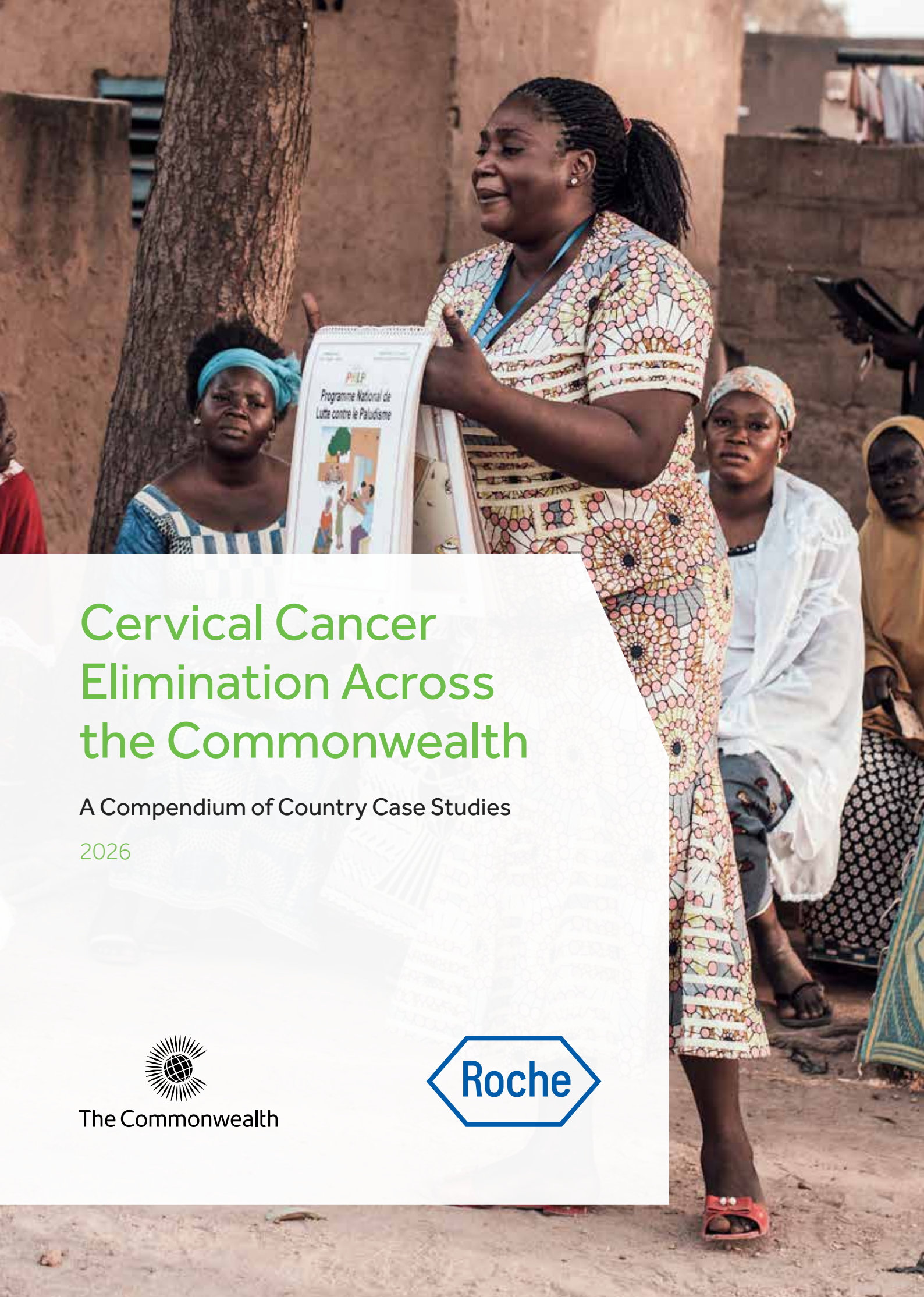


Cervical Cancer Elimination Across the Commonwealth

A Compendium of Country Case Studies

2026

The Commonwealth

Roche

Cervical Cancer Elimination Across the Commonwealth

A Compendium of Country Case Studies

2026

The Commonwealth

Published by the Commonwealth Secretariat.

Contents

Foreword

Cervical cancer is one of the most preventable and treatable cancers in the world. And yet it continues to claim hundreds of thousands of lives each year – most of them entirely avoidable, not because we lack the knowledge or tools to prevent them, but because too many women still cannot access them. This is not a medical failure. It is a failure of equity.

The Commonwealth carries a disproportionate share of this burden. While Commonwealth nations represent approximately 30 per cent of the global population, they account for 40 per cent of cervical cancer incidence and 43 per cent of its mortality. Without decisive action, projections suggest that by 2030, new cases could rise by 55 per cent and deaths by 62 per cent – equivalent to one woman dying every 3 minutes within our community of nations.

The World Health Organization (WHO) Global Strategy sets out a clear pathway: vaccinate 90 per cent of girls against HPV (the human papillomavirus) by age 15, screen 70 per cent of women with a high-performance test by ages 35 and 45 and treat 90 per cent of women with identified pre-cancer or cancer. If met by 2030, these 90–70–90 targets will set the world on course to eliminate cervical cancer as a public health problem within a generation. The Commonwealth has embraced this ambition. At the 2022 and 2024 Heads of Government Meetings, leaders reaffirmed their commitment and called for accelerated action. Spouses and Partners of Heads of Government have mobilised political will and community engagement in ways that have proved transformative. The Commonwealth International Task Force for Cervical Cancer Elimination, established in 2021, has provided expert leadership that is already bearing fruit.

But political commitment, however vital, is not enough on its own. What turns commitment into results is the hard, practical work of implementation and that work is already happening across the Commonwealth in ways that deserve to be seen, studied and shared. This compendium exists because the solutions to cervical cancer elimination will not come from any single institution or country. They will come from us learning from one another.

Bringing together 12 country case studies spanning Africa, the Pacific, Asia, Europe, and the Caribbean and Americas, this compendium documents what member countries are doing and what is working. These are real programmes, implemented by real health systems, for real women and girls. The breadth of what follows reflects both the diversity of the Commonwealth and the depth of our shared commitment.

It is offered as both an evidence base and an inspiration, a testament to what becomes possible when political will, scientific innovation and human compassion converge. We hope it equips every reader to act.

Jennifer Namgyal
Officer in Charge
Social Development, Youth and Gender

Acknowledgments

This compendium was overseen by the Commonwealth Health Team: Dr Janneth Mghamba, Emily Gilmour and Phyllis Ruzvidzo.

The Secretariat also wishes to express its appreciation to Roche Diagnostics for their generous support of this initiative.

The Secretariat wishes to thank all member countries that contributed country case studies and is grateful to the members of the Commonwealth International Task Force for Cervical Cancer Elimination for their technical inputs and expert guidance throughout

Professor Miriam Mutebi
Chair, Commonwealth International Task Force for Cervical Cancer Elimination;
Breast Surgeon and Oncologist; Chair, Kenya Society of Haematology and Oncology (KESHO), Kenya

Gideon Gachihi Githuthi
Lecturer, Kirinyaga University, Kenya

Professor Isaack Adewole
Chair of the Cervical Cancer Task Force
Former Minister of Health;
Professor of Obstetrics & Gynaecology, Nigeria
Former Vice Chancellor, University of Ibadan

Professor Marion Saville AM
Executive Director, Australian Centre for the Prevention of Cervical Cancer, Australia

Professor Karen Canfell
Lead, Cancer Elimination Collaboration, Sydney School of Public Health, The University of Sydney, Australia.

Professor Yin Ling Woo
Professor of Obstetrics & Gynaecology; Cervical Cancer Specialist, University of Malaya Medical Centre, Malaysia

Professor Gina Ogilvie, MD FCFP DrPH FRSC
School of Population and Public Health, University of British Columbia, Associate Director, Women's Health Research Institute, Canada,

Nadia Mithani, MPH
PhD Candidate, University of British Columbia, Canada

Karen Nakawala
Civil Society / Cancer Advocacy Group, Patient Advocacy, Founder, Teal Sisters, Zambia

Cindy Chng
Alliance For Active Action Against HPV (A4HPV), Singapore

Dr Sonali Johnson
Head of Knowledge, Advocacy and Policy, Union for International Cancer Control (UICC)

Anita Graham
Alliance for Active Action Against HPV (A4HPV) – Civil society / HPV advocacy

Laura Tucker-Longsworth MSN. (Health Systems), RN, OBE.
Belize Cancer Society
Healthy Caribbean Coalition, Barbados

Chukwuemeka Raymond Ikeasogbe
Civil society / health advocacy contributor, Nigeria

Ayesha Ali
Commonwealth Youth Health Network, Pakistan

Caroline Henao[1]
Civil Society / Health Advocacy, Papua New Guinea Cancer Foundation

1 Acknowledged for her instrumental contribution to the Cancer Task Force, which informed this work.

Introduction

Cervical cancer is almost entirely preventable. That this remains one of the leading causes of cancer death among women worldwide is not a reflection of scientific limitation – it instead reflects where those women live, and what their health systems can offer them.

The Commonwealth bears a disproportionate share of this burden. Accounting for 40 per cent of global cervical cancer cases and 43 per cent of deaths, while representing just 30 per cent of the world's population, our community of nations faces both an urgent challenge and a profound responsibility. The tools to meet it already exist: HPV (human papillomavirus) vaccines, DNA testing, self-collection screening and point-of-care treatment together underpin the World Health Organization's (WHO's) 90–70–90 elimination targets. The question is no longer whether elimination is achievable. It is whether we will act with sufficient speed and resolve to achieve it.

The Commonwealth has responded with growing political commitment – from health ministers' calls to action in 2018 through to historic pledges by First Ladies at the 2022 and 2024 Commonwealth Heads of Government Meetings (CHOGMs). Yet without accelerated implementation, cases could still rise by 55 per cent and deaths by 62 per cent by 2030. Commitment must now be matched by action, and action must be informed by evidence. This compendium is designed to help bridge that gap.

About the Country Case Studies

This compendium brings together 12 country case studies from across four Commonwealth regions – Africa, the Pacific, Asia, and the Caribbean – each selected to illuminate a distinct strategic innovation in the fight against cervical cancer. The case studies span the full breadth of the WHO 90–70–90 elimination framework: prevention through HPV vaccination, early detection through screening, and treatment and systems strengthening.

Countries were selected by the Commonwealth International Task Force for Cervical Cancer Elimination ('the Task Force') on the basis of several criteria: the presence of a clearly identified strategic innovation; the availability of credible programme data and evidence; the degree to which the approach offers transferable lessons for other Commonwealth member countries; and the importance of representing the diversity of contexts – small island developing states, large federal systems, high-income and low-income settings, varied health system architectures, and different epidemiological profiles.

Each case study follows a consistent analytical framework, enabling meaningful comparison and cross-learning. The framework, which was developed in consultation with country focal points and Task Force members, includes: a contextual background on the cervical cancer burden and health system landscape; a detailed description of the national intervention and its key components; an assessment of outcomes and evidence; lessons learnt and specific challenges encountered; and recommendations for national and cross-Commonwealth application.

How to Use this Compendium

This compendium is designed to work for you, wherever you are entering from.

Below are suggested entry points based on common priorities.

Designing or scaling HPV vaccination	Rwanda, Fiji, and Zambia — school-based delivery, community engagement, hard-to-access populations.
Strengthening screening systems	Bangladesh, Brunei Darussalam, Antigua and Barbuda, Malaysia — digital integration, self-sampling, decentralised delivery.
Political will and Multisectoral Action	Nigeria and Kenya
Treatment access / health system strengthening	Kenya and Belize - task-shifting, partnership models, domestic financing.
National-scale elimination model	Australia -policy decisions, programme design, and long-term investment pathway.
Small island developing states	Vanuatu, Fiji, Antigua and Barbuda, and Belize, constraints and opportunities of smaller health systems.

Overview of Case Studies by Region

Region	Country	Case Study Title
AFRICA	Kenya	The Role of Partnerships in Cervical Cancer Elimination
AFRICA	Nigeria	Nigeria Cervical Cancer Elimination: Uncommon Political Will, Multisectoral Action and the Road to 2030
AFRICA	Rwanda	How Rwanda Leverages High-Level Advocacy, Community-Based HPV Self-Sampling and Digital Health Integration
AFRICA	Zambia	Scalable Model Integrating HPV Vaccination, Community-Driven Screening, and Task Shifting
ASIA	Bangladesh	Closing the Cervical Cancer Care Cascade: Digital Integration and Decentralised Delivery
ASIA	Brunei Darussalam	Precision Screening and Digital Innovation on the Path to Cervical Cancer Elimination
ASIA	Malaysia	Malaysia's Accelerated Path to Cervical Cancer Elimination – A Comprehensive Strategy
CARIBBEAN	Antigua and Barbuda	Transforming Cervical Cancer Prevention Through hrHPV Screening, Digital Innovation, and Multi-Sector Partnership
CARIBBEAN	Belize	Building a Sustainable Cervical Cancer Elimination Programme Through Domestic Investment
PACIFIC	Australia	Cervical Cancer Elimination in Australia: Case Study for Policy Makers
PACIFIC	Fiji	Leveraging School-Based Vaccination, System Strengthening and Strategic Partnerships
PACIFIC	Vanuatu	Screening, Treatment and Systems: Vanuatu's Policy Pathway to Cervical Cancer Elimination

Africa

Africa carries the greatest absolute burden of cervical cancer deaths within the Commonwealth. The four African case studies span advocacy-driven vaccination, community-based self-sampling, partnership ecosystems, and decentralised screening models.

Case Studies in This Section

- Kenya
- Rwanda
- Nigeria
- Zambia

Kenya

The Role of Partnerships in Cervical Cancer Elimination

Key Takeaways

- Multi-sectoral partnerships are central to Kenya's progress across all three WHO elimination pillars.
- The STOP Cervical Cancer initiative provides a national coordination platform linking government, donors, and civil society.
- Integration of cervical cancer services with HIV platforms has improved coverage among high-risk women.
- Devolved governance requires robust county-level coordination to ensure equitable service delivery.

1. Introduction

Cervical cancer remains a major cause of preventable morbidity and mortality among women globally, with a disproportionate burden borne by low- and middle-income countries (LMICs). Despite the availability of highly effective primary and secondary prevention interventions, including human papillomavirus (HPV) vaccination and screening, inequities in access to these services persist, resulting in substantial variation in incidence and mortality across settings [1, 2]. These inequities are largely driven by structural health system constraints, including limited financing, inadequate workforce capacity, weak supply chains and suboptimal service integration.

Increasingly, cervical cancer control is conceptualised as a complex health systems challenge requiring co-ordinated and multisectoral responses. Partnerships defined as structured collaborations between governmental, multilateral, bilateral, non-governmental, private sector and community actors are therefore central to scaling and sustaining interventions across the cancer care continuum. Such partnerships facilitate resource mobilisation, technical assistance, capacity building and service delivery optimisation, particularly in resource-constrained settings [2, 3].

This case study critically examines the role of partnerships in advancing cervical cancer elimination in Kenya. It situates Kenya's response within the global epidemiological and policy context and analyses how partnerships have contributed to implementation across the three pillars of the World Health Organization (WHO) elimination strategy. It further identifies systemic constraints and proposes areas for strengthening partnership effectiveness to accelerate progress toward elimination.

2. Global burden of cervical cancer

Cervical cancer is the fourth most common cancer among women globally, with an estimated 660,000 incident cases and 348,000 deaths annually [1]. Approximately 90 per cent of these deaths occur in LMICs, reflecting persistent inequities in access to preventive and curative services [4, 5]. The disease is etiologically linked to persistent infection with oncogenic HPV types, making it amenable to both primary prevention through vaccination and secondary prevention through screening and treatment of precancerous lesions [2].

Notwithstanding the availability of effective interventions, global coverage of HPV vaccination and screening remains suboptimal and unevenly distributed. These gaps highlight the limitations of fragmented, vertical approaches and underscore the need for co-ordinated, system-wide strategies supported by multisectoral partnerships. Empirical evidence indicates that partnership driven programmes are associated with improved programme reach, efficiency and sustainability, particularly where domestic capacity is constrained [2, 3].

The WHO Global Strategy for Cervical Cancer Elimination operationalises this approach through the 90–70–90 targets, which require synchronised action across vaccination, screening and treatment [2]. Achieving these targets is contingent upon effective collaboration across stakeholders to address cross-cutting health system bottlenecks.

3. Epidemiology of cervical cancer in Kenya

In Kenya, cervical cancer constitutes a leading cause of cancer-related morbidity and mortality among women, with an estimated 6,000 new cases and 3,600 deaths annually [1, 6]. Age-standardised incidence and mortality rates remain high at 32.8 and 21.4 per 100,000 women years, respectively [1]. These outcomes are indicative of systemic gaps across the continuum of care, including low coverage of preventive services, delayed diagnosis and constrained treatment capacity.

The Kenyan health system operates within a devolved governance structure, wherein service delivery is managed at the county level, while policy and strategic oversight are retained nationally. While devolution has enhanced local decision-making, it has also introduced variability in implementation capacity, resource allocation and programme prioritisation across counties [6]. This heterogeneity necessitates robust co-ordination mechanisms and well aligned partnerships to ensure equitable service delivery.

4. Policy alignment and role of partnerships in implementation

Kenya has adopted the WHO cervical cancer elimination framework and integrated the 90–70–90 targets into national policy documents, including the National Cancer Control Strategy (2023–2027) and the National Cervical Cancer Elimination Action Plan (2025–2030) [2, 6]. These frameworks emphasise an integrated, life-course approach to prevention and care, underpinned by health system strengthening.

Operationalisation of these strategies is inherently partnership dependent. Development partners contribute financial and technical resources; multilateral agencies support normative guidance and co-ordination; civil society organisations facilitate community engagement and demand generation; and private sector actors provide complementary service delivery and innovation. The effectiveness of these partnerships is mediated by governance structures, alignment with national priorities and the degree of integration within the health system.

5. Contribution of partnerships across the cervical cancer control continuum

HPV vaccination

The introduction and scale-up of HPV vaccination in Kenya has been enabled through partnerships that support vaccine procurement, cold chain infrastructure, service delivery and community mobilisation. Global financing mechanisms and technical partners have been instrumental in reducing barriers to vaccine access [7, 8].

However, coverage remains suboptimal, with only 54.7 per cent of eligible girls receiving the first dose and 44.3 per cent completing the full schedule [6 ,7]. Implementation challenges – including vaccine hesitancy, limited reach among out-of-school populations and weak integration into routine immunisation systems – reflect gaps in co-ordination across sectors, particularly between health and education. From a systems perspective, these challenges highlight the need for strengthened intersectoral partnerships, improved microplanning, and enhanced accountability mechanisms. Following the revision of national HPV vaccination guidelines in Kenya to adopt a single-dose schedule, the country transitioned from the previous two-dose regimen to a simplified single-dose strategy. This policy shift was introduced to improve programmatic efficiency, increase vaccine coverage, reduce missed opportunities for completion and accelerate progress toward the WHO 90 per cent HPV vaccination target. Transitioning from donor supported to domestically financed programmes further necessitates strategic alignment between government and partners to ensure sustainability [8].

Screening and management of precancerous lesions

Partnerships have facilitated the expansion of screening services through investments in provider training, equipment and introduction of HPV DNA testing technologies. Despite these

efforts, screening coverage remains below target levels, and reliance on less sensitive methods such as visual inspection with acetic acid (VIA) persists [9]. The limited uptake of HPV testing, accounting for less than 6 per cent of screenings, reflects systemic constraints, including supply chain inefficiencies, laboratory capacity limitations, and weak referral and follow-up systems [6, 9]. Fragmentation of partner-supported interventions further contributes to inefficiencies and gaps in continuity of care. Innovations such as self-sampling and single-visit 'screen-and-treat' approaches demonstrate the potential of partnership-driven models to improve access and efficiency. However, scaling these interventions requires improved co-ordination, integration into national systems and alignment with county-level implementation structures.

Diagnosis and treatment of invasive cervical cancer

Partnerships have contributed to the expansion of diagnostic and treatment capacity in Kenya, including the establishment of regional cancer centres and increased availability of radiotherapy services [6]. These investments represent significant progress toward decentralising cancer care and improving geographic access. Nevertheless, substantial system-level constraints persist, including shortages of specialised personnel, inadequate equipment maintenance and weak referral networks. Supply chain challenges, particularly for oncology medicines and consumables, further limit treatment access and continuity of care.

6. Key partners supporting cervical cancer elimination in Kenya

Kenya's cervical cancer elimination response is underpinned by a complex, multisectoral partnership ecosystem spanning governmental, multilateral, bilateral, civil society, academic and private sector stakeholders. These actors contribute complementary technical, financial and operational inputs across the continuum of care, aligned with the National and World Health Organization (WHO) Cervical Cancer Elimination Framework (90–70–90 targets) [2].

The STOP Cervical Cancer Initiative in Kenya represents a co-ordinated national platform operating under the National Technical Working Group (TWG) for Cancer Prevention, Screening, and Early Diagnosis within the Ministry of Health. The initiative facilitates alignment of partner activities, supports resource mobilisation, and promotes implementation of evidence-based interventions across the national and county levels [6].

As illustrated in Table 1.1, Kenya's partnership model is structured around the three WHO pillars: primary prevention, secondary prevention, and treatment supported by cross-cutting health system enablers including governance, community engagement, data systems, service integration and financing.

Table 1.1. Key partners supporting cervical cancer elimination in Kenya, aligned to WHO pillars and health system enablers

Pillar / health system enabler	Key actors	Core roles	Key outputs	Impact indicators (aligned to 90–70–90 targets)
Primary Prevention (90% HPV Vaccination)	National Cancer Control Program (NCCP); National Vaccines and Immunization Program (NVIP); Division of Adolescent and School Health; Ministry of Education; Clinton Health Access Initiative (CHAI); WHO Kenya; Division of Health Promotion	Policy development; national co-ordination; guideline development; vaccine delivery; school-based programming; microplanning; supply chain strengthening; demand creation.	National HPV vaccine rollout; trained vaccinators; functional cold chain systems; community sensitisation campaigns.	Proportion of girls fully vaccinated by age 15; subnational equity in coverage; dropout rates.
Secondary Prevention (70% Screening)	Division of Reproductive Health; National AIDS and STI Control Program (NASCOP); Jhpiego; Liverpool Voluntary Counselling Testing (VCT), Care and Treatment (LVCT) Health; Population Services Kenya; Cure Cervical Cancer; Becton, Dickinson and Company Kenya (BD Kenya); Roche	Integration of screening into HIV and reproductive health services; HPV testing scale-up; healthcare provider training; laboratory strengthening.	Implementation of national screening guidelines; expanded HPV testing sites; trained providers; integrated HIV–cervical cancer services.	Proportion of women screened at ages 35 and 45; HPV testing coverage; screen positivity rates; linkage to treatment rates.
Treatment and Care (90% Treatment)	Kenyatta National Hospital; Kenyatta University Teaching and Referral Hospital; **Academic Model Providing Access to Healthcare (AMPATH);** International Cancer Institute (ICI); Texas Cancer Centre; Christian Health Association of Kenya (CHAK)	Diagnosis and staging; oncology care delivery; referral system strengthening; decentralisation of treatment services.	Expanded oncology centres; radiotherapy and chemotherapy access; established referral pathways; trained oncology workforce.	Proportion of precancer cases treated; proportion of invasive cancers managed; stage at diagnosis; treatment completion rates.
Governance, Policy, and Coordination (Enabler)	National Cancer Control Program (NCCP); National Cancer Institute Kenya (NCI-Kenya); Council of Governors Health Committee	Policy development; national co-ordination; guideline development; county engagement.	National Cervical Cancer Elimination Action Plan; policy guidelines; co-ordination frameworks; county implementation plans.	Policy adoption and implementation rates; county uptake; budget allocation levels.
Community Engagement and Advocacy (Enabler)	Kenyan Network of Cancer Organizations (KENCO); Women4Cancer; Africa Cancer Foundation (ACF); County First Ladies Association (CFLA); Beyond Zero Campaign; National Cancer Development Alliance of Kenya (NCDAK)	Advocacy; community mobilisation; risk communication; patient support.	Community outreach programmes; awareness campaigns; patient navigation systems.	Screening uptake; HPV vaccine acceptance; reduction in late-stage presentation; community awareness indicators.
Research, Data, and Surveillance (Enabler)	Kenya Medical Research Institute (KEMRI); University of Nairobi; Health Systems Insight	Research; monitoring and evaluation; data system strengthening; implementation science.	Strengthened cancer registries; operational research outputs; data dashboards.	Data completeness; availability of disaggregated data; reporting on WHO indicators; evidence-informed policy.

Service Delivery and Integration (Enabler)	**Centre for International Health, Education and Biosecurity Kenya (CIHEB** Kenya); Pathfinder International; Kilele Health Association; Division of Community Health	Integrated service delivery; community–facility linkage; last-mile access; **Community Health Volunteer (CHV)** engagement.	Community-based screening models; strengthened referral systems; integrated service delivery platforms.	Linkage-to-care rates; retention in care; reduced loss to follow-up.
Global Technical and Financing Support (Enabler)	**World Health Organisation (WHO); Joint United Nations Programme on HIV/AIDS (UNAIDS); United States Agency for International Development (USAID); United States Centers for Disease Control and Prevention (US CDC);** American Cancer Society	Technical assistance; financing; normative guidance; capacity building.	Programme funding; technical guidelines; training programmes; global benchmarking.	Alignment with WHO standards; resource mobilisation; sustainability indicators.

7. Monitoring, evaluation, and learning framework

Robust monitoring, evaluation, and learning (MEL) systems are essential for tracking progress toward elimination targets and informing adaptive programme implementation [2]. Kenya has established multiple data systems that collectively support surveillance across the cervical cancer care continuum. The Kenya Health Information System (KHIS/DHIS2) functions as the primary national platform for routine health data reporting. It captures key service delivery indicators, including screening volumes (PAP, VIA and HPV testing), treatment of precancerous lesions, and facility level outputs, enabling longitudinal monitoring across counties [6]. The National Cancer Registry, co-ordinated by the National Cancer Institute of Kenya, provides data on cancer incidence, stage at diagnosis and mortality. However, its coverage remains incomplete, particularly in rural areas, limiting representativeness [1, 6]. The Immunization Registry, managed by the National Vaccines and Immunization Program, tracks HPV vaccination coverage and is being adapted to reflect Kenya's transition to a single-dose schedule [7]. HIV programme data systems, particularly those supported through PEPFAR (the President's Emergency Plan for AIDS Relief) and the Global Fund, contribute to cervical cancer monitoring by capturing integrated screening data among women living with HIV, a high-risk population [6]. In addition, partner-supported digital tools have been introduced to track HPV testing and patient follow-up; however, these systems are often fragmented and not fully interoperable with KHIS, limiting their utility for national decision-making [6].

8. Lessons learned from Kenya's partnership model

Kenya's experience provides several key insights into partnership-driven implementation.

First, strong government stewardship is essential for co-ordinating diverse stakeholders and aligning interventions with national priorities. The Ministry of Health, through NCCP and NVIP, plays a central convening and regulatory role. Second, multisectoral collaboration enhances system capacity by leveraging complementary expertise and resources across stakeholders, improving both policy formulation and implementation. Third, community engagement is a critical determinant of service uptake, particularly in addressing socio-cultural barriers, misinformation and vaccine hesitancy. Fourth, integration of cervical cancer services into existing platforms, particularly HIV programmes, improves efficiency and increases coverage among high-risk populations. Fifth, private sector engagement facilitates technological innovation, including the introduction of HPV DNA testing and digital health tools, which can improve diagnostic accuracy and programme efficiency.

9. System-level challenges

Screening coverage remains below target levels, particularly in rural and underserved populations, reflecting persistent access barriers. Socio-cultural factors, including stigma and limited awareness, further reduce demand for preventive services. Treatment services remain geographically concentrated in urban centres, resulting in inequitable access and delayed care for women in remote regions. Additionally, heavy reliance on external financing raises concerns regarding long-term sustainability. Fragmentation of partner activities and limited co-ordination mechanisms contribute to inefficiencies, duplication and gaps in service delivery.

10. Recommendations for strengthening partnerships

To enhance the effectiveness and sustainability of partnerships, several strategies are recommended. First, strengthening national and subnational co-ordination platforms is critical to improve alignment, reduce duplication and enhance accountability. Second, scaling up community-based interventions can address demand-side barriers and improve service uptake. Third, increasing domestic financing is essential to ensure long-term sustainability beyond donor-supported programmes. Fourth, expanding decentralised treatment services, including low-cost modalities such as thermal ablation, can improve equitable access to care. Finally, strengthening interoperability across data systems will support real-time monitoring and evidence-based decision-making.

11. Implications of lessons learned for other settings

Kenya's experience demonstrates that cervical cancer elimination requires integrated, partnership-driven approaches anchored in strong government leadership and health system strengthening. Key transferable lessons include the importance of multisector collaboration, service integration, community engagement and data-driven decision-making.

Conclusion

Kenya's progress toward cervical cancer elimination highlights the central role of partnerships in addressing complex health system challenges. While significant gains have been achieved across vaccination, screening and treatment, persistent gaps underscore the need for more co-ordinated, sustainable and equity-focused partnership models. Strengthening governance, enhancing domestic resource mobilisation and improving system integration will be critical to accelerating progress toward the WHO 90–70–90 targets. Kenya's experience provides a valuable model for other LMICs seeking to operationalise cervical cancer elimination strategies.

Acknowledgments

We would like to acknowledge the following people for their work in the preparation of this report.

Dr Joan-Paula Bor
Head, National Cancer Control Program
National Cancer Control Program, MOH

Beatrice Ochieng
Programme Officer, Cancer Strategic Information, Research, Registration and Surveillance
National Cancer Control Program, MOH

Lilian Genga
Programme Officer, Prevention, Screening and Early Detection
National Cancer Control Program, MOH

Joseph Ngutiku
Program Officer, Advocacy, Partnerships, Co-ordination and Financing
National Cancer Control Program, MOH

References

1. International Agency for Research on Cancer (2023), 'Global Cancer Observatory: Cancer Today', IARC, Lyon, https://gco.iarc.fr
2. Bruni, L., SauraLázaro, A., Montoliu, A., Brotons, M., Alemany, L., Diallo, M. S., ... de Sanjosé, S. (2021). HPV vaccination introduction worldwide and WHO and UNICEF estimates of national HPV immunization coverage 2010–2019. Preventive Medicine, 144, 106399. https://doi.org/10.1016/j.ypmed.2020.106399
3. Arbyn, M., Weiderpass, E., Bruni, L., de Sanjosé, S., Saraiya, M., Ferlay, J., & Bray, F. (2020).Estimates of incidence and mortality of cervical cancer in 2018: A worldwide analysis. The Lancet Global Health, 8(2), e191–e203. https://doi.org/10.1016/S2214-109X(19)30482-6
4. Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: A Cancer Journal for Clinicians, 71(3), 209–249. https://doi.org/10.3322/caac.21660
5. Ministry of Health (MOH), Kenya. (2023). National Cancer Control Strategy 2023–2027. Nairobi: Ministry of Health. Available at: https://www.health.go.ke
6. World Health Organization (WHO) & UNICEF. (2023). Human papillomavirus (HPV) vaccination coverage estimates. Geneva: WHO. Available at: https://www.who.int/data/ghed/immunization/hpv
7. Gavi, the Vaccine Alliance (2022), Kenya HPV vaccine programme transition and sustainability report.
8. Ministry of Health Kenya (2020) Kenya National Vaccines and Immunization Program (NVIP) comprehensive multi-year plan 2019–2023. Nairobi: Ministry of Health. Available at:https://www.health.go.ke/wp content/uploads/2020/11/Kenya-National-Immunization-CMYP-2019-2023.pdf
9. World Health Organization (2021), WHO guideline for screening and treatment of cervical pre-cancer lesions, WHO, Geneva. Available at: https://www.who.int/publications/i/item/9789240030824

Nigeria

Nigeria Cervical Cancer Elimination: Uncommon Political Will, Multisectoral Action and the Road to 2030

Key Takeaways

- Nigeria's First Lady personally launched the HPV vaccination campaign, demonstrating how presidential-level political will directly accelerates community acceptance and coverage.
- Approximately 17 million girls vaccinated since October 2023 represents one of the largest HPV vaccination rollouts in Africa, though coverage remains at ~30% of the target population.
- The National Taskforce for Cervical Cancer Elimination, chaired by a former Health Minister, provides high-level multisectoral coordination backed by a fully costed National Elimination Plan 2026–2030.
- Nigeria's Cancer Health Fund provides comprehensive free cancer treatment across Federal Tertiary Hospitals — making cervical cancer one of only three cancers with dedicated, fully funded treatment support.

1. Background

Cervical cancer represents a substantial health challenge in Nigeria despite advancements in the prevention and control of the disease. It is currently the overall third commonest cancer in Nigeria. Cervical cancer is the second leading cause of cancer morbidity and mortality among women in Nigeria.

In recognition of the fact that cervical cancer is largely preventable and curable when detected early, the Nigerian Federal Ministry of Health and Social Welfare is prioritising cervical cancer prevention and control. This is why it is currently the only cancer that has a dedicated strategic elimination plan, while it also among the top three cancers covered by the Cancer Health Fund – which provides comprehensive free treatment in selected Federal Tertiary Hospitals.

Recently, the Honourable Minister of State for Health inaugurated a National Taskforce for the Cervical Cancer Elimination in Nigeria. The taskforce is charged to adopt a comprehensive multisectoral approach to build systematic screening infrastructure and achieve elimination through co-ordinated population-scale coverage The taskforce developed the National Cervical Cancer Elimination Plan 2026–2030. The strategy aligns with the World Health Organization (WHO) '90–70–90' targets: vaccinating 90 per cent of girls by age 15, screening 70 per cent of women twice, and treating 90 per cent of those diagnosed.

2. Policy and health system landscape

The National Health Act 2014 assigned the responsibility for healthcare delivery and its management across the three tiers of government: federal, state and local government areas (LGAs). The National Health Act provides that the Federal Ministry of Health shall ensure the development and implementation of policies and programmes for the Nigeria health system.

In 2006, The Federal Ministry of Health and Social Welfare set up the National Cancer Control and Nuclear Medicine Programme as a unit under the Department of Hospital Services, to drive the

development and implementation of policies, programmes and activities for cancer prevention and control in Nigeria. This is in line with the National Health Act, 2014.

The Federal Ministry of Health and Social Welfare (FMOHSW), through the National Cancer Control and Nuclear Medicine Programme, has established a robust policy framework to advance cancer control including the National Cancer Control Plan 2007–2013 and 2018–2022, the National Strategic Plan for Prevention and Control of Cancer of the Cervix 2017–2021 and 2023-2027, the National Chemotherapy Safety Policy, the National Policy and Strategic Plan for Hospice and Palliative Care Policy, and the National Nuclear Policy and Strategic Plan.

Cancer prevention and early detection

The FMOHSW has developed and implemented notable policies and initiatives for cancer prevention including the National Multisectoral Action Plan for the Prevention and Control of Non-Communicable Diseases (2019–2025), the National Tobacco Control Strategic Plan of Action (2024–2028), and the National Strategic Framework for the Elimination of Viral Hepatitis (2022–2026), as well as the earlier listed Cancer Control Plans and Policies. Significant efforts to advance cancer prevention include the introduction of the human papillomavirus (HPV) vaccine into routine immunisation in October 2023 through a single-dose approach, establishment of the National Taskforce on Cervical Cancer Elimination (NTF-CCE) in August 2024, and enactment of Tobacco Control Regulations with provisions on tobacco packaging and advertising, especially among minors. The country, through the National Primary Health Care Development Agency (NPHCDA), routinised the human papillomavirus vaccination and the hepatitis B and C virus vaccination for the prevention of cancer of the uterine cervix, and liver and oral cancer.

3. National intervention

Because cervical cancer is largely preventable through HPV vaccination, screening and early detection, the Federal Ministry of Health provided the following interventions:

i. A dedicated strategic plan for prevention of cancer of the uterine cervix.

ii. Setting up of a taskforce to drive implementation of the strategic plan in line with the WHO 2030 global target for elimination of cervical cancer.

iii. Establishment of a national Cancer Health Fund to provide comprehensive free cancer treatment for persons diagnosed with breast, cervical and prostate cancers.

iv. A pilot of single-dose HPV vaccination for primary prevention of cervical cancer.

v. Introduction of a catastrophic health insurance fund with the Nigerian Health Insurance Authority to provide cancer care and care for other catastrophic diseases such as renal and sickle cell diseases.

Massive HPV vaccination campaign

Nigeria's primary prevention strategy revolves around a historic single-dose human papillomavirus (HPV) vaccine rollout led by the National Primary Health Care Development Agency (NPHCDA). This was driven by a multisectoral approach through the establishment of a Technical Working Group to encourage uptake of the vaccines across the country. The Technical Working Group involved strategic stakeholders, including health professionals, policy-makers, religious and traditional leaders, advocates, civil society organisations, and academia. The First Lady of Nigeria, Her Excellency, Senator, Oluremi Tinubu, officially launched the vaccination campaign – demonstrating the value of strong political will in optimising HPV vaccination. Some studies show that the single-dose vaccine had 97.5 per cent efficacy in a randomised trial in Kenya [1]. Another study in Costa Rica shows 82.1 per cent, compared to 83 per cent for the double dose and 80.2 per cent for a three-dose vaccine [2]. The consideration of the single-dose vaccine was due to its very high efficacy, further strengthened by a significant cost reduction of about 51 per cent, according to evidence from John Hopkins University [3].

- Progress: As of early 2026, approximately 17 million Nigerian girls had received the HPV vaccine since the programme's inception in October 2023[4,5]. This represents about 30 per cent of the target population.

- Target population: Initially focusing on girls aged 9–14 through multi-age cohort (MAC) campaigns, the programme is transitioning in 2025–2026 to include the HPV vaccine in routine immunisation for 9-year-olds [5,6].
- Innovative delivery: Vaccines are distributed through schools, markets, religious houses and mobile clinics to reach out-of-school and vulnerable populations. The girls who missed the rollout and are still within the age range can still benefit as HPV has been included in the routine immunisation schedule [7].

'Screen and treat' strategy

Nigeria has adopted high performance HPV DNA testing as a standard for cervical cancer screening. However, as the plan for the national rollout of the HPV testing is underway, the government is expanding access to low-cost screening methods to address secondary prevention.

- Free screening: In February 2026, the Federal Government launched a Nationwide Free Cancer Screening Programme across the six geopolitical zones, with over 3,000 women screened in the month of February alone. The testing used both HPV testing, visual inspection with acetic acid (VIA) screen and treat, Pap smear, and colposcopy.
- Screen and treat approach: Research in Kaduna State demonstrated the effectiveness of using VIA followed by immediate treatment with thermocoagulation or LEEP (loop electrosurgical excision procedure) for precancerous lesions, achieving a high treatment rate of 96 per cent among eligible women.
- Technology integration: Efforts are underway to integrate HPV DNA testing into existing multi-disease testing platforms originally used for HIV and tuberculosis (TB).

4. Policy and institutional framework

- National Task Force: The Federal Ministry of Health established the National Task Force on Cervical Cancer Elimination, led by Prof. Isaac Adewole, to co-ordinate nationwide strategy and resource mobilisation.
- Funding requirements: The task force estimates that 2.2 trillion naira (₦) will be needed between 2026 and 2030 to execute comprehensive interventions, including ₦426 billion for vaccination and ₦1.42 trillion for treatment. The costing involves the institutional framework, including infrastructural and training requirements to provide primary, secondary and tertiary prevention of cervical cancer. It also captures the cost of awareness creation, monitoring evaluation and learning activities.

5. Outcome and evaluation

The strategic activities towards the elimination of cervical cancer in Nigeria have led to:

- increased HPV vaccination coverage from under 10 per cent to over 30 per cent;
- enhanced access to cervical screening;
- improved access to treatment for precancerous and cancerous lesions;
- provision of palliative care services.

6. Challenges

Despite groundbreaking progress, several hurdles remain in reaching the 2030 goal, as follows.

- Screening coverage: National screening coverage currently stands at approximately 15 per cent, far below the 70 per cent target.
- High costs: The price of HPV testing kits remains a significant barrier to scaling up secondary prevention.

7. Key recommendations

Based on the authors' experience, they hereby make the following recommendations.

i. There is a need for sustained advocacy for a high-level government commitment of resources and for a campaign for HPV vaccine uptake.

ii. It is important to leverage existing health systems for routine immunisation and screening programmes.

iii. Multisectoral involvement, partnership and ownership is key to removing barriers to penetration of communities.

iv. Adoption of multichannel awareness and communication strategies, utilising traditional and modern media, will help to increase programme uptake and sustainability.

Transferable lessons for other Commonwealth countries

Other Commonwealth countries may learn lessons from and adopt the above recommendations.

Linkage to WHO 90-70-90 target

The National Plan for Cervical Cancer Elimination in Nigeria outlines a comprehensive strategy that aligns with the World Health Organization global call to action and the 90–70–90 targets by 2030. The strategy encompasses several key components, including the following.

i. Prevention through vaccination: building on the successful nationwide rollout of HPV vaccination by establishing sustainable routinisation of vaccination services.

ii. Enhanced screening services.

iii. Development of comprehensive treatment capabilities for preinvasive and invasive diseases.

iv. Systematic capacity building across all healthcare levels.

v. Strengthening histopathology and cytology services across the country.

8. Conclusion

With the demonstration of an uncommon political will and financial commitment by the Federal Government of Nigeria, coupled with a clear elimination strategy being implemented by a multisectoral taskforce, Nigeria is on the path to actualising cervical cancer elimination. This will be more realistic with the support of various development partners and stakeholders.

Contributors

Dr Uchechukwu Emmanuel Nwokwu, MBBS, MHM, FWACP, National Coordinator, National Cancer Control Programme, Federal Ministry of Health and Social Welfare, Abuja, Nigeria.

His Excellency, Ambassador Isaac F Adewole, FAS, Chairman National Taskforce on Cervical Cancer Elimination in Nigeria.

