
Number of women who completed triage with hr HPV DNA
Number of women that tested positive for hr HPV
Number of women that tested positive for hr HPV and received a colposcopy
*Number of women who receive triage hr HPV DNA test results in 2 weeks
*Number of women who had colposcopy within 1 month of hr HPV result
*Number of biopsy results received within 2 weeks of colposcopy exam
*Number of women treated within 6 weeks of first colposcopy exam
Number of women with abnormal cytology and received proper follow up
Number of women who received treatment for precancerous lesions
Frequency of precancerous lesions confirmed at colposcopy by CIN types

Indicator disaggregation.

Disaggregation uses data elements to break up aggregate indicator data into component parts to identify and highlight differences that may exist. The most common elements for disaggregating cervical cancer data include age group or age range, geography or location, HIV status, or screening method. Fully disaggregated indicator data increases the

complexity of data collection, management, and aggregation processes; however, it can enable identification of significant issues requiring further investigation (34).

Facility and programme data will be collected and disaggregated by HIV status (general population and WLHIV). Within each group, collected data will be further disaggregated by age group and screening test. In practice, since women in each target age group are screened with a different screening test, we will monitor by age group.

- General population: 25-29 (cytology) and 30-65 years of age (hr HPV DNA test).
- WLHIV: 21-24 (cytology) and 25-65 years of age (hr HPV DNA test).

Example of numerator and denominator disaggregation

Example of disaggregation of the indicator 'Screening test positivity rate' for the general population

Numerator: Total number of screened women with a positive screening result	
Disaggregated by age group	25-29 years
	30-65 years

Denominator: Total number of women screened	
Disaggregated by age group	25-29 years
	30-65 years

Example of disaggregation of the indicator 'Screening test positivity rate' for WLHIV

Numerator: Total number of screened women with a positive screening result	
Disaggregated by age group	21-25years
	25-65 years

Denominator: Total number of women screened	
Disaggregated by age group	21-24 years
	25-65 years

Adapted from: Section 3: Patient and programme monitoring. Improving data for decision-making: a toolkit for cervical cancer prevention and control programmes. Geneva: World Health Organization; 2018 (34)

5.2.3 National indicators.

These are a subset of the indicators that will be used for national monitoring. For Antigua and Barbuda, national indicators will be disaggregated by age group (25-29 and 30-65 years of age), screening test (hr HPV DNA or cytology, also related to age groups) and HIV status.

National indicators will be calculated and reported disaggregated by age and HIV status. In some cases, aggregated figures may be used for specific reports.

National indicators. Each indicator will be disaggregated by age group and HIV status: General population: 25-29 (cytology) and 30-65 years of age (hr HPV DNA test). WLHIV: 21-24 (cytology) and 25-65 years of age (hr HPV DNA test).		
Indicator	**How is it calculated**	**Target**
Screening coverage	Number of women screened/ Number of women who require screening	70% of women are screened with a high-precision test
Screening test positivity rate	Number of screened women with a positive screening result/ Number of women screened (with a specific screening test)	
Cervical pre-cancer rate	Number of screen-positive women with biopsy confirmed CIN2-3/ Number of women screened	
Follow-up rate	Number of women with proper follow-up (cytology, colposcopy, biopsy, treatment)/ Number of screened women with a positive screening result	
Suspected cancer cases	Number of screened women with suspected cervical cancer/ Number of screened women	
Precancerous lesions treatment rate	Number of women who received treatment / Number of screen-positive women with biopsy confirmed CIN2-3	90% of screened women with a positive screening result receive treatment
Cervical cancer rate	Number of screen-positive women with biopsy confirmed invasive cancer/ Number of women screened	
Invasive cervical cancer treatment rate	Number of women treated for cervical cancer/ Number of women diagnosed with invasive cervical cancer	90% of women diagnosed with invasive cervical cancer receive treatment

5.2.4 Global indicators.

Global indicators are standardized in all countries for global monitoring and may be similar to national indicators. To allow for cross-country comparison and global monitoring, **WHO designates that globally-reported screening data should reflect only women within the target age group of 30–49 years for the general population and 25-49 years for WLHIV.**

