

**DRAFT**

**Strategic Framework for the Comprehensive  
Prevention and Control of Cervical Cancer  
in the Western Pacific Region 2023–2030**



## Contents

<b>Abbreviations</b>	<b>11</b>
<b>Executive summary</b>	<b>13</b>
<b>1. Introduction and background</b>	<b>15</b>
1.1 Rationale	15
1.2 Pathophysiology and epidemiology of cervical cancer	16
1.3 Impact on Sustainable Development Goals	16
1.4 Impact of COVID-19 pandemic on cervical cancer control activities	17
1.5 Cervical cancer elimination strategy	17
1.6 Guiding principles	19
1.7 Overview of the Western Pacific Region and cervical cancer-related challenges	21
<b>2. Primary prevention through HPV vaccination</b>	<b>24</b>
2.1 Vaccines type and dosage	24
2.2 Current status of HPV vaccination in the Western Pacific Region	25
2.3 Accelerating HPV vaccine coverage	27
2.4 Managing vaccine procurement and shortages	27
2.5 Strategic and interim action recommendations	28
<b>3. Secondary prevention through cervical screening and early treatment of precancerous lesions</b>	<b>30</b>
3.1 Cervical screening tests	30
3.2 WHO recommendations for cervical screening	31
3.3 Current status of cervical screening in Western Pacific Region	32
3.4 Screening and treatment of precancerous lesions	35
3.5 Strategic and interim action recommendations	37
<b>4. Treatment of invasive cervical cancer</b>	<b>39</b>
4.1 WHO recommendations for treatment	39
4.2 Cervical cancer diagnosis and staging	39
4.3 Primary treatment modalities	40
4.4 Symptom management and palliative care	42
4.5 Strategic and interim action recommendations	43
4.6 WHO support for the three pillars	44

**Annex**

<b>5. Health system and services strengthening</b>	<b>45</b>
5.1 Review of current barriers to access	45
5.2 Surveillance, monitoring and evaluation	45
5.3 Strengthening services and capacity-building	47
5.4 Systems integration at PHC level	50
5.5 Strategic and interim action recommendations	51
<b>6. Sustainable financing mechanisms</b>	<b>53</b>
6.1 Introduction	53
6.2 Situation in the Western Pacific Region	53
6.3 Strategic action recommendations	54
<b>7. Advocacy, health education, communication and community engagement</b>	<b>56</b>
7.1 Advocacy	56
7.2 Health education	56
7.3 Community engagement and messaging	57
7.4 Strategic action recommendations	58
<b>References</b>	<b>60</b>

## Abbreviations

ART	antiretroviral therapy
ASR	age-standardized rate
CHW	community health worker
COVID-19	coronavirus disease
Gavi	Gavi, the Vaccine Alliance
HPV	human papillomavirus
IARC	International Agency for Research on Cancer
IGCS	International Gynecologic Cancer Society
LLETZ	large loop excision of the transformation zone
LMICs	low- and middle-income countries and areas
OMRS	overseas medical referral schemes
PBCR	population-based cancer registry
PCR	polymerase chain reaction
PHC	primary health care
PICs	Pacific islands countries and areas
ROSE	Removing Obstacles to Cervical Screening
SAGE	Strategic Advisory Group of Experts on Immunization
STI	sexually transmitted infection
TMO	Te Marae Ora
UHC	universal health coverage
UPIN	unique personal identification number
VIA	visual inspection with acetic acid
VSMT	visiting specialist medical team
WHO	World Health Organization
WLHIV	women living with HIV



## Executive summary

*For the Future: Towards the Healthiest and Safest Region*, a shared vision for the work of the World Health Organization (WHO) with Member States and partners in the Western Pacific Region, urges action today to address the challenges of tomorrow. Noncommunicable diseases (NCDs) and ageing is one of the four thematic priorities of *For the Future*. If Member States are going to achieve the *For the Future* vision, the growing burden of cancer – one of the four main NCDs – must be addressed.

In 2020, cervical cancer was the fourth most frequently diagnosed cancer, as well as the fourth leading cause of cancer deaths in women worldwide, with an estimated 604 127 cases and 314 831 deaths. Nine out of 10 of deaths from cervical cancer occur in low- and middle-income countries (LMICs). Cervical cancer is one of the most preventable and treatable cancers if detected early, yet it continues to be a significant public health problem and cause of premature mortality among women. The Western Pacific Region accounts for one fourth of the global cervical cancer burden, and approximately 90% of that burden is in LMICs, making cervical cancer the sixth most diagnosed cancer and the eighth most common cause of cancer deaths among women in the Region. In 2020, an estimated 145 700 women were diagnosed and 74 900 women died from cervical cancer in the Region.

Recognizing the urgency of the growing burden of cervical cancer, WHO in November 2020 launched the *Global strategy to accelerate the elimination of cervical cancer as a public health problem*, setting intermediate targets to be achieved by 2030. To achieve cervical cancer elimination within a century, all countries must bring down the incidence of cervical cancer to less than four per 100 000 women-years of exposure. The Global Strategy projects that by 2120 elimination can be achieved if 90% of girls by age 15 are fully vaccinated against the human papillomavirus (HPV) by 2030; 70% of women have been screened using a high-performance test by 35 years of age and again by 45 years of age; and 90% of women diagnosed with cervical disease are treated.

This *Strategic Framework for the Comprehensive Prevention and Control of Cervical Cancer in the Western Pacific Region 2023–2030* was developed at the request of and in consultation with Member States in the Region. It builds on and aligns with existing global and regional strategies for cervical cancer elimination and with *For the Future*. The regional Strategic Framework is based on the recognition of extremely diverse social, economic, geographic and cultural characteristics, priorities and needs, while adapting global mandates and initiatives relevant to cervical cancer to regional, subregional and national contexts.