References

1. Barnabas, R.V., Brown, E.R., Onono, M., Bukusi, E.A., Njoroge, B., Winer, R.L., Donnell, D., Galloway, D., Cherne, S., Heller, K., Leingang, H., Morrison, S., Rechkina, E., McClelland, R.S., Baeten, J.M., Celum, C. and Mugo, N. (2022) 'Efficacy of single-dose human papillomavirus vaccination among young African women', *NEJM Evidence*, 1(5), EVIDoa2100056. doi: 10.1056/EVIDoa2100056.

2. Kreimer, A.R., Sampson, J.N., Porras, C., Schiller, J.T., Kemp, T., Herrero, R., Wagner, S., Boland, J., Schussler, J., Lowy, D.R., Chanock, S., Schiffman, M., Rodriguez, A.C., Cortes, B., Gail, M.H., Hildesheim, A., Gonzalez, P. and Pinto, L.A. (2020) 'Evaluation of durability of a single dose of the bivalent HPV vaccine: the CVT trial', Journal of the National Cancer Institute, 112(10), pp. 1038–1046. doi: 10.1093/jnci/djaa011.

3. International Vaccine Access Center (IVAC), Johns Hopkins Bloomberg School of Public Health (2024) *The power of a single dose: evidence for a single-dose HPV vaccine schedule*. Available at: https://publichealth.jhu.edu/ivac/the-power-of-a-single-dose-evidence-for-a-single-dose-hpv-vaccine-schedule (Accessed: 29 April 2026).

4. Gavi, the Vaccine Alliance (2023) *Nigeria to vaccinate 7.7 million girls against leading cause of cervical cancer*. Available at: https://www.gavi.org/news/media-room/nigeria-vaccinate-77-million-girls-against-leading-cause-cervical-cancer (Accessed: 29 April 2026).

5. World Health Organization (2023) *Nigeria to vaccinate 7.7 million girls against leading cause of cervical cancer*. WHO Regional Office for Africa. Available at: https://www.afro.who.int/countries/nigeria/news/nigeria-vaccinate-77-million-girls-against-leading-cause-cervical-cancer (Accessed: 29 April 2026).

6. Federal Government of Nigeria (2018), *Nigeria National Cancer Control Plan 2026–2030,* https://www.iccp-portal.org/resources/national-cancer-control-plan-2026-2030.

7. Federal Ministry of Health and Social Welfare (2025), *National Plan for Cervical Cancer Elimination in Nigeria*, FMOHSW, Abuja

Rwanda

How Rwanda Leverages High Level Advocacy, Community-Based HPV Self-Sampling and Digital Health Integration

Key Takeaways

- Rwanda was the first African nation to implement a national HPV vaccination programme — achieving 93% coverage.
- Community-based HPV self-sampling achieved 98% linkage to triage, overcoming access and stigma barriers.
- Mission 2027 commits Rwanda to achieving 90-70-90 targets three years ahead of the global deadline.
- Presidential-level advocacy and First Lady engagement were critical to mobilising political will.

1. Background and challenges

Cervical cancer represents a significant public health challenge globally, with a disproportionate burden on low- and middle-income countries where an estimated 90 per cent of deaths occur [1]. For Rwanda, this is a stark reality. Cervical cancer is the most frequently diagnosed cancer and the leading cause of cancer-related mortality among Rwandan women, accounting for 13 per cent of all cancer cases [2]. The International Agency for Research on Cancer (IARC) estimated 866 new cases and 609 deaths in 2023, with an age-standardised incidence rate of 18.9 per 100,000 women and a mortality rate of 13.8 per 100,000 [3]. Projections indicate that without decisive intervention, the disease could claim more than 142,000 lives between 2020 and 2070, rising to over 457,000 by 2120 [3]. This crisis is compounded by a moderate prevalence of HIV, a known co-factor that increases cervical cancer risk by up to 6 times [1, 4]; data from a multi-country study showed that 27 per cent of the HPV-positive cohort in Rwanda were women living with HIV [4, 15].

The challenge extended beyond disease burden to systemic inequities. Screening uptake among rural women was below 5 per cent, compared to approximately 28 per cent in Kigali [5], driven by long distances to facilities, transportation costs, limited awareness and cultural barriers including fear, stigma and embarrassment surrounding gynaecological examinations. A qualitative study identified fear of pain and a fundamental lack of knowledge about where and how to get screened as the most cited deterrents [6].

Before 2011, Rwanda's health system lacked the infrastructure to address cervical cancer. There was no national HPV vaccination programme, and screening relied on limited visual inspection with acetic acid (VIA), yielding coverage rates of only 2.6 per cent to 28.3 per cent among eligible women. Treatment services were centralised in Kigali, making them inaccessible for rural women. A shortage of trained professionals and a paper-based record system compounded the problem, leading to fragmented data and significant loss to follow-up across the care cascade [7, 8].

Rwanda's challenges must be viewed in the historical context, particularly the 1994 genocide against the Tutsi, which devastated the health system and displaced many health workers. The use of rape during the genocide led to increased rates of HIV and HPV among women. The post-genocide government's focus on rebuilding the health system

with an emphasis on equity and community-based care laid the foundation for the cervical cancer elimination programme. The country's decentralised health system includes more than 500 health centres, over 40 district hospitals, and 8 referral hospitals, with over 85 per cent of the population covered by Mutuelle de Santé, Rwanda's community-based health insurance scheme, which includes cervical cancer services in its benefits [9]. Each of Rwanda's approximately 14,837 villages is served by four elected community health workers (CHWs), creating an unparalleled platform for community mobilisation. It was against this backdrop that the Government of Rwanda resolved to build one of Africa's most ambitious cervical cancer elimination programmes.

2. Policy and health system landscape

In response to this challenge, the Government of Rwanda launched a comprehensive, multi-pronged national strategy – the first of its kind in Africa – designed to address the full continuum of care from primary prevention through screening, diagnosis and treatment, built on four interconnected pillars. This response is anchored in an interlocking policy framework: the fifth Health Sector Strategic Plan (HSSP V, 2024/25–2028/29), the National Cancer Control Plan 2025–2029, and Mission 2027 – the Accelerated Plan for the Elimination of Cervical Cancer 2024–2027 – collectively bind Rwanda to achieving the WHO 90–70–90 targets by 2027, three years ahead of the global deadline [2, 9, 10]. Universal financial access is ensured through Mutuelle de Santé, Rwanda's health insurance scheme covering over 85 per cent of the population, which includes cervical cancer screening, treatment of precancerous lesions and cancer management within its benefit package [9]. Service delivery is operationalised through a decentralised system of more than 500 health centres, over 40 district hospitals, and eight referral hospitals, with cervical cancer services integrated at every level of care. Programme governance is co-ordinated by the Rwanda Biomedical Centers (RBC) Cancer Diseases Unit, supported by a multistakeholder Cancer Technical Working Group. This alignment of political commitment, legal mandate, universal financing and decentralised delivery has been foundational to the programme's reach and sustainability.

3. National intervention

Primary prevention: single-dose HPV vaccination

Rwanda became the first African nation to implement a national HPV vaccination programme in April 2011, through a landmark public–private partnership. The First Lady of Rwanda, Mrs Jeannette Kagame, played a pivotal advocacy role, negotiating directly with Merck to secure a three-year donation of over 1.3 million Gardasil® doses. A strategic partnership between the Ministry of Health (MOH) and the Ministry of Education (MINEDUC) enabled a school-based delivery model leveraging Rwanda's 98 per cent primary school enrolment rate [11]. Annual Grade 6 vaccinations, beginning in 2011, were complemented by secondary school catch-up campaigns, while CHWs systematically tracked and vaccinated out-of-school girls. The programme achieved 93.2 per cent full-course coverage in its inaugural cohort [11, 12]. Since 2015, Gavi, the Vaccine Alliance, has financed HPV vaccination, ensuring long-term sustainability.

In a move demonstrating its commitment to evidence-based public health, Rwanda adopted the single-dose HPV vaccination schedule following the 2022 WHO Strategic Advisory Group of Experts (SAGE) recommendation [13], reducing logistical complexity, lowering costs and addressing global vaccine supply constraints. By 2022, single-dose coverage for girls aged 9–14 reached 93 per cent, and IARC population-level surveys confirmed a dramatic reduction in vaccine-targeted HPV prevalence among vaccinated cohorts [3, 14].

The population-level impact of Rwanda's HPV vaccination programme is already measurable. IARC cross-sectional surveys conducted among women aged 17–29 years – the first vaccinated cohorts – confirmed approximately 47 per cent overall reduction (95 per cent CI 31–60 per cent) in vaccine-targeted HPV genotypes, rising to 78 per cent effectiveness in school-attending cohorts, compared to the pre-vaccination baseline, representing landmark evidence of vaccine effectiveness under real-world programmatic conditions in sub-Saharan Africa [14]. While direct incidence data from vaccinated cohorts remain limited given the typical 20–30 year latency between HPV infection and cervical cancer diagnosis, IARC modelling projections for Rwanda estimate that HPV vaccination, as

part of the full elimination strategy, will avert over 289,000 cervical cancer deaths by 2120 and could save approximately 400,000 lives in total when combined with screening and treatment [3]. IARC also projects that under Rwanda's current strategy, cervical cancer incidence will cross the elimination threshold of 4 per 100,000 women before 2050 [3]. These projections underscore that while the full clinical impact of vaccination will take decades to manifest, the biological impact – measurable reduction in HPV infection prevalence – is already documented, providing a strong evidence base for sustained investment in the programme.

4. Secondary prevention: screening

Recognising that vaccination would not benefit women already exposed to HPV, Rwanda transitioned from opportunistic VIA to systematic, high-performance HPV DNA testing as the primary screening method in 2020, integrating it into primary healthcare services – including family planning, antenatal care and HIV clinics – creating a 'no missed opportunities' approach [2].

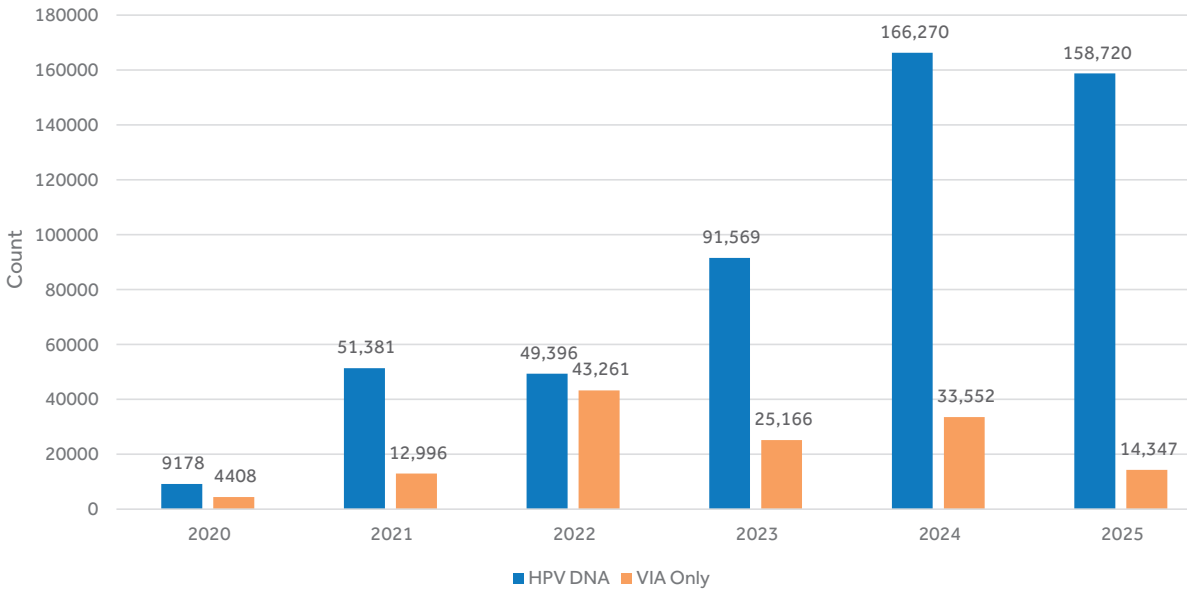
Early detection: community-based HPV self-sampling

A key innovation is the implementation of community-based self-sampling (CBSS) models. A UNITAID-funded prospective study conducted by CHAI across 5 countries screened more than 14,600 women and evaluated 3 delivery models: facility based, community health post and door-to-door [15]. Self-sampling was highly acceptable (with participation rates exceeding 89 per cent), and in Rwanda, both community models proved non-inferior to the facility-based model for linking HPV-positive women to care. In the door-to-door arm, 98 per cent of HPV-positive women were successfully linked to triage, confirming the viability of decentralised approaches for overcoming transportation, cost and stigma barriers [15].

5. Digital health and service integration

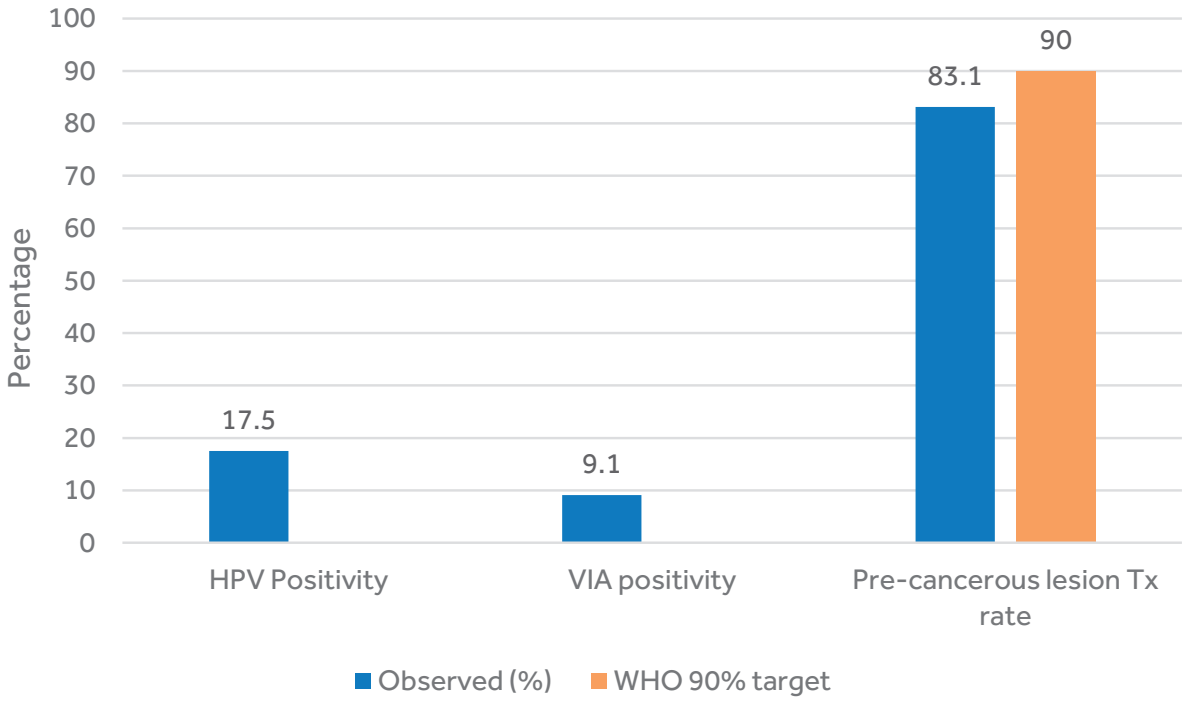
Rwanda has adopted digital health solutions to manage its complex care processes, including a custom system for HPV vaccinations (e-tracker) and cervical cancer screening and treatment (mUzima app). This system facilitates automated SMS reminders, manages referrals between health centres and hospitals, and provides real-time

Figure 3.1. Screening volume by year and test type (HPV DNA versus VIA), 2020–2025



Source: Rwanda HMIS / WCED dataset (2020–2025), Rwanda Biomedical Centre

Figure 3.2. Screening positive rates and precancerous lesion treatment



Note: Screening positive rates (HPV and VIA) and precancerous lesion treatment rate versus WHO 90 per cent target.
Source: Rwanda HMIS / WCED dataset (2020–2025), Rwanda Biomedical Centre

data for programme monitoring [16]. Treatment for precancerous lesions has been decentralised using thermal ablation at health centres and LEEP (loop electrosurgical excision procedure) at district hospitals, while invasive cancer cases are referred to the Butaro Cancer Center of Excellence and the Rwanda Cancer Centers for surgery, chemotherapy and radiotherapy [7]. In April 2025, Rwanda inaugurated the National Health Intelligence Center (NHIC) – an artificial intelligence (AI)-powered platform integrating real-time data from the community to the national level, addressing the longstanding challenge of fragmented health information systems [17].

6. Pre-service curriculum integration and workforce development

Mission 2027 explicitly mandates the integration of cervical cancer prevention, screening (HPV testing and VIA), and treatment of precancerous lesions (thermal ablation and LEEP) into the core curricula of medical, nursing and midwifery schools, in collaboration with the Rwanda Biomedical Centers and the University of Rwanda [2]. This ensures that all new health professionals graduate with the necessary competencies to contribute to the national programme. The 4×4 Workforce Reform ('the Reform') was approved in July 2023 to quadruple health workers within four years. As of December 2025, the Reform had enrolled 16,360 new health professional students across all cadres, tripling annual enrolment from a historical average of 1,604 to 6,340 students per year – with an overall target of 49,802 enrolled health professionals by 2028. Residency programmes expanded from 17 to 24 specialties, fellowship programmes from 8 to 25 subspecialties, and 860 residents and 123 fellows are currently in training [18]. Cervical cancer-specific competencies are also being embedded across all training institutions, ensuring every graduating cohort enters the system equipped for vaccination, screening, treatment and counselling [19]. Rwanda also established a master's programme in oncology nursing in 2015, creating a cadre of specialised nurses to lead cancer care nationwide. These combined efforts are building a resilient, self-sufficient workforce, co-ordinated through the Cancer Technical Working Group. A key but often under-recognised contributor

Table 3.1. Key partners and their contributions to the cervical cancer elimination programme in Rwanda

Partner	Period	Key Contribution	Program Area
Merck / MSD	2011–2014	Donated over 1.3 million Gardasil® doses; enabled the first national HPV vaccination launch in Africa.	Primary prevention (vaccination)
Ministry of Education (MINEDUC)	2011–present	School-based delivery platform leveraging 98% primary school enrolment for annual Grade 6 HPV vaccination.	Primary prevention (vaccination)
Gavi, the Vaccine Alliance	2015–present	Long-term financing of the national HPV vaccination programme, ensuring programme sustainability.	Primary prevention (vaccination)
IARC / WHO	2011–present	Population-level impact monitoring; technical guidance; provision of the WHO Cervical Cancer Elimination Planning Tool.	M&E and technical guidance
UNITAID / CHAI	2020–present	Funded and implemented the community-based self-sampling (CBSS) study; co-developed the cervical cancer electronic medical record (EMR) (mUzima app).	Secondary prevention; digital health
Partners in Health (PIH)	2012–present	Supported establishment of the Butaro Cancer Center of Excellence; oncology workforce development.	Tertiary prevention; workforce
Elekta Foundation	2019–present	Donated radiotherapy equipment to the Rwanda Cancer Centers; supported expansion of radiotherapy services.	Tertiary prevention (treatment)
WHO Regional Office for Africa	2020–present	Technical support for programme review, data quality assurance and alignment with the global elimination strategy.	Technical assistance & governance

Source: Rwanda Biomedical centre/ Cancer diseases unit

to this workforce ecosystem is Rwanda's community health worker (CHW) programme. With approximately 59,000 CHWs organised into 4-person teams serving all the country's approximately 14,837 villages, CHWs have played a central role in sensitisation, mobilisation of women for screening, tracking of HPV-positive women for triage and treatment, and follow-up of women due for rescreening. Their integration into the cervical cancer care pathway has been critical to sustaining high coverage and reducing loss to follow-up at each cascade step [9].

7. Stakeholders and partners

The country's cervical cancer elimination programme has been shaped by sequenced, differentiated partnerships across the programme lifecycle. Table 3.1 summarises the key contributions of each partner.

8. Outcomes and evaluation

Rwanda's integrated approach has produced measurable results across all three WHO elimination pillars, underpinned by a robust monitoring and evaluation system that enables evidence-based course correction.

Table 3.2. Rwanda's progress against WHO 90–70–90 targets (January 2026)

Indicator	Current	Target	Status
HPV vaccination (girls by age 15)	**93%**	≥90%	**TARGET MET**
Screening (women 30–49)	**~30%**	≥70%	**Accelerating**
Treatment of precancerous lesions and Invasive cervical cancer	**~83%**	≥90%	**Approaching**

Source: Rwanda HMIS / WCED dataset (2020–2025), Rwanda Biomedical Centre

9. Evidence of effectiveness: progress on the 90–70–90 targets

Vaccination (target. 90 per cent). Rwanda has consistently exceeded this target since 2011. The school-based programme has maintained coverage above 90 per cent, with the single-dose transition further solidifying this achievement: 2022 data show 93 per cent coverage among girls aged 9–14 [3, 14]. Models project that HPV vaccination will avert over 289,000 deaths by 2120 as part of the full elimination strategy, which is projected to save nearly 400,000 lives in total [3]. IARC population-level surveys confirmed approximately 47 per cent overall reduction (95 per cent CI 31–60 per cent) in vaccine-targeted HPV prevalence among vaccinated cohorts, rising to 78 per cent in school-attending cohorts – landmark evidence of real-world impact in sub-Saharan Africa [14].

Screening (target: 70 per cent). The scale-up of HPV DNA testing has rapidly increased coverage. As of late 2025, approximately 30 per cent of eligible women (from a total eligible population of about 1.73 million) have been screened – up from a VIA-based national baseline of 2.6–28.3 per cent by district – and under 5 per cent in many rural areas [2, 7]. The CBSS results described above confirmed that decentralised approaches maintain high linkage to triage (96–98 per cent), validating this model for

Figure 3.3. Care cascade: follow-up and retention among HPV-positive women – Rwanda

7,187 HPV-positive cohort	**HPV-positive cohort** All HPV-positive women enrolled Rwanda cohort · 2020–2022
5,952 (83%) Attended initial VIA exam	**Attended initial VIA exam** 83% of HPV-positive women 429 (7%) VIA-positive → 425 (99%)
↳Of 5,952 triaged: 429 (7%) VIA-positive → 425 (99%) treated for precancerous lesions	
5,880 (99%) Scheduled for 1-year follow-up	**Scheduled for 1-year follow-up** 99% of attended triaged women VIA-negative + treated groups
▼ 85% of scheduled women never returned for follow-up	
899 (15%) Returned for follow-up	**Returned for follow-up (at any time)** 15% of those scheduled 85% never returned – program critical gap

Notes: 7,187 women were tracked with 83 per cent attending their initial triage exam and, among those, less than 15 per cent attending a follow-up triage exam.
Source: CHAI/RBC (2023), 'Follow-up & Retention Retrospective Study', Rwanda cohort · n = 7,187 HPV-positive women

national scale-up [15]. Screening operates at WHO elimination-level intensity in 9 of 30 districts, with 24 having some services as of October 2025 [20].

Treatment (target. 90 per cent). National programme data from the cervical cancer EMR indicate that approximately 83 per cent of women identified with precancerous lesions across active screening districts have received appropriate treatment (thermal ablation, LEEP or referral for cancer management) [2]. The CBSS study demonstrated even higher treatment rates in its controlled setting: 98–100 per cent of eligible women received thermal ablation [15]. However, a retrospective analysis revealed a critical gap in long-term retention, with fewer than 15 per cent of women returning for their recommended one-year rescreening visit [21]. This indicates that while the initial treatment linkage is strong, sustaining follow-up remains the programme's most pressing challenge.

10. Monitoring and evaluation approach

Rwanda's progress is underpinned by a data-driven M&E framework integrating the national Health Management Information System (HMIS), the Rwanda National Cancer Registry, the Expanded Program on Immunisation (EPI) database, and a purpose-built cervical cancer EMR developed in partnership with CHAI [16]. The EMR captures patient-level data across the entire care continuum – from screening through triage, treatment and follow-up – enabling real-time monitoring of cascade completion and loss-to-follow-up at each stage. Crucially, this data infrastructure has driven programme improvements: the retention gap identified through EMR analysis directly informed the deployment of systematic EMR-based reminder systems [21]. The National Health Intelligence Center (NHIC), launched in April 2025, will consolidate these previously siloed data systems into a unified, AI-powered real-time surveillance platform [17].

11. Cost-effectiveness and resource implications

The investment in Rwanda's cervical cancer elimination strategy has been shown to be highly cost-effective. The IARC Elimination Planning Tool, based on the original elimination strategy model (single-dose vaccination with catch-up for girls aged 10–14, and twice-lifetime screening), projects that the strategy will return US$21.20 for every US$1 invested over 30 years through increased workforce participation and productivity, rising to US$64.96 over a 50-year timeframe [3]. The total 10-year investment is estimated at approximately US$21.4 million, requiring 2.3 million HPV vaccine doses and 544,000 HPV tests. An extended multi-age catch-up vaccination scenario – covering girls up to age 25 – could save an additional 8,917 lives by 2120 at a 10-year cost of US$34.9 million. Eliminating cervical cancer is not only a public health imperative but a smart development investment with measurable economic returns.

12. Lessons learnt

What worked well

- **Political will and presidential-level advocacy.** Unwavering commitment from the highest levels of government – including the First Lady's direct engagement with vaccine manufacturers – mobilised domestic resources, fostered inter-sectoral collaboration between the Ministries of Health and Education, and embedded cervical cancer targets within Rwanda's performance-based governance system (Imihigo) [2, 11].
- **Strategic partnerships.** The sequenced engagement of Merck (initial donation), Gavi (sustained financing), IARC (impact monitoring), UNITAID/CHAI (screening/treatment innovation) and WHO (technical guidance) demonstrates an effective model of differentiated partnership across the programme lifecycle [15].
- **Community-based self-sampling.** Community-based self-sampling brought screening directly to women's doorsteps, eliminating transportation, cost and stigma barriers while maintaining near-complete linkage to triage across all delivery models [15].

Digital health integration. The OpenMRS-based EMR and automated SMS reminders have strengthened patient tracking, reduced fragmentation and enabled data-driven programme management [16].

Key challenges and how they were addressed

- **Long-term retention gaps.** As noted above, the one-year rescreening return rate remains the programme's most pressing challenge [21]. In response, Rwanda is deploying a three-pronged strategy: systematic EMR-based automated SMS reminders, CHW-led proactive tracking of women due for rescreening, and strengthened provider counselling on the meaning of results and the importance of follow-up.
- **Workforce burden on HCWs.** Qualitative feedback from the CBSS study raised legitimate concerns about increased workload on already-stretched healthcare workers. The programme is addressing this through pre-service curriculum integration (ensuring new graduates enter the already competent system) and the 4×4 Workforce Reform, which will significantly expand the available health workforce [19].

Context-specific insights

Rwanda's experience yields three transferable insights for low-resource settings. First, single-dose HPV vaccination and community-based self-sampling are both ideally suited for countries with limited infrastructure and significant geographic barriers. Second, for settings with high HIV prevalence, integrating cervical cancer services with existing HIV care platforms ensures that high-risk populations are systematically reached. Third, Rwanda's trajectory confirms that post-conflict health systems, rebuilt on principles of equity and community participation, can achieve globally competitive outcomes in disease elimination [8, 9].

13. Key recommendations

National policy implications

1. **Institutionalise digital health systems.** It is important to expand the cervical cancer EMR to all 30 districts and fully integrate it with the HMIS and the NHIC, creating a unified patient record that automates follow-up tracking and directly addresses the low one-year retention rates [17, 20].
2. **Strengthen patient counselling.** Standardised counselling protocols should be implemented, addressing the meaning of HPV-positive results, treatment importance and rescreening schedules – integrated into both pre-service and in-service training for all providers, including CHWs [21].
3. **Formalise CHW roles.** Structured training, clear job aids and appropriate incentives need to be provided to sustain community-level interventions while managing workload [15].

Transferable lessons for Commonwealth countries

Rwanda's core lesson is that systems integration, embedding vaccination into school-based delivery, screening into community-level platforms and monitoring into digital EMR tools, delivers results without building parallel infrastructure. The community self-sampling model improved linkage to triage to 96–98 per cent and is directly replicable by other LMICs. Multi-ministry co-ordination and CHW-led outreach are equally transferable, particularly for Commonwealth countries seeking to reach high coverage quickly within existing structures.

- **Adopt high-impact, low-cost technologies.** Countries can prioritise single-dose HPV vaccination and HPV self-sampling – ideal for resource-constrained and small island developing states [13, 15].
- **Integrate, don't isolate.** It is important to embed cervical cancer services into existing primary healthcare, maternal health and HIV platforms to maximise reach and resource efficiency [2].
- **Invest in data-driven, people-centred systems.** Countries can pair political commitment with simple digital tools for patient tracking and community-based delivery models that address patient-cited barriers [16, 17].

14. Linkage to WHO 90–70–90 targets

Rwanda's experience demonstrates that a low-income, post-conflict country can meet the WHO vaccination target and make accelerating progress toward screening and treatment goals through

political commitment, evidence-based technology adoption, differentiated partnerships and community-level delivery. The Commonwealth – accounting for 30 per cent of the global population but bearing 40 per cent of cervical cancer incidence and 43 per cent of mortality [22] – has both the moral imperative and the institutional platform to accelerate elimination across its membership. Rwanda's Mission 2027 provides a concrete, replicable model of how national ambition, anchored in the WHO 90–70–90 framework, can be translated into a time-bound action plan that delivers results.

Acknowledgments

This country case study was prepared by:

Dr Francois Uwinkindi, MD, MSc
Rwanda Biomedical Centre (RBC)

Dr Theoneste Maniragaba, MD, MMed
Rwanda Biomedical Centre

Dr Felix Musabirema, MD, MSc
Rwanda Biomedical centre

Dr Jean de Dieu Hategekimana MD, MSc
Rwanda Biomedical Centre

Marc Hagenimana, MSc
Rwanda Biomedical Centre

References

1. World Health Organization (2020), *Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem*, WHO, Geneva.
2. Ministry of Health, Rwanda (2025), *Accelerated Plan for Elimination of Cervical Cancer in Rwanda 2024–2027 (Mission 2027)*, MOH, Kigali.
3. International Agency for Research on Cancer (IARC) (2025), 'Rwanda: Cervical Cancer Elimination Planning Tool Factsheet', IARC/WHO, Lyon.
4. Stelzle, D, LF Tanaka, KK Lee et al. (2021), 'Estimates of the global burden of cervical cancer associated with HIV', *Lancet Glob. Health,* Vol. 9 No. 2, e161–e169.
5. Niyonsenga, G, D Gishoma, R Sego, MG Uwayezu, B Nikuze, M Fitch et al. (2021), 'Knowledge, utilization and barriers of cervical cancer screening among women attending selected district hospitals in Kigali – Rwanda', *Can Oncol Nurs J*, Vol. 31 No. 3, 266–274.
6. Gafaranga, JP, F Manirakiza, E Ndagijimana et al. (2022), 'Knowledge, Barriers and Motivators to Cervical Cancer Screening in Rwanda: A Qualitative Study', *Int J Women's Health*, Vol. 14, 1191–1200.
7. IAEA (2025), *Rwanda Advances Cancer Control with Focus on Cervical Cancer and Health Workforce Development*, IAEA, Vienna.
8. Binagwaho, A, PE Farmer et al. (2014), 'Rwanda 20 years on: investing in life', *Lancet*, Vol. 384 No. 9940, 371–375.
9. Ministry of Health, Rwanda (2025), *Health Sector Strategic Plan V (HSSP V, 2024/25–2028/29),* MOH, Kigali.
10. Ministry of Health, Rwanda (2025), *National Cancer Control Plan 2025–2029*, MOH, Kigali.
11. Binagwaho, A, CM Wagner, M Gatera et al. (2012), 'Achieving high coverage in Rwanda's national human papillomavirus vaccination program', *Bull World Health Organ.*, Vol. 90, 623–628.
12. Sayinzoga, F, MC Umulisa et al. (2020), 'Human papillomavirus vaccine coverage in Rwanda: a population-level analysis by birth cohort', *Vaccine,* Vol. 38, 4001–4005.
13. WHO (2022), 'Human papillomavirus vaccines: WHO position paper (2022 update)', *Wkly Epidemiol Rec.* Vol. 97 No. 50, 645–672.
14. Sayinzoga, F, V Tenet, DAM Heideman, H Sibomana, MC Umulisa, S Franceschi, JD Hakizimana, GM Clifford, I Baussano (2023), 'Human papillomavirus vaccine effect against human papillomavirus infection in Rwanda: evidence from repeated cross-sectional cervical-cell-based surveys', *Lancet Glob. Health*, Vol. 11 No. 7, e1096–e1104.
15. Clinton Health Access Initiative/UNITAID (2023), Community-Based Self-Sampling (CBSS) Study: Effectiveness, feasibility, and cost of HPV self-sampling implementation models in Rwanda, Malawi, Zambia, Nigeria, and Zimbabwe [unpublished study].
16. Sibomana, H, J Ukwishaka et al. (2025), 'Health worker experiences on the integration of digital health tools for HPV vaccination and cervical cancer services in Rwanda', *BMC Digit Health*, Vol. 3, 10.

17. Ministry of Health, Rwanda (2025), *New Health Intelligence Center to drive real-time, evidence-based decisions*, April, MOH, Kigali.

18. Ministry of Health, Republic of Rwanda (2026), *4×4 Reform Reflections on Two Years of Implementation*, February, MOH, Kigali.

19. Ministry of Health, Rwanda (2023), *The 4×4 Reform: A Path to Quality Health Care in Rwanda*, MOH, Kigali.

20. WHO Regional Office for Africa (2025), *Rwanda steps up progress towards elimination of cervical cancer*, WHO AFRO, Brazzaville.

21. Clinton Health Access Initiative/Rwanda Biomedical Center (2023), Retrospective Study: Follow-up and Retention Rates among HPV-Positive Women Accessing Cervical Cancer Screening in Rwanda, RBC, Kigali [unpublished study].

22. Commonwealth Secretariat (2022), *Towards a Cervical Cancer-Free Commonwealth: Multistakeholder Collaboration*, Commonwealth Secretariat, London.

Zambia

Scalable Model Integrating HPV Vaccination, Community-Driven Screening, Task Shifting for Prevention and Early Detection

Key takeaways

- Integration of cervical cancer screening within HIV services has been a defining success
- The single-visit screen-and-treat model reduced loss to follow-up (~76% immediate treatment rate)
- Task-shifting to nurses/clinical officers was essential for decentralisation
- Sustained political commitment since 2006 with strong multi-partner co-ordination

1. Background and challenge

Zambia has been facing a high burden of cervical cancer, a disease that, despite being largely preventable and treatable, causes significant morbidity and mortality in the country. The situation comes from a complex interplay of epidemiological, socio-economic, healthcare infrastructure and poemy factors, with a notable influence of the country's high HIV prevalence. Cervical cancer remains a significant public health challenge in Zambia, representing one of the leading causes of cancer-related mortality among women [1, 2]. The incidence rate stands at approximately 71.5 per 100,000 women, with a mortality rate of about 49.4 per 100,000 women. These figures place Zambia among the countries with the highest global burden of cervical cancer. These figures also demonstrate that Zambia's current incidence is roughly 16 to 18 times higher than the World Health Organization (WHO) elimination benchmark of 4 per 100,000 women, underscoring the urgent and extensive efforts needed to achieve the 2030 target. Annually, it is estimated that 3,640 women are diagnosed with cervical cancer, and 2,285 women die as a result of the disease. This translates into nine new cervical cancer cases diagnosed and six deaths every day. Cervical cancer is the most common cancer among Zambian women and the leading cause of cancer-related death among females. It accounts for roughly 23.8 per cent of all new cancer cases in both sexes and 41.1 per cent in women [3]. The disease predominantly affects women in their prime reproductive and productive years between 40 and 49 years. This age distribution results in significant years of life lost, contributing to profound societal and economic challenges.

A critical factor exacerbating Zambia's cervical cancer burden is the high prevalence of HIV, with an adult prevalence of approximately 13.8 per cent. The intersection of HIV and cervical cancer has compelled Zambia to integrate screening and prevention with HIV care. Women living with HIV (WLHIV) are five or six times more likely to develop cervical cancer [4,5].

2. Policy and health system landscape

Zambia's commitment to cervical cancer prevention is longstanding, beginning with the establishment of the National Cervical Cancer Prevention Programme (NCCPP) in 2006. Over time, cervical cancer prevention has been progressively institutionalised within national health policy, including its integration into the National Cancer Control Strategic Plan (NCCSP) 2016–2021 and the current NCCSP 2022–2026. These policy efforts reflect a sustained strategic focus

Table 4.1. Key policy and programme milestones for cervical cancer prevention in Zambia

Pillar	Intervention	Key Timeframes
Foundation	National Cervical Cancer Prevention Programme (NCCPP) launch	2006
Screening	Scaleup of VIA screenandtreat in the public sector	2006–present (major scaleup post2010)
Screening	Pilot and scaleup of HPV DNA testing (integrated with HIV services)	2019 (pilot) – 2021 (expanded to all 10 provinces)
Vaccination	Introduction of routine HPV vaccination (girls aged 14 years)	2019
Vaccination	Multiage cohort (MAC) vaccination campaign (girls aged 9–14 years)	September 2023
Policy	National Cancer Control Strategic Plan (NCCSP)	2016-2021,2022-2026

Source Ministry of Expanded program on Immunisation Annual report

on reducing the cervical cancer burden through screening, vaccination and treatment. However, despite early adoption and scaleup of prevention interventions, national screening coverage has remained suboptimal, reaching approximately 32 per cent according to programme statistics [6].

3. National intervention

HPV vaccination

The national human papillomavirus (HPV) vaccination programme was launched following successful pilot projects, with the Gardasil vaccine introduced into the routine immunisation schedule in 2019.This was Initially focused on 14-year-old girls, primarily through school-based programmes, supplemented by outreach efforts to out-of-school girls. In 2023, the Ministry of Health initiated a multi-age cohort (MAC) vaccination campaign targeting girls aged 9 to 14 years [7,8,9]. This campaign aimed to vaccinate approximately 1.42 million girls, utilising schools, health facilities and community outreach to improve coverage and catch-up doses missed during COVID-19 disruptions. The programme is under the Expanded Programme on Immunisation (EPI). Currently, Zambia is giving only a single dose of HPV vaccine to immune-competent girls and three doses to immune-incompetent ones.

Screening

The second pillar requires 70 per cent of women to be screened with a high-performance test by the ages of 35 and 45 years. The primary cervical cancer screening method employed was visual inspection with acetic acid (VIA) with a 'screen-and-treat' approach using thermal ablation or LEEP if necessary. While this approach is accessible and cost-effective, it has lower sensitivity and specificity compared to HPV DNA testing, which is considered the gold standard for screening under WHO. To date, 2.1 million have been screened out of 5.75 million eligible women [4,6].

The programme continues to utilise the nurse-led VIA approach, complemented by a single-visit screen-and-treat strategy. Nurses, medical licentiates and clinical officers are trained to perform VIA and provide immediate ablation or LEEP to VIA-positive women, reducing loss to follow-up. Nonetheless, the country faces immense difficulty in achieving equitable population coverage. The screening is not yet the national organised population-based screening. This is mostly due to lack of awareness and education among the general public, while the weight of screening is skewed towards WLHIV – representing only 13.8 per cent.

Digital cervicography, employing mobile phone imaging, was introduced to enhance quality control and enable teleconsultations with the experts around the country.

Zambia has strategically transitioned to meet the 'high-performance test' requirement of the 70 per cent target by expanding HPV testing to all 10 provinces since 2021 [6,10]. This is supported by 10 regional central laboratories and 70 near point-of-care tests utilising GeneXpert machines. HPV testing has been adopted as the primary screening test. This is in recognition of the superior sensitivity of HPV DNA testing over VIA alone. The transition started with 10 per cent of the eligible population with annual increase of a further 10 per cent. There are now two centralised platforms and one near point of care. The two centralised platforms are the Hologic, where Pather machines are used, with the other being the Cobas 6800 (14), 4800 (2) and 6800 (1) from Roche. The near point of care is the GeneXpert. Most of the tests are done under the Hologic Pather and Cobas. All the machines were either procured by the HIV or the TB programme with these being leveraged on multi-disease testing with HPV prioritisation.

While the move to HPV testing is a major policy success that addresses the screening quality requirements, it has not immediately resolved the problem of low population coverage. The existing barriers, such as low levels of knowledge and logistical constraints, that kept VIA coverage low at 26 per cent must now be addressed to drive demand and access for the new high-performance test. The shift is now for policy to focus simultaneously on quality and equity to increase coverage.

Treatment

Treatment capacity for cervical pre-cancers and invasive cancers remains constrained by infrastructural and workforce limitations. The 'screen-and-treat' model is a giant leap. It has reduced loss to follow-up and facilitated rapid intervention. Invasive cancer treatment is highly centralised at the Cancer Diseases Hospital, but with decentralisation underway [5,11]. Many women present with advanced disease, where curative options are limited, and palliative care becomes the primary focus. This centralisation, coupled with shortages of trained specialists and essential treatment modalities, hampers the overall effectiveness of the cancer control efforts.

Funding for cervical cancer prevention and treatment

Funding for cervical cancer prevention and treatment in Zambia has historically depended heavily on external donors. Notably PEPFAR, along with partners like the Clinton Health Access Initiative (CHAI), the Centre for Infectious Diseases in Zambia (CIDRZ) and other implementing partners, have played important roles. These partnerships have facilitated integration of cervical cancer screening into existing HIV services, optimising resource use and expanding reach to the current 522 cervical cancer clinics across the 10 provinces. Nonetheless, reliance on external funding raises concerns about long-term sustainability. As donor support transitions or diminishes, Zambia faces challenges in maintaining and scaling its programmes without increased domestic investment. This dependency underscores the importance of developing sustainable financing models to ensure continued progress.

Despite policy and programmatic efforts, screening uptake remains low, especially among rural women. Socio-cultural beliefs, myths and low awareness further impede early detection, often resulting in late-stage diagnoses of about 57 per cent when curative treatment is less effective and costlier. Zambia's national cervical cancer intervention, primarily guided by the NCCSP (2016–2021) and subsequent strategic plans, adopted a comprehensive, multifaceted approach to address the entire continuum of care. Key interventions and reforms have been amplified since 2019 to enhance impact. The Zambian model is characterised by its pragmatic, decentralised structure to the 10 provinces and emphasis on integration across services.