Global indicators Each indicator will be disaggregated HIV status			
Indicator	**Definition**	**How is it calculated**	**Target**
Screening coverage	Proportion of women aged 30–49 years who been screened for cervical cancer with a high-performance test at least once between the ages of 30 and 49 years	Number of women aged 30-49 years screened using a high-performance test / Total number of women aged 30–49	70% of women are screened with a high-precision test
Screening test positivity rate	Cervical cancer screening test positive rate among women aged 30-49 years	Number of screened women aged 30-49 years with a positive screening result in the previous 12-month / Number of women aged 30-49 years screened in the previous 12-month	
Cervical pre-cancer incidence	Incidence/incident case (numbers and rates) of new cervical high grade squamous intraepithelial lesions grade 2/3 (CIN II/III)	Recorded numbers of new high-grade squamous intraepithelial lesions grade 2/3 (CIN II/III) / Population-at-risk	
Cervical pre-cancer treatment rate	Proportion of screen-positive women with lesions eligible for ablative or excision treatment who received that treatment in the previous 12-month period	Number of screen-positive women with lesions eligible for ablative or excision treatment who received that treatment in the previous 12-month period / Number of screen-positive women with lesions eligible for ablative or excision treatment in the previous 12-month period	90% of women identified with precancer receive treatment
Additional information: Framework for Monitoring the Implementation of the WHO Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem: Indicator Metadata (35)			

Summary table comparison of the different target age groups when calculating national and global indicators			
Target age groups			**Screening test**
	General population	WLHIV	
National indicators	25-29 years	21-24 years	Cytology
	30-65 years	25-65 years	Hr HPV DNA test
Global Indicators	30-49 years	25-49 years	Hr HPV DNA test

REFERENCES.

1. Ferlay, J. Global Cancer Observatory: Cancer Today [Internet]. Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer. [cited 2021 Oct 6]. Available from: https://gco.iarc.fr/today
2. Wardak S. Human Papillomavirus (HPV) and cervical cancer. Med Dosw Mikrobiol. 2016;68(1):73–84.
3. Habbema D, De Kok IMCM, Brown ML. Cervical cancer screening in the United States and the Netherlands: a tale of two countries. Milbank Q. 2012 Mar;90(1):5–37.
4. Naucler P, Ryd W, Törnberg S, Strand A, Wadell G, Elfgren K, et al. Human papillomavirus and Papanicolaou tests to screen for cervical cancer. N Engl J Med. 2007 Oct 18;357(16):1589–97.
5. Nkwabong E, Laure Bessi Badjan I, Sando Z. Pap smear accuracy for the diagnosis of cervical precancerous lesions. Trop Doct. 2019 Jan;49(1):34–9.
6. Bruni L, Diaz M, Castellsagué X, Ferrer E, Bosch FX, de Sanjosé S. Cervical human papillomavirus prevalence in 5 continents: meta-analysis of 1 million women with normal cytological findings. J Infect Dis. 2010 Dec 15;202(12):1789–99
7. Muñoz N, Bosch FX, Castellsagué X, Díaz M, de Sanjose S, Hammouda D, Shah KV, Meijer CJ. Against which human papillomavirus types shall we vaccinate and screen? The international perspective. Int J Cancer. 2004 Aug 20;111(2):278-85. doi: 10.1002/ijc.20244. PMID: 15197783.
8. World Health Organization. Global strategy to accelerate the elimination of cervical cancer as a public health problem. [Internet]. WHO; 2020 [cited 2021 Sep 23]. Available from: https://www.who.int/publications/i/item/9789240014107
9. ENLACE: Data Portal on Noncommunicable Diseases, Mental Health, and External Causes. https://www.paho.org/en/enlace. Accessed on November 2, 2023.
10. Simon LC. Cancer incidence and mortality in Antigua/Barbuda. West Indian Med J. 1991 Jun;40(2):74-80. PMID: 1897225.
11. Najioullah F, Dorival MJ, Joachim C, et al. Genotype distribution of cervical HPV among Caribbean women in a population-based study in Martinique: The DEPIPAPUFR study. PLoS One. 2021;16(10):e0257915. Published 2021 Oct 7. doi:10.1371/journal.pone.0257915
12. Ward, Juann M., Kolin Schmalenberg, Nick A. Antonishyn, Ian R. Hambleton, Elizabeth L. Blackman, Paul N. Levett, and Marquita V. Gittens-St.Hilaire. “Human Papillomavirus Genotype Distribution in Cervical Samples among Vaccine Naïve Barbados Women.” Cancer Causes & Control 28, no. 11 (2017): 1323–32. https://www.jstor.org/stable/48693221.
13. Andall-Brereton, Glennis et al. Prevalence of high-risk human papillomavirus among women in two English-speaking Caribbean countries. Revista Panamericana de Salud Pública. 2017, v. 41, e41. Available from: <>. Epub 08 June 2017. ISSN 1680-5348.