The overall objective of the regional Strategic Framework is to offer broad guidelines for the Member States to develop and strengthen their national cervical cancer control programmes, ensuring sustainability towards achieving global targets for the elimination of cervical cancer. The regional Strategic Framework should be considered in conjunction and implemented in coordination with plans endorsed by the WHO Regional Committee for the Western Pacific – namely the *Regional Strategic Framework for Vaccine-preventable Diseases and Immunization in Western Pacific (2021–2030)*, the *Regional Framework on Nurturing Resilient and Healthy Future Generations in the Western Pacific* and the *Global strategy to accelerate the elimination of cervical cancer as a public health problem* – as well as draft plans being considered for endorsement by the Regional Committee in October 2022 on reaching the unreached, NCD prevention and control, the future of primary health care, and mental health in the Region.

**Annex**

This *Strategic Framework for the Comprehensive Prevention and Control of Cervical Cancer in the Western Pacific Region 2023–2030* proposes three strategic actions and three enablers/overarching priorities.

The strategic actions for the elimination of cervical cancer in the Region include:

1. strategic action to strengthen primary prevention through HPV vaccination;
2. strategic action to improve secondary prevention through cervical cancer screening and early treatment of precancerous lesions; and
3. strategies to improve service access for early diagnosis, treatment, rehabilitation and palliative care.

The three enablers and priorities are:

1. health system and services strengthening;
2. sustainable financing mechanisms; and
3. advocacy, health education, communication and community engagement.



## 1. Introduction and background

### 1.1 Rationale

This *Strategic Framework for the Comprehensive Prevention and Control of Cervical Cancer in the Western Pacific Region 2023–2030* provides an evidence-based, consultative framework to inform policy and practice and to shape advocacy for the elimination of cervical cancer in the World Health Organization (WHO) Western Pacific Region. The target audience includes public officials, political leaders, health professionals, advocates, community leaders, civil society organizations and consumers.

This Strategic Framework will support the implementation of *For the Future: Towards the Healthiest and Safest Region*, a shared vision for WHO work with Member States and partners in the Western Pacific Region, of acting today to address the challenges of tomorrow. Building on the Region's tradition of solidarity and collaboration, this Strategic Framework will help actualize a whole-of-society and whole-of-government approach to cervical cancer prevention and control, consistent with the WHO *Global strategy to accelerate the elimination of cervical cancer as a public health problem*. This Strategic Framework will be applied according to regional, national and local needs.

Cervical cancer is the fourth most common cancer and fourth most common cause of cancer death among women globally.<sup>1</sup> The estimated global age-standardized rate (ASR) of cervical cancer incidence and mortality in 2020 was 13.3 new cases and 7.3 deaths per 100 000 women, respectively. It was estimated that in 2020 there were 604 127 cases and 314 831 deaths from cervical cancer, of which 90% were estimated to be from low- and middle-income countries (LMICs).<sup>1</sup> Cervical cancer incidence and mortality rates are significantly higher in LMICs than the global average (17.8 new cases per 100 000 women and 11.5 deaths per 100 000 women, compared with a global average of 13.3 cases and 7.3 deaths per 100 000 women, respectively).<sup>1</sup> These statistics reflect a huge disparity in effective cervical cancer prevention and control mechanisms both between and within countries worldwide.

Few diseases reflect global inequities as profoundly as cancer of the cervix. In LMICs, cervical cancer incidence is nearly twice as high, and its death rate three times as high, as that of high-income countries. In countries without equitable access to screening and treatment of precancerous lesions, cervical cancer is often identified in advanced stages. Improving the status of women in many LMICs will greatly reduce disparities in cancer outcomes.<sup>2</sup>

The personal and family impacts of untreated, recurrent or locally advanced cervical cancer are profound. Severe refractory pain, chronic bleeding, fistulae, weight loss and offensive vaginal discharge are common and often leave the woman socially isolated.<sup>3</sup> Due to the inaccessibility of appropriate medication for pain relief and the absence of palliative care services in many settings, many women experience unacceptable suffering and a terrible death.<sup>4</sup>

The impact on family is highlighted by the observation that mortality in the children of affected women is substantially increased. In one model, the life of one child can be saved for every four mothers whose deaths from cervical cancer can be prevented.<sup>5</sup> While proven and cost-effective measures for eliminating cervical cancer exist, these have not been widely implemented in countries and regions where the disease burden is highest. For optimal effect, these measures must be scaled to national levels and delivered using a life-course approach with health service platforms designed to respond to women's needs and social circumstances, and to address personal, gendered, cultural, social, structural

## Annex

and economic barriers to accessing health services. Health services that are integrated and people centred, and that respect and uphold women's rights and dignity, are vital.<sup>6</sup>

### 1.2 Pathophysiology and epidemiology of cervical cancer

Nearly all cases of cervical cancer are caused by persistent infection with high-risk carcinogenic human papillomavirus (HPV), which is commonly transmitted by sexual contact. There are more than 100 types of HPV, and a number of types are classified as oncogenic. Two of these, HPV types 16 and 18, cause approximately 70% of cervical cancer cases globally. Most genital HPV infections are cleared spontaneously by the immune system within two years of infection. However, in about 10% of cases, infection can persist, leading to the development of precancerous lesions and invasive cervical cancer over a 10- to 20-year period. Several other factors are associated with viral persistence/progression to precancer and cancer, including HIV infection, tobacco smoking, increased parity and early age at first full-term pregnancy, and current use of oral contraception.<sup>7,8</sup>

Tobacco smoking is associated with an increased risk of cervical cancer, and evidence-based tobacco control strategies can have an impact on reducing the cervical cancer burden.<sup>9,10</sup> In relation to oral hormonal contraceptives, while epidemiological studies show a somewhat increased risk of invasive cervical cancer among current users with persistent oncogenic HPV infection – which increases with duration of use and declines after cessation – access to contraception remains an important and priority health strategy.<sup>11-13</sup>

Women living with HIV (WLHIV) have increased risk of cervical cancer compared to the general female population, with the risk increased by a factor of six.<sup>11</sup> This increased risk is recognized by WHO recommendations for more frequent (every three to five years) and earlier (from age 25 years) cervical screening, using a primary HPV screening test followed by a triage test using either partial genotyping, colposcopy, visual inspection with acetic acid (VIA) or cytology.<sup>12</sup> Integration of cervical screening services within HIV management clinics is an important strategy for cervical cancer control for this vulnerable group, and early initiation and high compliance with antiretroviral therapy (ART) can reduce progression of HPV infection to precancer and invasive cancer.<sup>13</sup>

### 1.3 Impact on Sustainable Development Goals

Eliminating cervical cancer will contribute to the achievement of several Sustainable Development Goals (SDGs) and SDG targets, as highlighted in Fig. 1.<sup>6</sup> Realizing the elimination goals will depend on increased health systems strengthening in the areas of sexual and reproductive health, and elimination initiatives will thus contribute to universal health coverage (UHC) – SDG 3 (good health and well-being) and SDG 3 targets 3.7 and 3.8). Realizing the elimination goals will also mean that a one third reduction in cervical cancer mortality will be achieved by 2030, thus contributing to the realization of (SDG 3, target 3.4) and this, in turn, will contribute to the realization of SDGs 5 and 10,<sup>4</sup> which call for gender equality and reduced inequalities, respectively.