The 90 per cent treatment pillar requires the effective management of both precancerous lesions and invasive cancers. While precancer treatment is highly efficient, the provision of comprehensive care for invasive cancer represents the most critical bottleneck in Zambia's cervical cancer elimination effort. This is because of having only a single treatment centre. The Cancer Disease Hospital (CDH) in Lusaka co-ordinates comprehensive cancer management, including radiotherapy, chemotherapy and surgical interventions. There is another cancer centre under construction on the Copperbelt. The NCCSP

aimed to decentralise cancer care services to all provinces by 2021, including training specialised oncology personnel and strengthening provincial facilities. Although full implementation of this plan is ongoing, local training of radiation and gynaecologic oncologist is underway.

4. Key stakeholders and partners

Zambia's fight against the high burden of cervical cancer is sustained by strong multisectoral partnerships, with the Ministry of Health and the Cancer Disease Hospital providing essential governmental leadership and service delivery. In addition to the government the Zambian Screening program is supported by PEPFAR, Gavi, WHO, CHAI and CIDRZ [6-9]. PEPFAR/ the US Center for Disease Control (CDC) provides financial and technical backing, enabling the successful integration of screening into the existing HIV/AIDS care infrastructure. Gavi funds the HPV vaccine procurement for nationwide immunisation efforts and the WHO offers technical guidance for strategy alignment. Key implementation partners, such as CIDRZ, ensure technical quality, training and operational scale-up, while CHAI assists with supply chain and resource planning. This complex network is completed by local civil society organisations and patient advocacy groups, which are vital for community engagement, public awareness and combating the social stigma surrounding the disease. This integrated, multisectoral approach continues to evolve, aiming to reduce cervical cancer incidence and improve outcomes across Zambia.

5. Outcomes and evaluations

Zambia's programme has demonstrated significant progress, primarily in service delivery and treatment of precancerous lesions, though population-level coverage and mortality reduction remain the ultimate problems. Despite high facility-level engagement, national population-level screening coverage remains low, recorded at around 32 per cent of eligible women, which is significantly short of the 70 per cent WHO target. The Cervical Cancer Prevention Program in Zambia (CCPPZ) has been highly effective in increasing women's engagement in screening. Today, 2.1 million have been screened. The screen-and-treat model showed a high immediate treatment rate. Of women who screened VIA-positive for precancerous lesions, approximately 76 per cent received immediate treatment with ablation or LEEP. This high follow-through rate is a major success of the SVT model, drastically reducing loss to follow-up.

The programme demonstrated success in reaching high-risk populations, with WLHIV being significantly more likely to be screened, often four times more likely than their HIV-negative counterparts, demonstrating effective integration. However, screening uptake is skewed towards HIV-positive women, neglecting the general population.

Initial HPV vaccination coverage for the target cohort showed promising uptake but struggled with completion rates. Between 2019 and 2022, approximately 73 per cent of eligible girls received the first HPV dose, but less than half received the second dose, pointing to challenges in multi-dose scheduling. The 2023 MAC campaign aimed to rectify this, with coverage expected to increase significantly. The coverage following MAC was 63 per cent.

While the programme has effectively reduced the prevalence of precancers in the screened population, definitive evidence on a reduction in national age-standardised cervical cancer incidence and mortality rates has yet to be demonstrated, largely due to the long lag time between screening/vaccination and a measurable drop in invasive cancer rates.

6. Monitoring and evaluation approach

The monitoring and evaluation framework for the cervical cancer programme tracks several critical indicators to measure performance and impact, beginning with process metrics such as the number of women screened (disaggregated by age and HIV status) and the VIA/HPV positivity rates, VIA/HPV results and immediate treatment provided (cryotherapy/ablation. Key to assessing the efficiency of the 'screen-and-treat' model is the immediate treatment rate for precancers, which measures follow-through effectiveness. At the population level, the programme tracks screening coverage (percentage of eligible women screened) and HPV vaccine dose one and two coverage for the target cohort. Finally, outcome indicators measure the ultimate success of the programme by monitoring the stage of cancer

at diagnosis (to track the shift towards earlier detection) and the age-standardised incidence and mortality rates. National population-based surveys, such as the Zambia WHO STEPwise Approach to Noncommunicable Disease Risk Factor Surveillance (STEPS) survey [12], have been crucial for estimating population-level screening coverage. The Cancer Diseases Hospital (CDH) maintains the national cancer registry, which tracks invasive cancer incidence, stage at diagnosis and mortality.

7. Key recommendations

Transferable lessons for other Commonwealth countries

1. Integration of HIV and sexual and reproductive health (SRH) services

   Zambia's integration of cervical cancer screening within HIV services stands out as a key success, leveraging a well resourced, high volume antiretroviral therapy (ART) platform to reach women at highest risk. This approach normalised screening, reduced stigma and enabled efficient use of infrastructure and human resources. Taskshifting to nurses and clinical officers further decentralised care and significantly increased access at the primary healthcare level. Sustained political commitment since 2006, formalised through the NCCSP and HPV vaccine introduction, has created a stable platform for partner co-ordination and longterm programme planning.

2. Adoption of the single visit screen and treat (SVT) model

   The SVT model has been one of the most impactful innovations in Zambia's programme. Immediate treatment following a positive screening result dramatically reduced loss to followup and ensured timely intervention for precancerous lesions. This model is particularly well suited to low resource and rural settings and should be prioritised by countries seeking rapid reductions in precancer burden.

3. Embracing taskshifting and digital health innovations

   Training nurses, medical licentiates and clinical officers to lead screening and treatment services proved essential for scaleup. Digital cervicography supported quality assurance and mentorship, demonstrating the value of lowcost digital health tools in enhancing service quality. Future programmes can further expand digital platforms for appointment reminders, result notification and treatment tracking to reduce attrition.

4. Strengthening community engagement and demand generation

   Community-based organisations, survivor advocacy groups such as Teal Sisters and grassroots sensitisation efforts played a critical role in addressing fear, stigma and misconceptions surrounding cervical cancer. Strengthening community engagement is essential for improving demand, reducing late presentation and ensuring followup, particularly among women who are not engaged in HIV care.

Linkage to WHO 90-70-90 target

Zambia's cervical cancer response is closely aligned with the World Health Organization's Global Strategy to Accelerate the Elimination of Cervical Cancer, which sets ambitious 90–70–90 targets to be achieved by 2030. While the country has demonstrated strong political commitment and notable progress across all three pillars, namely vaccination, screening and treatment, important gaps remain that must be addressed to meet elimination thresholds. Assessing Zambia's current performance against these global benchmarks provides a clear framework for identifying priority policy actions and acceleration strategies.

Table 4.2 summarises Zambia's status, key challenges and targeted recommendations in relation to the WHO 90–70–90 elimination targets.

Table 4.2. Alignment of Zambia's Cervical Cancer Program with WHO 90–70–90 elimination targets

WHO pillar	Target (2030)	Zambia status/ challenge	Recommendation for acceleration
90% Vaccination	90% of girls fully vaccinated by age 15	High first-dose uptake (~73%), but low second-dose completion.	Sustain MAC campaigns, and integrate vaccine delivery and tracking into all school and community health platforms.
70% Screening	70% of women screened with a high-performance test by age 35 and 45	National coverage remains low (~32%). Screening is mainly VIA, not a high-performance test.	Increase on HPV DNA testing with self-sampling to rapidly increase coverage across all eligible women.
90% Treatment	90% of precancers treated and 90% of invasive cancers managed	High success (~78% treatment rate) for precancers due to SVT model. Invasive cancer management is limited due to centralisation.	Maintain high SVT success; decentralise invasive cancer diagnosis and management capacity through the hub-and-spoke model.

Source Ministry of Expanded program on Immunisation Annual report, Cervical cancer program Data

Table 4.3. Implementation challenges, mitigation strategies and lessons for future scaleup

Challenge	How it was addressed	What could be done differently
Low population screening coverage	Shift to high-performance HPV DNA testing with self-sampling to overcome barriers like stigma and scaling up community outreach.	Initiate HPV self-sampling pilots earlier to rapidly scale population reach, focusing on community health workers (CHWs) for sample collection.
Low HPV vaccine second-dose completion	Launching the multi-age cohort (MAC) campaign (2023) to catch up missed cohorts and reinforce the school-based strategy.	Integrate HPV vaccination tracking more rigorously with other routine childhood immunisation records and use digital reminders.
Centralised tertiary care/late presentation	Policy to expand treatment capacity to all 10 provinces (as per NCCSP) and training of cancer focal persons at the provincial/district levels.	Aggressively invest in mobile/ regional specialised training and in establishing spoke-and-hub referral networks to reduce patient travel distance.

8. Lessons learnt

Zambia's experience highlights key lessons learnt from the implementation of cervical cancer prevention and control interventions, demonstrating how programme challenges were addressed and where alternative approaches could strengthen future scale-up (see Table 4.3).

9. National policy implications

1. Adopt the single-visit screen-and-treat model: This model is highly effective for precancer management in low-resource settings, offering a blueprint for minimising loss to follow-up.
2. Integrate with other existing disease programmes: It is important for Zambia to continue to leverage successful, well-resourced disease control programmes (e.g., HIV, TB or maternal/child health) as delivery platforms for cervical cancer screening and vaccination.
3. Embrace task-shifting and digital health: Zambia should continue to train non-physician clinicians (nurses, clinical officers) to provide screening and basic treatment [13,14] It is important to utilise digital tools (telemedicine, digital cervicography) for quality assurance and specialist consultation.
4. Accelerate the shift to HPV DNA testing and self-sampling: As a policy mandate, the country can officially declare HPV DNA testing (with a self-sampling option) as the primary national screening test for women aged 25–59, replacing VIA over a phased timeframe.
5. Investment: Dedicated funding should be secured for the laboratory capacity, cold chain and training needed for widespread molecular testing and digital pathology.
6. Ensure sustainable domestic financing for HPV vaccine: In terms of budgeting, national budget lines should be ring-fenced to cover the full cost of the HPV vaccine as Gavi support is phased out.
7. Target cohort maintenance: Zambia should sustain and strengthen the 9–14-year-old
8. multi-age cohort vaccination strategy through consistent school and community campaigns to reach the 90 per cent target.
9. Decentralise tertiary cancer management network: It is important for the country to establish a formal 'hub-and-spoke' referral system to link primary screen-and-treat sites with regional diagnostic and treatment centres, rather than concentrating all advanced care at the Cancer Diseases Hospital.
10. Workforce: Zambia can increase the pipeline for oncologists, palliative care specialists and biomedical engineers needed to maintain radiotherapy equipment.

Acknowledgments

This country case study was prepared by:

Dr Paul Kamfwa, Head, Zambia's National Cervical Cancer Programme under the Ministry of Health

Karen Nakawala, Cervical cancer survivor and the founder of Teal Sisters Foundation Zambia, a patientled advocacy organisation

References

1. World Health Organization (WHO).
   Global strategy to accelerate the elimination of cervical cancer as a public health problem. Geneva: World Health Organization; 2020.
   Available at: https://www.who.int/publications/i/item/9789240014107

2. ICO/IARC Information Centre on HPV and Cancer.
   Zambia: Human papillomavirus and related cancers – Fact Sheet. Barcelona: ICO/IARC; 2023. Available at: https://hpvcentre.net/statistics/reports/ZMB_FS.pdf

3. International Agency for Research on Cancer (IARC).
   GLOBOCAN 2022: Zambia Fact Sheet. Global Cancer Observatory. Lyon: IARC; 2024. Available at: https://gco.iarc.who.int/media/globocan/factsheets/populations/894-zambia-fact-sheet.pdf

4. Groesbeck P, Mwanahamuntu MH, Sahasrabuddhe VV, et al.
   Cervical cancer and HIV in Zambia: a public health priority.
   The Lancet Global Health. 2021;9(6):e832–e840.
   doi:10.1016/S2214-109X(21)00062-0

5. Parham GP, Mwanahamuntu MH, Sahasrabuddhe VV, et al.
   Implementation of cervical cancer prevention services for HIVinfected women in Zambia: measuring program effectiveness.
   Journal of Acquired Immune Deficiency Syndromes. 2015;68(Suppl 2):S193–S201.
   doi:10.1097/QAI.0000000000000497

6. Ministry of Health, Republic of Zambia.
   National Cancer Control Strategic Plan 2022–2026. Lusaka: Ministry of Health; 2022.

7. World Health Organization Regional Office for Africa (WHO AFRO).
   Zambia steps up HPV screening to eliminate cervical cancer. Brazzaville: WHO AFRO; 2024.
   Available at: https://www.afro.who.int

8. UNICEF Zambia. MultiAge Cohort (MAC) HPV vaccination campaign in Zambia.
   Lusaka: UNICEF; 2023.
   Available at: https://www.unicef.org/zambia

9. Gavi, the Vaccine Alliance. Zambia launches national HPV vaccination campaign.
   Geneva: Gavi; 2023. Available at: https://www.gavi.org

10. Lubeya MK.
    HPV vaccination updates in Zambia.
    Zambian Journal of Public Health. 2023;7(1):15–18.

11. World Bank Group. Progress doesn't need perfection: Zambia is rewriting cervical cancer prevention. Washington DC: World Bank; 2026.
    Available at: https://www.worldbank.org/en/news/feature/2026/02/02/progress-doesn-t-need-perfection-zambia-is-rewriting-cervical-cancer-prevention
    (Accessed 29 April 2026)

12. World Health Organization Regional Office for Africa (WHO AFRO).
    Zambia launches the WHO STEPwise Approach to Noncommunicable Disease Risk Factor Surveillance (STEPS) survey. 2026.
    Available at: https://www.afro.who.int/countries/zambia/news/zambia-launches-steps-survey-noncommunicable-diseases-ncds

13. World Bank Group (2026). Progress doesn't need perfection: Zambia is rewriting cervical cancer prevention.

14. Parham GP, Groesbeck P, Mwanahamuntu MH, et a**l.**
Validation in Zambia of a cervical screening strategy including HPV genotyping and AIbased automated visual evaluation.
Infectious Agents and Cancer. 2023;18:61.
doi:10.1186/s13027-023-00536-5

Asia

Asia presents a diverse set of health system contexts within the Commonwealth, from large federal systems to smaller, middle-income states. The three Asian case studies illustrate digital health innovation, decentralised delivery, and precision screening approaches.

Case Studies in This Section

- Bangladesh
- Brunei Darussalam
- Malaysia

Bangladesh

Closing the Cervical Cancer Care Cascade: How Bangladesh Leverages Digital Integration and Decentralised Delivery

Key Takeaways

- Bangladesh demonstrates a perfect example of deployment of DHIS2 for cervical cancer screening, a replicable model for LMICs.
- HPV vaccination achieved 88% coverage across 7.2 million girls in two phases (2023-2024).
- Digital follow-up via DHIS2 tracker increased colposcopy compliance from 57.9% (2022) to 81% (2026).
- School-based and community-based delivery combined with multi-ministry coordination drove high vaccine uptake.

Background and challenge

Bangladesh is a densely populated low- and middle-income country (LMIC) in Southeast Asia, with 8 divisions, 64 districts and 495 *upazilas,* having a population of 165 million according to the 2022 census [1]. Among them, 83 million are female, and most people live in rural areas. Health sector spending represents 2.34 per cent of the gross domestic product (GDP) [2].

Bangladesh's healthcare delivery system starts at the national level under the Ministry of Health and Family Welfare (MOHFW), downward through divisional and district hospitals that supervise local services through secondary and tertiary care. *Upazila* health complexes provide primary healthcare supported by Union Health and Family Welfare centres. At the grassroots level, community clinics serve as the first point of care for rural populations.

Cervical cancer remains one of the gravest threats to women's lives worldwide. As per GLOBACAN 2022, it is the fourth most common cancer globally among women, with 661,044 new cases and 348,709 deaths [3]. Alarmingly, 90 per cent of these new cases and deaths occur worldwide in LMICs.

In Bangladesh, cervical cancer is the second most common cancer for females and the third leading cause of female cancer deaths. The World Health Organization (WHO) estimated about 9,640 new cervical cancer cases in Bangladesh in 2022, with a mortality rate of 7.0 per cent. Human suffering due to cervical cancer in Bangladesh is depressing. There is about one new case every 45 to 65 minutes, 22–32 new cases per day, with 28 women dying from the disease every day [4]. The high prevalence of cervical cancer in this country is due to early marriage, early initiation of sexual activity, multiple sexual partners, sexually transmitted diseases (STDs), low socio-economic conditions and lack of awareness. Cervical cancer is caused by the sexually transmitted human papillomavirus (HPV), which is one of the most common viral infections of the reproductive tract. Cervical cancer is preceded by precancerous changes within cervical cells, which represent a continuum of morphologic changes beginning with CIN (cervical intraepithelial neoplasia)1 and progressing through CIN2 and CIN3 to invasive cancer. Survival of cervical cancer patients is strongly determined by stage at diagnosis. As per the hospital–based registry of National Institute of Cancer Research and Hospital (NICRH), 95.8 per cent of cervical

cancer patients present with inoperable advanced stage cancer [5]. Due to the late stage at diagnosis and inadequate management facilities, the mortality rate from cervical cancer is very high in Bangladesh. The overall 5-year relative survival for early and localised cancer is 73.2 per cent – but can be as low as 7.4 per cent for advanced stage disease [6].

1. Policy and health system landscape

Treatment of cervical cancer is expensive and requires radical operative procedures and/or radiotherapy and a prolonged hospital stay. Facilities for radical surgery and radiotherapy are available only in few government institutions. In the private sector, treatment facilities are available in limited centres and are expensive, placing them out of reach for most Bangladeshi women. In 2020, the WHO adopted the Global Strategy to Accelerate the Elimination of Cervical Cancer as a public health problem, setting 3 targets: 90 per cent of girls vaccinated with the HPV vaccine by 15 years of age; 70 per cent of women screened with a high-performance test by 35 years of age and again by 45 years of age; and 90 per cent of women identified with cervical precancer or invasive cancer receiving treatment (the 90–70–90 targets).

2. National Intervention

Bangladesh's national response to cervical cancer focuses on mainly the preventive aspects – Pillar 1 (HPV vaccination) and Pillar 2 (cervical cancer screening) with both the government and private sectors engaged. The Government of Bangladesh has a national strategy for cervical cancer prevention and control (2017–2022). These strategies include broad guidelines to strengthen the National Cervical Cancer Control Programme by introducing HPV vaccination for adolescent girls through the Expanded Programme on Immunization (EPI) and by implementing a population-based, organised cervical cancer screening and treatment through the public delivery system. Across both pillars, digital innovation has played a transformative role in supporting programme delivery, data collection and monitoring.

HPV vaccination. Bangladesh's HPV vaccination journey began with a small-scale pilot. The Oncology Club Bangladesh, with financial support from Grameen Phone Limited and under the leadership of Bangabandhu Sheikh Mujib Medical University (BSMMU) [7], vaccinated 100 girls under this early initiative. Building on this, on 16 April 2016, the GoB and GAVI (the Vaccine Alliance) implemented HPV demonstration projects in four *upazilas* and one zone of Gazipur District, targeting Grade 5 schoolgirls and out-of-school girls aged 10–12 years, who received two doses of Cervarix (Bivalent) six months apart. Under this project, 33,000 girls received the HPV vaccine. In alignment with the WHO 90–70–90 targets, a national-level HPV vaccination campaign lead by the MOHFW was launched in October 2023, adopting a single-dose regimen for girls aged 10–14 years. This phased approach aimed to vaccinate millions of girls across the country.

The programme is a collaborative effort between the Directorate General of Health Services (DGHS) and international partners including GAVI, the WHO and the UN Children's Fund (UNICEF) Bangladesh. The first phase was conducted in Dhaka Division in October 2023. The second phase was successfully completed in the remaining seven divisions of Bangladesh from October to November 2024. Across both phases, the programme vaccinated over 5.6 million girls, achieving an overall 93 per cent coverage rate among the target population. Operationally, the programme combined schoolbased delivery through educational institutions with communitybased approaches. Several digital innovations were adopted such as VaxEPIbased registration, online microplanning and realtime reporting with rapid coverage assessment. The HPV vaccine was offered free of charge after registration on the VaxEPI app or the dedicated website. Since July 2025, the HPV vaccination has been integrated into the routine EPI for girls aged 10 years old, including both school-going and out-of-school girls. Bangladesh's EPI is one of the country's well-established and successful programmes that aim to reduce child morbidity and mortality from vaccine-preventable diseases, and integrating the HPV vaccine into this platform is expected to improve long-term sustainability, efficiency and coverage.

Screening. The cervical cancer screening programme in Bangladesh was officially launched by the MOHFW in 2005 after implementation and evaluation of a pilot programme in 16 districts [8,9,10]. Given its simplicity, low cost, potential for immediate linkage with treatment, and the

possibility of rapid training of service providers, visual inspection with acetic acid (VIA) was adopted as the primary screening method. Initially based in tertiary hospitals, the programme was gradually scaled up to district hospitals with support from Bangladesh Medical University (BMU) and the UN Population Fund (UNFPA) and, by 2010, all 64 districts had been covered. In 2012, the MOHFW established a National Centre for Cervical and Breast Cancer Screening and Training (NCCBCST) at the BSMMU to facilitate a rapid boost in the number of service providers through competency-based training, and thereby rolling out the screening programme further to the *upazila* health facilities and community clinics [10,11,12]. The number of screening centres increased to 600, with all centres providing screening services free of cost [13].

On enrolment, women are registered at the community clinics (CCs) for subsequent follow-up and tracking and are screened using the VIA method in health facilities at upazila health complexes (UHCs) or higher level facilities and at selected CCs during special screening camps. Trained senior staff nurses (SSNs) or doctors perform the VIA test. VIA-positive women are referred to the nearest colposcopy centre located in secondary or tertiary hospitals. Those with colposcopy-positive women are given treatment (loop electrosurgical excision procedure (LEEP) or thermal ablation (TA)) and followed up at certain intervals using a standard protocol.

Data on each woman, at each service encounter, are captured in real time through an online District Health Information System version 2 (DHIS2)-based electronic date server. Online access to this DHIS2 server has been rolled out across the country. A web portal dashboard presents a real-time data summary [13, 14, 15].

Digital technology has been central to scaling Bangladesh's screening programme. In 2010, Bangladesh introduced an electronic health information system (e-HIS) using DHIS2 [14]. DHIS2 is an open-source software developed by the University of Oslo and is used in over 80 LIC and MICs to collect data from various health programmes [2]. Bangladesh has become the largest deployer of DHIS2 globally.

From 2012 to 2018, the health information system transitioned from a paperbased, aggregated reporting approach to an electronic platform. The first stage of this transition began in 2013 with the introduction of an aggregated electronic data collection system [16, 17, 18]. In 2018, this system was strengthened through the establishment of a casebased electronic registry, and enrolment was expanded down to the grassroots level in community clinics [19].

Since 2019, the eHIS has been collecting individuallevel data for the cervical screening programme by registering each participant through the DHIS2 tracker application [20]. This shift to individual case capture added a new dimension to the programme by enabling personalised invitations and reminders, improving tracking of screenpositive women, and generating key performance indicators (KPIs) to support ongoing programme monitoring and evaluation.

10. Stakeholders and partnerships

The programme has required multisectoral engagement across government and civil society. Key stakeholders include the MOHFW, DGHS, Directorate General of Family Planning (DGFP), Bangladesh Medical University (BMU), international partners (GAVI, WHO, UNICEF, UNFPA), professional societies (OGSB, GOSB), the Bangladesh Cancer Society, non-governmental organisations (NGOs) and community organisations. For the HPV vaccination campaign, the Ministries of Education, Islamic Foundation, Information, Social Welfare, and Women and Children Affairs all played roles in outreach and mobilisation.

Table 5.1. Cervical cancer screening programme development timeline

Year	Activities	Agencies
2003	Stakeholders' orientation on screening of cervical cancer.	GOB, DGFP, DGHS, OGSB, BSMMU, Bangladesh Cancer Society, oncologists, pathologists from different institutions, NGOs
2005	Pilot programme on CC screening based on VIA in 16 HD, 16 MCWC, 12 UH & FWC. Research during pilot programme and inclusion of breast cancer screening in the programme.	GOB, DGFP, DGHS, BSMMU, UNFPA
2006	Pilot programme on breast cancer screening, and developing standards, guidelines and curriculum.	GOB, DGHS, DGFP, BSMMU, UNFPA
2006 onwards	Development of colposcopy clinics at all GOB MCHs.	GOB, DGHS, DGFP, BSMMU, UNFPA
2006–2010	Scaling up the screening services to remaining DHs, MCWCs, MCHs and others.	GOB, DGHS, DGFP, BSMMU, UNFPA
2012–2018	Further scale up to selected 200 UHCs. Development of colposcopy and breast clinics. Development of National Centre for Cervical and Breast Cancar Screening and Training at BSMMU. Introduction of DHIS2 through use of aggregated data collection from screening centres.	MOHFW, DGHS, DGFP, BSMMU, WHO, UNFPA
2018–2026	Further scale up to remaining 224 UHCs. Development of colposcopy and breast clinics. Development of electronic data tracking with population-based cervical and breast cancer screening and training programme. Introduction of case-based data system using DHIS2.	MOHFW, DGHS, DGFP, BMU, WHO, UNFPA
Ongoing activity	Training programmes Development of new centres and more colposcopy clinic Treatment of cervical pre-cancer Co-ordination, supervision and monitoring Record keeping and data management Research activities	GOB, DGHS, DGFP, BMU, UNFPA, WHO

Source: Nessa A, Chowdhury SB, Fatima P, Kamal M, Sharif M, Azad AK. Cervical cancer screening program in Bangladesh. Bangladesh J Obstet Gynaecol. 2018;33(1):63-73.22

11. Outcomes and Evaluations

Evidence of effectiveness

For elimination of cervical carcinoma, Bangladesh gives more emphasis on vaccination and screening by visual inspection with acetic acid (VIA).

Vaccination. The national-level HPV vaccination campaign led by the MOHFW was launched in October 2023 with a focus on a single-dose regimen (Bivalent -16,18) for girls aged 10 to 14 years. In Phase 1 (Dhaka Division, October 2023), 1,513,762 girls were vaccinated against a target of 2,018,943, achieving 74.98 per cent coverage. In Phase 2 (the 7 remaining divisions, October–November 2024), 5,678,026 girls were vaccinated against a target of 6,123,886, achieving 92.7 per cent coverage. Combined, the programme vaccinated over 7.2 million girls, with an overall 88 per cent coverage rate (Figure 5.1), a result that is near the WHO 90 per cent target and demonstrates the effectiveness of the school-based and community-based delivery strategy.

Screening. VIA screening in Bangladesh is performed at dedicated clinics at the primary (UHCs), secondary (district hospitals and mother and child welfare centres), and tertiary (medical college hospitals and specialised hospitals) levels of healthcare. Most of the women are enrolled in *upazila* health complexes and community clinics (Figure 5.2) [20]. Currently, three-quarters of all enrolments are collectively done by primary-level health facilities, reflecting the success of decentralised delivery and the importance of proximity to women's homes in driving uptake. To maintain high standards across this vast network, the programme conducts regular quality improvement and quality assurance (QI/QA) processes, including periodic retraining of practitioners to mitigate the inherent subjectivity of VIA.

The screening coverage has grown substantially from 11,693 women screened in 2005 to 902,395 in 2024 (Figure 5-5.3) [20]. Between 2019 and February 2026, a total of 5,699,755 women were enrolled in the case-based data collection system (Figure 5.4) [21]. The current care cascade reveals a high level of engagement. Of those enrolled, 3,033,436 (53 per cent) have completed VIA screening and 92,348 (3 per cent) tested VIA-positive. Of critical importance is the fact that 74,830 (81 per cent) of VIA-positive women underwent colposcopy evaluation, of whom 32,368 (43.3 per cent) were colposcopy-positive (Figure5.4). The consistent increase in year-wise enrolment and VIA screening test indicates Bangladeshi women's acceptance and interest in the screening programme.

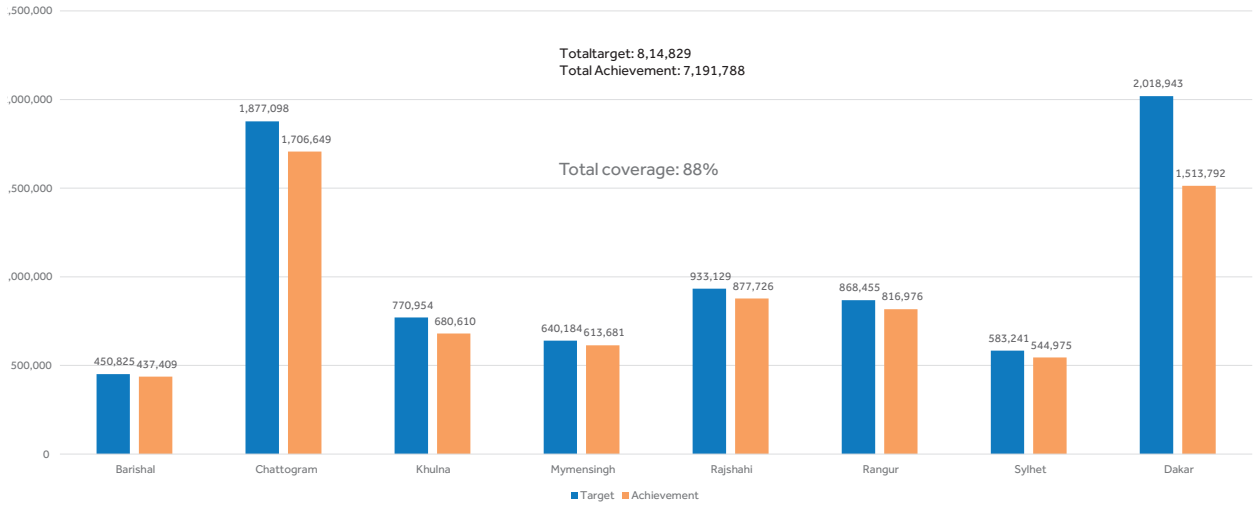
A transformative shift in the programme's effectiveness is attributed to the integration of the DHIS2 tracker within the electronic health information system (e-HIS). This system automates the invitation of eligible individuals and the recall of screen-positive patients through telephone reminders and SMS. The impact of this digital follow-up on patient retention has been profound; colposcopy compliance rose from 57.9 per cent in 2022 to 81 per cent in 2026. By utilising case-based tracking, Bangladesh has become a global leader in implementing the DHIS2 tracker at a national scale to ensure data quality and minimise loss to follow-up across the full cascade of care.

Among women diagnosed with cervical precancer via colposcopy, the programme has successfully treated 6,205 individuals (Table 5.2) [20]. The primary treatment modality is thermal ablation (81.6 per cent), followed by the loop electrosurgical excision procedure (LEEP) at 17.6 per cent. Despite these advances, significant barriers to universal coverage remain. Women in 'hard-to-reach' coastal and hilly districts face geographic isolation, lack of transport and a shortage of local screening facilities. Furthermore, social factors – including conservative cultural norms, misconceptions and a lack of awareness regarding screening benefits – continue to limit access for the most vulnerable populations.

Trends in incidence and mortality

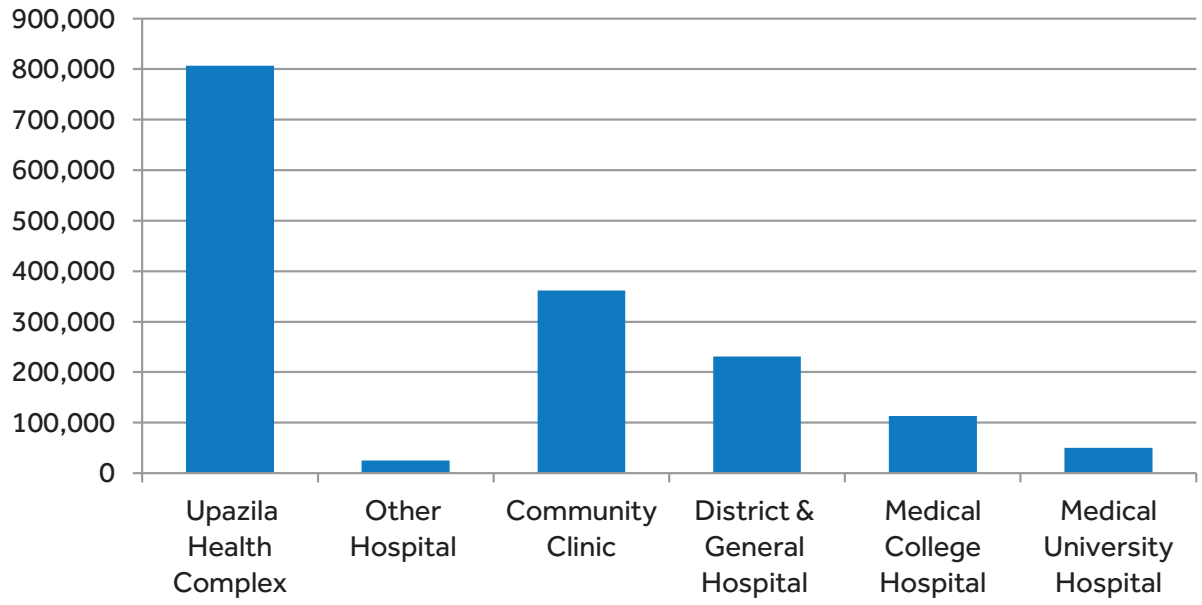
With the combined impact of vaccination and screening interventions, cervical cancer incidence and mortality in Bangladesh have shown a declining trend (Table 5.3). The incidence fell from 17,686 cases in 2008 to 8,068 in 2018, though it was recorded at 9,640 in 2022, indicating continued need for sustained programme effort. Mortality declined from 10,364 in 2008 to 5,214 in 2018, with 5,826 deaths recorded in 2022.

Figure 5.1. Nationwide HPV vaccination Target versus Achievement)



Source: VaxEPI — Vaccine Extended Program on Immunization (Bangladesh's EPI vaccination data system)& DHIS2 — District Health Information Software 2

Figure 5.2. Distribution of screened women by type of health facility – as enrolled (N=1,587,758) (2018–2023, case-based data)

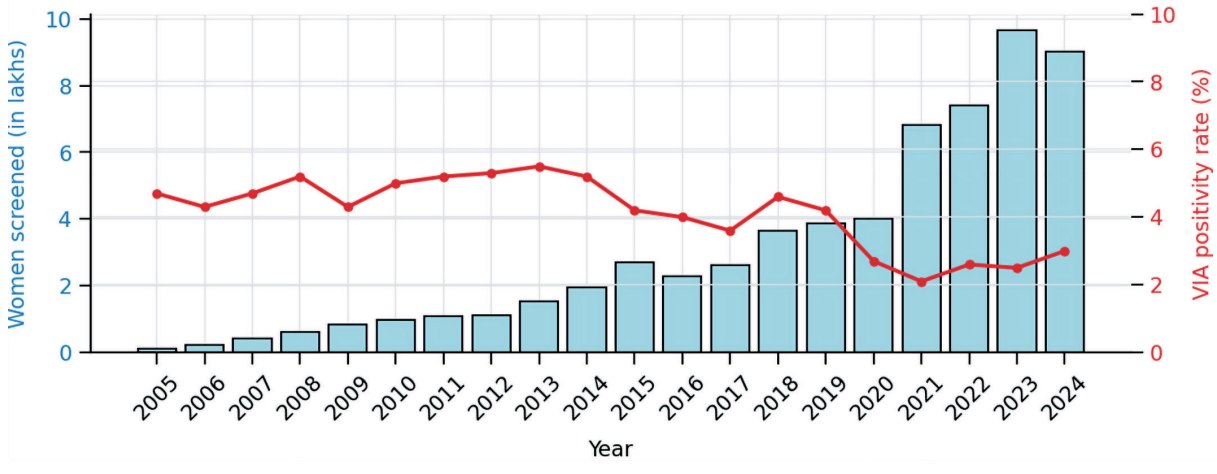


Source: Nessa, A, AK Azad, SMN Uddin, MAH Khan, S Zaman, MAS Khan (2025), 'Cervical cancer screening data from the case-based national electronic registry in Bangladesh', BMC Glob Public Health, Vol. 3, 34, doi:10.1186/s44263-025-00145-x.20

Monitoring and evaluation approach

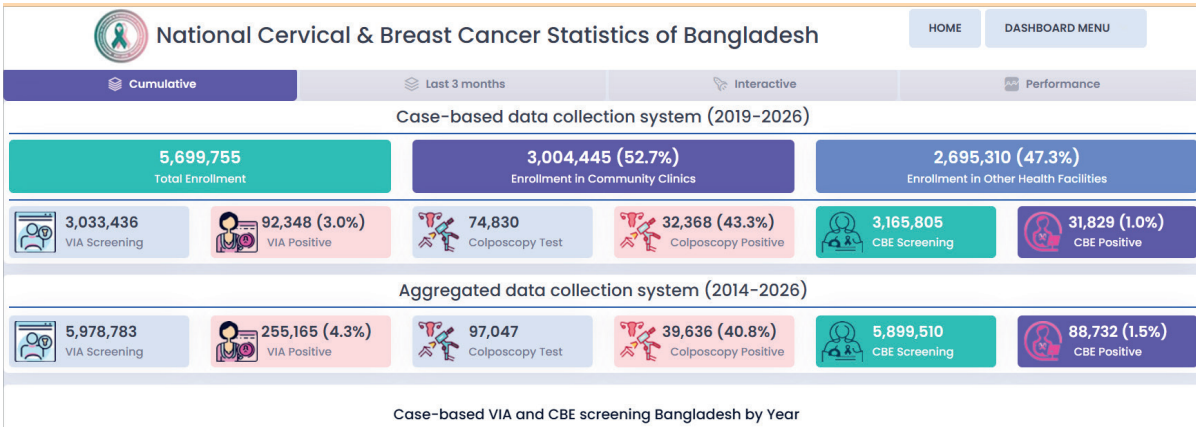
The National Center for Cervical and Brest Cancer Screening and Training (NCCBCST) at BMU, Dhaka, is responsible for protocol development, conducting regular training of nurses and clinicians, monitoring performance of different health facilities, and co-ordinating with the MoH, DGHS and other stakeholders to ensure smooth operations and expansion of services. The DHIS2 e-HIS enables real-time, individual-level data collection and analysis. Key performance indicators (KPIs) are tracked through a web portal dashboard, providing ongoing visibility into programme performance across all levels of the health system.

Figure 5.3. Cervical cancer screening performance, Bangladesh (2005–2024)



Source: Nessa, A, AK Azad, SMN Uddin, MAH Khan, S Zaman, MAS Khan (2025), 'Cervical cancer screening data from the case-based national electronic registry in Bangladesh', BMC Glob Public Health, Vol. 3, 34, doi:10.1186/s44263-025-00145-x.20

Figure 5.4. National cervical cancer screening care cascade, Bangladesh (2019–2026)



Source: Ministry of Health and Family Welfare, National Cervical and Breast Cancer Statistics of Bangladesh, MOHFW, Dhaka, https://cancer-dashboard.mohfw.gov.bd/cervical-breast.21

3. Lessons Learnt

Bangladesh is actively combating cervical cancer through a nationwide HPV vaccination campaign and an expanded screening programme by VIA. Bangladesh has high coverage of HPV vaccination due to the following:

a. Political commitment: The Government of Bangladesh initiated HPV vaccination as a government-led, public health initiative free of cost.

b. Incorporation of HPV vaccination through the EPI: The government already had a well-established EPI programme set up for vaccination with high coverage and a very successful programme. Integration of the HPV vaccine into the EPI was thus feasible and cost-effective, enabling the programme to be sustainable and leading to high coverage.

c. Multisectoral engagement and collaboration with various ministries (including Education, the Islamic Foundation, Information, Social Welfare, Women and Children Affairs), partners, professional societies (OGSB, GOSB), civil society organisations, organisation sectors, education, religious organisations, professional societies, and social media have been critical for the success of implementation of this programme.

d. The robust social and behavioural change communication, advocacy, and intensive media engagement used to address vaccine hesitancy and misinformation in diverse settings, such as *Qawmi madrasas* and Englishmedium schools, have assisted in acceleration of the HPV uptake and services.

e. Digital innovation has been transformative: The deployment of the DHIS2 tracker application for individual-level data collection, electronic follow-up reminders and performance monitoring has substantially improved programme quality, evidenced by the increase in colposcopy compliance. Bangladesh is believed to be the only country to have implemented the DHIS2 tracker in a national cervical cancer screening programme, offering a model for other LMICs. As one of the few nations to implement the DHIS2 tracker at a national scale, Bangladesh demonstrates how integrated digital follow-up ensures high-quality data and effective programme evaluation.

f. The adoption of a single-dose HPV vaccine regimen simplified logistics and contributed to achieving an 88 per cent coverage rate,

Table 5.2. Distribution of the patients who received treatment with cervical precancer

Treatment type	Number	%
Cryotherapy	46	0.7
Thermal ablation	5,062	81.6
Cone	8	0.1
LEEP	1,089	17.6
Total	6,205	100.0

Table 5.3. Distribution of incidence and mortality of ca cervix in different years.

Year	Incidence	Mortality
2008	17,686	10,364
2018	8,068	5,214
2022	9,640	5,826

near to the WHO 90 per cent target. The VaxEPI app enabled registration, streamlined enrolment and allowed for real-time monitoring of campaign progress.

g. The 'see and treat approach' for all CIN cases combining colposcopy and LEEP/thermal ablation has enabled compliance to treatment to be improved.

4. Key recommendations

Transferable lessons for other Commonwealth countries

Bangladesh's core lesson is that systems integration embedding vaccination into EPI, screening into the tiered facility network and monitoring into DHIS2 delivers results without building parallel infrastructure. The DHIS2 tracker alone improved colposcopy follow-up compliance and is directly replicable by other LMICs. Multi-ministry co-ordination and school-based HPV vaccination delivery are equally transferable, particularly for Commonwealth countries seeking to reach high coverage quickly within existing structures.