14. Mandelblatt JS, Lawrence WF, Womack SM, Jacobson D, Yi B, Hwang Y, et al. Benefits and costs of using HPV testing to screen for cervical cancer. JAMA. 2002 May 8;287(18):2372–81.
15. Mandelblatt JS, Lawrence WF, Gaffikin L, Limpahayom KK, Lumbiganon P, Warakamin S, et al. Costs and benefits of different strategies to screen for cervical cancer in less-developed countries. J Natl Cancer Inst. 2002 Oct 2;94(19):1469–83.
16. Goldie SJ, Gaffikin L, Goldhaber-Fiebert JD, Gordillo-Tobar A, Levin C, Mahé C, et al. Cost-effectiveness of cervical-cancer screening in five developing countries. N Engl J Med. 2005 Nov 17;353(20):2158–68.
17. Parham GP, Sahasrabuddhe VV, Mwanahamuntu MH, Shepherd BE, Hicks ML, Stringer EM, et al. Prevalence and predictors of squamous intraepithelial lesions of the cervix in HIV-infected women in Lusaka, Zambia. Gynecol Oncol. 2006 Dec;103(3):1017–22.
18. Branca M, Garbuglia AR, Benedetto A, Cappiello T, Leoncini L, Migliore G, et al. Factors predicting the persistence of genital human papillomavirus infections and PAP smear abnormality in HIV-positive and HIV-negative women during prospective follow-up. Int J STD AIDS. 2003 Jun;14(6):417–25.
19. WHO guidelines for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition. Geneva: World Health Organization; 2021. Geneva: World Health Organization; 2021.
20. Web Annex. Evidence-to-decision framework for mRNA testing for HPV. In: WHO guidelines for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition: use of mRNA tests for human papillomavirus (HPV). Geneva: World Health Organization; 2021.
21. Arbyn M, Ronco G, Anttila A, Meijer CJLM, Poljak M, Ogilvie G, et al. Evidence regarding human papillomavirus testing in secondary prevention of cervical cancer. Vaccine. 2012 Nov 20;30 Suppl 5:F88-99.
22. Arbyn M, Snijders PJF, Meijer CJLM, Berkhof J, Cuschieri K, Kocjan BJ, et al. Which high-risk HPV assays fulfill criteria for use in primary cervical cancer screening? Clin Microbiol Infect. 2015 Sep;21(9):817–26.
23. Ronco G, Giorgi-Rossi P, Carozzi F, Confortini M, Palma PD, Mistro AD, et al. Efficacy of human papillomavirus testing for the detection of invasive cervical cancers and cervical intraepithelial neoplasia: a randomized controlled trial. The Lancet Oncology. 2010 Mar 1;11(3):249–57.
24. Sankaranarayanan R, Nene BM, Shastri SS, Jayant K, Muwonge R, Budukh AM, et al. HPV screening for cervical cancer in rural India. N Engl J Med. 2009 Apr 2;360(14):1385–94.
25. WHO guidelines for the use of thermal ablation for cervical pre-cancer lesions. Geneva: World Health Organization; 2019. https://apps.who.int/iris/bitstream/handle/10665/329299/9789241550598-eng.pdf.
26. WHO guidelines for treatment of cervical intraepithelial neoplasia 2–3 and adenocarcinoma in situ: cryotherapy, large loop excision of the transformation zone, and cold knife conization. Geneva: World Health Organization; 2014.