**Fig. 1. Eliminating cervical cancer contributes to attainment of several Sustainable Development Goals and targets**

<b>Goal 1:</b>	End poverty in all its forms everywhere.
<b>Goal 3:</b>	<p>Ensure healthy lives and promote well-being for all at all ages:</p> <p>Goal 3, target 3.4: By 2030, reduce by one third premature mortality from noncommunicable diseases through prevention and treatment and promote mental health and well-being.</p> <p>Goal 3, target 3.7: By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.</p> <p>Goal 3, target 3.8: Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.</p>
<b>Goal 5:</b>	Achieve gender equality and empower all women and girls.
<b>Goal 10:</b>	Reduce inequality within and among countries.

#### 1.4 Impact of COVID-19 pandemic on cervical cancer control activities

The coronavirus disease (COVID-19) pandemic has disrupted and constrained the roll-out and scale up of HPV vaccination and cervical cancer screening, diagnosis and treatment in many settings. Reduced HPV vaccination uptake,<sup>14</sup> cervical screening participation<sup>15-17</sup> and access to treatment services<sup>18</sup> have been reported in many high-income countries during periods of pandemic-control lockdowns, with significant disruptions to cervical cancer screening/prevention activities also recorded among LMICs.<sup>19</sup>

However, the pandemic has also prompted multisectoral collaboration and additional investments in testing and laboratory services, which can be utilized for cervical cancer elimination efforts. COVID-19 vaccination efforts have raised public awareness and prompted discussion on the wider benefits of immunization. Efforts to promote COVID-19 vaccination can be harnessed to promote the public health benefits of vaccines for other prevalent infections including HPV.<sup>15-17</sup>

There have been significant delays in diagnosis and treatment due to the COVID-19 pandemic around the globe. Given that the majority of cervical cancers are in settings that were already resource-strained even prior to the pandemic, the overall impact of delays is likely to be amplified.<sup>20</sup> Limited data on the impact of these delays have been published. The full impact on cancer outcomes will not be known until further evidence is collected.

Re-emerging from the pandemic will require a concerted effort from various multidisciplinary specialties,<sup>21</sup> including learning from interventions that have worked in high- and low-income settings and integrating them into clinical and health services practices.

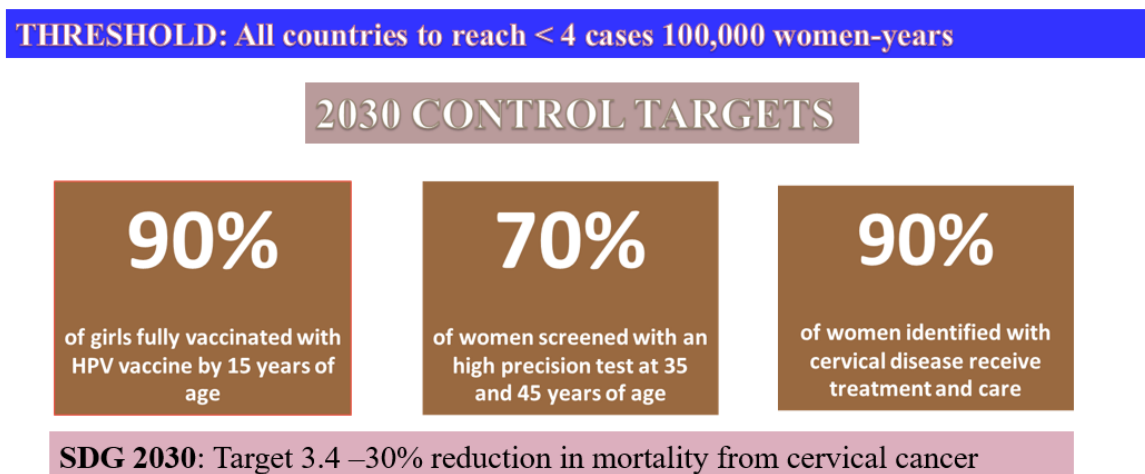
#### 1.5 Cervical cancer elimination strategy

In 2020, WHO developed and launched the *Global strategy to accelerate the elimination of cervical cancer as a public health problem*, which defines an elimination threshold of four cases per 100 000 women worldwide by 2120. The Global Strategy is built around the three pillars: HPV vaccination; cervical screening; and treatment. Triple-intervention coverage targets set for 2030 include the scale up

Annex

of HPV vaccination to 90%, twice-in-a-lifetime cervical screening to 70%, and treatment of precancerous lesions and invasive cancer to 90% (see Fig. 2).