Linkage to WHO 90–70–90 target

Bangladesh has surpassed the 90 per cent vaccination target (88 per cent in 2024) but screening coverage remains at 21 per cent, well below the 70 per cent target. Closing that gap through HPV self-collection, shortened rescreening intervals and sustained outreach to underserved populations is the programme's most urgent priority. Bangladesh's trajectory shows that measurable elimination progress is achievable in LMICs; the systems and tools are in place, and the model is ready to transfer.

National policy implications

Bangladesh is well positioned to accelerate progress by updating a few key policy levers. Aligning the VIA-negative rescreening interval with WHO's recommended three-year cycle would enable earlier detection and strengthen programme effectiveness. Initiating an HPV self-collection pilot using community health workers and courier transport to a central laboratory would build the evidence base for a smooth transition to HPV DNA testing as the primary screening modality. Ensuring universal application of the 'see and treat' approach across all colposcopy centres, alongside strengthened referral pathways, will help guarantee that no woman is lost to follow-up. With sustained investment in provider training, radiotherapy capacity and community behaviour change communication, Bangladesh can consolidate its strong foundation and move confidently towards achieving cervical cancer elimination.

Acknowledgments

This country case study was prepared by:

Professor Dr Jobaida Sultana
Principal & Head, Dept. of Obstetrics & Gynaecology
Shaheed Tajuddin Ahamad Medical College (STAMC), Gazipur, Bangladesh

Dr Rifat Sultana
Professor (Obstetrics & Gynae) STAMC, Gazipur

Dr Sharmin Jahan Urmi
Assistant Professor (Obstetrics & Gynae) STAMCH, Gazipur

Dr Salma Naher
Associate Professor (Obstetrics & Gynae) STAMC

Dr Mahmuda Sultana
Assistant Professor (Obstetrics & Gynae), National Institute of Cancer Research and Hospital (NICR&H), Dhaka

Dr Jebunnessa Begum
Associate Professor (Obstetrics & Gynae) STAMC, Gazipur

Professor Dr Ashrafun Nessa
Department of Gynaecological Oncology, Bangladesh Medical University (BMU), Dhaka

References

1. Bangladesh Bureau of Statistics (2022), *Population and Housing Census 2022: Preliminary report*, August.
2. Knoema (2018), 'Bangladesh – Out of Pocket Expenditure as a Share of Current Health Expenditure.
3. Wu, J, Q Jin, Y Zhang, Y Ji, J Li, X Liu, H Duan, Z Feng, Y Liu, Y Zhang, Z Lyu (2025), 'Global burden of cervical cancer: current estimates, temporal trend and future projections based on the GLOBOCAN 2022', *JJ Natl Cancer Cent., Vol. 23, No. 5, 322-29. doi: 10.1016/j.jncc.2024.11.006*.
4. WHO GLOBOCAN 2022, International Agency for Research on Cancer, Global Cancer Observatory (2022), 'Bangladesh factsheet', https://gco.iarc.who.int/media/globocan/factsheets/populations/50-bangladesh-fact-sheet.pdf (accessed 22 January 2025).
5. Directorate General of Health Service, Health Services Division, Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh (2017), *National Strategy for Cervical Cancer prevention and Control Bangladesh (2017-2022),* DGHS, Dhaka, www.iccp-portal.org/sites/default/files/plans/BGD_B5_s21_National%20Strategy%20cervical%20ca%20prevention%20and%20control%20Bd%202017-%202022.pdf.
6. National Institute of Cancer Research and Hospital (2020), *Hospital Cancer Registry 2018–2020: Report of the National Institute of Cancer Research and Hospital*, https://nicrh.gov.bd/images/reports/41272-hbcr-2018-2020- report_compressed.pdf (accessed 14 February 2023).
7. Khatun, S (2019), 'History of introduction of bivalent human papilloma virus 16/18 vaccine in Bangladesh', *Bangladesh J Obstet Gynaecology*, Vol. 34 No. 2, 68–70.
8. Nessa, A, MA Hussain, JN Rahman, MH Rashid, R Muwonge and R Sankaranarayanan (2010), 'Screening for cervical neoplasia in Bangladesh using visual inspection with acetic acid', *Int J Gynaecol Obstet*, Vol. 111, 115-18.
9. Basu, P, A Nessa, M Majid et al. (2010), 'Evaluation of the National Cervical Cancer Screening Programme of Bangladesh and the formulation of quality assurance guidelines', *J Fam Plann Reprod Health Care*, Vol. 36 131-4.
10. Ahmed, T and RJ Ashrafunnessa (2008), 'Development of a Visual Inspection Programme for Cervical Cancer Prevention in Bangladesh', *Elsevier Reproductive Health Matters*, Vol. 16, 78–85.
11. Basu, P, A Nessa, M Majid, JN Rahman and T Ahmed (2010), 'Evaluation of the National Cervical Cancer Screening Programme of Bangladesh and the formulation of quality assurance guidelines', *BMJ Sex Reproductive Health*, Vol. 36 No. 3, 131-4.
12. Directorate General of Health Service, Health Services Division, Ministry of Health and Family Welfare, Government of People's Republic of Bangladesh (2017), *National Strategy for Cervical Cancer Prevention and Control Bangladesh (2017–2022),* https://www.iccp- portal.org/system/files/plans/BGD_ B5_s21_ National%20Strategy%20cervical%20ca% 20prevention%20and%20control%20Bd%202017-%202022.pdf.

13. Directorate General of Health Services, Ministry of Health and Family Welfare, Government of People's Republic of Bangladesh (2023), *Health Bulletin 2023*, Management Information System, https://dghs.portal.gov.bd/sites/default/files/files/dghs.portal.gov.bd/page/8983ee81_3668_4bc3_887e_c99645bbfce4/2024-10-30-15-17-04fcbbc3747cbf6cc6983a34770666 d1.pdf

14. Nessa, A, SM Nazim, E Lucas, P Nag, S Palaniraja, M Roy et al. (2025), 'Implementation of an electronic health information system using DHIS2 tracker to manage and evaluate the national cervical screening programme in Bangladesh', *BMC Public Health*, Vol. 25, 1649, doi:10.1186/s12889-025-22663-6.

15. World Health Organization (2025), 'Cervical Cancer', https://www.who.int/news-room/fact-sheets/detail/cervical-cancer (accessed on 23 January 2025).

16. WHO GLOBOCAN 2022, International Agency for Research on Cancer, Global Cancer Observatory (2022), 'Bangladesh factsheet', https://gco.iarc.who.int/media/globocan/factsheets/populations/50-bangladesh-fact-sheet.pdf (accessed 22 January 2025).

17. World Health Organization (2023), 'Human Papillomavirus (HPV) Vaccination Launching in Bangladesh: A single dose vaccine has potential to prevent cervical cancer!', www.who.int/bangladesh/news/detail/10-10-2023-human-papillomavirus-(hpv)-vaccination-launching-in-bangladesh--a-single-dose-vaccine-has-potential-to-prevent-cervical-cancer

18. Gavi (2025), 'Bangladesh makes HPV vaccine routine after successful launch campaign', 4 February, www.gavi.org/vaccineswork/national-hpv-vaccine-programme-goes-routine-bangladesh-can-boast-93-coverage-rate

19. Sankaranarayanan, R, R Swaminathan, H Brenner, K Chen, KS Chia, JG Chen et al. (2010), 'Cancer survival in Africa, Asia, and Central America: a population-based study', *Lancet Oncol*. February, Vol. 11 No. 2, 165–73.

20. Nessa, A, AK Azad, SMN Uddin, MAH Khan, S Zaman, MAS Khan (2025), 'Cervical cancer screening data from the case-based national electronic registry in Bangladesh', *BMC Glob Public Health*, Vol. 3, 34, doi:10.1186/s44263-025-00145-x.

21. Ministry of Health and Family Welfare, National Cervical and Breast Cancer Statistics of Bangladesh, MOHFW, Dhaka, https://cancer-dashboard.mohfw.gov.bd/cervical-breast

22. Nessa A, Chowdhury SB, Fatima P, Kamal M, Sharif M, Azad AK. Cervical cancer screening program in Bangladesh. *Bangladesh J Obstet Gynaecol*. 2018;33(1): 63-73.

Brunei Darussalam

Precision Screening and Digital Innovation on the Path to Cervical Cancer Elimination

Key Takeaways

- Brunei Darussalam has met the 90% vaccination target through its sustained school-based programme since 2011.
- Transition to HPV DNA self-sampling in 2025 tripled annual screening volumes in the first year.
- The BruHealth digital platform enables online appointment booking, driving higher participation.
- Treatment rate of 97.9% for citizens (excluding uninsured foreign workers) surpasses the 90% target.

1. Background and challenge

Brunei Darussalam is a small country in Southeast Asia with an estimated current population of 460,000. Cervical cancer was the second leading cancer among women in Brunei Darussalam in the early 2000s [2]. Data from 2002 to 2006 reported an increase in the age standardised incidence rate (ASIR) of cervical cancer from 12.1 to 17.0 per 100,000 Brunei population [1, 2]. Brunei reported the highest mean ASIR of cervical cancer (2005 to 2009) of 24.9 per 100,000 women per year, compared with Malaysia (15.7), Indonesia (15.7) and Singapore (7.8) [6, 9].

The natural history of cervical cancer is characterised by persistent infection with oncogenic (high-risk) types of human papillomavirus (HPV), a common virus acquired through skin-to-skin sexual contact. In some women, persistent infection may progress to cervical precancerous lesions and, if untreated, to invasive cancer. In 2020, the World Health Organization (WHO) launched the Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health problem, setting 90–70–90 targets to be met by 2030: i) 90 per cent of girls fully vaccinated with HPV vaccine by 15 years of age; ii) 70 per cent of women screened using a high-performance test by 35 years of age, and again by 45 years of age; iii) 90 per cent of women with precancer treated and 90 per cent of women with invasive cancer managed.

The five-year data from 2002 to 2006 reported two peak age groups at 45 to 49 years old and 65 to 75 years old [2]. By 2009, key limitations were clear: Brunei had no HPV vaccination programme, availability of HPV vaccines was scarce, and there was no organised national cervical cancer screening programme. Pap smears were offered opportunistically only [2]. In 2006, at least half of the women diagnosed with cervical cancer had no previous or updated Pap tests. Pap test uptake was less than 30 per cent of the eligible female population [2].

2. Policy and health system landscape

The Ministry of Health Brunei Darussalam is committed to advancing a healthcare system that is people-centred, resilient and future-ready, in line with national aspirations to enhance the health and well-being of the population. This commitment is anchored in a continued pursuit of service excellence, ensuring that healthcare delivery remains accessible, patient-focused and of the highest quality. At the same time, strong emphasis is placed on health safety and security, with sustained efforts to strengthen national preparedness and response capacities

in safeguarding the population against public health threats and emergencies. The ministry also prioritises the development of an innovative and sustainable health system, leveraging digital transformation, data-driven decision-making and efficient resource utilisation to support long-term resilience. Central to these efforts is the strengthening of a highly skilled and optimised health workforce, recognising that capable and well-supported human resources are fundamental to delivering effective, efficient and compassionate care.

Brunei Darussalam's healthcare system remains highly affordable and accessible, supported by substantial government subsidies that enable citizens and stateless permanent residents to receive comprehensive, high-quality care at minimal or no cost, in line with the country's commitment to Universal Health Coverage (UHC).

In July 2025, policy refinements were introduced to strengthen the sustainability of the health system, whereby Permanent Residents holding foreign passports are subject to revised charging arrangements when accessing services at government facilities. These adjustments aim to ensure balanced cost-sharing while maintaining access to essential healthcare services.

At the same time, existing regulatory provisions on employer responsibility continue to be reinforced, including the requirement for adequate health insurance coverage for foreign workers. While insurance uptake among other non-citizen groups is encouraged, access to healthcare services remains available.

These measures collectively support a sustainable healthcare system while upholding equitable access and the principles of UHC.

The healthcare network is made up of hospitals, health centres and clinics alongside specialised, outsourced or overseas care. For treatments not available locally, the government finances sending patients abroad [10].

The national health system involves a primary, secondary and tertiary healthcare network. Primary healthcare includes community clinics that provide comprehensive services of general practice, maternal and child health, well-women health, ophthalmology services, dental services, dietetics, diabetic nurse educator, phlebotomy, pharmacy dispensary services and limited radiological imaging.

Secondary centres include the Pengiran Muda Mahkota Pengiran Muda Haji Al-Muhtadee Billah Hospital in Tutong district and the Pengiran Isteri Hajjah Mariam Hospital in Temburong District. These centres provide additional emergency services, non-complex inpatient care and outpatient specialty clinics.

The two main tertiary centres are the Raja Isteri Pengiran Anak Saleha Hospital, Brunei-Muara, and the Suri Seri Begawan Hospital, Kuala Belait. These tertiary centres provide emergency, surgical, medical and critical care services. In addition, the Brunei Cancer Centre under the Jerudong Park Medical Centre serves as the main treatment area for national cancer cases. Similarly, Brunei citizens receiving treatment at the Brunei Cancer Centre are heavily subsidised, while foreign nationals and permanent residents pay full consultation and treatment charges. The Jerudong Park Medical Centre is a private institution which provides paid services. There are also private general practices available nationally depending on patient's preference.

The Ministry of Health, Brunei Darussalam, aims to be on the path towards cervical cancer elimination by aiming to meet the WHO 90-70-90 targets by 2030 through a national program which includes offering HPV vaccination to girls and by having primary high risk HPV DNA screening for women aged 25 to 65 years old, using self-sampling kits and at 5-yearly intervals [3].

3. National intervention

Brunei takes the cervical cancer burden seriously and has taken crucial steps towards cervical cancer elimination from the year 2009 by targeting the three major areas of HPV vaccination, screening and treatment.

Sustaining the success of HPV vaccination

The Gardasil® (quadrivalent) vaccine became available in 2006, protecting against HPV types 6, 11, 16, and 18. This was followed by Cervarix® (bivalent), protecting against HPV types 16 and 18, in 2007. Initially, these vaccines were only available privately in Brunei [2].

Following WHO recommendations, Brunei launched the National School-Based HPV Vaccination Programme on 6 October 2011. The programme

aims to vaccinate all female students aged 10 to 17 years from both government and private schools nationwide. It is managed by the School Health Services Unit under the Health Promotion Centre. The HPV vaccine is given on a voluntary basis with written parental consent. The primary target group is female students in Year 7 (aged 10–12 years) [3].

From 2012 to 2015, a catch-up programme was carried out for those in Year 11 (aged 15 to 17 years). Since 2022, the bivalent and quadrivalent vaccines have been replaced with the nonavalent vaccine [3].

Apart from the school-based programme, Brunei citizens and permanent residents aged 15 to 45 years may receive the HPV vaccine through vaccination centres nationwide, provided they have not received it previously and are not pregnant. The current vaccine is Gardasil 9 following a three-dose schedule at zero, two and six months. The HPV vaccine is free and accessible through the national health digital platform BruHealth.

Screening scale-up and modernisation

Brunei's first response to decreasing the cervical cancer burden was to improve screening. The first National Cervical Cancer Prevention and Control Guidelines were launched in 2009, introducing a standardised pap smear test targeting sexually active women aged 20 to 65 years every 3 years [2, 10].

In 2011, a call-recall system was established whereby women aged 20 to 65 years are invited to attend routine screening every 3 years through mail invitations. In 2012, Brunei shifted from conventional pap smear to liquid-based cytology (LBC), resulting in a significant reduction in unsatisfactory pap test reports to less than 1 per cent [3, 10].

The Ministry of Health introduced the National Health Screening Programme in 2019, offering Brunei citizens and permanent residents screening for cervical, colorectal and breast cancer, as well as cardiovascular disease risks. Registration is available online via the 'BruHealth' app or walk-in [10].

In January 2025, Brunei introduced updated National Cervical Cancer Prevention and Control Guidelines consistent with WHO recommendations. The recommended screening test changed from pap LBC to a high-performance HPV test, through a partnership with Borneo Genomics Innovation (BGIB), a joint venture of BGI Genomics in Brunei [3, 10]. The BGI HPV test combines self-sampling technology and genotyping assay, detecting 14 high-risk HPV types. The target population is women aged 25 to 65 years with routine screening every 5 years.

Treatment

Brunei has a free healthcare policy for Brunei citizens and permanent residents, encompassing all forms of cancer treatment. Women with abnormal pap tests are referred to two main referral centres: the Obstetrics and Gynaecology Departments at Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital and Suri Seri Begawan (SSB) Hospital [3].

All patients with abnormal colposcopy results are offered excisional treatment depending on patient factors (age, parity, patient preference, future fertility desires). Available excisional methods include large loop excision of the transformation zone (LLETZ)/LEEP; electrosurgical needle conisation or knife cone biopsy; and hysterectomy. The current limitation is the absence of ablative methods [3].

For early-stage cervical cancer (FIGO stage 1A1 to 1B2), surgery is recommended. For advanced stages or early stages with lymphovascular invasion, concurrent chemoradiation therapy (CCRT) is recommended [3]. Patients are transferred to the Brunei Cancer Centre (TBCC), established in 2009, for CCRT [8]. Prior to its establishment, patients requiring CCRT were transferred overseas at full government expense. TBCC also provides comprehensive nuclear medicine imaging including PET-CT and SPECT-CT.

4. Key stakeholders and partners

The cervical cancer elimination programme in Brunei Darussalam has involved multi-sectoral co-ordination across government and health institutions. Key stakeholders include the Ministry of Health, School Health Services Unit, Health Promotion Centre, Obstetrics and Gynaecology Departments at RIPAS and SSB Hospitals, The Brunei Cancer Centre (TBCC), and Borneo Genomics Innovation (BGIB) [3, 8, 10].

Table 6.1. Brunei Darussalam cervical cancer prevention programme development timeline

Year/period	Key activity	Agencies
2009	National Cervical Cancer Prevention and Control Guidelines launched. TBCC established.	MOH, RIPAS Hospital
2011	National School-Based HPV Vaccination Programme launched (Oct 2011). Call-recall screening system established.	MOH, School Health Services Unit
2012	Vaccination programme formally established. Shift from conventional pap smear to liquid-based cytology (LBC).	MOH
2012–2015	Catch-up vaccination programme for Year 11 students (aged 15–17 years).	MOH, School Health Services Unit
2019	National Health Screening Programme introduced — multi-cancer screening including cervical, breast and colorectal cancer and cardiovascular disease.	MOH
2022	Bivalent and quadrivalent HPV vaccines replaced with nonavalent vaccine (Gardasil 9).	MOH
August 2024	The soft launch of high-risk HPV (hrHPV) screening test, replacing liquid-based cytology screening test. This includes education and training of relevant healthcare workers.	MOH, BGIB
January 2025	The official launch of the Updated National Cervical Cancer Prevention and Control Guidelines. HPV DNA self-sampling test introduced via BruHealth app. Screening interval changed to every 5 years for women aged 25–65.	MOH, BGIB (BGI joint venture)
Ongoing	School-based vaccination; National Health Screening Programme; BruHealth digital platform for screening registration.	MOH, School Health Services, BGIB

Source: References 2, 3 and 10

5. Outcomes and evaluations

Vaccination

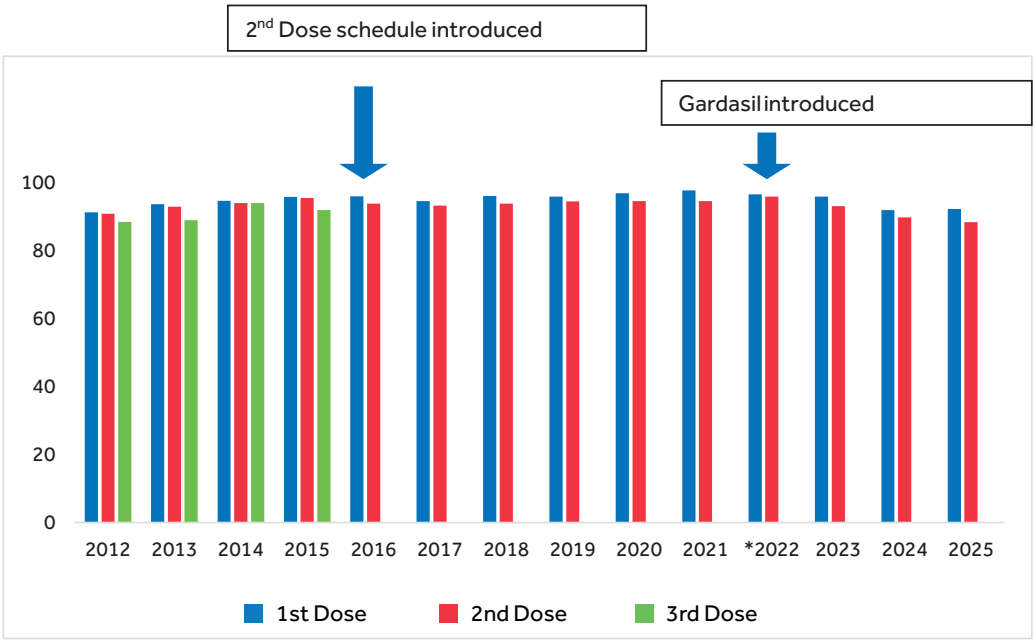
The National School-Based HPV Vaccination Programme has enabled Brunei Darussalam to achieve the WHO 90 per cent goal for girls to be fully vaccinated with HPV vaccine by 15 years of age [3].

Screening outcome and projections

The establishment of the National Cervical Cancer Prevention and Control Guidelines in 2009 and the use of liquid-based cytology proved beneficial, contributing to improvements in cervical cancer incidence in Brunei Darussalam. The calculated mean age-standardised incidence rate (ASIR) of cervical cancer declined from 23.23 per 100,000 women in 2005–2009 to 14.82 per 100,000 women in 2020–2024 among citizens and permanent residents [14]. The peak age group for incidence between 2020 to 2024 was women aged 35 to 39 years old [14].

Screening uptake remained suboptimal in earlier years, with uptake estimated to be less than 50 per cent in 2018 [6]. Key barriers identified included: i) fear of bad results; ii) embarrassment; and iii) lack of time due to home commitments. Between 2009 and August 2024, a total of 55,927 women underwent at least one cervical cancer screening, of whom approximately 3.0 per cent had abnormal results requiring further assessment. Following the transition to primary HPV DNA testing in August 2024, approximately 12,167 women were screened up to December 2025, with a positivity rate of 7.8 per cent for high-risk HPV. The national launch of the 2025 cervical screening guidelines

Figure 6.1. School-based HPV vaccination coverage, 2012–2025



Source: Reference 14

coincided with the integration of cervical screening into the BruHealth app. This strategic initiative supports the transition from pap LBC screening to HPV self-sampling, paired with an accessible appointment system [3]. Following the introduction of HPV testing, screening volume increased substantially, rising from under 3,000 women in the year prior to implementation to over 8,000 women being screening in the first year, despite changes in the eligible screening age.

While screening uptake and test positivity data are available, comprehensive data across the full cervical cancer care pathway remain limited due to challenges such as manual compilation of registry data and the lack of linkage with subsequent care pathways, including referrals, clinical attendance, follow-up management and outcomes.

Strengthening integration across screening and clinical data systems is now a priority to enable monitoring of the full care cascade.

Treatment

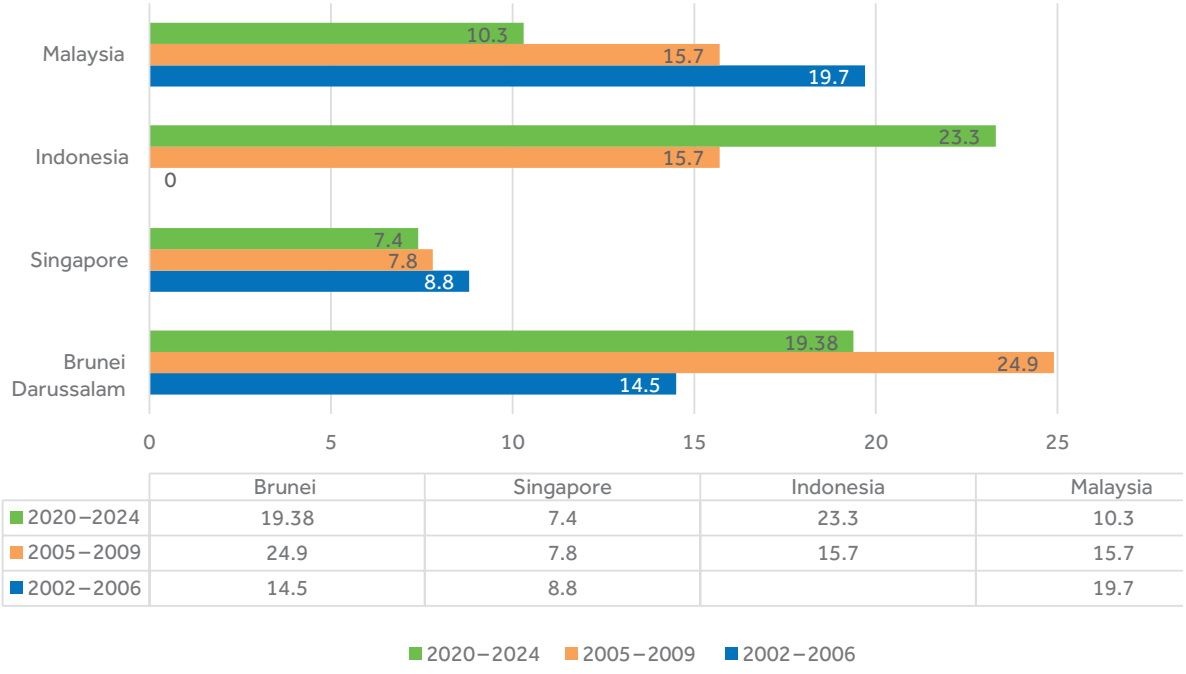
In terms of treatment, 12 per cent (18 out of 144) diagnosed with cervical cancer from 2000 to 2024 declined treatment, placing Brunei's treatment percentage at 88 per cent [1]. Of the 18 who refused treatment, 15 were foreign workers who declined due to the high cost of private medical care, as foreign worker insurance generally does not cover cancer-related treatments [1]. Three patients had initial excision treatment but declined further surgery or chemo-radiation, despite entitlement to free healthcare. Excluding foreign workers, Brunei achieved a 97.9 per cent treatment accomplishment rate for cervical cancer.

Table 6.2. Brunei Darussalam age-specific incidence rate for cervical cancer timeline

Time Period	ASIR (Brunei)	Status
2002 to 2006	18.61	Initial rise
2005 to 2009	23.23	Historical peak (highest in region)
2020 to 2024	14.82	Current trend (post intervention drop)

Sources: 14

Figure 6.2. Age standardised incidence rate of cervical cancer (per 100,000 women) comparing Brunei other Southeast Asian countries



	Brunei	Singapore	Indonesia	Malaysia
2020–2024	19.38	7.4	23.3	10.3
2005–2009	24.9	7.8	15.7	15.7
2002–2006	14.5	8.8		19.7

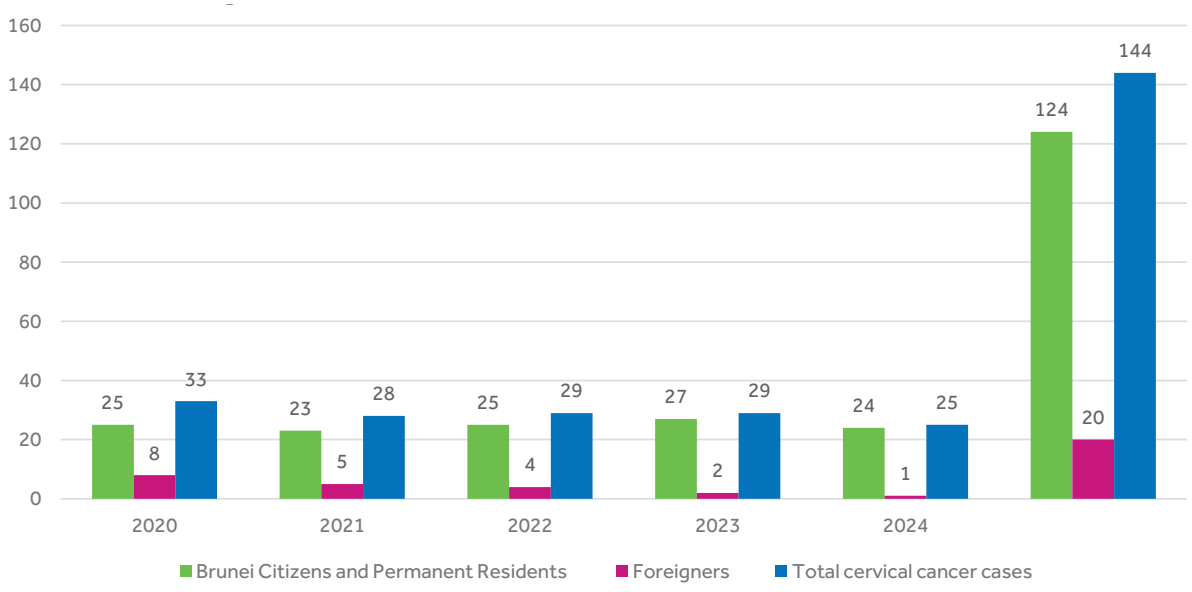
Sources: References 1, 4-6, 7, 9 and 11

6. Monitoring and evaluation approach

The statistics for the school health HPV vaccination is being followed up by the School Health, under the Health Promotion Centre, Ministry of Health.

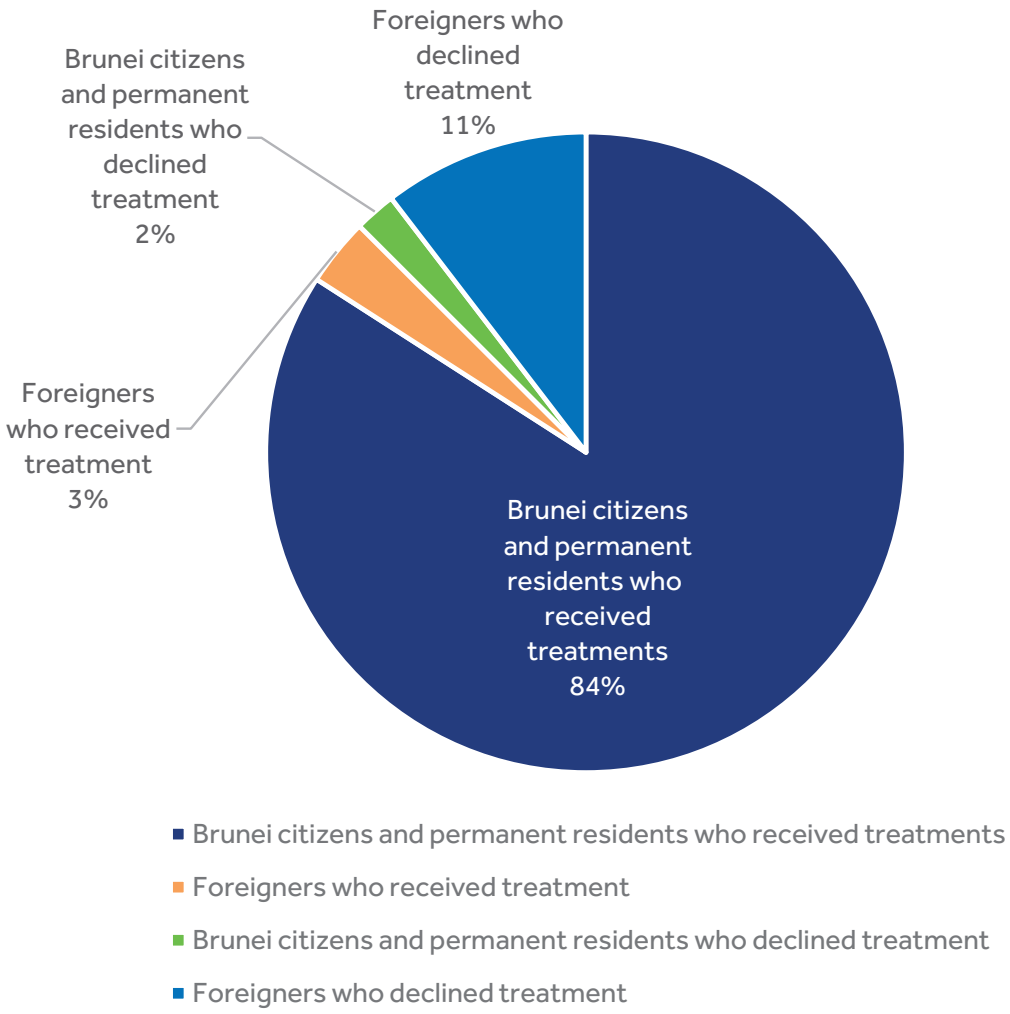
Cervical cancer screening activities in Brunei Darussalam are monitored through the National Health Screening Programme (NHSP). Monitoring and evaluation are supported by the recently launched NHSP Dashboard, which captures data on screening registrations, screening uptake, HPV test

Figure 6.3. Diagnosed cervical cancer cases in Brunei, 2020–2024



Sources: 1 and 12

Figure 6.4. Percentage of cervical cancer cases (2020 – 2024) who received and declined treatment



Source: References 1 and 12

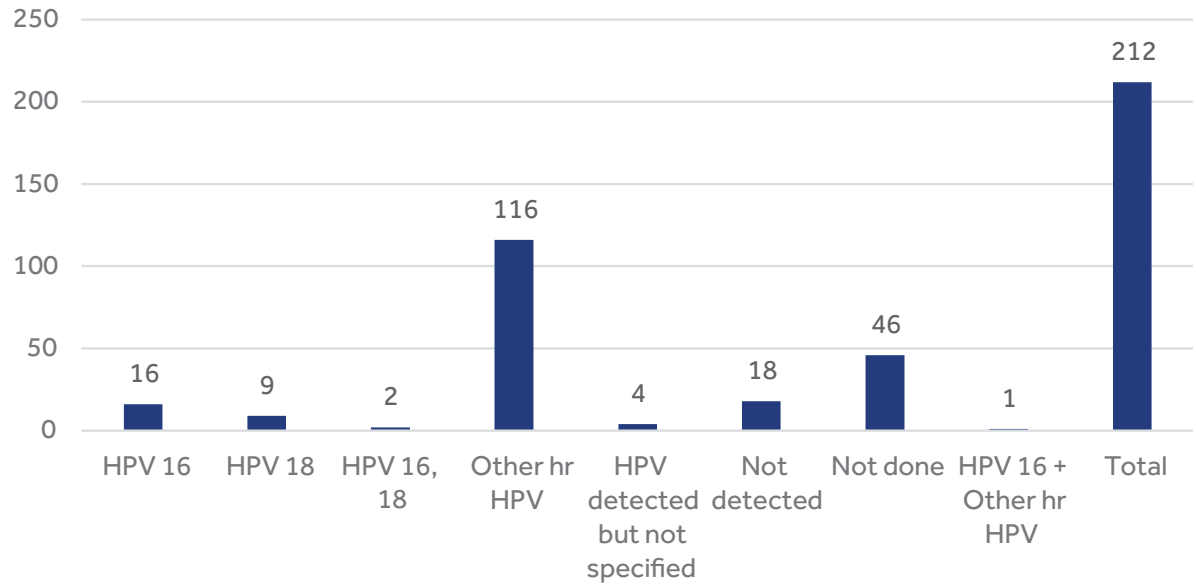
results and selected clinical outcomes. However, further enhancements are needed to improve the capture of additional data elements, as some components of the screening pathway are still compiled manually and are not yet fully integrated into the dashboard. Strengthening integration across screening and clinical data systems will enable more comprehensive monitoring of the full care cascade, from screening and diagnosis to treatment and clinical outcomes.

In addition to the NHSP Dashboard, certain data are captured at different points of care, including at the tertiary Gynaecology and Gynae-oncology Department, where data are collected on colposcopy, diagnostic outcomes and treatment of precancerous lesions (low-grade squamous intraepithelial lesions (LSIL) and highgrade squamous intraepithelial lesions(HSIL) and cervical cancer.

Since the launch of HPV testing and the updated cervical cancer guidelines, an initial audit and evaluation was performed to answer the following auditable yet significant outcomes: i) whether the updated national guidelines were followed; ii) ability to extract hrHPV data prevalent to Brunei; and iii) whether colposcopy referral guidelines were followed.

The audit reported a total of 212 women referred for colposcopy from August 2024 to August 2025. Of these, 148 women had hrHPV detected; 46 women were referred based on their abnormal smears and did not have HPV testing; and 18

Figure 6.5. hrHPV reports for cases referred for colposcopy, August 2024 to August 2025

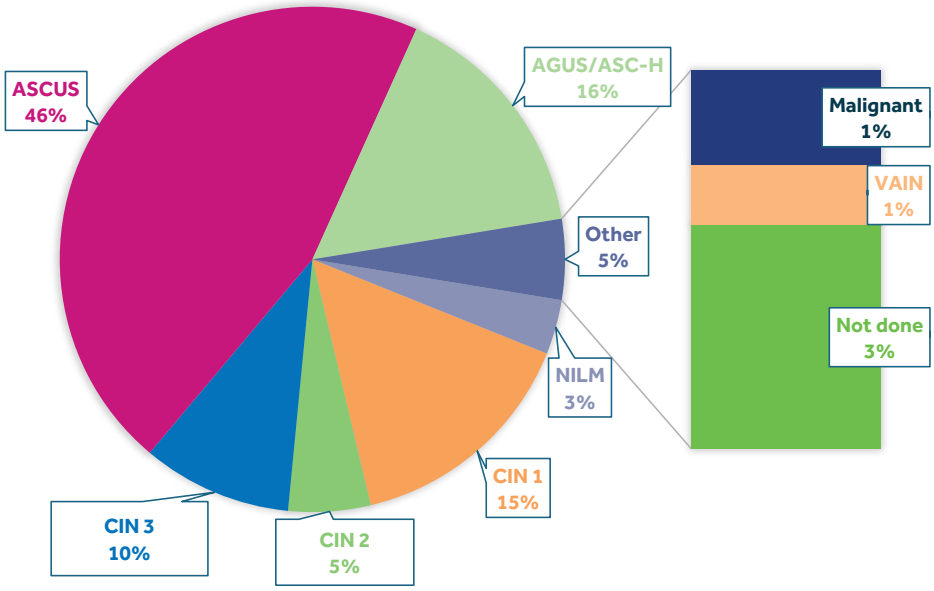


Source: Reference 13

women referred had negative hrHPV but their pap LBC co-test report was abnormal. A detailed summary of the results of HPV test, pap LBC and colposcopy appears in Figure 6.5.

The audit also found that 1.5 per cent defaulted on colposcopy. The cytological findings of referred women are shown in Figure 6.6, and the colposcopy biopsy results are presented in Figure 6.7. Post-colposcopy, five malignancies were identified. One patient elected hysterectomy and the remainder

Figure 6.6. Pap LBC reports of cases referred for colposcopy, August 2024 to August 2025



Key: ASCUS (Atypical Squamous Cells of Uncertain Significance); CIN (Cervical Intraepithelial Neoplasia); NILM (Negative for Intraepithelial lesion or malignancy); VAIN (Vaginal Intraepithelial Neoplasia); AGUS (Atypical Glandular Cells of Uncertain Significance), ASC-H (Atypical Squamous Cells).
Source: Reference 13

Figure 6.7. Colposcopy biopsy reports

opted for excisional biopsy for justified deferrals on the basis of fertility concerns. Three foreign nationals with HSIL opted to pursue further treatment in their country of origin (2.4 per cent). The calculated treatment percentage was sustained above 90 per cent.

In summary, this audit managed to answer the auditable outcomes of interest. This gives an outstanding hope that Brunei will be able to analyse and calculate hrHPV prevalence, monitor future improvements in screening uptake, sustain high treatment success, and eventually observe the success of the updated guidelines in eliminating cervical cancer burden within the country.

7. Lessons learnt

Brunei Darussalam's experience in advancing toward cervical cancer elimination highlights several critical success factors:

- **Free healthcare policy.** Brunei's universal free healthcare for citizens and permanent residents removes financial barriers to treatment, contributing to a 97.9 per cent treatment accomplishment rate (excluding foreign workers).
- **Digital health innovation.** The BruHealth national health digital platform has transformed accessibility for both vaccination and cervical cancer screening, enabling online appointment booking and significantly increasing screening uptake.
- **Evidence-based technology transition.** The strategic shift from pap LBC to HPV DNA self-sampling testing, supported by the 2025 updated guidelines, has resulted in a three-fold increase in annual screening numbers, demonstrating the effectiveness of adopting superior, accessible screening technologies.
- **Addressing equity gaps for foreign workers.** The key remaining treatment gap (88.2 per cent overall versus 97.9 per cent for citizens) is concentrated among foreign workers who lack cancer insurance coverage. Policy attention to this group is needed to further improve overall treatment rates.
- **Managing transition challenges.** The introduction of the updated cervical cancer screening workflow caused some uncertainties due to the shift from LBC to HPV testing and different follow-up regimes. Ongoing education and support from healthcare professionals helped keep these as minor issues.

8. Key Recommendations

Transferable lessons for other Commonwealth countries

Brunei Darussalam's key recommendations include:

- **Take a digital approach:** Having a digital platform can improve accessibility for both vaccination and screening.
- **Use the self-sampling test:** Transitioning to the HPV self-sampling test has increased the uptake of cervical cancer screening.
- **Universal free healthcare:** Having a universal free healthcare has removed the financial barrier as a treatment gap.
- **Update evidence-based guidelines:** Brunei updated its cervical cancer guidelines in 2025, which resulted in transitioning from pap test to HPV test and extending the screening interval from three to five years.

Linkage to WHO 90–70–90 target

Brunei has achieved the 90 per cent vaccination target through its sustained school-based programme. Screening coverage has improved substantially with the shift to HPV testing, with lifetime uptake now at 66.9 per cent of eligible women, approaching the 70 per cent target. The treatment rate of 97.9 per cent for citizens surpasses the 90 per cent target. The most urgent priorities are extending equitable access to foreign workers, further scaling HPV self-sampling uptake and calculating HPV prevalence within the Brunei population to inform future programme planning.