https://iris.who.int/bitstream/handle/10665/104174/9789241506779_eng.pdf?sequence=1
27. Metaxas T, Kenfack B, Sormani J, Tincho E, Lemoupa Makajio S, Wisniak A, Vassilakos P, Petignat P. Acceptability, and safety of thermal ablation to prevent cervical cancer in sub-Saharan Africa. BMC Cancer. 2022 Feb 2;22(1):132. doi: 10.1186/s12885-022-09202-2. PMID: 35109806; PMCID: PMC8812220.

28. Jakobsson M, Gissler M, Paavonen J, Tapper AM. Loop electrosurgical excision procedure and the risk for preterm birth. Obstet Gynecol. 2009 Sep;114(3):504-510. doi: 10.1097/AOG.0b013e3181b052de. PMID: 19701027.
29. Jeronimo J, Castle PE, Temin S, Denny L, Gupta V, Kim JJ, et al. Secondary Prevention of Cervical Cancer: ASCO Resource-Stratified Clinical Practice Guidelines. Journal of Global Oncology [Internet]. 2016 Oct 12 [cited 2021 Aug 30]; Available from: https://ascopubs.org/doi/pdf/10.1200/JGO.2016.006577.
30. Bingham A, Bishop A, Coffey P, Winkler J, Bradley J, Dzuba I, et al. Factors affecting utilization of cervical cancer prevention services in low-resource settings. Salud Publica Mex. 2003;45 Suppl 3:S408-416.
31. Goldie SJ, Kuhn L, Denny L, Pollack A, Wright TC. Policy analysis of cervical cancer screening strategies in low-resource settings: clinical benefits and cost-effectiveness. JAMA. 2001 Jun 27;285(24):3107–15.
32. World Health Organization. (2014). Comprehensive cervical cancer control: a guide to essential practice, 2nd ed. World Health Organization https://apps.who.int/iris/handle/10665/144785)
33. WHO technical guidance and specifications of medical devices for screening and treatment of precancerous lesions in the prevention of cervical cancer. Geneva: World Health Organization; 2020 (Chapters 5–7 and Annexes 5–7) https://apps.who.int/iris/bitstream/ handle/10665/331698/9789240002630-eng.pdf.
34. Improving data for decision-making: a toolkit for cervical cancer prevention and control programmes. Geneva: World Health Organization; 2018 https://www.who.int/publications/i/item/9789241514255.
35. Framework for Monitoring the Implementation of the WHO Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem: Indicator Metadata https://cdn.who.int/media/docs/default-source/ncds/ncd-surveillance/cxca/220121-bls21466-who-cp-accompany-doc_v01-web_.pdf?sfvrsn=2d2c811c_5&download=true.

APPENDIX A: CERVICAL CANCER MESSAGES.

Additional educational messages on the prevention of cervical cancer and screening and treatment of pre-cancer in communities.

a. Explain key points about cervical cancer and its consequences.
   - Cancer of the cervix is a disease that kills many women in Antigua & Barbuda.
   - The cervix is in the opening of the womb (briefly describe the anatomy of the cervix).
   - Cancer is the abnormal, uncontrolled growth of some cells in the body. Cancer is like the rot on some fruit. It starts in the body and spreads slowly. If left untreated, the cancer takes over the body and a woman will likely die.