Fig. 2. Path to cervical cancer elimination in Western Pacific Region



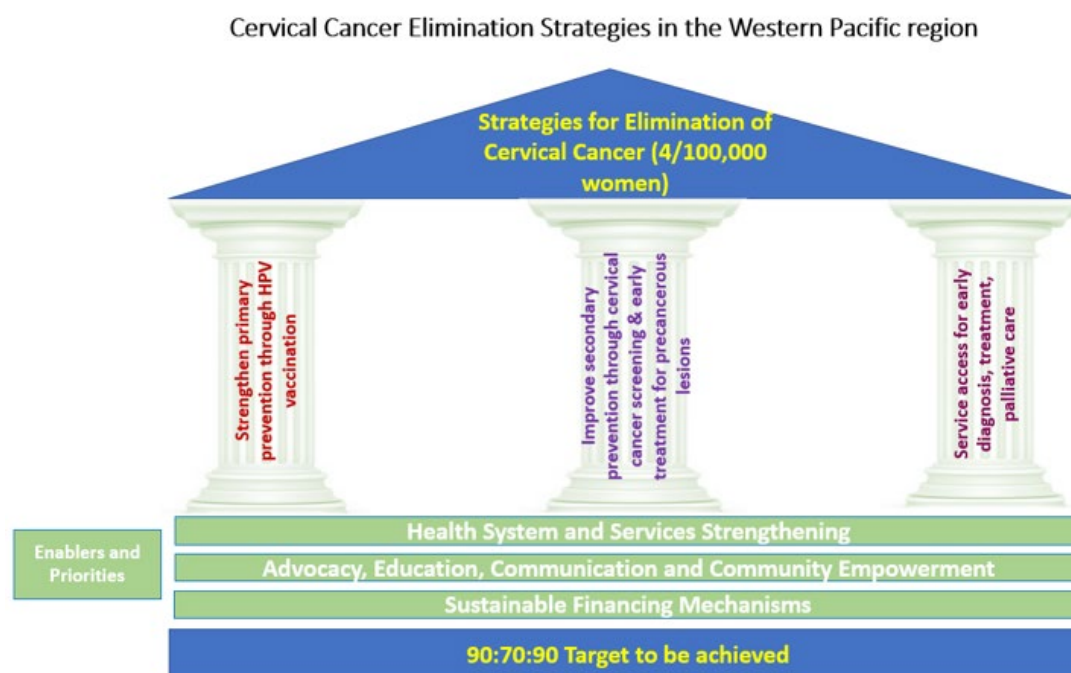
Over the next century, implementation of the WHO Global Strategy for elimination would avert 74 million cervical cancers, reduce cervical cancer mortality by almost 99% and save more than 62 million women's lives.<sup>4,22</sup>

The Global Strategy is evidence-based and substantive. For optimal effect, it must be adapted and tailored to the realities, needs, challenges and priorities of Member States in the diverse Western Pacific Region. The Strategic Framework for the comprehensive prevention and control of cervical cancer in the Western Pacific Region (see Fig. 3) aims to provide an integrated, inclusive, equitable, comprehensive and resilient approach to the prevention, control and elimination of cervical cancer as a public health problem in the Region. It will support and be aligned with the Global Strategy for elimination, but with actions tailored for specific settings in the Region.

Individual countries should update current national policies on cervical cancer prevention and control according to this Strategy, adapting recommendations on best practices to what is most feasible and urgently required in varying settings. Based on the Global Strategy for cervical cancer elimination – and taking into account the current status quo – countries should set up country-specific targets and timelines for cervical cancer elimination in five-, 10- or 20-year national action plans tailored to their needs.

Technical guidelines for HPV vaccination,<sup>23,24</sup> cervical screening and precancer treatment,<sup>12</sup> and invasive cervical cancer management<sup>25</sup> should additionally be reviewed and tailored to country-specific needs.

Fig. 3. Cervical cancer elimination in the Western Pacific Region



## 1.6 Guiding principles

The guiding principles of this regional Strategic Framework for cervical cancer are articulated in Fig. 4 and summarized below:

- **Trust at all levels** – Transparency and accountability must be embedded across all activities to ensure support and buy-in from all stakeholders including community, nongovernmental organizations, private partners and government.
- **Culture and context sensitive** – Each country must develop and implement an elimination strategy that fits its own economic, political, cultural and geographic landscape.
- **Gender responsive and inclusive** – Design of programmes and services must ensure respect for the rights of women and girls, with consideration of their strategic gender interests and practical gender needs. Gender analysis, gender perspectives, and attention to the goal of gender equity and equality must be mainstreamed in all activities from research, advocacy, policy development, resource allocation, and project and programme planning, implementation and monitoring. Inclusion of male advocates and champions at family and community levels is also essential.
- **Collaborative** – Strong governmental support and buy-in is essential to promote, implement, scale up and sustain initiatives for health promotion, cancer literacy education, HPV vaccination, screening, treatment of precancerous lesions, and diagnostic, curative and palliative treatment capacity for invasive cancer. Public–private partnership based on sound governance is essential for a whole-of-society, whole-of-government and whole-systems approach.
- **Adaptive and resilient** – Given the diverse contextual characteristics and conditions among countries in the Region, and within countries, developing a flexible and adaptable regional

## Annex

framework that can be tailor fitted by stakeholders, decision-makers and country experts is essential.

- **Equitable access (for all women and girls everywhere)** – Women and girls facing social, cultural and geographical barriers such as incarcerated women, ethnic minorities, those in geographically isolated and disadvantaged areas or experiencing humanitarian crises or displacement, and marginalized urban communities, all require access to affordable, quality care.
- **Participatory and multistakeholder engagement** – Key stakeholders in each of the Western Pacific Region Member States will be meaningfully engaged, to ensure integration of good practice models, successful innovations, insights, lessons learned from on ground experiences, experts' viewpoints and the lived experiences of patients.
- **Evidence-based and innovative** – Policies, interventions and services proposed are evidence-based and delivered in the context of national efforts to achieve universal health coverage (UHC) with focus on primary health care (PHC), a life-course approach, and integrated, people-centred health services.
- **Progressive realization (of goals and outcomes)** – Implementation of strategies and key activities will be stepwise, with a focus on optimizing opportunities to save lives and improve health outcomes while capacity is built incrementally to meet the three elimination targets.

Fig. 4. Guiding principles of the regional Strategic Framework



This regional Strategic Framework will help ensure that policies, legislation and regulations are aligned and congruent with global, regional and local priorities. It can serve as an advocacy tool to inform political engagement, mobilize resources, generate widespread support and create momentum in shaping a better, healthier future for women, girls and the wider community in the Region.

Through the development and implementation of this regional Strategic Framework for action, WHO envisions a Region that is on track to eliminate cervical cancer, where women and girls are better able to live healthy, productive and meaningful lives.