9. National policy implications

Brunei is well-positioned to accelerate progress. Continuous government support for the school vaccination programme must be maintained to sustain the 90 per cent target. Screening uptake should continue to improve following the introduction of HPV self-sampling and online appointment access via BruHealth. Brunei aims to calculate HPV prevalence and incidence within the local population to strengthen evidence-based programme design. Public awareness should be improved through media roadshows, community outreach and health notifications via BruHealth and Ministry of Health social media.

Acknowledgments

This country case study was prepared by:

Pengiran Dr Hajah Roserahaini Pengiran Haji Idros

Head of Maternal Health Service, Department of Health Services, Ministry of Health

Senior Medical Officer, Maternal Health Service, Department of Health Services, Ministry of Health

Dr Hajah Farhana Haji Ayup

Deputy Head II for Department of Obstetrics and Gynaecology, RIPAS Hospital

Acting Senior Medical Officer, Obstetrics and Gynaecology Department, RIPAS Hospital

Dr Hajah Norol-Ehsan Haji Abdul Hamid

Head of School Health Unit, Health Promotion Centre, Ministry of Health

Senior Medical Officer, Health Promotion Centre, Ministry of Health

Dr Siti Zuhrini Haji Kahan

Medical Officer, Brunei Centre for Disease Control and Prevention (Brunei CDC), Ministry of Health

References

1. Noncommunicable Disease Prevention Unit, Ministry of Health (2022), Brunei Darussalam Cancer Registry Report 2002–2021, MOH, Brunei Darussalam.
2. Ministry of Health (2009), Brunei Darussalam: The National Cervical Cancer Prevention and Control Guideline, MOH, Brunei Darussalam. https://platform.who.int/doc/default-source/mca-documents/guideline/BRN-RH-47-01-GUIDELINE-2009-eng-National-Cervical-Cancer-Prevention-Control-Guideline.pdf
3. Ministry of Health (2025), Brunei Darussalam National Cervical Cancer Prevention and Control Guideline, MOH, Brunei Darussalam. https://moh.gov.bn/.wp-content/uploads/2025/01/CERVICAL-CANCER-2025.pdf
4. Department of Economic Planning and Statistics, Ministry of Finance and Economy (2021), Brunei Darussalam Population and Housing Census Report, Ministry of Finance and Economy, Brunei Darussalam. https://deps.mofe.gov.bn/statistical-publications/
5. Department of Economic Planning and Statistics, Ministry of Finance and Economy (2024), Brunei Darussalam Population Estimates 2022 to 2024, Ministry of Finance and Economy, Brunei Darussalam. https://deps.mofe.gov.bn/statistical-publications/
6. Chaw, L et.al (2022), 'Reasons for non-attendance to cervical cancer screening and acceptability of HPV self-sampling among Bruneian women: A cross sectional study', PLoS ONE, Vol. 17 No. 3, e0262213. https://doi.org/10.1371/journal.pone.0262213
7. Ferlay, J, M Ervik, F Lam, M Laversanne, M Colombet, L Mery, M Piñeros, A Znaor, I Soerjomataram and F Bray (2024), Global Cancer Observatory: Cancer Today, International Agency for Research on Cancer, Lyon, France. https://gco.iarc.who.int/today (accessed 8 April 2026).
8. Jerudong Park Medical Centre, Brunei, Homepage. https://www.jpmcbrunei.com
9. Lee, MY, PU Telisinghe and R Ramasamy (2012), 'Cervical cancer in Brunei Darussalam', Singapore Med J, September, Vol. 53 No. 9, 604–607.
10. Ministry of Health, Brunei, Homepage. https://www.moh.gov.bn
11. Zaridah, S (2014) 'A Review of Cervical Cancer Research in Malaysia', *Med J Malaysia*, August, Vol. 69 Supplement A. https://e-mjm.org/2014/supplement-A/cervical-cancer-research.pdf
12. Department of Obstetrics and Gynecology (2022-2024). Cervical cancer statistics for Raja Isteri Pengiran Anak Saleha Hospital and Suri Seri Begawan Hospital, Brunei Darussalam. Unpublished data.
13. Department of Obstetrics and Gynecology (2024 – 2025). Colposcopy statistics for Raja Isteri Pengiran Anak Saleha Hospital and Suri Seri Begawan Hospital, Brunei Darussalam. Unpublished data.
14. Brunei Centre for Disease Control and Prevention. Cervical Cancer Incidence Data for Brunei Darussalam (2002-2024). Bandar Seri Begawan: Ministry of Health Brunei Darussalam; 2026. Unpublished data.

Malaysia

Malaysia's Accelerated Path to Cervical Cancer Elimination: A Comprehensive Strategy

Pillar Focus: Pillar 1 (Vaccination) and II (Screening)

Strategic Rationale: Innovation & Trust

Key Takeaways

- Malaysia achieved 85-90% annual HPV vaccination coverage pre-pandemic through a school-based programme launched in 2010.
- A national catch-up programme in 2024 recovered coverage above 91% across all COVID-disrupted cohorts.
- Transition from LBC to HPV testing, the most impactful lever is projected to accelerate elimination by 18 years.
- System dynamics modelling confirms 70% HPV testing coverage by 2040 would avert 6,000 new cases by 2070.

Background and Challenge

Malaysia is at a critical juncture in its public health development, reflecting strong national commitment to the World Health Organization's (WHO) cervical cancer elimination goals. Through the successful national HPV vaccination programme and ongoing investments in screening and early detection, the country has established a solid foundation for transformative progress. By advancing a strategic, evidence-based expansion of cervical cancer screening initiatives, Malaysia is strengthening early diagnosis, ensuring equitable access to life-saving interventions, and reinforcing follow-up care. These efforts position the nation not only to achieve its ambitious elimination targets but also to serve as a regional model of excellence, demonstrating how coordinated policy, innovation, and community engagement can drive meaningful health outcomes for all citizens.

The Dual Landscape of Incidence and Survival

Current prevention strategies have successfully driven a 3.2% reduction in cervical cancer incidence, as reported by the National Cancer Registry, pushing the age-standardised rate down from 6.2 (2012-2016) to 6.0 per 100,000 (2017-2021) and positioning the nation in close reach of the WHO elimination benchmark of 4.0 per 100,000.

The commendable success in prevention has laid the groundwork for elimination, making the current deficit in early detection—evidenced by 47% of cases presenting at late stages and the corresponding stagnation in the 5-year survival rate—the single greatest opportunity for the Ministry of Health to maximise clinical outcomes and resource efficiency through targeted, immediate enhancement of screening programmes.

1. Policy and Health System Landscape

The Ministry of Health (MOH) is strategically accelerating the screening component of the WHO 90-70-90 elimination strategy. Building upon the current screening baseline of 25% among eligible women, a dedicated, nationwide effort is underway to rapidly scale up the newly introduced, highly sensitive Human Papillomavirus (HPV) testing. This transformation will be executed in phases to ensure comprehensive implementation and optimal resource deployment.

Through sustained and predictable financial commitments, the Ministry of Finance has been instrumental in securing the long-term sustainability of the national HPV programme. This financial stewardship has safeguarded uninterrupted service delivery, ensured the consistent availability of essential supplies and services, and facilitated the expansion of screening and management pathways. Collectively, these investments reinforce Malaysia's trajectory toward achieving national cervical cancer elimination targets by 2030 and beyond.

The current guideline recommends screening every five years for women aged 30 to 65, reflecting evidence-based optimisation of HPV testing for maximum public health impact. Leveraging structured partnerships with non-governmental organisations such as the National Cancer Society Malaysia (NCSM) and the ROSE Foundation, the MOH is implementing a coordinated, interagency approach to expand screening coverage, with particular focus on underserved and hard-to-reach populations.

2. National Intervention

Sustaining the Success of HPV Vaccination

Malaysia's National School-based HPV vaccination programme stands as a global benchmark for public health implementation. From its nationwide launch in 2010, the programme achieved exceptional population coverage, leveraging coordinated design, multi-sectoral partnerships (health, education, local authorities), and robust execution. Pre-pandemic success was defined by incredibly high consent rates of 96% to 99% and completion rates of 98% to 99%, resulting in an estimated population coverage of 85% to 90% annually between 2010 and 2019. This success was built on high parental trust and a cohesive operational structure that ensured consistent implementation across all 446 school health teams.

The COVID-19 pandemic severely tested the resilience of Malaysia's HPV immunisation programme, resulting in an estimated 800,000 female students missing their scheduled vaccines between 2021 and 2024 due to the global vaccine shortage. In response, the Ministry of Health (MOH) demonstrated remarkable agility and commitment. Beginning in 2023, MOH adopted a single-dose HPV vaccine regime for the 13-year-old cohort, aligning with emerging international evidence supporting this simplification. Crucially, a major national catch-up programme was launched in May 2024. This effort expanded delivery beyond the school-based platform by leveraging clinic-based services and collaborations with non-governmental organisations (NGOs), including the National Cancer Society Malaysia (NCSM).

Achieving outstanding coverage, the catch-up programme successfully reached

- 95.11% of the 2021 cohort
- 92.69% of the 2022 cohort
- 91.50% of the 2023 cohort
- 92.42% of the 2024 cohort.

This rapid recovery ensures that the fundamental pillar of prevention remains intact and on track to meet the 90% vaccination target, a necessity reaffirmed by all national elimination models. Sustained annual vaccination rates of 90% are the essential foundation underpinning the entire elimination strategy.

The Imperative for Screening Modernisation and Scale-Up

HPV testing is scientifically superior as it detects the presence of the oncogenic virus itself, offering a more sensitive and objective screening tool compared to liquid-based cytology (LBC). The transition from LBC to HPV testing constitutes a strategic advancement in both clinical practice and the efficient allocation of economic and logistical resources. The phased national rollout achieved full access to HPV testing across all states by 2024, and supports the piloting of enhanced screening,

colposcopy, and treatment registries to ensure robust monitoring, timely follow-up, and attainment of the final 90% treatment coverage target.

The Ministry of Health (MOH) is now strategically accelerating the screening component of the WHO 90-70-90 elimination strategy. The advanced screening method has already demonstrated a promising initial uptake of 8% in MOH facilities, which serves as a strong indicator of health system readiness and provides an optimistic foundation for a targeted, swift expansion phase across the country.

HPV testing is scientifically superior as it detects the presence of the oncogenic virus itself, offering a more sensitive and objective screening tool. To address the screening gap more effectively. The transition from liquid-based cytology (LBC) to HPV testing constitutes a strategic advancement in both clinical practice and the efficient allocation of economic and logistical resources. The phased national rollout, which achieved full access to HPV testing across all states by 2024, and supports the piloting of enhanced screening, colposcopy, and treatment registries to ensure robust monitoring, timely follow-up, and attainment of the final 90% treatment coverage target.

Building upon the current screening baseline of 25% among eligible women, a dedicated, nationwide effort is underway to rapidly scale up the newly introduced, highly sensitive Human Papillomavirus (HPV) testing. This transformation will be executed in phases to ensure comprehensive implementation and optimal resource deployment.

The Ministry of Health will accelerate uptake to achieve the 2026 milestone, supported by steady annual increases thereafter to ensure the 70% coverage target is achieved within the planned timeframe..

Key stakeholders and Partners

The Ministry of Health is implementing a coordinated, interagency approach to expand screening coverage, with particular focus on underserved and hard-to-reach populations. This strategy ensures equitable access to the enhanced screening protocol, strengthens follow-up and treatment pathways, and contributes directly to Malaysia's broader objective of reducing cervical cancer incidence and achieving national elimination targets.

Key Stakeholders and Partnerships

Table 7.1: Malaysia Cervical Cancer Prevention Programme Development Timeline

Year/Period	Activities	Agencies
2010	Nationwide launch of National School-based HPV Vaccination Programme	MOH, Ministry of Education, Local Authorities
2010–2019	Sustained school-based HPV vaccination; 85–90% annual coverage achieved	MOH, 446 school health teams
2021–2024	COVID-19 disruption; ~800,000 students missed scheduled vaccines	MOH
2023	Adoption of single-dose HPV vaccine regime for 13-year-old cohort	MOH
May 2024	Launch of national catch-up programme; clinic-based and NGO-based delivery expanded	MOH, NCSM, NGOs
2024	Full national rollout of HPV testing across all states; piloting of enhanced screening, colposcopy, and treatment registries	MOH, Ministry of Finance, NCSM, ROSE Foundation
Ongoing	Phased scale-up of HPV testing; target 70% screening coverage; monitoring and follow-up	MOH, NGOs, Ministry of Finance

Outcomes and Evaluations

Vaccination

The national school-based HPV vaccination programme achieved exceptional pre-pandemic coverage of 85% to 90% annually between 2010 and 2019. Following disruption from the COVID-19 pandemic, the 2024 catch-up programme demonstrated strong recovery with coverage rates exceeding 91% across all affected cohorts (2021–2024), ensuring that the 90% vaccination target remains achievable and the elimination strategy remains on track.

Screening

The current cervical cancer screening coverage stands at 25% among eligible women, with HPV testing now available across all states following the 2024 national rollout. The advanced screening method has demonstrated an initial uptake of 8% in MOH facilities, reflecting early-stage health system readiness. The strategic system dynamics model projects that transitioning fully from LBC to HPV testing by 2030, combined with sustained vaccination rates and a target of 70% screening coverage by 2040, would accelerate elimination by 18 years and avert an estimated 6,000 new cancer cases by 2070.

Trends in Incidence and Mortality

Current prevention strategies have successfully driven a 3.2% reduction in cervical cancer incidence. The age-standardized incidence rate declined from 6.2 per 100,000 (2012–2016) to 6.0 per 100,000 (2017–2021), positioning Malaysia within close reach of the WHO elimination benchmark of 4.0 per 100,000. However, 47% of cases continue to present at late stages, with the 5-year survival rate remaining stagnant, underlining the urgency of improving early detection through enhanced screening coverage.

3. Monitoring and Evaluation Approach

The Ministry of Health is piloting enhanced screening, colposcopy, and treatment registries to ensure robust monitoring, timely follow-up, and attainment of the final 90% treatment coverage target. The strategic system dynamics model has been employed to simulate the effects of multiple policy interventions, providing a data-driven foundation for resource allocation and programmatic decisions. Sustained and predictable financial commitments from the Ministry of Finance support uninterrupted service delivery and programme monitoring across all states.

4. Lessons Learnt

Malaysia's experience in advancing toward cervical cancer elimination highlights several critical success factors:

- **Political commitment and sustained financing.** Sustained financial commitments from the Ministry of Finance have been instrumental in maintaining uninterrupted programme delivery and enabling strategic expansion of screening and management pathways.
- **Multi-sectoral partnerships.** The school-based vaccination programme's success relied on strong coordination between health, education, local authorities, and NGOs including NCSM and ROSE Foundation, ensuring broad reach and operational coherence.
- **Adaptability and resilience.** The rapid pivot to single-dose vaccination and the launch of a national catch-up programme in response to COVID-19 disruptions demonstrated the programme's capacity to adapt and recover, achieving coverage rates above 91% across affected cohorts.

Table 7.2: Cervical Cancer Age-Standardised Incidence Rate Trends in Malaysia

Period	Age-Standardised Incidence Rate (per 100,000)	WHO Elimination Benchmark (per 100,000)
2012–2016	6.2	4.0
2017–2021	6.0	4.0

- **Evidence-based technology transition.** The strategic transition from liquid-based cytology to HPV testing is supported by a system dynamics model demonstrating significant gains in elimination timeline and cost-effectiveness. This model confirms that timely technology transition has greater impact than delays in expanding coverage.
- **Equity-focused outreach.** Partnerships with NGOs and a focus on underserved and hard-to-reach populations ensure that screening expansion is equitable, strengthening follow-up and treatment pathways for the most vulnerable.

5. Key Recommendations

5.1 Transferable Lessons for Other Commonwealth Countries

Malaysia's core lesson is that sustained vaccination coverage, achieved through school-based delivery, multi-sectoral partnerships, and adaptive catch-up mechanisms, forms an indispensable foundation for any elimination strategy. The rapid recovery from pandemic-related disruption—achieving over 91% catch-up coverage—demonstrates that resilient programme structures and committed multi-sectoral engagement can overcome significant challenges. The evidence-based transition to HPV testing, supported by a system dynamics model and phased rollout to all states, provides a replicable model for countries seeking to modernise their screening programmes. Collaborative financing mechanisms and structured NGO partnerships to reach underserved populations are equally transferable lessons for Commonwealth countries at similar stages of their elimination journey.

5.2 Linkage to WHO 90-70-90 Target

Malaysia has achieved strong progress on the first pillar, with vaccination coverage on track to meet the 90% target following the successful catch-up programme. Screening coverage at 25% remains significantly below the 70% target, making this the most urgent programmatic priority. The system dynamics model confirms that achieving 70% HPV testing coverage by 2040—alongside full transition from LBC by 2030 and sustained 90% vaccination—is the optimal scenario, projected to accelerate elimination by 18 years and avert 6,000 new cases by 2070. Malaysia's trajectory demonstrates that measurable elimination progress is achievable; the systems and evidence base are in place, and the phased rollout provides a scalable model for acceleration.

5.3 National Policy Implications

Malaysia is well positioned to accelerate progress through focused policy action. Maintaining the momentum of the catch-up programme and ensuring sustained annual HPV vaccination rates of 90% are essential to preserving the gains made. Accelerating the transition from LBC to HPV testing—targeting full completion by 2030—is the single most effective lever for advancing elimination ahead of schedule. Expanding HPV testing capacity and mobilising community outreach to close the screening gap, with a particular emphasis on underserved populations through NGO and clinic-based partnerships, will be critical. Strengthening colposcopy and treatment registries will ensure that screen-positive women receive timely follow-up care, supporting attainment of the 90% treatment target. With sustained investment and disciplined execution of the phased national rollout, Malaysia can consolidate its strong foundation and move confidently toward cervical cancer elimination.

6. Data-Driven Acceleration and Economic Rationale

The strategic direction is robustly supported by the system dynamics model, which simulated the effects of multiple policy interventions. The model demonstrates that, while vaccination remains the cornerstone of cervical cancer prevention, a complete transition from LBC to HPV testing—ideally by 2030—serves as the most effective accelerator toward elimination. Notably, any delay in adopting this technological transition has a greater impact on prolonging elimination than a delay in expanding coverage.

The optimal scenario—combining sustained 90% vaccination, full HPV testing by 2030, and 70% screening uptake by 2040—is projected to accelerate elimination by 18 years. This scenario is highly cost-effective, leading to 6,000 averted new cancer cases by 2070. While the estimated screening cost of MYR 1.81 billion (USD 411 million) is higher than the LBC baseline (MYR 1.39 billion), the return on investment in averted cases, reduced morbidity, lower treatment costs, and increased productivity from a healthier population

far outweighs the initial expense. The alternative scenario of only two lifetime HPV screenings before age 50 would accelerate elimination by 14 years and cost less (MYR 1.13 billion), but would avert fewer cases (1,000), confirming that the more comprehensive 70% coverage target, powered by HPV testing, is the best value proposition for achieving true elimination. Malaysia's next critical steps involve the disciplined execution of this technological transition and a massive mobilization effort to close the screening gap.

Acknowledgments

This report was prepared by the Ministry of Health Malaysia and Professor Dr Woo Yin Ling of the Commonwealth Cervical Cancer Elimination Taskforce.

References

1. Balqis-Ali NZ, Anis-Syakira J, Fun WH, Mohd Said Z, Abdul Samad S, Zainal Abidin N, et al. (2024) Achieving cervical cancer elimination: The simulated impacts of HPV vaccination and transitioning from liquid-based cytology to HPV-based screening test. *PLoS ONE* 19(7): e0307880. https://doi.org/10.1371/journal.pone.0307880
2. Henschke N, Bergman H, Buckley BS, Crosbie EJ, Dwan K, Golder SP, Kyrgiou M, Loke YK, McIntosh HM, Probyn K, Villanueva G, Morrison J. (2025). Effects of human papillomavirus (HPV) vaccination programmes on community rates of HPV-related disease and harms from vaccination. *Cochrane Database Syst Rev.* Nov 24;11(11):CD015363. doi: 10.1002/14651858.CD015363.pub2. PMID: 41276264; PMCID: PMC12640735.
3. Ministry of Health Malaysia. (2021). Action plan towards the elimination of cervical cancer in Malaysia 2021–2030. Family Health Development Division, Ministry of Health Malaysia.
4. Ministry of Health Malaysia. (2023). National Cancer Registry Report 2017–2021. Institut Kanser Negara. https://nci.moh.gov.my/images/pdf_folder/Malaysia-National-Cancer-Registry-Report-2017-2021.pdf
5. Muhamad, N., Buang, S., Jaafar, S. et al. Achieving high uptake of human papillomavirus vaccination in Malaysia through school-based vaccination programme. *BMC Public Health* 18, 1402 (2018). https://doi.org/10.1186/s12889-018-6316-6
6. Ministry of Health Malaysia. (2024). Annual report 2024. Putrajaya: Ministry of Health Malaysia. https://www.moh.gov.my
7. World Health Organization. Global strategy to accelerate the elimination of cervical cancer as a public health problem. Geneva: World Health Organization; 2020. Available from: https://www.who.int/publications/i/item/9789240011403.

Caribbean

The Caribbean carries one of the highest cervical cancer burdens relative to population size within the Commonwealth. The two Caribbean case studies demonstrate how small island developing states are driving innovation in HPV screening, domestic financing, and health system integration.

Case Studies in This Section

- Antigua and Barbuda
- Belize

Antigua and Barbuda

Transforming Cervical Cancer Prevention Through hrHPV Screening, Digital Innovation and Multisector Partnership

Key Takeaways

- Screening coverage reached 62.9% of eligible women, a dramatic improvement from historically low cytology uptake.
- A phased pilot-to-scale-up approach (2020-2025) enabled operational refinements before national expansion.
- Integration into the national EHR enabled real-time monitoring and improved data reliability significantly.

1. Background and challenge

Antigua and Barbuda is a small island developing state (SIDS) in the Eastern Caribbean with a population of approximately 100,000. It is classified as a high-income country, yet like many SIDS, faces structural health system constraints including limited specialist workforce, geographic dispersion across two islands, and reliance on external procurement for medical supplies and laboratory services.

Cervical cancer remains a major public health concern in Antigua and Barbuda and reflects the broader global inequity in which low- and middle-income countries (LMICs) account for nearly 90 per cent of cervical cancer deaths [1,2, 3]. The Caribbean is one of the most disproportionately affected subregions, with incidence rates often ranging between 20 and 35 per 100,000 and mortality rates well above global averages. Globally, the age-standardised cervical cancer incidence rate stands at 14.1 per 100,000 women (GLOBOCAN 2022), placing the Caribbean well above this benchmark and underscoring the region's disproportionate burden [4].

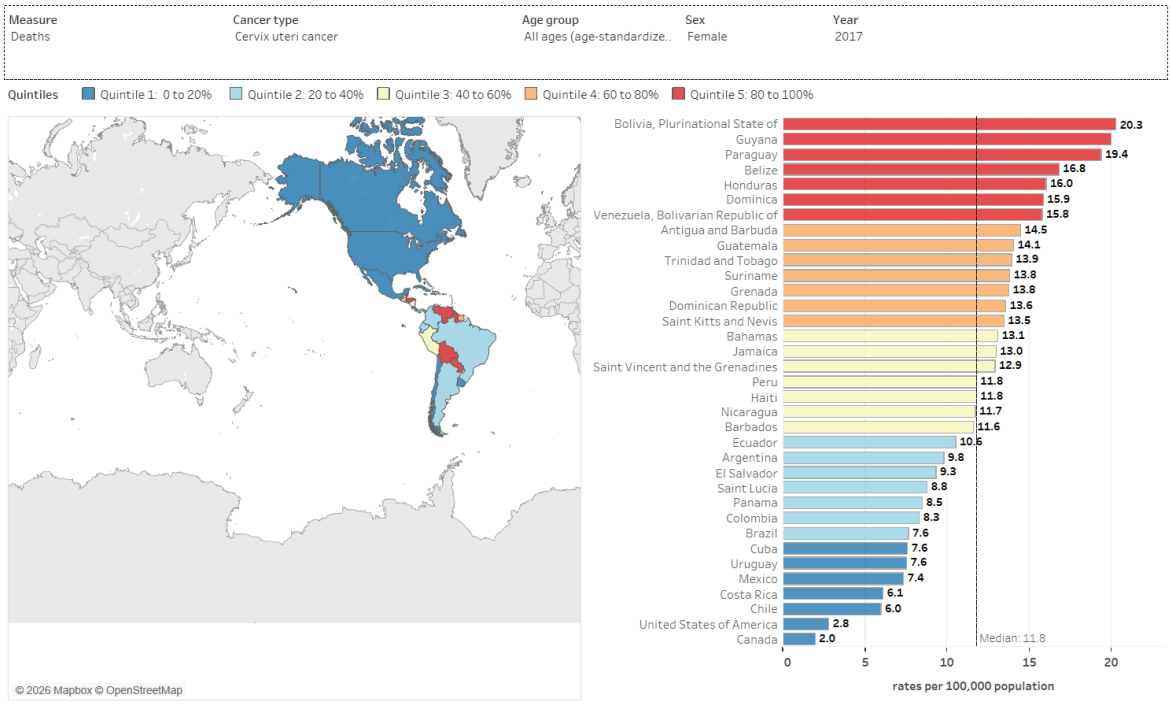
Local epidemiological data are limited; however, modelling estimates indicate that the 2019 cervical cancer mortality rate in Antigua and Barbuda was 14.23 per 100,000 women, placing the country in the fourth regional quintile (60–80 per cent), with only 7 countries in the Americas experiencing higher mortality [4]5. Between 2000 and 2019, mortality is estimated to have increased by 31.2 per cent, highlighting a growing burden [5].

Clinical data from the Oncology Department at the Sir Lester Bird Medical Centre (SLBMC) reinforce this picture. Between 2016 and 2020, 52 gynaecologic cancers were referred. Cervical cancer was the most common gynaecologic cancer and more than 50 per cent of cervical cancers presented at advanced stages, consistent with regional findings showing high late-stage diagnosis due to limited screening access [6].

2. Policy and health system landscape

In 2020, the World Health Assembly adopted the Global Strategy for Cervical Cancer Elimination, which calls on countries to achieve: 90 per cent HPV vaccination, 70 per cent screening with a high-performance test, and 90 per cent treatment of women with precancer or cancer [7]. When Antigua

Figure 8.1.Cervical Cancer Deaths per 100,000 population in the region of the Americas



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

and Barbuda reviewed its status against these targets in 2021, fewer than 50 per cent of eligible women had been screened. Significant variability existed in screening intervals, documentation and follow-up across both the public and private sectors. HPV vaccination, introduced in 2018 for girls and boys aged 9–13 years, achieved only 18 per cent coverage in its first year and declined further during the COVID-19 pandemic [8]. A 2023 cross-sectional awareness survey confirmed that despite high knowledge levels – 91.6 per cent of women were aware of HPV and 98.9 per cent were aware of Pap smear screening – only 12.8 per cent had actually received HPV vaccination, while 49.7 per cent expressed willingness to vaccinate. This knowledge–uptake gap underscores the persistent demand-side barriers to vaccination that must be addressed through structured community education [9].

Screening remained opportunistic, based solely on Pap cytology for women aged 21–65. Although many local clinicians used American College of Obstetricians and Gynecologists (ACOG) guidelines, significant variability existed in screening intervals, documentation and follow-up. The lack of national guidelines led to inconsistent practice, including annual cytology for many women, high loss to follow-up after abnormal results and inequitable access to colposcopy.

To address these challenges, the Ministry of Health (MOH), established the Cervical Cancer Task Force (CCTF) in 2018.

3. National Intervention

Antigua and Barbuda's national cervical cancer intervention represents a comprehensive restructuring of the health system's approach to cervical cancer prevention, diagnosis and management. The transition was initiated by the Ministry of Health (MOH) in collaboration with the Pan American Health Organization (PAHO) and Basic Health International (BHI). It was designed as a long-term strategy to address persistent inequities in screening coverage, inconsistent clinical management and the increasing number of women presenting with advanced cervical cancer.

HPV vaccination

HPV vaccination for boys and girls aged 9–13 years was introduced in 2018 using a community-based approach. Despite strong early advocacy, coverage

Table 8.1. Target population groups 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

Note: WLHIV = Women Living with HIV. Due to HIV-related immunosuppression and heightened risk of persistent HPV infection, this group requires earlier and more closely monitored cervical cancer screening than the general population.

reached only 18 per cent in the first year and declined further during the COVID-19 pandemic, falling well below the WHO elimination target of 90 per cent HPV vaccination by age 15 [8].

Screening programme development and hrHPV transition

Caribbean cervical screening studies report widely variable coverage, from 19 per cent to 65 per cent, with most countries relying on opportunistic Pap testing rather than organised population-level screening. These structural characteristics mirror the situation in Antigua and Barbuda prior to programme reform [10,11]. Antigua and Barbuda's shift to high-risk HPV (hrHPV)-based cervical screening unfolded in four successive phases: foundational development, a national demonstration project, adoption of screening guidelines and full-scale programme rollout.

Phase 1: Foundational development (2020)

The national reform process began in 2020 when Antigua and Barbuda joined a PAHO initiative aimed at demonstrating the feasibility of hrHPV testing in Caribbean and Latin American small island states. PAHO and BHI supported the Ministry of Health through procurement of hrHPV tests, training of clinical and laboratory personnel, and the introduction of new programme management structures that aligned with WHO best practices [12].

This early phase introduced a paradigm shift away from Pap test screening towards a screen-triage-treat model, establishing the technical and operational foundations of the national intervention. The screening algorithm, subsequently codified in the National Guidelines for Cervical Screening and Treatment of Pre-Cancer (2024), defines distinct pathways by age group and risk profile, as shown in Table 8.1.

Phase 2: Demonstration project (September 2022–January 2023)

The first operational application of the new screening model occurred during the national hrHPV demonstration project, whose screening phase was conducted between September 2022 and January 2023 [12].

The project:

- validated the feasibility of hrHPV screening within the primary care system
- refined training methodologies and tested laboratory and referral workflows

- introduced, for the first time, consistent procedures for client counselling, specimen collection, laboratory processing, colposcopy referral and clinical documentation
- strengthened multisector collaboration between the nursing, laboratory, primary care and colposcopy teams' workflows – which later formed the backbone of the national programme.

Five public health facilities, namely All Saints, Clare Hall, Jennings, Gray's Farm and Browne's Avenue, were selected to represent diverse geographic and demographic populations, while maximising coverage by prioritising sites with high patient numbers throughput to capture a large proportion of eligible women. The demonstration project generated the operational evidence base for subsequent guideline development and was the first nationally co-ordinated cervical screening activity with consistent quality-assurance measures and documentation tools.

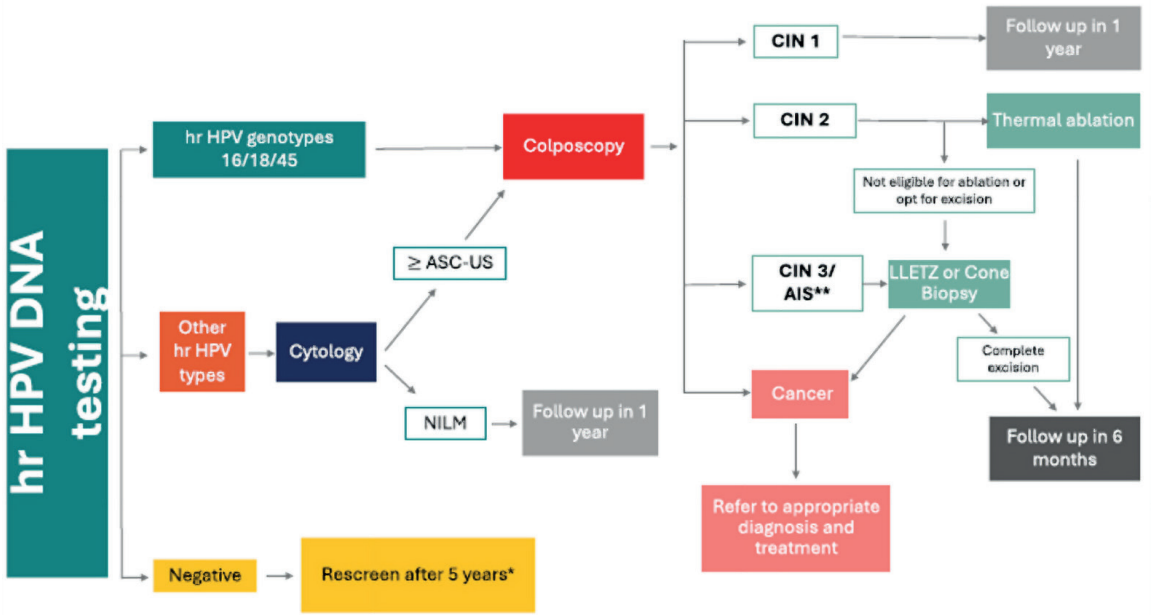
Phase 3: Development, adoption of the National Cervical Screening Guidelines

Building directly on the pilot, the MOH developed the National Cervical Screening and Precancer Treatment Guidelines (2024), establishing national standards for screening, triage, treatment and follow-up, harmonised with WHO and PAHO recommendations [13].

Key features of the guidelines include the following:

- Adoption of hrHPV testing as the national standard for primary screening.
- Structured pathways for triage, including cytology and colposcopy referral.
- Treatment decision trees detailing eligibility for thermal ablation and Large Loop Excision of the Transformation Zone LLETZ.
- Dedicated guidance for pregnant women, post-treatment follow-up and WLHIV.
- Uniform clinical competency and training requirements.
- A national monitoring framework aligned with WHO/PAHO indicators.

Figure 8.2. 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
** Cone biopsy for AIS. Option for hysterectomy for CIN 3/AIS in women completed childbearing.

These guidelines provided the policy foundation necessary for programme expansion and ensured consistency across all public sector screening services.

Phase 4: Nationwide scale-up of hrHPV screening

In February 2025, after national adoption of hrHPV testing and finalisation of the guidelines, Antigua and Barbuda began a systematic scale-up of cervical screening services that continued through October 2025. This represented the transition from a discrete pilot to a fully integrated, centrally co-ordinated national programme.

a. Centralisation of screening services under the CCEP

A major reform during this period was the centralisation of programme management under the National Cervical Cancer Elimination Programme (CCEP). Centralisation ensured uniform implementation of the national guidelines; streamlined supply-chain management for hrHPV test kits, consumables and treatment devices; and strengthened oversight of colposcopy and treatment services. It also improved communication across primary care, colposcopy services, laboratory units and oncology.

b. Integration into the national electronic health record (EHR) system

During the scale-up, cervical cancer screening was fully integrated into the national electronic health record system. This restructuring allowed for standardised documentation, improved consistency of clinical data entry, and alignment with Ministry of Health, PAHO and WHO indicator requirements. Integration into the national digital health infrastructure also strengthened programme governance and facilitated routine monitoring of screening implementation.

c. Workforce expansion and continuous provider training

The scale-up required significant expansion of the trained workforce. The ministry delivered repeated rounds of provider training to ensure competency in hrHPV sample collection, triage decision-making, colposcopy referral processes, infection prevention, patient navigation and digital documentation.

Continuous capacity building ensured that all clinics were able to apply the guidelines consistently and sustainably.

4. Stakeholders and partnerships

The programme has required sustained multisectoral engagement. Key stakeholders include the MOH, PAHO, Basic Health International (BHI), the SLBMC – especially laboratory services and the Obstetric and Gynaecology, Pathology and Oncology Departments, primary care nursing services, and community organisations. Regional and international partnerships have been essential for training, procurement and guideline development.

5. Outcomes and evaluation

HPV vaccination

HPV vaccination for boys and girls aged 9–13 years was introduced in 2018 using a community-based approach. Despite strong early advocacy, coverage reached only 18 per cent in the first year and declined further during the COVID-19 pandemic, falling well below the WHO elimination target of 90 per cent vaccination by age 15 [8].

Screening

Antigua and Barbuda's transition to HPV testing as the primary cervical screening method is significantly strengthening the sensitivity and performance of the national programme. Unlike cytology, which detects only 50–60 per cent of true precancer, HPV DNA testing identifies a much larger proportion of women at genuine risk, as reflected in the expected rise in screening positivity rates [14].

This shift represents a major improvement in the country's ability to detect disease earlier and more reliably. Screening uptake is increasing substantially, with 62.9 per cent of eligible women now screened, an important improvement compared with historically low cytology coverage. Free HPV testing, decentralised service delivery and nurseled implementation are driving higher participation and helping reduce inequities, particularly in suburban and rural communities. The rural and suburban clinics report strong gains in attendance, illustrating how communityembedded, accessible services enhance uptake.

Table 8.2. Antigua and Barbuda: Cervical Cancer Elimination Programme development timeline

Year	Milestone	Significance	Partners
2018	CCTF established; HPV vaccination launched for boys and girls aged 9–13.	First national governance structure; primary prevention begins.	MOH
2020	Joined PAHO hrHPV demonstration initiative; foundational training and procurement.	Paradigm shift to screen–triage–treat model; operational foundations established.	MOH, PAHO, BHI
Sep 2022	hrHPV demonstration project launched across five facilities.	First nationally co-ordinated, standardised screening with QA measures.	MOH, PAHO, BHI
Jan 2023	Demonstration project completed; evidence base for guidelines generated.	Findings directly informed national guideline development.	MOH, PAHO, BHI
2024	National Cervical Screening and Precancer Treatment Guidelines published.	Unified national standard replacing inconsistent public/private practices.	MOH, PAHO, BHI
Feb 2025	Nationwide scale-up begins: CCEP centralisation, EHR integration, workforce expansion.	Transition from pilot to fully integrated national programme.	MOH, PAHO, BHI, SLBMC
Oct 2025	Scale-up phase completed; 62.9% screening coverage achieved.	Significant progress toward WHO 70% screening target.	MOH

Current programme data show that 19.8 per cent of screened women test hrHPVpositive, a figure consistent with Caribbean prevalence estimates and indicative of improved detection sensitivity. Between February and October 2025, 411 hrHPVpositive women required triage, significantly exceeding the referral burden observed under cytology-based screening. This increased demand places pressure on colposcopy services and highlights the need for expanded human resources, additional equipment and optimised clinical pathways as HPV testing scales [15].

Cytology, used as triage for women positive for non16/18/45 hrHPV types, continues to be a bottleneck. Its dependence on specialised personnel, interpretive variability and slower turnaround times creates delays in the diagnostic continuum.

Clinically, Antigua and Barbuda is observing a substantial proportion of CIN2 (cervical intraepithelial neoplasia) lesions among highgrade abnormalities identified through colposcopy and biopsy. Because CIN2 is a biologically ambiguous category, sometimes regressing like CIN1 and sometimes behaving like CIN3, this pattern raises the risk of overtreatment, particularly when excisional procedures are used. The country's experience underscores the importance of highquality colposcopic assessment, enhanced provider training and strong quality assurance in histopathology to ensure appropriate management and avoid unnecessary excision.

Treatment

The diagnostic continuum has been strengthened through expanded colposcopy capacity, introduction of thermal ablation, structured referral pathways and stronger links to gynaecologic oncology services, creating a more integrated national system capable of earlier detection and more streamlined care.

Incidence and mortality

Retrospective studies conducted across four key study sites, namely the Sir Lester Bird Medical Centre, the Medical Benefits Scheme, the Cancer Centre Eastern Caribbean and the Health Information Division, provide the most current and

comprehensive evidence on cancer burden for the period 2017–2021 [16]. Between 2017 and 2021, 40 women were diagnosed with cervical cancer across these sites. Cervical cancer accounted for 10.2 per cent of all cases among the 4 major cancers studied (female breast, cervical, colorectal and prostate), with a median age at diagnosis of 51 years. The combined age-standardised incidence rate for all four cancers was 65.2 per 100,000 population (95 per cent CI: 58.7–71.6), with an overall annual percentage change of 8.1 per cent (95 per cent CI: -14.9–37.6). Cancer-specific incidence rates are projected to increase by an average of 3.4 per cent per year through 2030 if current trends continue, underscoring the urgency of sustained prevention and early detection efforts [16].

6. Monitoring and evaluation

Integration of cervical screening into the national electronic health record (EHR) served as the foundation for effective monitoring and evaluation. The system enables improved tracking of screening performance. These data are used to populate standardised WHO/PAHO cervical cancer elimination indicators, including screening coverage, HPV positivity, triage attendance, treatment completion and follow-up.

The digital platform supports monthly performance reviews and rapid identification of bottlenecks, strengthening programme governance and accountability. This represents a major improvement from previous paper-based screening programmes, which were unable to monitor population-level outcomes effectively.

7. Lessons learnt

What worked well

The transition to HPV testing was highly successful in improving screening sensitivity, equity and standardisation. Strong political will and dedicated leadership within the MOH drove the reform agenda consistently across multiple years. Multi-year PAHO–BHI collaboration provided essential technical, financial and procurement support without requiring parallel infrastructure. Centralisation under the National Cervical Cancer Elimination Programme (CCEP) created a unified governance structure ensuring consistent implementation, while the digital transformation through EHR integration increased data reliability and service co-ordination. Training programmes, particularly in HPV sampling, colposcopy and thermal ablation, substantially improved provider competence and system readiness.

The structured PAHO–BHI supported pilot-to-scale-up approach proved particularly effective, allowing operational refinements before national expansion. The shift to HPV also supported the pre-existing nurse-led model of care, improving efficiency and accessibility.

8. Key challenges and responses

- The increased number of women requiring colposcopy following HPV testing is predictable due to the higher positivity rate of HPV testing compared with cytology. This highlighted the need for early strengthening of downstream diagnostic services. Without adequate colposcopy capacity, HPV-based programmes risk creating diagnostic bottlenecks. Antigua and Barbuda responded by expanding colposcopy clinics, procuring new equipment and strengthening provider training to standardise management
- Cytology continued to pose challenges as a triage tool. Limited cytotechnologists, constrained lab capacity and the need for specialised skills contributed to delays. This underscores that cytology is a limiting factor in human resource-constrained settings, and alternative triage methods such as partial genotyping, VIA in select contexts or artificial intelligence (AI)-supported cytology should be explored for sustainability.
- Public hesitancy toward HPV testing and vaccination also persisted. Many women and their partners struggle to understand the natural history of HPV infection, and misconceptions about infidelity, cancer risk and modes of transmission generate anxiety and potential stigma. Providers require additional time, training and culturally appropriate communication tools to address these concerns effectively. This situation highlights the broader need to strengthen HPV and cervical cancer literacy among both healthcare providers and the

public, particularly regarding transmission, persistence, clearance and the protective role of vaccination.