b. Where does cancer of the cervix come from?
   - Cancer of the cervix comes from a virus called the human papillomavirus (HPV).
   - It is a common virus and is sexually transmitted.
   - Most sexually active people will be infected with HPV sometime in their lives. Most infected people will never experience any health problems.
   - However, for a small number of young women who are infected with HPV, a problem may occur when they grow older.
   - When these young women grow older (usually after 30 years of age) sometimes this HPV infection will cause a sore or lesion to grow on the mouth of the womb (called the cervix).
   - This lesion continues to grow on the cervix, spreads slowly, and may turn into cancer.
   - When it starts, women do not feel anything – no pain, no bleeding. It may continue to spread very deeply into the surrounding tissues. When this happens, it is very difficult to treat.
   - Signs that this has happened include bleeding after sex or between menstrual cycles, smelly discharge from the vagina, or bleeding after menopause.
   - If left untreated, these changes may grow into cancer. And signs and symptoms will appear.

c. Explain that cancer of the cervix can be prevented in two ways:
   - A cervical cancer vaccine (available in Antigua & Barbuda) and education on sexual and reproductive health. The vaccine is supported by WHO and is being given in many countries around the world.
   - Cervical screening (health check-ups) for women aged 25-65 years of age.

d. Explain the age group of cervical screening for women in Antigua & Barbuda.
   - A screening test is available for women in Antigua & Barbuda aged 30-65 for the general population, or 25-65 for WLHIV.

- A test called hr HPV test is the 1st option promoted by the government of Antigua & Barbuda.

Social mobilisers should be prepared to address questions about the following: • Screening availability – what if no services are available in my area? • What can a woman younger than age of 30 do to protect herself?

e. Explain why the cervical cancer screening is for women aged 30-49 (25-49 for WLHIV) and why it is important.
   - Ideally, women aged 30-49 (25-49 if WLHIV) should get this cervical cancer screening due to the high prevalence of the precancerous lesions. They constitute a group at high-risk for precancerous lesions. The screening test is safe and effective and can prevent a woman from developing cervical cancer.

Social mobilisers should be prepared to address questions such as: • Is the cervical cancer screening test harmful for women who are pregnant or HIV positive?

f. Explain screening test safety.
   - The screening test is approved by the Government of Antigua & Barbuda and WHO.
   - The screening test is being delivered in many other countries (Great Britain, United States, Europe, Australia, as examples)
   - The test is safe and effective.
   - The screening test can detect hr HPV, cervical precancerous lesions, and cervical cancer.
   - The hr HPV DNA test, VIA, thermal ablation, LLETZ or cryotherapy do NOT cause infertility.

g. Explain the location where the screening will be done.
   - The screening and treatment will be done at public health facilities starting from screening clinics (location/time/dates should be given in case of cervical cancer screening campaign).

h. Remind your audience the importance of good health practices.
   - Promote a woman's health by getting regular health check-ups and participating in cervical cancer screening.
   - Tell the audience they can be proud for taking steps to promote the cervical cancer vaccine programme and prevent cancer of the cervix in Antigua & Barbuda.

APPENDIX B: OVERVIEW OF DIAGNOSIS AND TREATMENT OF INVASIVE CERVICAL CANCER.

B.1 CORE ELEMENTS OF CERVICAL CANCER MANAGEMENT.

Prevention of cervical cancer through HPV vaccination, screening, and treatment of pre-cancerous lesions is cost-effective and has a high return on investment. However, timely management of invasive cervical cancer must simultaneously be strengthened to achieve a long-term, sustained impact on cervical cancer mortality.

Although HPV immunization rates in Antigua & Barbuda are growing, the prevention of cervical cancer through universal HPV vaccination would take decades to be realized. Cervical cancer screening could also take years to reach the entire target populations and with the successful scale-up of cervical cancer screening, the number of invasive cancers will increase, requiring an improvement of the referral systems connected to screening programs and ensuring the linkage of those to effective treatment strategies.

Cervical cancer diagnosed in its early stages has a higher probability of cure than that in advanced stages. With quality cancer management, even women with locally advanced cervical cancers may have improved outcomes if treated in a timely fashion. Treatment of early-stage cervical cancer is also less complex, less expensive, and more effective, with higher long-term survival rates and better quality of life. In countries where women have access to timely diagnosis and quality treatment, the 5-year survival rate of early-stage cancer can be over 90%.