### **1.7 Overview of the Western Pacific Region and cervical cancer-related challenges**

The Western Pacific Region bears one fourth of the global cervical cancer burden, with nearly 90% of countries in the Region classified as LMICs. Cervical cancer is the sixth most-common cancer and the eighth most-common cause of cancer death among women in the Region. The WHO International Agency for Research on Cancer (IARC) has estimated that in 2020, around 145 700 women were diagnosed, and 74 900 women died from cervical cancer in the Region. For 2020, the ASR of cervical cancer incidence was 10.7 new cases per 100 000 women while cervical cancer mortality was 5.0 deaths per 100 000 women (across all ages).<sup>1</sup>

The Western Pacific Region is one of six WHO regions and includes 37 countries and areas containing more than one fourth of the world population. The Region is diverse, including countries and areas with populations ranging from 1.4 billion people in China to some 50 people in the Pitcairn Islands. The Region includes countries with substantial economic diversity and enormous differentials in gross domestic product, educational and social services, and health-care infrastructure.<sup>26</sup>

The Region includes Pacific island countries and areas (PICs) that face daunting challenges including weak and fragmented health systems and small and fragile economies. These challenges can deter development and the scale up of service delivery – with barriers to sustaining an adequate health workforce, poor accessibility of health services, unavailability of specialized cancer services, and limited purchasing power for essential medicines and equipment. The burden of cancer in PICs is also increasing due to increases in population-level drivers of cancer, including tobacco use, obesity and unhealthy food choices.

The enormous diversity of the Region has major implications for designing models of prevention and care for cervical cancer control and elimination. Moreover, the Region's demographic, epidemiological and economic challenges – as well as the vulnerability of PICs to natural disasters – may exacerbate current challenges and barriers to cancer prevention and care.

To meet these challenges, a tailored, fit-to-context approach to cervical cancer elimination is vital. Current cervical cancer prevention and control activities vary considerably among countries in the Region. In most Western Pacific Region countries, girls and women have limited access to HPV vaccination, cervical screening and cervical cancer treatment services, especially in marginalized, economically disadvantaged and geographically remote countries. The COVID-19 pandemic has further squeezed national health budgets, especially in LMICs and low-resource countries, causing delayed delivery of planned initiatives and cancellation of some committed projects and programmes. The continuity of HPV vaccination, as well as screening, treatment and care for women with cervical cancer, has been disrupted by COVID-19.

Some high-income and upper-middle income countries in the Region (for example, Australia, Malaysia, New Zealand and Singapore) have national HPV vaccination programmes with extensive coverage. Elsewhere in the Region, such as the Pacific islands affiliated with the United States of America and other island nations and regions (for example, the Marshall Islands and the Federated States of Micronesia), vaccine coverage varies widely. In many countries, including Cambodia, China, the Lao People's Democratic Republic, Papua New Guinea, the Philippines, Solomon Islands, Vanuatu and

## **Annex**

Viet Nam, HPV vaccination has not been scaled up or has only been used within pilot or demonstration projects.<sup>27</sup>

Self-reported coverage rates for cervical screening also vary widely in the Region.<sup>28</sup> Although many countries reported that they have a nationally organized cervical screening programme, data monitoring and evaluation systems in many settings are underdeveloped.<sup>28</sup> In terms of screening test technologies, Australia and Singapore have included HPV testing in their national programmes, while Malaysia is phasing in HPV testing (endorsed in 2019 with implementation expected by 2024). Many countries use cytology (Pap smears) or VIA tests. WHO recommends that primary cervical screening and precancer treatment be fully integrated, and where possible, provided as a same-day service to maximize impact and minimize loss to follow-up.<sup>12</sup> Two overarching strategies are recommended: HPV DNA detection in a “screen-and-treat” approach; and HPV DNA detection in a “screen-triage-and-treat” approach. A number of countries in the Western Pacific Region have conducted HPV-based screening pilots or subnational demonstration projects, combined with approaches to treatment of precancers. In China, Malaysia, Papua New Guinea and Vanuatu, for example, these projects have led to plans to introduce HPV-based screening scale up at a national level.

There remains relatively low population coverage of cancer registration systems and in many countries existing registries cover only 10–50% of the population. Near-complete or high population-based coverage (50–70%) has been achieved only in Australia, New Zealand, Palau and Singapore. Japan has had a near-complete registry since 2016. Some countries rely on estimates from neighbouring countries with registries. Malaysia started publishing its quadrennial cancer registry in 2003. The latest registry report, capturing 2017–2021 data, is in development.<sup>27,28</sup>

There is a pressing need for cancer generally and cervical cancer, in particular, to be prioritized in the health and development agendas of countries in the Western Pacific Region. In many countries, there is inadequate public sector resource allocation for cancer control. This is primarily attributed to competing health priorities and development programmes, lack of appreciation for the developmental and economic impacts of cancer and cervical cancer, low political engagement, and limited access to compelling information on disease burden and the economic and investment case for investing in cervical cancer elimination. Furthermore, the wider benefits of investment in cervical cancer elimination are not generally appreciated or understood. They include (but are not limited to) health systems strengthening and increasing access to cancer services more broadly (including diagnostic services, radiotherapy, chemotherapy and palliation), as well as raising awareness of cancer prevention strategies, and reducing cancer stigma across the board.



**Box 1. Case study: Illustrating the need for action**

Ms A is a 37-year-old primary schoolteacher, wife and mother of two young children. She has never been offered cervical screening. She noticed vaginal bleeding after intercourse, as well as an unusual vaginal discharge and pelvic pain. She assumed she had a fibroid and did not want to complain because she was worried about how her husband might react. Soon, she developed vaginal bleeding even without intercourse, and the vaginal discharge became malodorous. Although she suspected that something was very wrong, she was afraid of both seeing a doctor and not seeing a doctor. Ms A became constantly anxious and had trouble sleeping. She found herself angering easily with her children. She found it almost impossible to work. She avoided intercourse and even conversation with her husband. He began spending evenings away from home and drinking more. Ms A began to suspect that he was seeing other women. She began to feel hopeless and ashamed, lost her appetite, felt constantly tired and had trouble concentrating on anything. When she finally sought medical care, she was found to be anaemic and to have a fungating mass eroding the cervix and extending into the vagina. Ms A arranged for her sister to care for her children and travelled several hours by bus to a large hospital in the city where she was diagnosed with advanced cervical cancer. She felt exhausted and depressed. But most of all, she was terrified that she would die and her children would end up orphans.