- Strengthened community education, expanded clinic outreach and engagement of trusted community leaders helped mitigate misinformation. These challenges reinforce the importance of structured, intentional education for healthcare providers and the public, particularly around HPV transmission, persistence and vaccination.

9. Context-specific insights

Health system considerations for SIDS

For small island developing states (SIDS), cervical cancer interventions must be designed with careful consideration for workforce constraints and service delivery realities. HPVbased screening is particularly well suited to these settings; however, simplifying triage and ensuring adequate colposcopy planning remain essential to maintain programme efficiency. Digital health systems must also be adaptable, interoperable and resilient to support reliable monitoring, followup and continuity of care. Strong regional and international partnerships play a central role in enabling training, procurement and evidencebased guideline development, while centralised governance structures help ensure uniform standards and maximise limited national resources.

Effectiveness and service uptake

Antigua and Barbuda's experience demonstrates that service uptake can improve substantially when barriers are reduced and services are redesigned with accessibility in mind. Screening coverage increased dramatically, with 62.9 per cent of eligible women screened, a notable improvement compared with historically low cytology uptake. Free HPV testing, a decentralised delivery model and nurse-led approaches have collectively increased participation and reduced inequities. Rural clinics, in particular, have reported significant improvements in attendance, underscoring the value of bringing services closer to communities and building trust through local engagement.

At the diagnostic and treatment levels, the continuum of care has also strengthened. Expanded colposcopy capacity, the introduction of thermal ablation, more structured referral pathways and enhanced linkages with gynaecologic oncology services have contributed to a more integrated national system. These developments support earlier detection, promote timely management and create a smoother, more reliable pathway for women navigating post-screening care.

10. Key recommendations

Transferable lessons for Commonwealth countries

Commonwealth SIDS and lower-resource settings can adopt Antigua and Barbuda's phased approach: pilot implementation, operational evaluation, national guideline development, centralised governance, and early investment in diagnostic and treatment capacity. A key transferable lesson is that HPV testing's inherently higher positivity rate must be anticipated; adequate planning for triage and colposcopy capacity is essential. The transition from cytology to HPV improves equity, simplifies sample collection and enables nurse-led models of care – all important in workforce-constrained settings.

A forward-looking lesson is the role of HPV self-testing to expand screening uptake and reduce pressure on primary care staffing. In SIDS and similar resource-limited contexts, self-collection can improve participation, reduce clinic workload and enhance the resilience of screening systems.

Investment in national cancer registry infrastructure is a complementary priority. The retrospective studies conducted in Antigua and Barbuda (2017–2021) demonstrate what can be achieved through multisite data collection, but also highlight its limitations: without a prospective, continuous registry, real-time monitoring of incidence and mortality trends and assessment of the impact of HPV screening on these trends will remain a challenge. Establishing a national or hospital-based cancer registry should be considered a foundational investment alongside screening programme development. This experience reinforces a critical lesson for small island developing states (SIDS): HPV-based screening must be paired with simplified, sustainable triage strategies such as partial genotyping, AI-supported cytology or adapted visual methods in settings where cytology capacity is limited.

Alignment with WHO 90-70-90 targets

The programme's progress toward 70 per cent screening coverage is significant. Strengthening triage and treatment capacity is necessary to achieve the 90 per cent treatment benchmark, while expanding HPV vaccination is essential to meet the 90 per cent vaccination target. These combined efforts position Antigua and Barbuda to contribute meaningfully to the WHO Cervical Cancer Elimination Agenda.

11. National policy implications

Antigua and Barbuda continues to strengthen colposcopy and treatment capacity to match the increased demand from HPV testing. Investment in alternative triage strategies –molecular triage, automated cytology or visual assessment supported by digital tools – will be essential in settings where cytology remains a bottleneck. Sustaining centralised co-ordination, integrating screening into national budgets and expanding HPV vaccination coverage remain key priorities.

Acknowledgments

This country case study was prepared by:

Dr Cherie Tulloch, Ministry of Health

Dr Teri-Ann Joseph, Ministry of Health

References

1. Arbyn, M, E Weiderpass, L Bruni et al. (2019), 'Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis', *Lancet Global Health*.
2. Pan American Health Organization (2019), *Cervical Cancer in the Americas: Burden of Disease*, Washington, DC.
3. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A and F Bray (2021), Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin, Vol. 71:209-49. https://doi.org/10.3322/caac.21660
4. Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, Jemal A. (2024) Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin., Vol. 74, :229-63. doi: 10.3322/caac.21834.
5. Health Information Platform for the Americas (PLISA), PAHO, *Cervical cancer mortality data, Antigua and Barbuda, 2000–2019*.
6. Sir Lester Bird Medical Centre Oncology Department, 'Gynaecologic cancer data, 2016–2020', St John's: Antigua.
7. World Health Organization (2020), *Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem*, Geneva.
8. Ministry of Health, Wellness, Social Transformation and the Environment (Year?), *HPV Vaccination Programme Report, Antigua and Barbuda, 2018–2020*.
9. Honnavar P, E Mansoor, C Tulloch, U Udayan, I Cosmello, P Patel and A Bersma (2023), 'Cervical cancer and human papillomavirus awareness among women in Antigua and Barbuda', *Medicina*, Vol. 59 No. 7, 1230.
10. Alleyne, G, et al. (2018), *Strengthening cervical cancer screening in the Caribbean: regional trends and gaps*, Rev Panam Salud Publica.
11. Pan American Health Organization (2020), *Strategies to Scale Up Cervical Cancer Screening in the Caribbean*, Washington, DC.
12. Pan American Health Organization and Basic Health International (2022–2023), *Technical Guidance for HPV Testing Demonstration Projects in the Caribbean and Latin America*, Washington, DC.
13. Ministry of Health, Wellness, Social Transformation and the Environment (2024), *National Guidelines for Cervical Screening and Treatment of Pre-Cancer Lesions*, First Edition, St John's, Antigua.
14. Rijkaart, DC, J Berkhof, FJ van Kemenade et al. (2012), 'HPV DNA testing in population-based cervical screening (VUSA-Screen study): results and implications', *Br J Cancer*, Vol. 106 No. 5, 975–981.
15. Arbyn M, L Bruni, D Kelly et al. (2020), 'Prevalence of HPV infection worldwide: a systematic review and meta-analysis', *Vaccine*, Vol. 38, Suppl. 1, A16–A19.
16. Bovell, AAN, T Ramaliba, SO Goodwin, JC Phillip, J Ncayiyana and TG Ginindza (2025), 'Incidence, trends and patterns of female breast, cervical, colorectal and prostate cancers in Antigua and Barbuda, 2017–2021: a retrospective study', *BMC Cancer*, Vol. 25, 72.

Belize

Building a Sustainable Cervical Cancer Elimination Programme Through Domestic Investment and Community-Centred Care

Key Takeaways

- Belize funds HPV vaccines and HPV test kits entirely from domestic government budgets — a model of sustained public investment that removes dependency on donor cycles.
- A low-cost Google spreadsheet master tracking list for all hrHPV-detected women is a practical, replicable solution for countries without bespoke digital health systems.
- The visiting OBGYN Oncologist partnership (Global Oncology, 3–4 visits/year) provides surgical capacity without requiring permanent specialist employment, directly transferable to other small island and Caribbean states.
- The absence of in-country radiotherapy is the most critical treatment gap: locally advanced cervical cancer cannot be fully managed within Belize, requiring overseas referral at BZD 40,000–50,000 per patient.

1. Background and challenge

Cervical cancer constitutes a major global public health burden. In 2022, an estimated 660,000 new cases and 350,000 deaths were recorded worldwide[1] ranking it as the fourth most common cancer among women and the fourth leading cause of cancer-related female mortality globally. The burden is profoundly inequitable: approximately 90 per cent of incident cases and deaths are concentrated in low- and middle-income countries (LMICs)[2], with sub-Saharan Africa, Central America and South-East Asia bearing the greatest absolute impact.

Belize has historically reported some of the highest cervical cancer incidence and mortality rates in Latin America and the Caribbean (LAC)[3]. Between 2015 and 2025, the age-standardised incidence rate was 24.6 per 100,000 females aged 15 years and older (range: 20.3–39.6), and the age-standardised mortality rate was 15.7 per 100,000 in the same population cohort, both substantially exceeding regional LAC averages of 14.9 and 7.6 per 100,000, respectively[4]. Over this decade, 383 incident cases were reported through the Belize Health Information System (BHIS), equating to a mean of 34 new diagnoses per year. The highest disease frequency was observed among women aged 40–49 years (n = 112; 29.2 per cent of all cases).

Demographic analysis of diagnosed cases reveals that Mestizo women constituted the largest proportion (n = 156; 40.7 per cent), followed by Creole women (n = 98; 25.6 per cent). Socio-economic vulnerability is reflected in educational attainment data: 58.7 per cent of cases occurred among women with no formal schooling or only primary-level education. Geographic distribution of cases spanned all six districts: Belize District recorded the highest burden (n = 116), followed by Cayo (n = 87), Orange Walk (n = 64), Corozal (n = 47), Stann Creek (n = 44) and Toledo (n = 24). In terms of clinical management, oncologists were the primary treating specialty (30.2 per cent), followed by obstetrician-gynaecologists (14.6 per cent); fewer than half of all diagnosed women received

follow-up care from the relevant specialist, indicating significant gaps in referral pathways and specialist access.

Over the same period, 244 cervical cancer-related deaths were recorded, distributed across Belize District (n = 64), Cayo (n = 61), Orange Walk (n = 36), Stann Creek (n = 36), Corozal (n = 25) and Toledo (n = 21). Critically, more than half of deaths (51.6 per cent) occurred within 12 months of diagnosis and, among those, 75.4 per cent died within the first six months, a pattern strongly indicative of predominant late-stage disease presentation at the time of diagnosis. Survival data further underscore the severity of presentation: mortality within 1–2 years of diagnosis was 26 per cent, within 3–4 years 5 per cent, and within 5–10 years 3.5 per cent. Nearly all cases involved Belizean nationals (99.5 per cent), and more than half of deaths occurred among women residing in rural communities (54.5 per cent). Regional hospitals accounted for 40.1 per cent of deaths (n = 98), reflecting both the severity of advanced-stage disease and limited availability of tertiary-level oncology services outside Belize City

The epidemiological data collectively indicate that late-stage presentation, rapid disease progression, socio-economic and geographic health inequities, and limited specialist care are the primary drivers of cervical cancer mortality in Belize. These findings provide the evidence base for Belize's national elimination programme, which has evolved through sustained policy commitment and domestic financial investment[5].

2. Policy and health system landscape

Nearly two decades ago, Belize established a National Cervical Cancer Prevention and Control Committee, composed of multisector and multidisciplinary health professionals. The Committee has played a central role in guiding and supporting interventions to reduce the burden of cervical cancer. Its mandate has since expanded and it is now known as the Reproductive Tract Cancer Committee, reflecting its broader oversight of breast wellness initiatives and prostate cancer control.

The Government of Belize finances cervical cancer prevention and control primarily through domestic health budget allocations. HPV vaccination and cervical cancer screening services are provided without outofpocket payment in the public sector, including through schoolbased and public health delivery platforms. HPV vaccines and diagnostic commodities are procured using national funds, and services are delivered in collaboration with private health sector and nongovernmental organisations. This publicly led, nouserfee approach reflects Belize's commitment to treating HPV vaccination and cervical screening as public health goods and is aligned with the principles of the WHO Global Strategy to Accelerate the Elimination of Cervical Cancer and the WHO 90–70–90 targets for 2030.

3. National intervention

Belize's cervical cancer elimination efforts span all three pillars of the WHO global elimination strategy: HPV vaccination, HPV DNA screening, and treatment of pre-invasive and invasive disease. These interventions have evolved over nearly three decades.

4. Sustaining the success of HPV vaccination

HPV prophylactic vaccination constitutes the cornerstone of primary prevention in Belize's elimination strategy. The national programme was initiated in 2016 with the introduction of a two-dose HPV vaccine schedule, targeting girls in Standard 4 (the primary age cohort of 9–14 years) through a school-based delivery platform. In 2023, Belize adopted a single-dose HPV vaccine schedule, consistent with WHO Strateic Advisory Group of Experts (SAGE) recommendations issued in April 2022[6], which concluded that a single dose provides immunogenicity and efficacy comparable to multi-dose regimens for girls and women aged 9–20 years. This policy change simplified programme logistics, reduced the cost per fully vaccinated girl, and improved completion rates by eliminating the need for a second-dose recall.

The programme is school based, with Standard 4 pupils constituting the primary target cohort. Mop-up vaccination strategies are implemented for students in higher grades who were not vaccinated during the scheduled programme year. HPV vaccines are administered at public health facilities and through outreach sessions, including mobile clinics conducted every one to two months for communities without resident

health facilities. Vaccines are provided free of charge at point of delivery to the target population across public, private and non-governmental organisation (NGO)-affiliated health services. As of 2025, national HPV vaccination coverage among girls stood at 75.9 per cent, representing an increase of 18.4 percentage points compared to 2024 (57.5 per cent), partly attributable to the implementation of the 'announcement approach' communication technique[7], though this remains 14.1 percentage points below the WHO Pillar I target of 90 per cent1.

Screening scale-up and modernisation

Between 17 November 2022 and December 2025, more than 10,000 women underwent HPV DNA testing in Belize, a substantial screening scale-up for a country of approximately 450,000 inhabitants. Of the 3,792 women (37.9 per cent of those screened) who returned a high-risk HPV (hrHPV)-detected result, 61.2 per cent (n = 2,321) were within the WHO-prioritised age range of 30–49 years. Women aged 50 and older accounted for 10.2 per cent of hrHPV-detected results, and those below 30 years for 28.5 per cent (n = 1,084). Geographic distribution of hrHPV-detected results by district was: Belize District (n = 1,358), Corozal (n = 656), Cayo (n = 636), Orange Walk (n = 509), Stann Creek (n = 409) and Toledo (n = 224).

HPV DNA testing is offered at health facilities, community settings, and during outreach and mobile clinic sessions. Programme data indicate a clear patient preference for vaginal self-sampling over clinician-collected cervical samples, consistent with evidence from multiple settings demonstrating that Polymerase Chain Reaction (PCR)-based self-sampling achieves sensitivity for high-grade cervical intraepithelial neoplasia (CIN2+) comparable to clinician-collected specimens[8], and that self-sampling substantially improves screening coverage in under-screened populations[9]. The current median turnaround time for hrHPV test results is one to two weeks from sample collection, though results occasionally exceed this timeframe.

Women with a hrHPV-detected result are recalled for visual assessment and triage (VAT) services. Recall is prioritised by genotype risk, with HPV-16 and HPV-18 cases prioritised ahead of other high-risk HPV types, consistent with their higher attributable fraction of invasive cervical cancer globally. The Ministry of Health and Wellness (MOHW) maintains a centralised master tracking list (Google spreadsheet) documenting follow-up care for all women with detected hrHPV results, irrespective of the facility at which follow-up was received, to enable identification of women lost to follow-up. The overall post-test follow-up rate is 55.7 per cent (1,443 seen of 2,587 women with detected results). By hrHPV genotype, follow-up rates are: HPV-16 – 54 per cent; HPV-18 – 60 per cent; other hrHPV genotypes – 34 per cent. Documented barriers to follow-up attendance include geographic inaccessibility, economic constraints and difficulty obtaining employer leave to attend clinic appointments.

Treatment and care

Treatment services available to women with pre-invasive and invasive cervical disease include: papanicolaou (Pap) cytology; HPV vaccination; HPV DNA testing; visual inspection with acetic acid (VIA); visual assessment and triage (VAT); thermal ablation (replacing cryotherapy, which is being phased out); colposcopy; large loop excision of the transformation zone (LEEP); and surgical management by OB-GYN (obstetrician–gynaecologist) specialists, general surgeons and visiting OB-GYN oncologists. Chemotherapy is available at Karl Heusner Memorial Hospital (KHMH). A computed tomography (CT) scan is required prior to oncologist evaluation for women being considered for surgical intervention; for those unable to afford this investigation, the Special Envoy for the Development of Families and Children has provided financial support through a donation to the Belize Cancer Society.

Belize does not currently have in-country radiotherapy infrastructure. Women requiring radiotherapy, the standard of care for locally advanced cervical cancer, must be referred overseas for treatment. The estimated total cost of accessing external beam radiotherapy abroad, inclusive of medical treatment, travel, accommodation and subsistence, ranges from 40,000 Belizean dollars (BZD) to BZD 50,000 per patient, representing a substantial financial burden for affected women and the public health system. The absence of radiotherapy constitutes the most critical treatment gap in Belize's elimination programme. A visiting OB-GYN oncologist from Global Oncology attends three to four times per year, providing surgical capacity at KHMH without requiring permanent specialist employment.

Public awareness and community engagement

The Belize Cancer Society's (BCS; established in 1996) mission is to reduce the burden of cancer through education, early detection, access to treatment and policy advocacy[10]. The key programmes and activities are public education campaigns on breast, cervical, prostate and childhood cancers; patient navigation and support, including referrals, psychosocial care and financial assistance; HPV vaccination advocacy, especially for cervical cancer prevention; screening initiatives in partnership with the Ministry of Health and Wellness (MOHW) and the Pan American Health Organization (PAHO), among other local and international partners; policy engagement, pushing for national cancer control plans and equitable access to care; and an annual Cancer Walk, a major awareness and fundraising events that mobilises communities nationwide. The BCS works closely with the MOHW, PAHO, Global Oncology and the Healthy Caribbean Coalition. The BCS is a member of regional cancer networks and contributes to Caribbean-wide cervical cancer efforts. In 2025, the BCS launched a bold five-year strategic plan with focus on boosting early diagnosis, expanding international partnerships and strengthening support systems for patients and families.

The Belize Cancer Centre – Dangriga (BCCD) opened its doors in October 2008. It was established by Dr Ellsworth R Grant (Medical Director) and Nurse Dellone Pascascio, two Belizean visionaries who recognised the urgent need for specialised cancer services in the country. Their mission was to improve lives and restore hope through holistic oncology services that combine medical treatment with compassion and dignity. The centre is located in Dangriga, Stann Creek District, a town known for its Garifuna culture but also now recognised as the home of Belize's cancer hub. Services include chemotherapy administration, patient counselling and follow-up care. The centre supports patients who wish to return home but continue treatment locally, reducing the burden of travelling abroad. The BCCD operates as a charitable, donation-based organisation, ensuring that financial barriers do not prevent access to care. Care is individualised, recognising that each patient's cancer journey is unique. The team emphasises privacy, dignity and sensitivity, reflecting a patient-centred ethics. It has become a symbol of community-driven healthcare innovation, showing how local leadership and philanthropy can transform national health outcomes.

Belize Palliative Care Hospice Association (BPCHA Ltd) was founded to serve underserved areas of Belize City and surrounding villages. It offers free home-based palliative and hospice care for patients with cancer, HIV/AIDS and other life-threatening conditions. Services include pain and symptom management, psychosocial and spiritual support, and end-of-life care. It operates with a volunteer team supported by medical experts, emphasising dignity and comfort for patients in their final stages. Identified gaps include limited public sector integration, with palliative care not yet fully embedded in Belize's national health system; few clinicians being formally trained in palliative medicine; volunteers filling critical gaps; Belize having no national palliative care policy, though regional frameworks (PAHO, WHO) offer guidance; and rural patients facing barriers to home visits, medication access and continuity of care. Strategic directions include integrating palliative care into primary health care services, especially for cancer and HIV programmes; training frontline providers in pain management, communication and psychosocial support; developing national standards and referral protocols to ensure consistent care; and leveraging community networks and faith-based organisations to expand reach. The MOHW, with technical assistance from PAHO, has conducted training in palliative care (one session per district).

5. Key stakeholders and partners

In Belize, the long-standing Cervical Cancer Prevention Committee, originally established to co-ordinate national screening, early detection and treatment efforts, has progressively expanded its mandate in response to the country's broader cancer control needs. As its scope grew to include additional reproductive tract cancers, the Committee was renamed the Reproductive Tract Cancer Committee. This evolution reflects Belize's commitment to a more integrated and multisectoral approach to cancer prevention for both women and men, linking cervical cancer initiatives with breast wellness programmes and prostate cancer control. Within this expanded framework, the Committee continues to play a central role in advancing key cervical cancer prevention and control milestones,

including the rollout of HPV vaccination, the expansion of HPV testing, co-ordination of follow-up care and strengthening of referral pathways for treatment.

Belize's cervical cancer elimination programme has been shaped by sustained multisectoral collaboration across government, civil society and international partners. These efforts align closely with the World Health Organization's global cervical cancer elimination strategy, which emphasises

Table 9.1. Belize cervical cancer prevention programme development timeline

Year	Milestone	Significance	Agencies
1996	Belize Cancer Society established.	First co-ordinated national cancer advocacy, education and patient support organisation.	Belize Cancer Society
2008	Dangriga Cancer Treatment Centre opened; first HPV profile study in Belize City; Belize Palliative Care Hospice Association established.	Landmark year – specialist cancer care outside Belize City; first local HPV burden evidence; end-of-life care infrastructure established.	BCCD, MOHW, BCS
2015	Cost-effectiveness study of HPV vaccination published.	Evidence base established to justify national vaccine introduction.	MOHW, PAHO
2016	HPV vaccine introduced (two-dose schedule).	Primary prevention begins – major step toward reducing future cervical cancer cases.	MOHW, PAHO
2017	VIA and cryotherapy introduced; mobile Optical Digital Technology (ODT) colposcopes procured; visiting OB-GYN oncologist through Global Oncology.	Surge in screening and surgical capacity; diagnostic reach expanded to regional facilities.	MOHW, Global Oncology
2018	Oncology Clinic established at KHMH.	First public oncology service in Belize; national referral point created, ending mandatory overseas treatment (chemotherapy).	KHMH, MOHW, Global Oncology
2021	Dedicated Oncology Unit opened at KHMH, accelerated by COVID-19.	Permanent in-country cancer care embedded in the national referral hospital.	KHMH, MOHW
2022 (17 Nov)	HPV DNA test introduced; >10,000 women screened to date.	Shift to high-sensitivity screening modality; self-sampling preference noted.	MOHW
2023	Single-dose HPV vaccine schedule adopted following SAGE recommendations.	Simplified programme; improved completion rates; reduced cost per vaccinated girl.	MOHW
2024	Visual assessment and triage (VAT) adopted; thermal ablation introduced.	End-to-end screen-and-treat pathway now available locally without overseas referral.	MOHW
2025	Inroduction of the announcement approach technique	® University of North Carolina; technique for effective communication between health professionals and parents or caregivers.	MOHW, University of North Carolina, UNICEF

Source: Ministry of Health and Wellness. Belize

the pillars of prevention, screening and treatment. The WHO's 2030 targets call for 90 per cent of girls to be vaccinated against HPV by age 15; 70 per cent of women to be screened at least twice in their lifetime; and 90 per cent of women with precancerous lesions or cervical cancer to receive appropriate treatment.

Table 9.1 consolidates the key milestones from 1996 to 2024, situating each intervention within the broader context of the WHO global elimination strategy and demonstrating Belize's continued progress towards the 2030 goals.

6. Outcomes and evaluations

Vaccination

The 2025 HPV vaccination coverage among girls was 75.9 per cent – significantly below the WHO Pillar I target of 90 per cent and the most urgent Pillar I gap in Belize's elimination programme. The 18.4 percentage point increase from 2024 (57.5 per cent) demonstrates that coverage gains are achievable with targeted communication strategies; however, sustaining and accelerating this trajectory requires systematic investigation and mitigation of residual barriers to vaccine uptake, including hesitancy, access and school enrolment gaps. Achievement of and maintenance above 90 per cent coverage is essential for the generation of sufficient herd protection to reduce population-level HPV transmission over time.

Screening outcome and projections

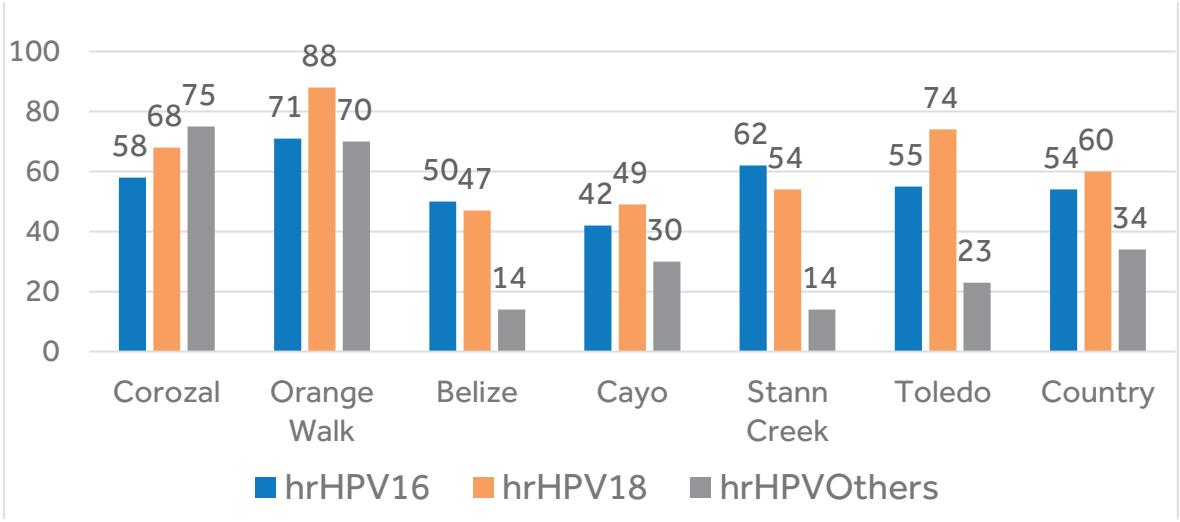
Of the 3,792 hrHPV-detected women identified since November 2022, the overall follow-up rate is 55.7 per cent (1,443 seen of 2,587 with detected results). By hrHPV type, follow-up rates are: hrHPV 16 – 54 per cent; hrHPV 18 – 60 per cent; hrHPV Others – 34 per cent. The northern region (Corozal and Orange Walk) leads on district-level follow-up attendance, while Belize District, which has the highest number of detected cases, has the lowest follow-up count, a pattern warranting urgent investigation.

Figure 9.1 presents hrHPV post-test follow-up rates stratified by district and HPV genotype.

Treatment

Treatment for early-stage cervical disease is available at regional hospitals across all six districts. Advanced-stage disease management is centralised at KHMH in Belize City, utilising local specialist capacity supplemented by visiting OB-GYN oncologist services (three to four visits per year). The KHMH Oncology Unit, formally opened in 2021, has substantially improved equity of access

Figure 9.1. Women seen after receiving high-risk HPV result, by district and HPV type, November 2022 to November 2025



Note: District values are counts of women seen; the country average column shows national follow-up percentage (%). All values are in percentages.

Source: Ministry of Health and Wellness. Maternal Child Health Unit. Belize.

for women who previously required international referral for chemotherapy. The concentration of deaths within six months of diagnosis confirms that late-stage presentation remains the dominant proximal driver of cervical cancer mortality [7]. The absence of in-country radiotherapy infrastructure is the most critical unmet treatment need: locally advanced cervical cancer International Federation of Gynecology and Obstetrics (FIGO) Stage IIB and above) cannot be fully managed within Belize, necessitating overseas referral at a cost of BZD 40,000–50,000 per patient.

7. Monitoring and evaluation approach

The MOHW maintains a master list (Google spreadsheet) tracking follow-up care for all women with detected high-risk HPV results, regardless of where follow-up was received. This enables early identification of women who have not accessed post-test services. The Belize Health Information System (BHIS) captures cervical cancer cases and deaths through the electronic medical records system. All deaths in-country, irrespective of place of death, are mandatory notifiable events.

The WHO 90–70–90 targets provide the framework for national monitoring. Annual reporting against all three pillars for vaccination coverage, screening coverage and treatment rates is required to track progress toward elimination.

8. Key recommendations

Transferable lessons learnt for other Commonwealth countries

Belize's cervical cancer elimination journey highlights several important lessons.

- **Domestic funding sustains programmatic continuity.** Belize's government procurement of HPV vaccines and HPV test kits with domestic funds every year has ensured programme sustainability and reduced dependence on donor cycles. This model of treating HPV vaccination and screening as public goods is directly transferable.
- **Google-based tracking as a low-resource follow-up system.** The MOHW master spreadsheet for tracking all hrHPV-detected women represents a practical, low-cost solution to the follow-up gap — the most common failure point in cervical cancer screening programmes in resource-limited settings. The system enables identification of women lost to follow-up regardless of where they received care.
- **Visiting oncologist partnership to fill surgical gaps.** The partnership with Global Oncology providing a visiting OB-GYN oncologist three to four times per year has enabled surgical capacity at KHMH without requiring permanent specialist employment[11]. This model is relevant to other small Commonwealth and Caribbean nations facing similar specialist workforce gaps.
- **Addressing the follow-up attendance gap requires targeted attention.** Only 55.7 per cent of women with a detected hrHPV result have been seen for follow-up VAT services. Geographical barriers, economic barriers and inability to obtain work leave are the documented drivers. Community outreach, same-day services and financial support mechanisms need strengthening to close this gap.
- **Improved communication effectiveness between health professionals and parents or caregivers of children in age group for HPV vaccination.** The HPV vaccination coverage increased by 18.4 percentage points comparing 2024 and 2025 values (57.5 per cent and 75.9 per cent respectively).

Linkage to WHO 90–70–90 target

Pillar I (Vaccination). At 75.9 per cent, Belize's HPV vaccination coverage falls 14.1 percentage points below the WHO 90 per cent target. Sustained below this threshold, vaccination coverage will be insufficient to generate the herd immunity needed to drive elimination within the planned timeframe. Priority actions recommended include systematic barrier assessment, community engagement and school outreach intensification.

Pillar II (Screening). The scale-up to over 10,000 women screened with HPV DNA testing represents substantial progress. However, the 55.7 per cent post-test follow-up rate for hrHPV-detected women is a critical programme weakness. Without significant improvement in triage and treatment

linkage, screening investment will not translate into commensurate reductions in precancerous lesion burden or invasive disease incidence.

Pillar III (Treatment). Early-stage cervical disease can be managed in-country following the introduction of thermal ablation and LEEP. However, the absence of in-country radiotherapy means that locally advanced disease cannot be fully managed within Belize, creating a structural barrier to equitable access to the standard of care necessary for the most prevalent disease stage at presentation.

9. National policy implications

a. **Urgently scale up HPV vaccination coverage.** Investigate and address the specific barriers preventing achievement of the 90 per cent target. At 75.9 per cent, the current coverage rate will not provide sufficient herd protection to drive elimination within the planned timeframe.

b. **Strengthen followup attendance after hrHPVdetected results.** The current followup rate of 55.7 per cent must be significantly improved to ensure that investments in screening translate into lives saved. This requires addressing geographic, economic and workplace barriers through enhanced community outreach, sameday VIA/VAT services and supportive financial mechanisms. There is a clear need to revisit existing strategies to ensure timely followup care for women with an **hrHPVdetected** result. Because hrHPV infection can be present long before precancerous lesions develop, prompt management is essential to prevent progression and eliminate future cancer risk.

c. **Establish in-country radiotherapy services as a long-term priority.** The absence of radiotherapy is the most critical treatment gap. Regional radiotherapy hub arrangements or International Atomic Energy Agency (IAEA)/International Agency for Research on Cancer (IARC) support should be explored as near-term alternatives while a national facility is planned.

d. **Strengthen data systems.** Transition from the current Google spreadsheet tracking system to a purpose-built, interoperable national cancer registry with real-time reporting, longitudinal follow-up tracking and integration across all service delivery points. Consistent annual reporting against WHO 90–70–90 indicators is essential for programme accountability, external reporting and evidence-informed policy adjustment.

Acknowledgments

This country case study was prepared by:

Natalia Largaespada Beer, Maternal Child Health Technical Advisor

Kevin Bernard, Minister, Ministry of Health and Wellness

Melissa Diaz, Director, Public Health and Wellness

Julio Sabido, Chief Executive Officer

Russell Manzanero, National Epidemiologist

References

1 World Health Organization (2023), 'Human papillomavirus (HPV) and cervical cancer', WHO Fact Sheet, WHO, Geneva, www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer

2 World Health Organization (2023), 'Human papillomavirus (HPV) and cervical cancer', WHO Fact Sheet, WHO, Geneva, www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer

3 Mittal, A, SS Neibart, A Kulkarni et al. (2023), 'Barriers and facilitators to effective cervical cancer screening in Belize: a qualitative analysis', Cancer Causes Control, Vol. 34 No. 8, 647–656, doi:10.1007/s10552-023-01703-0

4 Neibart, SS, M Laufer, W Wong et al. (2021), 'Assessment of cervical cancer prevention and treatment infrastructure in Belize', JCO Glob Oncol., Vol. 7, 1232–1241, doi:10.1200/GO.21.00055

5 Belize Ministry of Health and Wellness, Belize Health Information System (BHIS) Data Report 2015–2025, MOHW, Belmopan.

6 World Health Organization (2022), 'One-dose Human Papillomavirus (HPV) vaccine offers solid protection against cervical cancer', WHO News Release, 11 April, www.who.int/news/item/11-04-2022-one-dose-human-papillomavirus-(hpv)-vaccine-offers-solid-protection-against-cervical-cancer

7 Brewer, NT, MG Hall, TL Malo, MB Gilkey, P Thompson and S Lykken (2017), 'Announcements versus conversations to improve HPV vaccination coverage: a randomized trial', *Pediatrics*, Vol. 139 No. 1, e20161764, doi:10.1542/peds.2016-1764

8 Arbyn, M, F Verdoodt, PJF Snijders et al. (2014), 'Accuracy of human papillomavirus testing on self-collected versus clinician-collected samples: a meta-analysis', *Lancet Oncol.*, Vol. 15 No. 2, 172–183, doi:10.1016/S1470-2045(13)70570-9

9 Racey, CS, DR Withrow and D Gesink (2013), 'Self-collected HPV testing improves participation in cervical cancer screening: a systematic review and meta-analysis', *Can J Public Health*, Vol. 104 No. 2, e159–e166, doi:10.17269/cjph.104.3394

10 Belize Cancer Society (2025), Strategic Plan 2025–2030

11 Global Oncology (GO) (2024), GO-DOC Framework — Building Oncology Capacity in Resource-Limited Settings, GO, San Francisco, www.globaloncology.org

Pacific

The Pacific region encompasses some of the most geographically dispersed health systems in the Commonwealth, including both a high-income elimination frontrunner and small island developing states. The three Pacific case studies span Australia's elimination pathway, school-based vaccination in Fiji, and systems strengthening in Vanuatu.

Case Studies in This Section

- Australia
- Fiji
- Vanuatu

Australia

Cervical Cancer Elimination in Australia: Case Study for Policy-Makers

Key Takeaways

- Australia is projected to be the first country to achieve cervical cancer elimination, between 2028 and 2035.
- School-based HPV vaccination (first global programme) achieved 86.6% coverage by 2020, with recent declines requiring attention.
- Universal self-collection option since July 2022 has transformed uptake: now 46% of HPV tests in 2025.

1. Background and challenge

Burden of disease and equity dimensions

Australia is internationally recognised as a frontrunner in cervical cancer control and is projected to be the first country to achieve elimination – defined as less than 4 cases per 100,000 women per year (age-standardised using the World 2015 female population). It is expected that elimination will be reached between 2028 and 2035, contingent on sustained vaccination, screening and treatment coverage [1, 2, 3]. Cervical cancer age-standardised incidence was 6.4 per 100,000 women annually nationally in 2017–2021, but incidence rates were nearly twice as high in Aboriginal and Torres Strait Islander women (11.7 per 100,000), increased with area-level socio-economic disadvantage, and tended to rise with remoteness [4]. A national analysis also reported higher incidence among women who migrated from Polynesia, New Zealand and the Philippines [5].

2. Policy and health system landscape

In 2007, Australia established the first national, publicly funded human papillomavirus (HPV) vaccination programme for adolescent girls (school-based for 12–13 year olds, school-based catch-up to age 17, community-based catch-up to age 26), expanding to adolescent boys in 2013. The recommended vaccine schedule evolved from a three-dose course of quadrivalent vaccine to a two-dose nonavalent course in 2018 and single-dose nonavalent vaccine in 2023.

Opportunistic screening with cytology (Pap tests) occurred in Australia from the mid-1960s, and in 1991, Australia introduced an organised National Cervical Screening Program (NCSP), initially recommending 2-yearly cytology for those aged 20–69 years. In the following decade, there was a halving in incidence and mortality, before a plateau in the early 2000s, but there was little impact on incidence of adenocarcinomas or on cervical cancer incidence among women aged 20–24 years [6–8]. In December 2017, the NCSP transitioned to primary HPV testing every 5 years for those aged 25-74 years, based on strong evidence that HPV screening is more effective in preventing invasive cancer than cytology [9–12]. HPV testing on a self-collected vaginal sample (self-collection), was initially limited to people aged 30–74 who were at least 2 years overdue for screening. This has been universally available since July 2022, based on emergent evidence of comparable accuracy to clinician-collected samples [13, 14]. In the primary HPV screening programme, operations are supported by the National Cancer Screening Register (NCSR), which took over from state-based

registers in 2017 and enables clinically supported invitations, reminders and provider access to screening histories.

Treatment of cervical precancer and cancer is undertaken in public and private hospital and outpatient settings. Recommendations for treatment of cervical precancer are available as part of the NCSP guidelines [15], while the first formal national guidelines for the treatment of cervical cancer were commissioned by the Australian Government Department of Health, Disability and Ageing, and are currently under development.

3. National approach

Description of interventions

In 2018, the World Health Organization (WHO) issued a call-to-action to eliminate cervical cancer as a public health problem, and in 2020, released a global strategy to accelerate the elimination of cervical cancer [3, 16]. The WHO strategy called for the following targets to be met by 2030, to set every country on the path to elimination of cervical cancer: 90 per cent of girls fully vaccinated with the HPV vaccination by age 15 years; 70 per cent of women to be screened with a high-performance test by age 35 and again by age 45 years; and 90 per cent of women with precancer treated and 90 per cent of women with invasive cervical cancer offered appropriate management and treatment [3, 17, 18].

In 2023, Australia's National Strategy for the Elimination of Cervical Cancer ('the National Strategy') was launched. The National Strategy adopts and builds upon the WHO strategy to align with local context and needs. The targets set by Australia were adapted from the WHO 2030 targets to be: 90 per cent of all eligible people (boys and girls) vaccinated against HPV; 70 per cent of eligible people screened every 5 years; and 95 per cent of eligible people receive optimal treatment for precancer and cancer [19]. The National Strategy, codesigned with community stakeholders, identifies five priority groups: Aboriginal and Torres Strait Islander peoples; culturally and linguistically diverse communities; residents of rural/remote areas; people who identify as lesbian, gay, bisexual, transgender, queer and asexual and people who are intersex (LGBTQIA+); and people with disability [19]. Annual progress reports have been produced since 2021 by C4, the National Health and Medical Research Council (NHMRC) Centre of Research Excellence in Cervical Cancer Control, supported by the Commonwealth Department of Health, Disability and Ageing, though disaggregated data remain limited for several priority populations [4].

Vaccination. School-based HPV vaccination remains the foundation of primary prevention, with programmatic evolutions including the introduction of nonavalent vaccine (2018) and a double-dose (2018) then single-dose schedule (2023). Catch-up vaccination is available through schools in some jurisdictions and through community-based settings (GPs (general practitioners), paediatricians, other community-based health workers, pharmacies) up to and including age 25 years. Providers can verify immunisation status via the Australian Immunisation Register (AIR) and as required can offer opportunistic vaccination [20, 21]. After many years of improving coverage (until 2020), recent declines are likely driven by both operational factors (for example, reduced school visits due to single-dose schedule, higher absenteeism post-COVID, competing priorities and resource limitations in the education sector, the shift to electronic consent which may disadvantage families without reliable internet access) and potential hesitancy/fatigue [20, 22].

Screening. The 2017 transition to five-yearly primary HPV testing introduced a screening test with improved sensitivity and has also enabled new and innovative approaches to improve participation. A universal option to use self-collection (since July 2022), complemented by outreach, GP education and a national community campaign from September 2024, is a key lever to close participation gaps, particularly for under- and never-screened groups. The NCSR underpins invitations, reminders and call–recall based on Medicare enrolment and provides healthcare providers and laboratories with screening histories to guide pathways [13, 14, 19, 23–28].

Follow-up and treatment. Australia now uses a risk classification system based on HPV screening result, where those classified as higher risk at screening (with HPV16/18) are recommended to attend colposcopy, and those classified as intermediate risk (with other oncogenic HPV infection) are recommended to return for a follow-up test in 12 months; those without HPV infection are referred back to routine screening. Risk

classification is primarily based on test results and screening history with some considerations given to immunocompromised, age and Indigenous status.

Colposcopies are performed within the public and private health systems in Australia, mostly by medical practitioners, primarily gynaecologists and gynaecological oncologists. To improve access to colposcopy, training programmes for general practitioners and nurses to perform the procedure – similar to those in the United Kingdom – have begun; however, nurse colposcopists remain uncommon in Australia.

4. Policy/legal reforms, stakeholders, partnerships and digital innovations.

The National Strategy (2023) builds on the WHO's 90–70–90 target and outlines 10 strategic priorities and 35 supporting actions to ensure equitable elimination [19]. Key implementation partners for the National Strategy include the Commonwealth Department of Health, Disability and Ageing (policy, funding, oversight); state/territory health departments (jurisdiction-specific implementation and school vaccination delivery); NCSR (register, invitations and recall functions); general practitioners, nurses, specialists (screening, follow-up, treatment); schools and pharmacies (vaccination); and community partners, including Aboriginal and Torres Strait Islander organisations, LGBTQIA+ health networks, community and peak body disability organisations, and multicultural groups (codesign, outreach, education). C4 provides independent monitoring against the Australian and WHO 2030 elimination targets via annual report [4, 19, 21, 24–26, 29].