For patients with incurable or metastatic disease, ensuring access to palliative surgery, radiotherapy, and systemic treatment, as well as integrated supportive care, can significantly increase women's quality of life.

The detection of cervical cancer can occur either via screening or early diagnosis, but once invasive cancer is detected, further diagnostic and treatment steps are the same regardless of the access pathway. The table below summarizes the core steps of cervical cancer management.

To achieve the cervical cancer elimination goals, it is therefore key that women with suspected cervical cancer are timely referred to effective treatment. The management of invasive cervical cancer requires access to pathology, medical imaging, surgery, radiotherapy, and chemotherapy services.

Cervical cancer management	
Diagnosis & staging	• Quality diagnosis and staging are essential for guiding appropriate treatment for individual patients. Women with suspected invasive cervical cancer should be evaluated at a facility where trained health providers can make a thorough gynaecologic examination and perform a proper cervical biopsy, as definitive diagnosis of cervical cancer must be based on histopathological evaluation. • Staging involves more extensive clinical, pathological, and radiological examinations to determine the extent of cancer spread for making treatment decisions. The FIGO system and TNM Classification of Malignant Tumours system are the two most used systems for staging.
Treatment	• The treatment of invasive cervical cancer involves surgery, systemic therapy (chemotherapy) and radiotherapy depending on the stage of the disease. • Surgery is used for the treatment of early-stage cervical cancer, although is also indicated in case of recurrent disease or for palliative intent. Determination of the type of surgery required is based on the stage of disease, desire for preserved fertility and condition of the patient's health. • Radiotherapy uses guided ionizing radiation to destroy cancer cells, and it is a treatment modality especially useful to treat cervical cancer. Radiotherapy in combination with chemotherapy, is the primary curative treatment for women with cervical cancer who are not candidates for primary surgery. The type of radiotherapy required depends on the stage of the disease and performance status of the patient. For curative treatment, two types of radiotherapy delivery are necessary: external beam radiotherapy (EBRT); and brachytherapy (BT). In some cases, radiotherapy is used as adjuvant treatment after surgery. • Systemic treatment, including chemotherapy, refers to the administration of antineoplastic medicines that target rapidly dividing cells. It is rarely used alone as the primary treatment of cervical cancer, but rather administered along

	with radiotherapy as a radiosensitizer for definitive courses of cervical cancer treatment (i.e., concurrent chemoradiation). It is also given for high-risk cases after surgery (i.e., adjuvant chemotherapy) with or without adjuvant radiotherapy.
Palliative care	• Palliative care is prevention and relief of physical, psychological, social, and spiritual suffering of patients facing serious illness and prevention and relief of psychological, social, and spiritual suffering of family members. Palliative care should be integrated with and complement prevention, early diagnosis, and treatment of cervical cancer. Initial assessment for palliative care needs should be done at the time of cervical cancer diagnosis, and palliative care always should be integrated into the treatment plan for invasive cervical cancer.
Survivorship care	• Survivorship care after effective cancer treatment should continue for at least five years unless there is a recurrence. Must include monitoring for recurrent cervical cancer or new cancers; as well as palliative care to relieve any persistent or late-onset physical or psychological symptoms.

B.2 TREATMENT OF INVASIVE CERVICAL CANCER IN ANTIGUA & BARBUDA.

In Antigua & Barbuda, the diagnosis of cancer is done in hospitals where histopathology laboratories and trained pathologists are available. Surgery is provided at tertiary levels and district levels, and radiation therapy has been provided previously at The Cancer Centre, Eastern Caribbean. The Ministry of Health is currently working to re-establish radiation therapy locally. Chemotherapy is available at the Oncology department, SLBMC, where 70% of patients receive treatment.

The most effective treatment is provided in an equitable, human-rights based, and sustainable manner. Quality care is associated with accurate diagnosis and staging; evidence-based standards of care; and integrated with rehabilitative services as well as palliative care. It is important to address barriers that limit access to safe, quality, effective, and affordable cancer services by working towards universal health access and coverage that include diagnosis, treatment, rehabilitation, and palliative care.

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