**Box 2. Managing WLHIV across the three pillars**

Women living with HIV (WLHIV) have a higher prevalence of HPV infection and increased risk of precancerous lesions and invasive cancer than those in the general population. WLHIV have a sixfold increased risk of developing cervical cancer.

However, early initiation and high compliance with antiretroviral therapy (ART) can reduce progression of HPV infection to precancer and invasive cancer.<sup>13</sup> Integration of cervical screening services within HIV management clinics is also an important strategy for cervical cancer control in WLHIV.

Women and girls living with HIV should receive three doses of the HPV vaccine, if feasible, but at least two doses. There is limited efficacy data of a single dose in this group.<sup>24</sup> The WHO screening guidelines recommend that WLHIV should receive screening earlier and more frequently than those in the general population, starting at 25 years of age and continuing every three to five years until age 50. WHO also recommends a screen-treat-and-triage approach for this population, with an HPV primary screening test followed by a triage test using either partial genotyping, colposcopy, VIA or cytology depending on the local context and setting.<sup>12</sup>

WLHIV who develop invasive cervical cancer are at risk of potentially worse outcomes due to poor tolerability of treatment and lower treatment completion rates.<sup>29</sup> However, in the current era of ARTs there are no notable differences in outcomes of patients with or without HIV,<sup>29-31</sup> and all patients should be given evidence-based therapy regardless of their HIV status.

Annex

## 2. Primary prevention through HPV vaccination



HPV vaccination is the most important strategy to prevent and eventually eliminate cervical cancer. HPV vaccination is an evidence-based strategy to reduce the lifetime risk of developing cervical cancer in young girls. Although very effective in the long term, by itself the impact of vaccination on rates of invasive cervical cancer will take time to realize, because young vaccinated cohorts will only reach the age where protection is most needed when they are well into their adulthood. However, immediate action on HPV vaccination is critical to protect them against future risk of cervical cancer. The WHO *Global strategy to accelerate the elimination of cervical cancer as a public health problem* recommends by 2030 that 90% of girls be fully vaccinated against HPV by age 15 years.

### 2.1 Vaccines type and dosage

Table 1 shows the HPV vaccines available in the Region. Vaccines supplied by Gavi, the Vaccine Alliance, are first generation (2- or 4-valent vaccines). Both the 2-valent vaccine (GSK's Cervarix) and 4-valent vaccine (Merck's Gardasil) provide protection against HPV16/18 types, which account for 70% of cervical cancer cases globally.<sup>32</sup> The 4-valent vaccine also provides protection against HPV6/11, which cause genital warts but not cervical cancer. The 2-valent vaccine is in effect a broader-spectrum vaccine because it offers some cross-protection to a number of other high-risk types (HPV31/45/52), with at least seven years of protection. Middle-income and high-income countries have access to a 9-valent vaccine, which offers protection against seven high-risk types (HPV16/18/31/33/45/52/58) in addition to (HPV6/11).

Initially, a three-dose schedule was recommended in young females but for several years, WHO has recommended two doses in this age group. In April 2022 the WHO Strategic Advisory Group of Experts on Immunization (SAGE) evaluated the evidence of the effectiveness of a one-dose HPV vaccination schedule. The April 2022 SAGE recommendation is for a one- or two-dose schedule of HPV vaccine for girls aged 9–14 years. This schedule is also recommended for young women aged 15–20 years who missed out on receiving the vaccine at ages 9–14 years. Women older than 21 years old are recommended to receive two doses with a 6-month interval. Immunocompromised individuals,

including those with HIV, should receive three doses if feasible, and at least two doses, as there is limited efficacy data of a single dose in this group.<sup>6</sup>

This recommendation for a one- or two-dose schedule for young females should facilitate increasing vaccine supply and also reduce costs per individual vaccinated. As such, a one-dose schedule will allow more girls to be vaccinated, and provides opportunities for LMICs to move closer towards committed investments into HPV vaccination.<sup>24</sup> Ultimately, a single dose regimen could promote global equity, increase vaccine uptake in LMICs, as well as decrease rates of cervical cancer and related deaths. Furthermore, a single dose regimen could address some of the implementation challenges by reducing cost and operational difficulties related to multidose schedules.

**Table 1. Currently available HPV vaccines, HPV types and recommended dosage**<sup>33</sup>

Vaccine type	HPV types targeted#	Cross-protection against HPV types	Manufacturer	WHO prequalification
Bivalent (Cervarix)	HPV16 and HPV18	31, 33 and 45*	GlaxoSmithKline	2009
Bivalent (Cecolin) (currently licensed in China only)	HPV16 and HPV18	31, 33 and 45*	Innovax, Xiamen, Fujian province, People's Republic of China	Under review
Quadrivalent (Gardasil)	HPV6, 11, 16 and 18	31, 33 and 45*	Merck	2009
Nonavalent (Gardasil 9)	HPV6, 11, 16, 18, 31, 33, 45, 52 and 58		Merck	2018

#Source: HPV. WHO position paper, May 2017.

\*Source: Gavi HPV vaccine characteristics document 2020 and Cecolin insert.