Guidelines supporting expanded eligibility for self-collection in July 2022 deliberately included flexibility for healthcare providers in where and how self-collection could be offered, provided there was appropriate clinical oversight and connection to follow-up, in line with strategic actions in the National Strategy. This supports models such as telehealth and community outreach events. Digital elements include progressive electronic consent (mitigating digital exclusion through parallel options), SMS (short messaging service) reminders and the option to receive communications digitally, and tailored communications to under-screened populations [4, 19, 24–26]. Accredited education for screening providers is frequently delivered through online modules and webinars, while a wide range of information and promotional resources are available for both healthcare providers and the community, provided by the national programme and a range of community organisations [30–35]. An online toolkit has been developed to support organisations who would like to run cervical screening outreach events for priority populations [36].

Table 10.1 National Strategy Timeframe

1960s–1990	Opportunistic cytology screening.
1991	Organised NCSP introduced (2yearly cytology, 18–20 to 69 years).
2007	Introduction of a National HPV Vaccination Program for girls (three-dose quadrivalent vaccine).
2013	Boys added to the National HPV Vaccination Program.
2017	Transition to primary HPV screening (5-yearly, 25 to 74 years); and introduction of the National Cancer Screening Register (NCSR).
2018	Two-dose nonavalent vaccination introduced.
2018–2019	Self-collection for under-screened women aged 30–74 introduced.
2021 onward	Annual national elimination progress reports produced by C4 [4, 29].
July 2022	Universal option for self-collection for cervical screening introduced.
2023	Single-dose nonavalent vaccination introduced.
2023	National Strategy released [19].
Sep 2024 onward	Outreach/GP education programme.

5. Outcomes and evaluation

Effectiveness: coverage, morbidity/mortality, equity

Vaccination. Female HPV vaccination coverage at age 15 peaked at 86.6 per cent (2020 cohort), falling to 85.3 per cent (2022) and 81.1 per cent (2024), with larger declines among Aboriginal and Torres Strait Islander females, and among girls in remote/very remote areas and lowest socio-economic status (SES) quintiles. Similar patterns have been seen in males, with coverage at age 15 peaking at 84.9 per cent in 2020 and dropping to 77.9 per cent by 2024. Operational realities of single-dose delivery (single school day opportunity) and higher post-pandemic absenteeism likely contributed; electronic consent may also disadvantage families with limited internet access. Catch-up via primary care and pharmacies is therefore critical [4, 20–22]. Surveillance showed large declines in vaccine-preventable HPV types in females by 2015 (92 per cent reduction among 18–24 year olds; 90 per cent among 25–35 year olds) and subsequent reductions in high-grade lesions in young cohorts [37, 38].

Screening participation. By end-2024, 85.0 per cent of women aged 35–39 had received at least one HPV test, meeting the first part of the WHO 70 per cent screen target across states/territories and SES/remoteness strata (data incomplete for Aboriginal and Torres Strait Islander peoples). For Australia's 5-yearly participation target, 74.2 per cent were up to date by the end of 2024, with gaps in those aged 25–29 years (50.0 per cent), 30–34 years (68.0 per cent) and 70–74 years (68.8 per cent), and those residing in the lowest SES areas (67.9 per cent); very remote residents were just at threshold (70.5 per cent). Participation slipped slightly from 76.5 per cent (2022) to 74.2 per cent (2024), which may be related to longer-term declines seen since 2000 in Australia and other high-income countries [4, 39–41].

Self-collection uptake. Following universal eligibility and targeted promotion from September 2024, self-collection rose from 1.2 per cent of HPV tests in April–June 2022 to 46 per cent in April–June 2025, with growth across all ages, SES, remoteness and jurisdictional groups. Among under-screened and never-screened participants, 60 per cent and 54 per cent of tests, respectively, were self-collected in April–June 2025. More under- and never-screened people underwent screening with self-collected samples in the first six months after self-collection became a universal option than had used it in the entire four years and seven months before eligibility was expanded. Net impact on population coverage is still being assessed given oscillating total screening volumes and substitution of clinician-collected tests [23–28].

Follow-up and treatment. Among people who were classified as higher risk in 2022, colposcopy was recorded for 46.5 per cent by 3 months, 61.6 per cent by 6 months, and 69.4 per cent by 12 months, with lower 3-month attendance for Aboriginal and Torres Strait Islander peoples (50.8 per cent) than for non-Indigenous participants (60.8 per cent), and the lowest attendance in remote/very remote areas [29, 42]. Among women with high-grade disease detected in 2023, 54.6 per cent were treated within 8 weeks, 82.7 per cent within 6 months, and 86.5 per cent within 12 months, below WHO 90 per cent and Australia's 95 per cent targets. Post-COVID challenges related to availability of surgical resources likely contributed to declines observed from 2020 to 2023 [4]. Timeliness targets for colposcopy, as used in New Zealand and the United Kingdom, can support faster diagnosis and treatment [43, 44]. In Australia, colposcopy attendance timeframes have been established and are reported upon in programme monitoring by the Australian Institute of Health and Welfare (AIHW) in screening programme monitoring reports.

Impact on disease burden. There has been a steady drop in cervical cancer incidence in younger age groups, suggestive of a preventative effect of HPV vaccination [4]. Among women aged 25–29 years, rates fell from 9.3 cases per 100,000 in 2013 to 3.4 cases per 100,000 in 2021. In 2021, no cases were diagnosed in women under 25 years; however, these figures should be interpreted cautiously due to the small number of cases in this age group. Modelling indicates elimination at the population level is feasible by the national target date of 2035, but without intensified effort, elimination in Aboriginal and Torres Strait Islander communities is projected to occur ~10 years later than this 2035 target. However, modelling suggests a targeted effort to support all currently unscreened Aboriginal and Torres Strait Islander women to be screened and attend indicated follow-up could bring the timeline closer to national targets [1, 2, 4, 45].

Monitoring and evaluation approach

Australia's monitoring and evaluation is drawn together in annual cervical cancer elimination progress reports produced by C4, based on data from the AIR and the National Centre for Immunisation Research and Surveillance (NCIRS) (vaccine coverage, catch-up verification); the NCSR (screening invitations/reminders, participation, follow-up indicators); and the Australian Cancer Database, National Gynae-Oncology Register and state-based cancer treatment data. Data gaps limit systematic equity disaggregation for culturally and linguistically diverse communities, gender/sexually diverse people, and people with disability [4,19–21], and on screening data for Aboriginal and Torres Strait Islander people [27, 28].

Cost-effectiveness and resource implications

Key programmatic considerations include fluctuations in resource requirements with the change from two-yearly cytology-based to five-yearly HPV-based screening, operational trade-offs under single-dose scheduling (efficiency and cost-effectiveness versus missed school day risk), the need for a sustained screening catch-up for Aboriginal and Torres Strait Islander people, and surgical capacity constraints affecting treatment timeliness post-pandemic. Future iterations could incorporate cost-effectiveness and resource requirements for targeting priority populations, including point-of-care screening approaches in remote Indigenous communities and expanded self-collection services and colposcopy capacity. Expanding the range of non-medical providers who can offer screening, particularly in the context of self-sampling, has the potential to increase access and improve equity in cervical screening [4, 20–22, 31, 32, 46–48]. Longer term, the potential to safely de-intensify screening in nonavalent-vaccinated cohorts, who will be at very low lifetime risk of cervical cancer if vaccination coverage is continuously achieved at a high rate, requires evaluation.

6. Lessons learnt

What worked well

- Whole-of-system alignment across vaccination, screening and treatment – anchored by clear elimination targets and a national strategy – created a coherent pathway from policy to practice [4, 19].
- School-based vaccination, the first such programme globally, achieved high coverage and demonstrated substantial reductions in vaccine-preventable HPV types and early declines in high-grade lesions among young women, including indirect protection among young unvaccinated women [4, 20, 37, 42, 49].
- Expanding access to self-collection has greatly increased its use by the originally targeted group of never-and under-screened women (both in absolute and relative terms) [23–28].
- Data collections (AIR, NCSR, cancer registries; annual progress reporting by C4 drawing all elimination data together) enable tracking and agile policy adjustment; the National Strategy's explicit equity framing keeps priority populations central [4, 19, 29].

Key challenges and responses

- *Declines in vaccination and screening coverage*: declines in vaccination coverage and participation dips prompted catch-up efforts through primary care, pharmacies and targeted provider education from 2024 [4, 20, 21]. The introduction of the universal option of self-collection of an HPV sample increased the participation of previously under-screened women and was complemented by extensive GP education, outreach programmes and campaigns co-designed to target hard-to-reach groups [24–26, 30–32, 34–36].
- *Equity gaps*: higher incidence/mortality in Aboriginal and Torres Strait Islander women, and participation shortfalls in younger and lower SES groups, persist. Modelling supports sustained screening catch-up to advance elimination timing for Indigenous communities [4, 45].

- *Digital divide*: electronic consent for vaccination can exclude families without reliable internet; however, paper-based forms are also easily lost. Mitigation includes providing multiple options, school follow-up and community outreach [20, 21, 47].
- *Data gaps and delays in accessing large-scale linked data* currently limit the ability to rapidly and routinely track and report upon differences in coverage rates for vaccination and screening, across culturally and linguistically diverse communities, gender/sexually diverse people and people with disability. Investment in linked data systems and standardised equity indicators is a priority, as is streamlined access to data by a range of users, with appropriate privacy protections [4, 19, 50].

Context-specific insights

- In a federated system, a national strategy plus jurisdictional-supported delivery of vaccination can succeed when underpinned by national registers and common clinical guidance. Performance variation across states/territories underscores the value of shared targets and transparent reporting but also provides opportunities for a range of approaches to be used and evaluated [4, 19].
- The National Cervical Screening Program – Quality Framework defines the standards to monitor the quality of the NCSP, including how quality is monitored in clinical practice, programme register services and programme data [51].
- Reimbursement for HPV screening testing through the Medical Benefits Schedule is dependent on use of a validated test (and self-collection device on a self-collected sample) that meets the National Pathology Accreditation Advisory Council (NPAAC) Requirements [52].
- Remote communities benefit from self-collection, telehealth-enabled pathways and point-of-care approaches – particularly to ensure timely follow-up and treatment [19, 47].
- Primary care and pharmacies are pivotal for vaccination catchup and opportunistic screening invitations, especially when school attendance or consent processes are barriers [20–22].

7. Key recommendations

National policy implications

Sustain vaccination momentum. Implement systematic catch-up protocols (AIR enabled recalls, in-school catch-up opportunities, pharmacy/GP outreach) to reverse coverage declines and mitigate single-dose 'missed day' risks; ensure equitable consent pathways (paper + digital) [20–22].

Improve culturally safe access to screening and follow-up for Aboriginal and Torres Strait Islander peoples. A recent modelling study found that a screening initiative that reached previously unscreened Aboriginal and Torres Strait Islander women, and sustained ongoing efforts, could accelerate elimination in Aboriginal and Torres Strait Islander women and align timing to near the national target date [45].

Take full advantage of opportunities provided by self-collection to improve access to screening. Maintain universal choice; empower community-led models of offering and providing screening; and guarantee equitable kit access (including in remote settings) to convert acceptability into durable coverage gains [23–28].

Close the follow-up/treatment gap. Set timeliness targets for colposcopy (as in NZ/UK), continue to expand colposcopy workforce capacity, and track loss to follow-up with culturally safe navigation – prioritising Aboriginal and Torres Strait Islander communities and remote areas [4, 43, 44].

Invest in data systems enabling appropriate tracking of outcomes in key subpopulations, to enable broader access while maintaining appropriate privacy. Expand routine disaggregation (Indigenous status, country of birth/language, disability, gender/sexual diversity) and data linkage to enable targeted interventions and accountability [4, 19].

Transferable lessons for Commonwealth countries

A comprehensive package (vaccination + HPV screening + timely treatment) anchored by national targets and registers can enable effective

implementation; school-based vaccination and self-collection screening tests delivered using models co-designed with communities are high-yield levers across diverse contexts [9, 10, 13, 14, 19, 23–28, 40, 42].

Equity by design – naming priority groups, codesigning communications and monitoring disaggregated indicators – is essential to ensure elimination timelines are shared by all subpopulations [4, 19].

Federated/devolved systems can succeed with a clear national strategy underpinned by national data repository, shared clinical guidance and public reporting; primary care and pharmacies are pivotal for vaccination catchup [4, 19–21].

Link to WHO 90–70–90 and global agenda

Australia has benefited from developing its own national cervical elimination strategy – based on the WHO strategy and global agenda but adapting to account for the local situation and existing gaps. Extensive consultation with a range of stakeholders, including priority populations, was key to developing the strategy and enabling wide buy-in, positioning the country to achieve the less than 4 per 100,000 elimination target while actively addressing equity gaps [3–7, 19].

Acknowledgments

Susan Yuill, Cancer Elimination Collaboration, University of Sydney

Megan Smith, Cancer Elimination Collaboration, University of Sydney

Marion Saville, Australian Centre for Prevention of Cervical Cancer

Karen Canfell, Cancer Elimination Collaboration, University of Sydney.

This case study is based on a full-length manuscript published in the Medical Journal of Australia, as follows:

Yuill, S, C Naidu, M Smith, D Bateson, M Saville, D Boniface and K Canfell (2026), 'Cervical cancer elimination in Australia and the Asia Pacific: Progress and barriers', Medical Journal of Australia, DOI: 10.5694/mja2.70164.

We used Microsoft co-pilot to produce a first summary of the above manuscript and then reviewed and added to it for the current Case Study.

We thank Mr C David Wrede for his input on colposcopy and pre-cancer treatments.

References

1. Hall, MT, KT Simms, JB Lew, MA Smith, M Saville and K Canfell (2018), 'Projected future impact of HPV vaccination and primary HPV screening on cervical cancer rates from 2017-2035: Example from Australia', *PLoS One,* 13, e0185332.
2. Hall, MT, KT Simms, JB Lew et al. (2019), 'The projected timeframe until cervical cancer elimination in Australia: a modelling study', *Lancet Public Health,* Vol. 4, e19–27.
3. World Health Organization (WHO) (2020), *Global strategy to accelerate the elimination of cervical cancer as a public health problem*, WHO, Geneva, Licence: CC BY-NC-SA 3.0 IGO.2020.
4. Smith, M, J Brotherton, D Machalek et al. (2025), *2025 Cervical Cancer Elimination Progress Report: Australia's progress towards the elimination of cervical cancer as a public health problem*, Melbourne, Australia, https://report.cervicalcancercontrol.org.au/ (accessed February 2026).
5. Yu, XQ, E Feletto, MA Smith, S Yuill and PD Baade (2022), 'Cancer incidence in migrants in Australia: patterns of three infection-related cancers', *Cancer Epidemiol Biomarkers Prev,* 31, OF1–OF8.
6. Australian Institute of Health and Welfare (AIHW) (2025), 'Cancer data in Australia', www.aihw.gov.au/reports/cancer/cancer-data-in-australia/data (accessed February 2026).
7. Smith, M and K Canfell (2016), 'Impact of the Australian National Cervical Screening Program in women of different ages', *Med J Aust*, Vol. 205, 359–364.
8. Australian Institute of Health and Welfare (AIHW) (2017), 'Cervical screening in Australia 2014–2015', Cancer series No. 105, Cat. No. CAN 104, AIHW, Canberra.
9. Lew, JB, K Simms, MA Smith et al. (2014), *National Cervical Screening Program Renewal: Effectiveness modelling and economic evaluation in the Australian setting (Assessment Report),* MSAC application number 1276, Report to the Medical Services Advisory Committee (MSAC), Department of Health Australia.
10. Lew, JB, KT Simms, MA Smith et al. (2017), 'Primary HPV testing versus cytology-based cervical screening in women in Australia vaccinated for HPV and unvaccinated: effectiveness and economic assessment for the National Cervical Screening Program', *Lancet Public Health*, Vol. 2, e96–107.
11. Cancer Council Australia Cervical Cancer Screening Guidelines Working Party (2017, updated 2025), *National Cervical Screening Program Guidelines*, Sydney, www.cancer.org.au/health-professionals/clinical-practice-guidelines/cervical-cancer-screening
12. Ronco, G, J Dillner, KM Elfström et al. (2014), 'International HPV screening working group. Efficacy of HPV-based screening for prevention of invasive cervical cancer: follow-up of four European randomised controlled trials', *Lancet,* Vol. 383, 524–32.
13. Arbyn, M, SB Smith, S Temin, F Sultana and P Castle (2018), 'Detecting cervical precancer and reaching underscreened women by using HPV testing on self samples: updated meta-analyses', *BMJ*, Vol. 363, k4823–k4823.

14. Cancer Council Australia (2022), *FAQ for Providers. Self-collection updates for the National Cervical Screening Program Clinical Guidelines*, June, https://cancercouncilaustralia.mediavalet.com/galleries/5cf3c229-b772-48fe-be1c-b3812fa0125a_9d5c2dda-d835-4576-a756-8252ede4dbe6-ExternalUser (accessed March 2026).

15. Cancer Council Australia Cervical Cancer Screening Guidelines Working Party (2017, updated 2025)), 'Colposcopy and treatment', *National Cervical Screening Program Guidelines,* Sydney, https://app.magicapp.org/#/guideline/Eez2Kj/section/j7AJD3 (accessed March 2026).

16. World Health Organization (WHO) (no date), 'Cervical Cancer Elimination Initiative', www.who.int/initiatives/cervical-cancer-elimination-initiative (accessed July 2025).

17. Canfell K, JJ Kim, M Brisson et al. (2020), 'Mortality impact of achieving WHO cervical cancer elimination targets: a comparative modelling analysis in 78 low-income and lower-middle-income countries', *Lancet*, Vol. 395, 591–603.

18. Brisson, M, JJ Kim, K Canfell et al. (2020), 'Impact of HPV vaccination and cervical screening on cervical cancer elimination: a comparative modelling analysis in 78 low-income and lower-middle-income countries', *Lancet*, Vol. 395, 575–90.

19. Australian Centre for the Prevention of Cervical Cancer (ACPCC) (2023), *National Strategy for the Elimination of Cervical Cancer in Australia*, www.health.gov.au/sites/default/files/2023-11/national-strategy-for-the-elimination-of-cervical-cancer-in-australia.pdf (accessed July 2025).

20. National Centre for Immunisation Research and Surveillance (2024), *Annual Immunisation Coverage Report 2024*, https://ncirs.org.au/sites/default/files/2025-10/Annual%20Immunisation%20Coverage%20Report%202024.pdf (accessed February 2026).

21. Services Australia, Australian Government (no date), 'Provider types who can register as a vaccination provider', www.servicesaustralia.gov.au/provider-types-who-can-register-vaccination-provider?context=20#accordion8 (accessed October 2025).

22. Australian Curriculum, Assessment and Reporting Authority (2025), *Student attendance*, www.acara.edu.au/reporting/national-report-on-schooling-in-australia/student-attendance (accessed July 2025).

23. Smith, M, M Saville and K Canfell (2020), 'HPV swab self-collection and cervical cancer in women who have sex with women', *Med J Aust*, Vol. 213, 239–239.e1.

24. Kearney, G (2024), 'Getting everyone on board to eliminate cervical cancer by 2035', 3 September, www.health.gov.au/ministers/the-hon-ged-kearney-mp/media/getting-everyone-on-board-to-eliminate-cervical-cancer-by-2035#:~:text=It's%20aimed%20at%20raising%20awareness,Communities%20Councils%20of%20Australia%20(FECCA) (accessed August 2025).

25. Australian Government, Department of Health, Disability and Ageing (no date), 'Screen Me', www.health.gov.au/screen-me (accessed August 2025).

26. Australian Government, Department of Health, Disability and Ageing (no date), 'Own It cervical screening campaign posters and social media images', www.health.gov.au/resources/publications/own-it-cervical-screening-campaign-posters-and-social-media-images?language=en (accessed October 2025).

27. Sultana, F, M Smith, M Saville et al. (2026), 'Uptake and performance of self-collection offered through primary care to all eligible participants in a national cervical screening programme in Australia: a retrospective cohort study', *Lancet Public Health*, Vol. 11, e101–e110.

28. National Cervical Screening Program (2025), *Monitoring of self-collection in the National Cervical Screening Program. Summary pack. Quarterly report – Q2 2025*, www.health.gov.au/sites/default/files/2025-10/update-on-cervical-screening-self-collection-uptake.pdf (accessed October 2025).

29. Brotherton, J, D Machalek, M Smith et al. (2025), *2024 Cervical Cancer Elimination Progress Report: Australia's progress towards the elimination of cervical cancer as a public health problem,* Melbourne, Australia, https://report.cervicalcancercontrol.org.au/2024/executive-summary/ (accessed July 2025).

30. Department of Health, Disability and Ageing. Australian Government. Cervical screening resources. www.health.gov.au/our-work/national-cervical-screening-program/cervical-screening-resources (accessed March 2026).

31. Australian Centre for the Prevention of Cervical Cancer (ACPCC) (no date), 'Education for Practitioners', https://acpcc.org.au/practitioners/education/ (accessed 2026).

32. Australian Centre for the Prevention of Cervical Cancer (ACPCC) (no date), 'Clinical Resource Hub', https://acpcc.org.au/practitioners/clinical-resources/ (accessed March 2026).

33. Cancer Council (no date), 'HPV Vaccine', www.hpvvaccine.org.au/ (accessed March 2026).

34. National Aboriginal Community Controlled Health Organisation (NACCHO) (no date), 'Cervical Screening Program', www.naccho.org.au/cancer/cervical-screening/ (accessed March 2026).

35. ACON, CANWE (no date), 'Cervical screening', https://canwe.org.au/staying-healthy/cervical-screening/ (accessed March 2026).

36. Australian Centre for the Prevention of Cervical Cancer (ACPCC) (no date), 'Community Outreach Toolkit for Cervical Screening', https://acpcc.org.au/community-outreach-toolkit-for-cervical-screening/ (accessed March 2026).

37. Machalek, DA, SM Garland, JML Brotherton et al. (2018), 'Very Low Prevalence of Vaccine Human Papillomavirus Types Among 18- to 35-Year Old Australian Women 9 Years Following Implementation of Vaccination', *J Infect Dis,* Vol. 217, 1590-1600.

38. Australian Institute for Health and Welfare (AIHW) (2024), *National Cervical Screening Program monitoring report 2024: Diagnosis supplementary data tables*, www.aihw.gov.au/reports/cancer-screening/ncsp-monitoring-2024/data (accessed July 2025).

39. Australian Institute of Health and Welfare (AIHW) (2018), 'Cervical screening in Australia 2018', Cat. No. CAN 111, AIHW, Canberra.

40. Australian Institute of Health and Welfare (AIHW) (2018), 'Cervical screening in Australia 2018: supplementary data tables. Indicator 1 Participation', AIHW, Canberra, www.aihw.gov.au/reports/cancer-screening/cervical-screening-in-australia-2018/data (accessed July 2025).

41. Richards, M (2019), *The independent review of adult screening programmes in England*, NHS England.

42. Australian Institute of Health and Welfare (2024*), National Cervical Screening Program monitoring report 2024,* catalogue number CAN 163, AIHW, Australian Government.

43. National Screening Unit (2023), *National Cervical Screening Programme Policies and Standards: Section 6 – Providing a Colposcopy Service*, Te Whatu Ora, www.tewhatuora.govt.nz/assets/Policies-and-Standards/two_4959_ncsp_pands_s6_colposcopyservice_interim_v1.0.pdf (accessed August 2025).

44. NHS England (2025*), Guidance. 2. Management and referral guidelines for colposcopy,* updated 9 July 2025, www.gov.uk/government/publications/cervical-screening-programme-and-colposcopy-management/2-providing-a-quality-colposcopy-clinic (accessed August 2025).

45. Smith, MA, J Killen, L Jamieson et al. (2026), 'Accelerating cervical cancer elimination in Aboriginal and Torres Strait Islander women: a modelling study', *Lancet Public Health*, Vol. 11, e147–e155.

46. Smith, MA, D Gertig, M Hall, et al. (2016), 'Transitioning from cytology-based screening to HPV-based screening at longer intervals: implications for resource use', *BMC Health Serv Res*, Vol. 16, 147.

47. Powell A, L Anderson, J Brotherton et al. (2025), 'Cervical screening approach of self-collection, point-of-care HPV testing, and same-day colposcopy among Aboriginal and Torres Strait Islander women in remote Western Australia (the PREVENT Project): an implementation study', *Lancet Public Health*, Vol. 10, e732–e740.

48. Nisha, M, D Bateson, M Saville et al. (2025), 'The role of non-medical providers in increasing access to cervical screening: a scoping review', *BMJ Glob Health*, Vol. 10, e019041.

49. Drolet, M, É Bénard, N Pérez et al. (2019), 'Population-level impact and herd effects following the introduction of human papillomavirus vaccination programmes: updated systematic review and meta-analysis', *Lancet*, Vol. 394, 497–509.

50. Wilkinson, K, C Green, D Nowicki and C Von Schindler (2020), 'Less than five is less than ideal: replacing the "less than 5 cell size" rule with a risk-based data disclosure protocol in a public health setting', *Can J Public Health*, Vol. 111, 761–765.

51. Australian Government, Department of Health, Disability and Ageing (no date), 'National Cervical Screening Program – Quality Framework', www.health.gov.au/resources/publications/national-cervical-screening-program-quality-framework (accessed March 2026).

52. Australian Government, Department of Health, Disability and Ageing (no date) 'Medicare Benefits Schedule, Note PN.0.22. Cervical and Vaginal Screening (Items 73070 to 73076)', https://www9.health.gov.au/mbs/fullDisplay.cfm?type=note&qt=NoteID&q=PN.0.22 (accessed March 2026).

Fiji

Leveraging School-Based Vaccination, System Strengthening and Strategic Partnerships to Accelerate Cervical Cancer Elimination

Key Takeaways

- Fiji was among the first Pacific Island countries to adopt HPV vaccination at scale -first-dose uptake reached 95-100%.
- A 2024 HPV screen-and-treat pilot reached 853 women in two weeks -5.7× more than comparable cytology outreach.
- The canSCREEN5 registry integrated with GeneXpert provides real-time tracking of screening and follow-up.

1. Background and challenges

Cervical cancer remains one of Fiji's most significant public health challenges, characterised by persistently high incidence, elevated mortality, and inequitable outcomes across ethnic and geographic groups. Prior to 2000, epidemiological reporting was limited. The earliest documented figures, from 2003 to 2009, indicated an incidence rate of 27.6 per 100,000 and a mortality rate of 23.9 per 100,000. A subsequent study covering 2004 to 2007 recorded 413 incident cases and 215 deaths, reinforcing the severity of the burden [1]. The most recent national analysis documented 2,043 cervical cancer cases and 691 deaths between 2010 and 2018, with an age-standardised incidence rate of 62.3 per 100,000 [2]. GLOBOCAN similarly reported an incidence of 36.7 per 100,000, a case-fatality rate of 63.6 per cent, and a five-year prevalence of 116.4 per 100,000 in 2022.

Virological evidence further contextualises this burden and supports the biological plausibility of prevention through vaccination. The first genotype-specific analysis of human papillomavirus (HPV) in Fiji [3], examined cervical biopsies from women diagnosed with cervical intraepithelial neoplasia (CIN) and invasive cervical cancer. The study demonstrated a high prevalence of oncogenic HPV types, particularly HPV 16 and HPV 18, which are responsible for most cervical cancers worldwide and are targeted by current HPV vaccines. These findings established a clear link between Fiji's cervical cancer burden and vaccine-preventable HPV genotypes, providing an early evidence base for the introduction of a national HPV vaccination and HPV-based screening strategies.

Fiji's high case-fatality rate is largely driven by late presentation. Many women are diagnosed at stages when the disease is no longer operable, leaving palliative care as the only option. This challenge is compounded by the absence of in-country radiotherapy: gold-standard chemoradiation cannot be delivered locally, and women requiring this treatment must be referred overseas. Access to overseas care is further constrained by cost – government assistance is selective, and many patients must self-fund treatment abroad. Early-stage surgical management and palliative chemotherapy are available across Fiji's three

divisional hospitals, but these services cannot compensate for the absence of comprehensive treatment options.

At the same time, the burden of cervical cancer is not felt equally across the population. Outcomes are shaped not only by the limitations of available services, but by who is able to access them — and when. The iTaukei (Indigenous Fijian) population comprises 57 per cent of the national population, Indo-Fijians 38 per cent and other groups the remaining 5 per cent. Between 2000 and 2010, iTaukei women accounted for 68 per cent of cervical cancer cases, Indo-Fijian women for 29 per cent and other groups for 3 per cent. Age-standardised incidence rates between 2004 and 2007 were correspondingly higher among iTaukei women at 49.7 per 100,000, compared with 35.2 per 100,000 among Indo-Fijian women [4].

These disparities reflect a convergence of cultural, geographic and socio-economic factors. iTaukei communities are more concentrated in rural and maritime areas, where access to screening and follow-up services is limited, and where awareness of cervical cancer and its prevention has been shown to be lower, contributing to delayed presentation and poorer outcomes. Socio-economic disadvantage compounds this picture: two-thirds of women in one study reported monthly household incomes below FJD$500 , with iTaukei families more likely to fall into lower-income brackets. These patterns influence screening uptake, access to services and the timeliness of care in ways that cut across the entire pathway from prevention to treatment. [5, 6]

Cervical screening in Fiji has historically relied on opportunistic Pap smear cytology rather than a structured national programme [7, 8]. Over subsequent decades, additional modalities were introduced, including visual inspection with acetic acid (VIA) and ThinPrep cytology. Despite this expansion, screening coverage has remained low due to persistent barriers, including workforce shortages, limited awareness, geographic access constraints and competing health priorities [7, 8]. Taken together, these gaps in screening coverage and treatment infrastructure underscore the critical role that primary prevention through HPV vaccination must play in reducing Fiji's cervical cancer burden.

2. Policy and health system landscape

Fiji's health delivery service is a structured four-tier level system designed to transition care from primary health services in urban, rural and maritime health facilities to high-level specialised services at the national level through universal health coverage. This public health system framework is supplemented by various private health facilities that provide both primary and specialised care along with independent screening services.

At the apex of the Fiji health system is the divisional level, made up of three major hospitals which comprise multi-specialty and sub-specialty health services providing the highest level of clinical expertise. Supporting this is the sub-divisional level, where hospitals manage secondary care, oversee general clinical services and co-ordinate outreach programmes to their respective geographic divisions. Primary care is delivered at the health centre level, focusing on essential outpatient services, basic maternal healthcare and emergency stabilisation. Finally, at the community level, nursing stations and health workers serve as the critical first point of contact in rural and maritime areas, prioritising primary care, health promotion and local outreach.

Patient entry into the health system is accessible, occurring at the community level through nursing stations and health centres, as well as through outpatient clinics at sub-divisional hospitals. For urgent presentations, direct entry is available through the Emergency Department at all major divisional hospitals, including emergency referrals from other health facilities. Outpatient referrals are booked to special clinics into the divisional hospitals from the sub-divisional down to the community levels. The private sector plays a complementary role by offering both primary and specialised diagnostic and screening services through out-of-pocket payments or private health insurance.

Cancer care in Fiji is specialised and integrated directly into the divisional hospital system through expert clinical departments. Under this structure, cervical cancer and other gynaecological malignancies are managed by the Obstetrics and Gynaecology (O&G) department. While advanced care is centralised, screening services are widely accessible at all levels of the health system. Most screenings are conducted at the sub-divisional,

health centre and nursing station levels through outpatient clinics and community outreach programmes. This public effort is bolstered by healthcare non-governmental organisations (NGOs) that provide on-site and mobile screening in community and workforce settings, as well as private health facilities that offer screening services via out-of-pocket payments or private health insurance

The current cervical cancer programme, which is delivered opportunistically through all the health facilities and mobile outreach services, is now guided by the 2025 Cervical Cancer Elimination Policy. This updated policy marks a significant transition from the 2015 version by fully adopting the WHO Global Elimination Framework. By aligning with the global 90–70–90 targets, the 2025 policy establishes a rigorous annual monitoring schedule from 2026 through 2030, formalising Fiji's commitment to eliminating cervical cancer within the established international timeframe.

3. National intervention

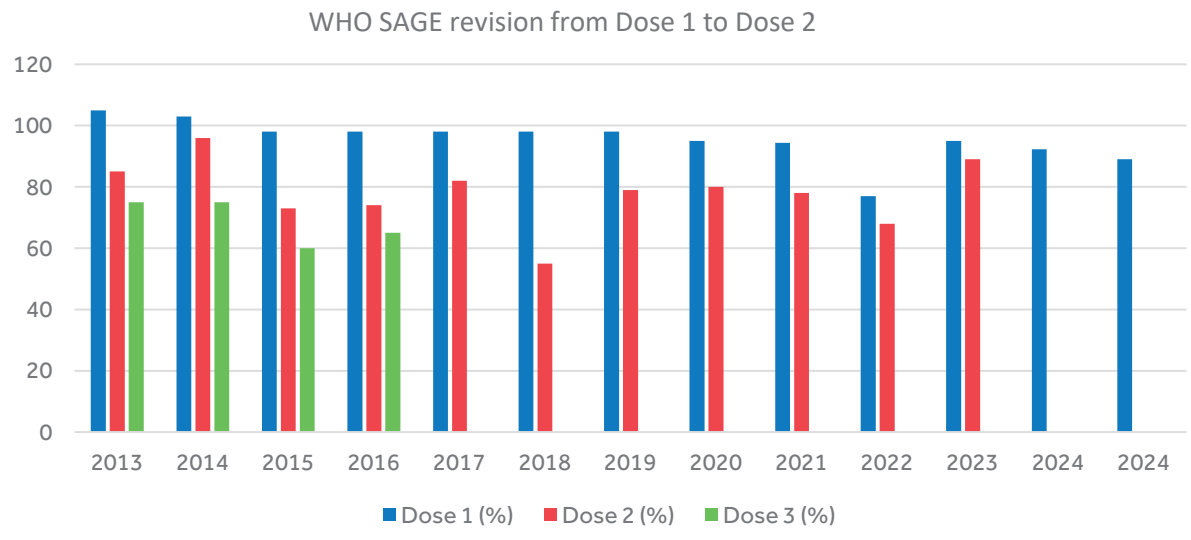
Fiji's cervical cancer elimination efforts span all three pillars of the WHO global elimination strategy, namely HPV vaccination, HPV DNA screening, and treatment of pre-invasive and invasive disease. These interventions have evolved over three decades, shaped by partnerships, policy reforms and the country's commitment to achieving the 90–70–90 targets by 2030.

HPV vaccination

Fiji made early progress in the first pillar. A nationwide pilot HPV vaccination campaign began in 2008, followed by integration of the HPV vaccine into the national immunisation schedule in 2013 [9]. This positioned Fiji among the first Pacific Island countries to adopt HPV vaccination at scale. The programme benefited from Fiji's long-standing school-based immunisation platform, which consistently achieves coverage above 90 per cent due to strong community trust and well-established delivery systems. Following the introduction of HPV vaccination into the school programme, first-dose uptake among age-eligible girls reached 95 to 100 per cent, although second- and third-dose completion dropped to 60 to 70 per cent [9].

Global evidence has strengthened the case for simplified HPV vaccination schedules, with the latest Evaluation Study of Combined and Uniform Doses of Different HPV Options (ESCUDDO) trial demonstrating 97 per cent efficacy for a single dose [10], consistent with WHO SAGE's 2022 endorsement of the one-dose approach [11, 12]. In response, Fiji transitioned to a single-dose HPV vaccination schedule from 2024 onwards, a shift expected to improve completion rates, reduce logistical burden and enhance long-term protection

Figure 11.1. HPV vaccination coverage, 2013–2025



Source: Ministry of Health (Fiji), Family Health Unit. HPV vaccination information update Dr Kelera Sakumeni 19326 1116HOURS. Suva: National EPI Office; 2026. Unpublished internal document provided by Litiana Volavola.

for future cohorts. The vaccine is fully funded by the Fiji Government, with procurement supported by UNICEF, ensuring sustainability and continued high coverage.

Screening and early detection

The second pillar of Fiji's 2025 Cervical Cancer Elimination Policy, screening, represents the most significant programmatic shift in the country's cervical cancer control strategy. HPV DNA testing is now endorsed as the primary screening modality, with a policy requirement that all women aged 30–59 receive at least one HPV DNA test in their lifetime. This marks a substantive departure from the 2015 policy framework, which prioritised ThinPrep liquid-based cytology, and included VIA as an adjunct modality to expand coverage and mitigate shortages of cytology equipment and consumables.

VIA was introduced into the national screening programme in 2011 through a technical partnership with Family Planning NSW [12]. A feasibility study conducted in Fiji demonstrated a VIA-positivity rate of 9.9 per cent, consistent with expected ranges for comparable low-resource settings, and confirmed that VIA combined with cryotherapy was both safe and effective as a single-visit screen-and-treat approach[13]. Despite its value as an alternative modality, VIA encountered operational constraints analogous to those affecting cytology-based screening, including inconsistent cryotherapy availability, human resource shortages and limited quality assurance systems. These limitations contributed to persistently low national screening coverage, which remained between 10 and 30 per cent for much of the programme's operational period. VIA was additionally delivered through primary healthcare facilities without a centralised registry.

The most recent advancement in screening delivery was the HPV screen-and-treat pilot conducted in Fiji's Central Division in 2024. Over a two-week implementation period, 853 women were screened using HPV self-collection [14], far exceeding the 100 to 200 women typically reached through comparable cytology-based outreach campaigns. Acceptance of self-collection was high, and the pilot demonstrated that HPV DNA screen-and-treat can achieve significantly wider population coverage when supported by strong programme planning, adequate staffing and strategic institutional partnerships. Technical training was delivered in collaboration with Family Planning Australia and the Kirby Institute. The programme expanded to the Northern Division in July 2025, and by November 2025, had screened approximately 10 per cent of the target population in that division [15]. Programme monitoring and longitudinal follow-up have been strengthened through the canSCREEN5 registry, integrated into the HPV DNA testing platform via GeneXpert technology.

Against a total eligible population of 129,278 women aged 30–59 (Fiji 2017 Census) [16], confirmed screening counts remain well below the WHO elimination threshold of 70 per cent coverage, which would be approximately **104,966** women.

Treatment and care

Treatment for pre-invasive and early invasive cervical cancer is available across Fiji's three tertiary hospitals and is delivered by specialist gynaecologists. Over the past five years, Fiji has strengthened its treatment capacity through a partnership with the International Gynaecologic Cancer Society (IGCS), enabling local gynaecologists to undertake a gynae-oncology fellowship. One specialist has now completed accreditation, with another currently in training. These efforts, combined with regular visits from international gynae-oncology teams, have enhanced clinical and surgical capacity, strengthened referral pathways and improved access to overseas radiation therapy.

However, treatment for locally advanced cervical cancer remains limited due to the absence of in-country radiation services. Radiotherapy combined with concurrent chemotherapy is the standard of care for invasive cervical cancer, but this is not currently available in Fiji. Chemotherapy alone is offered when radiotherapy cannot be accessed abroad. National discussions about establishing local radiation services are underway, though no timeline has been set [17].

Public awareness and community engagement

Public awareness has been a critical enabler across all three pillars. The Fiji Cancer Society and other NGOs, in collaboration with the Ministry of Health and Medical Services, have played a central role in raising awareness through face-to-face community sessions, workplace outreach,

radio and television interviews, and social media campaigns. Awareness efforts intensify each January during Cervical Cancer Awareness Month, which has become a national platform for education, advocacy and mobilisation. 'Pinktober' in October further amplifies women's cancer awareness, with fundraising activities supporting women undergoing treatment and strengthening community engagement. These sustained awareness efforts have contributed to high HPV vaccination acceptance, improved screening uptake and greater public understanding of cervical cancer prevention across Fiji's diverse communities.

Health system strengthening and policy integration

Monitoring systems for disease trends in Fiji continue to face longstanding challenges. Data collection remains inconsistent across health facilities, with many sites maintaining their own registries and using varying formats. Dissemination of information to the national data unit is irregular, and the system still relies heavily on a mixture of paper-based forms, local registries and the Patient Information System (PATIS) information system. These structural limitations influence how efficiently and consistently cervical cancer data are captured across the country.

The 2025 National Development Plan reinforces the importance of strengthening cervical cancer prevention, screening and treatment pathways as part of broader non-communicable disease (NCD) control efforts. Integrating new services into pre-existing health programmes has been most feasible in Fiji, as shown by the successful incorporation of HPV vaccination into the national school immunisation programme. This approach has made vaccination the most sustainable and effective pillar of the national cervical cancer elimination effort.

Table 11.1. Fiji cervical cancer prevention programme development timeline

Year/period	Key activity	Agencies
1996	Pap smear cytology introduced — opportunistic screening begins.	Ministry of Health and Medical Services (MHMS)
2008	Nationwide HPV vaccination pilot campaign launched.	MHMS, UNICEF
2011	VIA screening introduced through partnership with Family Planning NSW.	MHMS, Family Planning NSW
2013	HPV vaccine integrated into national immunisation schedule.	MHMS, UNICEF, Fiji Government
2015	Cervical Cancer Policy launched — ThinPrep cytology and VIA.	MHMS
2024	Single-dose HPV vaccination schedule adopted. HPV screen-and-treat pilot, Central Division (853 women). Training with Family Planning Australia and Kirby Institute.	MHMS, Family Planning Australia, Kirby Institute, IGCS
Jul 2025	Programme expanded to Northern Division; canSCREEN registry integrated with GeneXpert.	MHMS, Australian Centre for the Prevention of Cervical Cancer (ACPCC), Elimination Partnership in the Indo-Pacific for Cervical Cancer (EPICC(
2025	2025 National Development Plan reinforces cervical cancer as NCD priority.	Fiji Government, MHMS
2026	2026 Cervical Cancer Elimination Policy launched — HPV DNA testing as primary modality; annual monitoring 2026–2030.	MHMS, WHO, Fiji Government

Source: Fiji Ministry of Health Data.

4. Key stakeholders and partners

Fiji's cervical cancer elimination programme has been shaped by sustained multisectoral collaboration across government, civil society and international partners.