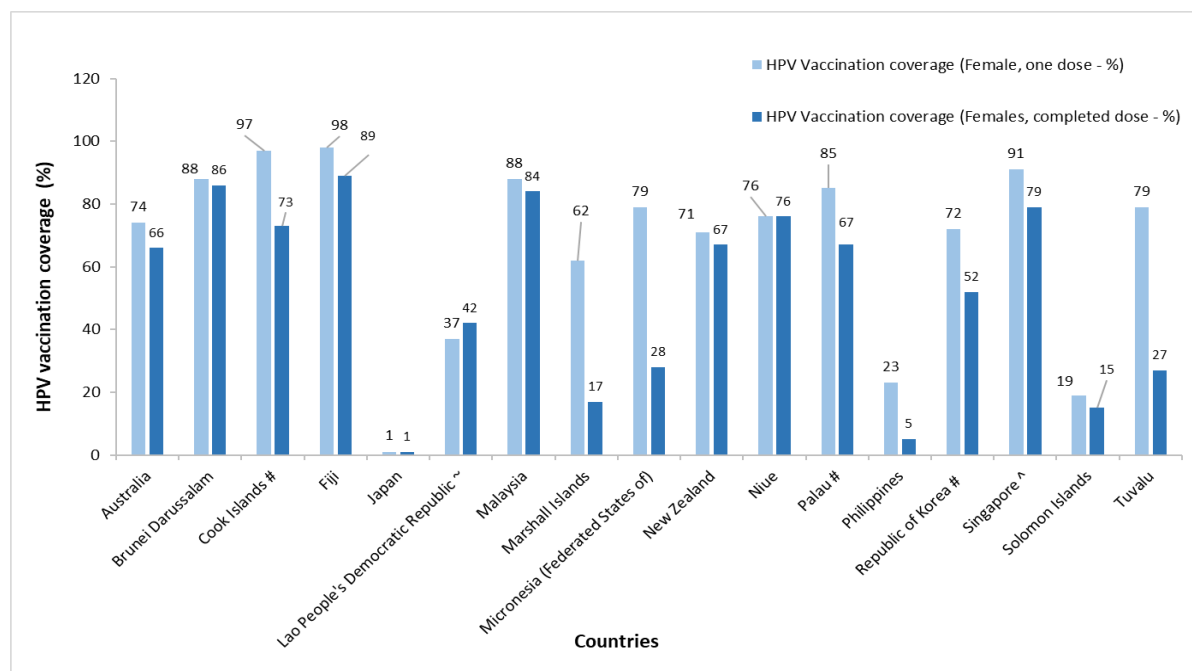
## 2.2 Current status of HPV vaccination in the Western Pacific Region

Reports from Member States in the Western Pacific indicate that the Region is lagging behind targeted HPV vaccine coverage.<sup>28</sup> Of 37 countries and areas in the Western Pacific Region, only 27 (73%) have regularly reported their immunization data to the WHO immunization data portal. Among those 27 countries, only 17 (46% of the 37 countries and areas in the Region) have a national HPV vaccination programme and have reported data: Australia, Brunei Darussalam, Cook Islands, Fiji, Japan, the Lao People's Democratic Republic, Malaysia, the Marshall Islands, the Federated States of Micronesia, New Zealand, Niue, Palau, the Philippines, the Republic of Korea, Singapore, Solomon Islands and Tuvalu.<sup>34</sup>

Fig. 5 presents the HPV vaccination coverage among girls in countries that provided a self-assessment report to the WHO Immunization data portal in 2020. The 2020 data may reflect the impact of COVID-19 on vaccination programmes, which previously may have achieved higher coverage.

Annex

Fig. 5. HPV vaccination programme coverage among girls based on countries' self-reported data (2020)



Data source: HPV vaccination coverage, 2020, WHO Immunization data portal; For countries without 2020 data, we used data from the most recent years using symbols as following: (\*) 2018 data; (#) 2019 data; (~) 2021 data; ^ School Health Service/Health Promotion Board, 2021, Singapore

Ten countries (27% of total 37 Western Pacific Region countries and areas) have yet to introduce HPV vaccine into their national immunization programme and data on HPV vaccination coverage for these countries are therefore unavailable. They are Cambodia, China, Kiribati, Mongolia, Nauru, Papua New Guinea, Samoa, Tonga, Vanuatu and Viet Nam.

Ten other countries and areas are currently not included in the WHO immunization data portal. They are American Samoa, French Polynesia, Guam, Hong Kong SAR (China), Macao SAR (China), New Caledonia, the Commonwealth of the Northern Mariana Islands, the Pitcairn Islands, Tokelau, and Wallis and Futuna.<sup>34</sup> However, it is understood that HPV vaccination is currently available in a number of these countries and areas, including Guam, the Commonwealth of the Northern Mariana Islands, Hong Kong SAR (China) and Macao SAR (China).

Among the 27 countries that have reported to the WHO Immunization data portal, five (19%) have a mature HPV vaccination programme established between 2007 and 2010, with high coverage for both first dose and completed doses. They are Australia, Brunei Darussalam, Malaysia, New Zealand, Palau and Singapore. Another seven countries have a national HPV vaccination programme that was established between 2011 and 2016 and have achieved a stable first-dose coverage, except for a few countries impacted by vaccine hesitancy. They are Brunei Darussalam, Cook Islands, Fiji, Japan, the Marshall Islands, the Federated States of Micronesia and the Republic of Korea.

A further five countries – the Lao People's Democratic Republic, Niue, the Philippines, Solomon Islands and Vanuatu – have introduced HPV vaccine into their national immunization programme between 2016 and 2021 but require further efforts to scale up.<sup>28</sup> A few others – Cambodia, China, Papua New Guinea, Mongolia and Viet Nam – have HPV demonstration projects that have been successfully

evaluated with useful lessons learnt, but ongoing challenges, such as affordable vaccine prices, long-term sustainability of vaccine roll-out and logistics,<sup>35</sup> have precluded the introduction of vaccine programmes in these countries.

Recognizing that countries are at different stages of HPV vaccine programme implementation due to a range of factors, including vaccine supply and costs, is imperative as it will support setting realistic timeframes and staggered targets as indicators of success. This is reflected in the adaptable and scalable actions proposed in this regional Strategic Framework.

### **2.3 Accelerating HPV vaccine coverage**

Evidence supports a school-based approach to HPV vaccine delivery as a means by which both coverage and equity can be achieved.<sup>36</sup> However, other innovative mechanisms of delivery can also be implemented. Alternative pathways used during COVID-19 may be considered, recognizing that significant numbers of girls in the vaccine age range are not in school in some settings. Countries and diverse settings within countries should consider other innovations, such as involving the primary care and pharmacy sectors and multipurpose health services.