5. Outcomes and evaluation

Vaccination

The full populationlevel impact of Fiji's national HPV vaccination programme will not be fully observable until at least 2030, when the first routinely vaccinated cohorts reach cervical screening age. However, robust international evidence demonstrates that substantial reductions in highrisk HPV infection and highgrade cervical disease occur well before this point. Longterm observational data from highincome settings with comparable vaccination strategies show marked declines in cervical intraepithelial neoplasia grade 2 or worse (CIN2+) among young women within 10–15 years of programme introduction [18].

A 15year populationbased study from northern Norway reported a significant reduction in CIN2+ incidence among women aged 20–25 following the implementation of a national HPV vaccination programme, providing strong realworld evidence of vaccine effectiveness at the population level [18]. These findings are consistent with global metaanalyses and WHO modelling, which indicate that countries achieving and sustaining high vaccine coverage can expect rapid declines in HPV 16/18 prevalence, followed by reductions in precancerous lesions and, ultimately, cervical cancer incidence.

Based on this global evidence, Fiji is expected to observe measurable reductions in highrisk HPV infections within the next five years, particularly among vaccinated cohorts entering early adulthood. When combined with expanding HPV DNA–based screening, vaccination is anticipated to accelerate progress toward the WHO cervical cancer elimination thresholds by reducing both the prevalence and severity of screendetected disease.

Screening

Prior to the introduction of HPV DNA testing, Fiji's screening programme operated well below the WHO elimination threshold. Independent estimates from the Institut Català d'Oncologia (ICO)/IARC HPV Information Centre (2019) indicate that only 14–16 per cent of women aged 25–65 had been screened within the preceding 5 years, and just 8–9 per cent within the preceding 3 years [19], figures consistent with the nationally reported range of 10–30 per cent and attributable to the structural limitations of the cytology- and VIA-based programmes described above.

The transition to HPV DNA screen-and-treat model has greatly improved the number of women who receive treatment for early signs of cancer. In the 2024 pilot, 78 per cent of HPV-positive women were treated immediately [14]. This is a major improvement over the old Pap smear system, where women often waited weeks for results and many never returned for follow-up. This efficiency is the main reason Fiji expects cervical cancer deaths to fall over the next decade.

A critical enabler of this transition is the modernisation of Fiji's data infrastructure. Through partnership with the Australian Centre for the Prevention of Cervical Cancer (ACPCC) and Elimination Partnership in the Indo-Pacific for Cervical Cancer (EPICC) Fiji has adopted canSCREEN5 [20], a digital registry platform integrated directly with GeneXpert testing equipment to enable real-time tracking of screening, results and follow-up. This system allows health authorities to monitor regional coverage, identify high-need populations, ensure treatment completion and generate standardised reports, capabilities that were absent under previous screening modalities and that are essential for progress toward the WHO 90–70–90 elimination targets.

6. Monitoring and evaluation

Monitoring systems for disease trends in Fiji continue to face longstanding challenges. Data collection remains inconsistent across health facilities, with many sites maintaining their own registries in varying formats. Dissemination to the national data unit is irregular, and the system still relies on a mixture of paper-based forms, local registries and the PATIS information system.

The adoption of canSCREEN [19], a digital platform developed with ACPCC and EPICC, directly addresses these limitations. Integrated with GeneXpert testing machines, canSCREEN provides real-time tracking of screening and follow-up, enables health officials to monitor regional

coverage and identify high-need areas, ensures patients complete treatment and generates standardised reports. The 2026 Cervical Cancer Elimination Policy outlines annual monitoring requirements from 2026 to 2030, establishing accountability milestones for the first time.

7. Lessons learnt

Fiji's cervical cancer elimination journey has generated several valuable lessons that can inform national planning and offer insights for other small island developing states. A key lesson is the importance of integrating new services into existing delivery platforms. The successful incorporation of HPV vaccination into the national school immunisation programme illustrates how leveraging established systems can promote sustainability, achieve high coverage and strengthen community acceptance. This approach streamlines operations and avoids the burden of creating parallel service structures.

Another important lesson is the critical role of strategic partnerships. Fiji's advancements in screening and treatment have been significantly enhanced through collaboration with local and international partners. These include specialist capacitybuilding initiatives such as gynaecology fellowships and visiting clinical teams, which have strengthened surgical capability, improved referral pathways and expanded access to quality care.

The HPV screen-and-treat pilot demonstrated that HPV DNA testing combined with self-collection can dramatically increase screening coverage when supported by strong planning and adequate staffing [14]. This model reduces reliance on laboratory infrastructure, shortens turnaround times and enables same-day care. It also addresses barriers faced by rural women, who often struggle to return for follow-up appointments. However, the pilot also highlighted the need for reliable supply chains, consistent consumables and trained staff to sustain service delivery.

Although progress has been made, HPV DNA screening in Fiji continues to depend on external funding. Routine testing has commenced in the Northern Division, but national rollout plans for the remaining divisions are still being finalised. In other areas, screening continues to rely on ThinPrep cytology, where coverage remains suboptimal due to recurring shortages of equipment and consumables that lead to service disruptions. Opportunistic screening at public health facilities, supplemented by periodic community outreach, remains the dominant mode of service delivery. Several NGOs also contribute to screening efforts, but stronger co-ordination across all providers is needed to enhance coverage, minimise duplication, and enable a more strategic and targeted approach.

Data systems also remain fragmented, limiting the country's ability to track trends, measure programme performance and plan effectively. Treatment capacity is constrained by the lack of in-country radiotherapy, resulting in delays and incomplete treatment for women with advanced cervical cancer.

Fiji's experience further underscores the importance of addressing equity. iTaukei women and those living in rural and maritime areas face greater obstacles to prevention, early detection and treatment [1,4]. Tailored outreach strategies, culturally appropriate communication and strengthened community partnerships are essential to reducing these disparities and ensuring that all women benefit from elimination efforts.

For small island developing states, Fiji's journey highlights the need for adaptable, resource-efficient models that integrate effectively with existing health systems. Approaches such as screen-and-treat, strong multisector partnerships and investment in workforce capability are critical enablers for achieving cervical cancer elimination in low-resource settings.

8. Key recommendations

Transferable lessons for other Commonwealth countries

Leverage school-based vaccination for high-yield coverage

Fiji has leveraged the school-based programme to embed HPV vaccination into the existing school immunisation system. As a result, the country's HPV vaccination coverage is consistent at 90 per cent or more. This model leverages long-standing community trust and established logistics, offering a 'plug-and-play' strategy for other Pacific, Caribbean and African Commonwealth nations with functioning school health infrastructure.

Scale screening through HPV self-collection

Fiji's pilot demonstrates that HPV self-sampling is the most effective entry point for Pillar II in resource-constrained settings. By removing the two primary barriers, that is, provider scarcity and cultural sensitivities around pelvic examinations, self-collection achieves a level of community reach that traditional cytology (Pap smears) never could.

Implement canSCREEN as a replicable digital backbone

The GeneXpert-integrated canSCREEN [19] registry provides a tested, low-infrastructure digital monitoring solution specifically designed for low-resource environments. Fiji's successful deployment offers a working model that other small Commonwealth nations can adopt to track patient journeys without the need to build expensive, bespoke systems from scratch.

Close the radiotherapy gap through regional collaboration

Fiji's experience highlights a critical challenge common to small states: the absence of in-country radiotherapy [15, 17]. Rather than individual, high-cost infrastructure investments, Fiji's journey argues for regional radiotherapy hubs and co-ordinated advocacy with the IAEA/IARC to provide more realistic and sustainable treatment solutions.

Apply equity-focused programme design from the start

The documented disparity in cancer burden between iTaukei and Indo-Fijian women [3, 4] underscores the importance of building equity monitoring into programme design from day one. Fiji demonstrates that Commonwealth countries with diverse populations must disaggregate data by ethnicity and geography from the start to ensure interventions are targeted where they are needed most.

Link to the WHO 90–70–90 target

Fiji has met or is approaching the 90 per cent vaccination target through its school-based programme. Screening coverage remains the most urgent gap: historical rates of 10–30 per cent are well below the 70 per cent target. However, the 2024 pilot and 2026 policy represent a decisive turning point. The screen-and-treat model's demonstrated capacity to reach 5.7 times more women per outreach activity [14], combined with the canSCREEN registry for follow-up, provides a credible pathway to accelerated progress. Treatment linkage has improved markedly through same-day treatment, but the radiotherapy gap means the 90 per cent treatment target for locally advanced disease remains out of reach without in-country infrastructure or strengthened overseas referral pathways.

9. National policy implications

Several policy priorities emerge from the country's experience, as follows:

1. **Sustain high HPV vaccination coverage as this is essential**. The transition to a single-dose schedule should be fully embedded within the national immunisation programme, with continued government funding and strengthened monitoring to ensure consistent coverage across all divisions. Ongoing community engagement and school-based delivery will remain critical to maintaining high uptake.
2. **Prioritise and embed national rollout of HPV DNA screening within existing service platforms to ensure long-term sustainability**. This requires integrating HPV DNA testing equipment and consumables into the national health budget, strengthening procurement systems, and expanding workforce training to support a national screen-and-treat model. HPV DNA screening should be delivered through scheduled outreach visits, particularly targeting rural and maritime communities and complemented by satellite screening services in selected health facilities where this is operationally feasible. Sustained implementation will depend on strengthened public–private partnerships, including co-ordinated outreach and resource sharing with NGOs already providing cervical screening, to reduce duplication, lower per-test costs and expand equitable coverage toward the 70 per cent target.
3. **Improve treatment capacity**. Establishing in-country radiotherapy services should be a long-term priority to ensure timely and

equitable access to gold-standard treatment. In the interim, referral pathways for overseas treatment should be strengthened, with clear criteria and financial support mechanisms to reduce inequities.

4. **Invest significantly in data systems**. National integration of the canSCREEN registry, combined with strengthened reporting from all health facilities, will improve monitoring, planning, and accountability. Consistent data collection is essential to track progress toward elimination

Acknowledgments

This country case study was prepared by:

Dr Kelera Sakumeni, Ministry of Health and Medical Services

Dr Nanise Sikiti, Lautoka Aspen Health Ltd

Mr Isoa Volavola, Ministry of Health and Medical Services

Mrs Litiana Volavola, Ministry of Health and Medical Services

Nadia Aslam, Ministry of Health and Medical services

Louise Ellis senior project officer Asia and Pacific Health Program, Kirby Institute, UNSW Sydney

References

1. Kuehn, R, J Fong, R Taylor et al. (2012), 'Cervical cancer incidence and mortality in Fiji 2003–2009', *Aust N Z J Obstet Gynaecol.*, Vol. 52 No. 4, 380–386.
2. Naidu, CK, N Wiseman, D Nand and N Harris (2025), 'Epidemiology of Cancer in the Fiji Islands: 2010 to 2018', *Asia Pacific Journal of Public Health*, Vol. 37 No. 2–3, 208–217.
3. Vodonaivalu, L and C Bullen (2013), 'Trends in cervical cancer in Fiji, 2000–2010', *Public Health Action*, Vol. 3 No. 1, 68–71.
4. Law, I, JJ Fong, EM Buadromo et al. (2013), 'The high burden of cervical cancer in Fiji, 2004–07', *Sex Health*, Vol. 10 No. 2, 171–178.
5. Naidu, SL, G Heller, G Qalomaiwasa et al. (2015), 'Knowledge, Attitude, Practice and Barriers regarding cervical cancer and its screening, in rural women of Ba, Lautoka and Nadi, Fiji', *Pacific Journal of Reproductive Health*, Vol. 1 No. 2, 50–59.
6. Kunatoga, A, M Mohammadnezhad, S Khan et al. (2024), 'Prevalence and trends of cervical cancer screening among women in Fiji from 2014 to 2018', *Heliyon*, e30220.
7. Fong, J (2001), 'Cervical Cancer Screening in Fiji', unpublished manuscript, Ministry of Health and Medical Services, Fiji.
8. Lohrey, J (2024), 'Focus on HPV in Fiji: Exploring the success of the HPV vaccination programme in Fiji', Policy brief, Development Research Awards, Massey University.
9. Kreimer, AR, C Porras, D Liu et al. (2025), 'Noninferiority of one HPV vaccine dose to two doses', *New England Journal of Medicine*, advance online publication.
10. World Health Organization (2022), 'Weekly Epidemiological Record', 16 December, Vol. 97 No. 50, 645–672.
11. British Society for Immunology (2025), 'Celebrate Vaccines: How the HPV vaccine has transformed cervical cancer prevention', 2 April, British Society for Immunology.
12. Family Planning NSW (2014), *Cervical Screening Project – Fiji: Summary of activities 2011–2014*, Family Planning NSW, www.fpnsw.org.au
13. Fong, J, R Gyaneshwar, S Lin et al. (2014), 'Cervical screening using visual inspection with acetic acid (VIA) and treatment with cryotherapy in Fiji', *Asian Pac J Cancer Prev.*, Vol. 15 No. 24, 10757–10762.
14. Family Health Unit, Ministry of Health (2024), *HPV Screen and Treat Outreach Implementation Pilot Report*, Ministry of Health, Fiji.
15. Chugai Pharmaceutical Co. Ltd (Year?), Supporting the Cervical Cancer Elimination Program in Marshall Islands and Fiji, Reports, Chugai Pharmaceutical Co. Ltd, https://www.chugai-pharm.co.jp/english/sustainability/activity/detail/20250327130000_151.html (accessed 25 February 2026).
16. Fiji Population Census (2017).
17. Veljkovikl, I (2023), 'Fiji works with IAEA, IARC and WHO to develop road map for its first radiotherapy facility', 13 April, International Atomic Energy Agency.
18. hpvcentre.net, Fiji country profile, https://hpvcentre.net/statistics/reports/FJI_FS.pdf
19. Australian Centre for the Prevention of Cervical Cancer (no date), 'canSCREEN', https://acpcc.org.au/acpcc-global/canscreen/ (accessed 25 February 2026).

Vanuatu

Screening, Treatment and Systems: Vanuatu's Policy Pathway to Cervical Cancer Elimination

Key takeaways

- Vanuatu screened 17,540 women across all six provinces – 47 per cent of eligible women, demonstrating that point-of-care HPV screen-and-treat is scalable even across 83 geographically dispersed islands.
- Eighty-five (85) per cent of HPV-positive women received same-day thermal ablation or LLETZ treatment, near the 90 per cent WHO target achieved by committing to same-day screen-and-treat as the default model of care.
- A nurse-led model using portable, battery-operated equipment makes equitable screening reach across remote communities possible without dependence on specialist infrastructure or stable power supply.
- Community health promotion teams deploying ahead of clinical outreach teams, particularly the Ikkana Cancer Society, demonstrably increased screening uptake and treatment completion.
- Vanuatu's South–South mentorship initiative trained Papua New Guinea in LLETZ, establishing peer-to-peer regional knowledge transfer as a cost-effective model for Pacific capacity building.

1. Background and challenge

Vanuatu is a Pacific island nation consisting of 83 islands spread over 1,000 kilometres from north to south, situated between the equator and the Tropic of Capricorn. As of 2022, Vanuatu's population was estimated at 326,740. Vanuatu is divided into the six provinces: Malampa, Penama, Sanma, Shefa, Tafea and Torba. Port Vila, on Efate Island in Shefa province, is the capital. The country experiences earthquakes and is the most cyclone-prone nation in the South Pacific. It also has five active volcanoes, and eruptions are not uncommon. Geographical remoteness is a key challenge to health service delivery.

Cervical cancer is the second most common cancer among women in Vanuatu. Current estimates indicate that approximately 22 women are diagnosed with cervical cancer each year, with 19 related deaths, most likely due to late-stage diagnosis. High-risk types of the human papillomavirus (HPV) can cause cancer, with types 16 and 18 the most frequent cause of HPV-related cancers and accounting for over a third of women who test positive in Vanuatu. Furthermore, in Melanesia, HPV 16 and 18 account for about 82.9 per cent of cervical cancer cases in the region. Treatment is available for pre-invasive disease with thermal ablation, or large loop excision of the transformation zone (LLETZ). For invasive disease, only surgery for International Federation of Gynecology and Obstetrics (FIGO) Stage 1A is available in-country, and there are no facilities for chemotherapy or radiotherapy. Women with later-stage disease must self-fund treatment overseas. Those unable to afford it typically receive only basic palliative care.

The Vanuatu Ministry of Health has shown significant commitment towards the prevention and control of cervical cancer in the country and

Figure 12.1 Point-of-care HPV self-collection, testing and same-day treatment

has made significant progress on this pathway. Vanuatu has had an opportunistic cervical cancer screening programme since 2008, data collection of screening rates, outcomes and results of subsequent treatment since 2015, and guidelines for cervical cancer prevention and control since 2020. Between 2015 and 2021, one-fifth of eligible Ni-Vanuatu women underwent screening. Loss to follow-up remained a key issue and coverage varied across the six provinces, ranging from 8.9 to 31.9 per cent of eligible women. The delay between testing and recall for treatment was cited as a key factor in loss to follow-up. A national HPV-based screen-and-treat programme began in 2022, with the aim of reaching 70 per cent of women aged 30–54 years. A national HPV vaccination programme began in 2023. In 2024, the Vanuatu Ministry of Health proposed that a National Strategy for the Elimination of Cervical Cancer in Vanuatu be developed for the country. The *Vanuatu National Cervical Cancer Elimination Strategy 2026–2035* is anticipated to be released in 2026.

2. National intervention

The Elimination of Cervical Cancer across the Western Pacific (ECCWP) project was led by the Vanuatu Ministry of Health (MOH) and the Vanuatu Family Health Association and supported by the University of Sydney (USyd), Kirby Institute University of New South Wales UNSW, Australian Centre for Prevention of Cervical Cancer (ACPCC), and Family Planning Australia (FPA). Funding was provided by the Minderoo Foundation, bolstered by donations of equipment and consumables from Cepheid and Copan, with in-kind and additional funding support from partner health authorities and governments.

Supporting the global elimination agenda, the World Health Organization released guidelines in 2021 to accelerate access to cervical screening and treatment services in low- and middle-income countries (LMICs). Modelling carried out to support the WHO strategy has shown that HPV-based screen-and-treat is the most effective primary screening method for reducing long-term risk of cervical cancer in LMICs. The first field trials to demonstrate the effectiveness, safety, acceptability, scalability and cost-effectiveness of HPV screen-and-treat were carried out in Papua New Guinea (PNG; 2014–2021). Following findings from the PNG field trials, and the endorsement of HPV screen-and-treat for primary screening by WHO in 2021, the Vanuatu Ministry of Health approved implementation of the introduction and scale-up of HPV screen-and-treat in 2022.

National HPV screen-and-treat programme

The nurse-led screening model comprises point-of-care HPV testing using self-collected vaginal specimens (GeneXpert; Cepheid, Sunnyvale, CA) followed by same-day curative treatment using a new, battery-operated, portable thermal ablation device (WISAP Medical Technology GmbH) (see Figure 12.1). Data are collected using the canSCREEN® electronic registry.

The aim was to demonstrate that the screening strategy resulted in 70 per cent or higher participation in screening of eligible women aged 30–54 years; and that 90 per cent or more of screen-positive women were attending follow-up care and treatment. From 2022 to 2025, five outputs were outlined to be achieved by the programme in Vanuatu, as below.

i. Effective and equitable HPV-based cervical screening programmes for women aged 30–54 years.

The co-design process for Vanuatu screening programmes was undertaken online, as Vanuatu remained closed to visitors until July 2022, following its first community cases of COVID-19 in March 2022. The process engaged clinical and programmatic partners. A screening algorithm was agreed, with HPV testing the primary method of screening for women aged 30–54 years, and pap smears recommended for women aged 25–29 and those over 54 years. An implementation plan was developed based on two screening hubs in the populous centres of Port Vila (Vanuatu National Hospital) and Luganville (Northern Provincial Hospital). Due to human resource shortages, it was agreed that a broader team of midwives and nursing staff would be trained and people would be rostered to the clinics, at the same time as continuing their current roles. The Northern team would conduct outreach to the northern provinces (Penama, Sanma, Torba) and Vila team to the southern provinces (Malampa, Shefa, Tafea).

Community engagement and awareness raising involved a collaborative effort between screening clinic staff, programmatic staff and the Ikkana Cancer Society. Ikkana delivered community engagement and health promotion activities in the provinces prior to the arrival of the clinical outreach teams. This resulted in higher numbers of women presenting for screening and completing treatment. Messaging focused on screening and treatment (if positive) to prevent cervical cancer. There was a deliberate gender equality, disability and social inclusion (GEDSI) approach, which included partnering with women's leadership groups, and also targeting influential men such as chiefs and church leaders, to encourage shared responsibility and understanding of screening and treatment as a cancer prevention priority.

Figure 12.2. Vanuatu cervical cancer screening, 2022–2025 (map generated from CanSCREEN)

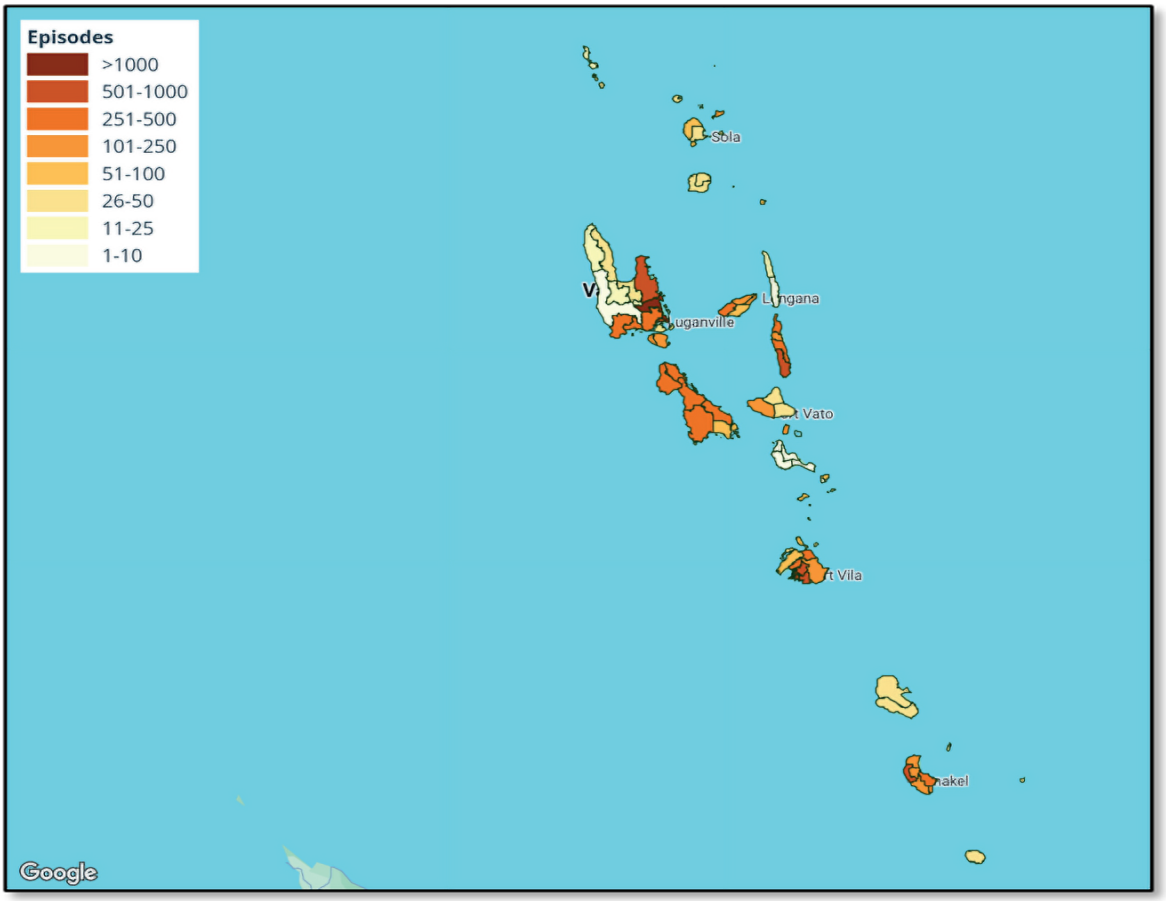


Figure 12.3. Nurse Sera processes an HPV test

ii. Quality management and training systems for screening and treatment established.

Systems for standardised training, workforce development and clinical mentorship were established to build sustainable in-country capacity for the continued delivery of HPV screening and treatment services in Vanuatu.

Clinical screening and treatment training was completed by 32 healthcare professionals across Port Vila and Luganville. This training equipped staff with the skills and technical

expertise required to implement HPV screen-and-treat services, including HPV testing, GeneXpert operation, clinical examination and visual assessment of the cervix, and thermal ablation.

Competency for thermal ablation was assessed under supervision in the clinic by obstetrics and gynaecology specialists to build clinical confidence, ensure adherence to standard operating procedures (SOPs) and support the safe adoption of new clinical practices. Key clinicians and midwives then completed 'training of the trainer' training to subsequently lead training and competency-based sign-off of new staff.

Implementation of the Vanuatu MOH-approved national cervical screening algorithm was supported by SOPs comprehensively covering all aspects of clinic operations, as well as

planning and delivery of outreach services. This included a quality control framework to verify assay performance, detect potential testing issues, and ensure accuracy and reliability of the GeneXpert platform. Quality control testing is conducted monthly in both screening clinics in accordance with established SOPs. Data quality processes were implemented and are periodically reviewed to support routine monitoring of screening coverage, treatment uptake and follow-up. This includes monthly data management meetings to facilitate timely resolution of data entry issues. Clinic staff were trained and accredited in GeneXpert maintenance and module replacement, so minimising equipment downtime due to module failure.

The quality management and training systems established will support long-term sustainability of the national cervical screening programme and have already reduced reliance on external technical assistance.

iii. Effective and equitable treatment and care programmes for women with precancer and cancer established.

Strengthening treatment completion has been a key priority in Vanuatu. Some of the initial outreach did not utilise the same-day screen-and-treat model of care. This resulted in a lower treatment completion rate, as healthcare workers were unable to locate women again. Once this issue was identified, there was a commitment to provide same-day screen-and-treat whenever feasible. An active programme was initiated to contact women in the community and encourage them to return for treatment, which led to sustained improvement in primary treatment completion rates.

Outreach in Vanuatu was unique in that teams delivered HPV screen-and-treat with thermal ablation, as well as gynaecological review and LLETZ treatment for those who required it, where possible. This avoided loss to follow-up for those requiring specialist referral, particularly where travel between islands was required and follow-up care was cost-prohibitive or physically inaccessible. This required gynaecologists to participate in outreach (usually for the last week of each trip).

Vanuatu clinicians have provided training through a South–South mentorship initiative co-ordinated by ECCWP. This enabled the introduction of LLETZ to Papua New Guinea, significantly enhancing capability for the management of pre-invasive disease.

Vanuatu MOH is progressing the establishment of oncology services at Vanuatu National Hospital (VNH), focused on gynaecological and breast

Figure 12.4. Proud participants in Port Vila

cancers. Key priority actions will include inclusion of required oncology/chemotherapy drugs into the National Essential Drugs List; training for doctors, nurses and the pharmacist on chemotherapy handling, preparation and safe dispensing/dispatch processes; and supporting a local doctor to enrol in the Master of Cancer Science course and mentorship programme. These actions will address the critical gap in diagnosis and management of gynaecologic malignancies, as currently patients are referred overseas for chemotherapy or radiotherapy – an approach that is financially unsustainable and inaccessible for most citizens. Strengthening oncology services within the VNH will improve outcomes through earlier diagnosis, local treatment options and multidisciplinary care.

iv. Locally adapted screening and treatment registries established.

Robust and reliable data systems are essential for monitoring coverage, ensuring quality of care, including facilitation of follow-up, and enabling national oversight. The canSCREEN® electronic registry has been adapted and contextualised for Vanuatu, incorporating geographical location data (including island and province) socio-demographic data, screening algorithms, clinical management pathways and follow-up procedures. The registry provides real-time programme monitoring, including participation rates, HPV positivity, treatment uptake and geographic distribution of screening. This has enabled the teams to identify underserved areas and to strategically plan outreach activities to maximise resource use and efficiency.

The canSCREEN® electronic registry has been adapted and contextualised for Vanuatu, incorporating geographic location data (including island and province), socio-demographic information, screening algorithms, clinical management pathways, and follow-up procedures.

v. Economic, social, health system and policy requirements defined for sustainable elimination programmes.

The Vanuatu MOH established a working group and engaged a consultant to support drafting of the Vanuatu National Cervical Cancer Elimination Strategy. The strategy will acknowledge that sustained progress will require long-term, sustainable financing and states that the Government of Vanuatu is committed to seek measures to ensure that activities are adequately funded and maintained over time.

Aligned with the strategy, cervical cancer elimination activities have been included within the Ministry of Health Corporate Plan (2026–2030). This supports the potential integration of programme costs into the national health budget and establishes a pathway for increased government financing and reduced reliance on external donor support over time. Philanthropic funding has been secured

Figure 12.5. Nurses in Vanuatu enter data into canSCREEN

for Vanuatu to continue its cervical screening programme and support the Ministry of Health in its transition to a sustainable programme ~~to~~ by 2029.

3. Key stakeholders and partners

The cervical cancer elimination programme in Vanuatu has involved multisectoral co-ordination across government, health institutions, non-governmental organisations and international partners. Key stakeholders include the Vanuatu Ministry of Health, the Vanuatu Family Health Association, the Ikkana Cancer Society, Vanuatu National Hospital, Northern Provincial Hospital, and international technical and funding partners, including the University of Sydney, the Kirby Institute UNSW, the Australian Centre for Prevention of Cervical Cancer (ACPCC), Family Planning Australia (FPA), and the Minderoo Foundation. Equipment and consumable donations were provided by Cepheid and Copan, with additional logistical support from Global Response through the HELPR-1 vessel for remote island outreach.

4. Outcomes and evaluation

Between October 2022 and February 2026, 17,540 women were screened under the national HPV-based screening programme, representing 47 per cent of the approximately 37,000 eligible women aged 30–54 years (the WHO 70 per cent screening target for Vanuatu would be 25,900). Through outreach, screening has been offered across all 6 provinces of Vanuatu, with the percentage of total eligible population screened by province ranging from 36 to 73 per cent.

Of the 3,523 women who tested HPV positive, 3,004 (85 per cent) of women were either treated by thermal ablation or LLETZ. A total of 2,398 women received treatment with thermal ablation. Women who were ineligible for thermal ablation either underwent gynaecological review on outreach or were referred to Northern Provincial Hospital (NPH) or Vanuatu National Hospital (VNH). This included those with suspected high-grade lesions. Vanuatu already had LLETZ capacity prior to the programme start; 606 LLETZ procedures were undertaken during the programme. Histological samples were sent to Australia for processing.

The Vanuatu Ministry of Health has also developed a Vanuatu National Cervical Cancer Elimination Strategy and included cervical cancer as a priority within the Ministry of Health Corporate Plan, demonstrating strong commitment at the national level.

5. Lessons learnt

The continued success of the Vanuatu national screening programme demonstrates that the HPV screen-and-treat model is highly effective and scalable, even within such a geographically dispersed, island setting. The leadership shown by the Vanuatu Ministry of Health, as well as strong partnerships with non-government organisations and collaboration between clinical and programmatic actors, have been key to the programme's success. As has the incredible commitment to programme delivery and continuous quality improvement by the health workers involved.

Vanuatu is vulnerable to natural disasters and climate change, including cyclones, heavy rainfall and earthquakes. The twin cyclones in March 2023 and the earthquake in Port Vila in December 2024 significantly disrupted clinic operations and outreach activities. A state of emergency was declared in each instance, with health staff redeployed to the humanitarian response for several months. Infrastructure damage and telecommunications failures also impacted supply chains, transport and community behaviours in accessing healthcare, highlighting the need for adaptive planning and increased community engagement following these events to restore services.

Outreach also presented significant logistical challenges. Air Vanuatu, the national carrier, entered voluntary liquidation on 9 May 2024. This meant outreach became dependent on inter-island charter air and sea transport, often at a higher cost and with less reliability. Staff, equipment and consumables had to utilise small planes, boats and land transport to provide equitable access to screening across provinces. To address significant geographic and transport barriers, the programme also leveraged external collaborations, such as the partnership with Global Response to utilise the HELPR-1 vessel where feasible. This allowed for targeted outreach to remote and underserved provinces, significantly extending the reach of screening and treatment services.

Table 12.1. Vanuatu cervical cancer prevention programme development timeline

Year/period	Key activity	Agencies
2008	Opportunistic cervical cancer screening programme established.	Vanuatu MOH
2015	Systematic data collection of screening rates, outcomes and treatment results commenced.	Vanuatu MOH
2020	National Guidelines for Cervical Cancer Prevention and Control released.	Vanuatu MOH
2021	Co-design process for HPV screen-and-treat programme initiated (conducted online due to COVID-19 border closures).	Vanuatu MOH, Vanuatu Family Health Association, USyd, Kirby Institute UNSW, ACPCC, FPA
2022	National HPV-based screen-and-treat programme approved and launched. Two screening hubs established at Vanuatu National Hospital and Northern Provincial Hospital. canSCREEN® electronic registry implemented.	Vanuatu MOH, Vanuatu Family Health Association, USyd, Kirby Institute UNSW, ACPCC, FPA, Minderoo Foundation
2023	National HPV vaccination programme launched. Twin cyclones disrupt clinic operations and outreach activities.	Vanuatu MOH
2023	South–South mentorship initiative: Vanuatu clinicians train Papua New Guinea in LLETZ.	Vanuatu MOH, ECCWP partners
2024	Collapse of Air Vanuatu necessitates shift to charter air and sea transport for outreach. Earthquake in Port Vila disrupts services. Partnership with Global Response initiated using HELPR-1 vessel for remote outreach.	Vanuatu MOH, Global Response
2024	Vanuatu MOH proposes National Strategy for the Elimination of Cervical Cancer.	Vanuatu MOH
2025	Sustainability planning workshop convened. Strategic oversight transitioning to National Cervical Cancer Elimination Steering Committee (NCCESC).	Vanuatu MOH
2026–2035	Vanuatu National Cervical Cancer Elimination Strategy to be released and implemented.	Vanuatu MOH
2026–2030	Cervical cancer elimination activities embedded in Ministry of Health Corporate Plan.	Vanuatu MOH
Ongoing	HPV screening outreach across all six provinces; workforce training and mentorship; quality control monitoring; histopathology capacity strengthening; palliative care development.	Vanuatu MOH, ECCWP partners, the Pacific Community (SPC), Kirby Institute UNSW

Access to histopathology with short turnaround times is key to timely diagnosis and management for women with invasive disease. Vanuatu has faced challenges with a reliance on overseas services and disruption locally due to natural disasters and human resources shortages. The country is working toward establishment of in-country histopathology capacity in time with capacity-strengthening supported by Vanuatu MOH, the Pacific Community (SPC) and the Kirby Institute, UNSW.

Strengthening palliative care and services is a key priority for Vanuatu. Key focus areas include workforce development, improving access to essential medicines for pain management and

Figure 12.6. Challenges with infrastructure damage following a natural disaster

establishing a community-based palliative care approach. A national Palliative Care Technical Working Group (TWG) has been established to provide technical guidance, leadership and oversight for the development of culturally appropriate and accessible palliative care services.

Figure 12.7. Outreach service using sea transport

6. Key recommendations

To support long-term sustainability and transition from project-based oversight to national governance, the Vanuatu MOH is transitioning strategic oversight for the Vanuatu National Cervical Cancer Elimination Programme to a National Cervical Cancer Elimination Steering Committee (NCCESC) under the leadership of the Director of Public Health. A sustainability planning workshop was convened in November 2025. Key actions for the cervical screening programme in the coming years include the following

- Implementation of targeted strategies to improve screening in provinces with lower coverage.
- Continuous workforce development and mentoring of midwives and clinicians to sustain local capacity for the delivery of HPV screening and treatment.
- Progressive integration of cervical screening with broader outreach health programmes, such as non-communicable disease (NCD) screening, maternal and child health services, to improve efficiency and reduce duplication of travel and operational costs.
- To continue strengthening histopathology and diagnostic capacity at Vanuatu National Hospital.
- To strengthen continuous quality improvement mechanisms, treatment capacity and access to treatment for invasive disease.
- Integration of treatment data into canSCREEN.
- For Vanuatu MOH to progressively embed activities across the WHO three pillars into national systems and budgets.

Transferable lessons for other Commonwealth countries

Vanuatu has learnt several lessons that can be transferable to other Commonwealth countries. These include the following.

- **Implement a same-day screen-and-treat model.** Eliminating the gap between testing and treatment through same-day screen-and-treat significantly reduces

Figure 12.8. Health promotion for HPV screening and treatment, Mele Village, Vanuatu

loss to follow-up, which is a critical lesson for other geographically dispersed or low-resource settings.

- **Deploy nurse-led, portable service delivery.** Employing a nurse-led model using battery-operated, portable equipment enables equitable screening reach across remote and hard-to-access communities without dependence on specialist infrastructure.
- **Engage with the community before clinical outreach.** Deploying community health promotion teams, including the Ikkana Cancer Society, ahead of clinical outreach teams demonstrably increased screening uptake and treatment completion.
- **Ensure logistics planning is adaptive.** Building flexible transport arrangements, including charter air, sea vessels and community partnerships, is essential for sustained outreach in island and archipelago settings vulnerable to natural disasters and infrastructure disruption.
- **Engage in South–South knowledge transfer.** Vanuatu's experience of training Papua New Guinea in LLETZ demonstrates the value of peer-to-peer regional mentorship as a cost-effective and contextually appropriate model for building clinical capacity across the Pacific.

Linkage to WHO 90–70–90 targets

Vanuatu has made substantial progress toward the WHO 90–70–90 targets, though further acceleration is required. A national HPV vaccination programme was launched in 2023, with the 90 per cent coverage target for girls under 15 established as a national priority within the forthcoming Vanuatu National Cervical Cancer Elimination Strategy 2026–2035. Screening coverage has reached 47 per cent of eligible women aged 30–54 across all 6 provinces, with provincial coverage ranging from 36 to 73 per cent, advancing toward the 70 per cent screening target. Treatment completion stands at 85 per cent of HPV-positive women, approaching the 90 per cent treatment target. The most urgent priorities are accelerating screening coverage in lower-performing provinces, strengthening in-country histopathology capacity, expanding treatment options for invasive disease and securing sustainable domestic financing to reduce reliance on external donor funding.

The Government of Vanuatu has reaffirmed its commitment to attaining these goals and the Strategy provides a roadmap to strengthen cervical cancer prevention, early detection, treatment and palliative care.

Figure 12.9. Simulated practice in training, Luganville

7. National policy implications

Vanuatu is well positioned to consolidate and accelerate its progress towards cervical cancer elimination. Strategic oversight is transitioning to the National Cervical Cancer Elimination Steering Committee (NCCESC) under the Director of Public Health, signalling strong institutional commitment. Cervical cancer elimination activities have been embedded within the Ministry of Health Corporate Plan 2026–2030, establishing a pathway for progressive integration into the national health budget. Continued investment in workforce development, particularly the mentoring of midwives and clinicians, is essential to sustain local delivery capacity. Outreach programming should increasingly be integrated with broader NCD and maternal and child health services to improve efficiency and reduce operational costs. Strengthening palliative care services, in-country histopathology and access to treatment for invasive disease remain critical gaps requiring targeted policy action. Public awareness efforts should continue to engage community leaders, women's groups and influential figures such as chiefs and church leaders to sustain demand for screening and treatment services across all provinces.

References

1. Types 16,18/45 account for >36 per cent of HPV types detected for all cervical screening episodes from 2022 to 2026. Source: canSCREEN Vanuatu, Vanuatu national cervical screening programme.
2. IARC Information Centre on HPV and Cancer (2023), 'Vanuatu: Human papillomavirus and related cancers', fact sheet, https://hpvcentre.net/statistics/reports/VUT_FS.pdf
3. Allanson, ER, V Velanova, IH Frazer, M McAdam, Cervical Cancer Foundation (Logistics Support), Vanuatu Ministry of Health, Sullivan Nicolaides Pathology, and Frazer Family Foundation (2021), 'An update on cervical cancer screening in Vanuatu', *International Journal of Gynecological Cancer* Vol. 31 No. 4, 631–632, https://doi.org/10.1136/ijgc-2020-002129
4. World Health Organization (2020), *Global strategy to accelerate the elimination of cervical cancer as a public health problem*, WHO, https://creativecommons.org/licenses/by-nc-sa/3.0/igo
5. Allanson, ER, V Velanova, B Damutalau et al. (2025), 'The state of cervical cancer screening in Vanuatu: a retrospective analysis (2015–2020)', *Malig Spect.*, Vol. 2 No. 1, 46–52, doi:10.1002/msp2.70004
6. Vanuatu Ministry of Health (2020), *Guidelines for public health programmes: Cervical Cancer Prevention and Control*, Ministry of Health, Government of Vanuatu (ed.).
7. Allanson, ER, V Velanova, B Damutalau et al. (2025), 'The state of cervical cancer screening in Vanuatu: a retrospective analysis (2015–2020)', *Malig Spect.*, Vol. 2 No. 1, 46–52, doi:10.1002/msp2.70004
8. Allanson, ER, V Velanova, B Damutalau et al. (2025), 'The state of cervical cancer screening in Vanuatu: a retrospective analysis (2015–2020)', *Malig Spect.*, Vol. 2 No. 1, 46–52, doi:10.1002/msp2.70004
9. WHO (2021), 'Annex B. Evidence-to-decision tables', *WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention*, second edition, WHO, Geneva.
10. Vallely, AJ, M Saville, SG Badman et al. (2022), 'Point-of-care HPV-DNA testing of self-collected specimens and same-day thermal ablation for the early detection and treatment of cervical pre-cancer in high-burden, low-resource settings: Results of a prospective intervention trial in Papua New Guinea (HPV-STAT)', *Lancet Global Health*, https://pubmed.ncbi.nlm.nih.gov/30391365/; https://pubmed.ncbi.nlm.nih.gov/35241461/

Commonwealth Secretariat
Marlborough House, Pall Mall
London SW1Y 5HX
United Kingdom

thecommonwealth.org

The Commonwealth

D20442