HPV vaccination programmes are also recognized as a potential way to concurrently deliver health interventions to adolescents, who can be difficult to reach, particularly in low-income countries. *Working together*, the 2018 WHO integration resource guide for immunization, describes interventions that could be paired with HPV vaccination, including vision screening, iron and folic acid supplementation, sexual and reproductive health education, and the potential co-administration of other vaccines.<sup>37</sup>

### **2.4 Managing vaccine procurement and shortages**

Due to a sharp increase in demand, there have been continuing supply constraints of HPV vaccines in recent years, which have particularly affected LMIC. This led to the adjustment of introduction plans, especially in Gavi-supported countries, and to the issuing of adapted global policy recommendations. As a result of this proactive management of HPV vaccine demand, along with declines in immunization coverage due to the COVID-19 pandemic and increases in available HPV vaccine supply (primarily from one of the existing manufacturers), the supply–demand balance has significantly improved. Starting from 2022, the global supply is expected to be sufficient to meet base demand for a two-dose routine programme targeting girls, inclusive of multi-age catch-up campaigns. Given limited buffers, for the next two to three years careful phasing of multi-age catch-up campaigns and country willingness to use any of the available HPV vaccines will be necessary conditions to ensure all countries can access the supply required to achieve the primary goals of the HPV vaccination programme. The potential widespread adoption of a one-dose schedule would lead to higher supply flexibility in the short term. In the midterm, it could result either in expansion of the HPV programmes (that is, boys or older age cohorts) or the rapid reduction in programmatic dose requirements.

The main source of financing for HPV vaccination programmes in high-income countries is government, whereas in LMICs it is typically international donors such as Gavi and ad hoc pharmaceutical company donations. Key barriers that prevent many middle-income countries introducing HPV vaccination into their national immunization programmes include limited sources of sustainable financing and operations after Gavi's support stage, the price of vaccines, lack of political will, and restrictive procurement policies and regulations.<sup>38</sup>

## **Annex**

A recent systematic review reported cost as a major barrier to vaccine uptake, especially where it was not covered by national insurance programmes and patients were required to pay out of pocket.<sup>39,40</sup> Previous studies have shown that the highest HPV vaccination coverage rates are observed in countries where vaccines are funded from the national budget.<sup>41</sup>

Gavi has developed a standardized approach to post-transition support for former Gavi-eligible countries and is exploring extending this approach to middle-income countries that were never eligible for Gavi support.<sup>42</sup> Key elements to address include: advocacy and building political will; targeted technical assistance; and innovative financing facilities for pooled procurement.<sup>42</sup> Advocacy efforts should focus on developing and sharing information on the value of HPV vaccination, including return on investment and detailed budget projections for sustained delivery. This can inform and support bringing together key partners to engage with country leadership to influence decision-making towards investing in sustainable immunization programmes.

Gavi supported countries who have exceeded the support threshold or are expected to have done so by 2020 must consider creating a fiscal space for increasing the overall health budgets, which could be financed by economic growth, strengthened tax administration or efficiency gains. Following their transition out of Gavi support, governments could face large increases in vaccine prices, which could threaten the sustainability of immunization programmes. To mitigate this risk, Gavi gives governments the opportunity in the tendering process for Gavi-supported countries for five years after Gavi's financial support ends. This helps ensure price continuity in the medium term. Details on this can be found on <https://www.gavi.org/sites/default/files/document/gavi-eligibility-and-transition-policy.pdf>.

For more on sustainable financing, please refer to Chapter 6.

## **2.5 Strategic and interim action recommendations**

### **Current situation**

The situation varies widely in the Region, from countries with well-established vaccine programmes to countries with no experience of HPV vaccination delivery. Tailored, incremental approaches to meeting the 90% vaccine coverage target over the short, medium and long term will be pivotal to optimal roll-out of the global elimination strategy.

### **Strategic actions to meet the WHO vaccination targets**

- Integrate HPV vaccination into national immunization programmes and/or national cancer control programmes as a permanent pillar of such programmes.
- Build strong linkages between multiple sectors, including government, health system, education system, social welfare services and community groups, from commencement and establishment to long-term maintenance of HPV immunization programmes.
- From programme inception, build immunization registries in parallel with vaccine roll-out to collect and monitor population data and integrate over time with screening registries as well as incorporate tailored, evolving communication strategies into all components of vaccine roll-out, building community-wide awareness for the benefits of HPV vaccination.
- From programme inception (see the Advocacy and Financing sections), highlight the strong long-term economic case for investing in HPV vaccination and develop tailored economic

assessments that equip countries for appropriate pricing negotiations to ensure affordability of vaccines.

- Consider male vaccination as part of long-term planning, taking into account the case for incremental and cost-effective added herd immunity benefits if female vaccination coverage is limited and affordability and supply issues.

#### **Interim actions to build capacity incrementally**

- Tailor HPV vaccination roll-out plans for specific settings, integrating targeted technical advice with in-country expertise on best practice for optimal short-term vaccine outcomes.
- Adapt and tailor policy and practice advice, guidance notes and toolkits (see section 4.6 WHO Support section) that set out specific actions to deliver optimal HPV vaccine outcomes in varying settings.
- Consider one-dose vaccination in specific settings in line with WHO guidance to increase initial vaccine coverage across and within countries that could benefit.
- Adapt WHO advice to strengthen the economic case for accelerated HPV vaccine roll-out and incorporate into advocacy tools (see Advocacy and Financing sections).
- Explore opportunities to leverage vaccine infrastructure and resources that were fast-tracked to deliver COVID-19 vaccines, as pathways to accelerated HPV vaccine delivery.
- Explore innovative approaches to vaccine financing, including public–private partnerships and philanthropy, leveraging WHO advice on community-wide benefits.
- Drawing on WHO technical advice and support, establish a framework to monitor all components of vaccination roll-out, including media coverage and public discourse, to develop and adapt resources for addressing barriers such as vaccine hesitancy and misinformation and for promoting community-wide benefits.
- Vaccinate young females as the initial priority as this is population accounts for the large majority of HPV-related disease.

Annex

### 3. Secondary prevention through cervical screening and early treatment of precancerous lesions



Cervical screening, coupled with effective treatment of precancerous lesions, is an evidence-based approach to reducing rates of incident invasive cervical cancer, and reducing rates of cervical cancer death, in adult women (who may already have been exposed to HPV). The WHO *Global strategy to accelerate the elimination of cervical cancer as a public health problem* specifies that by 2030, a minimum 70% of women are screened with a high-performance test (primary HPV testing) by 35 years of age, and again by 45 years of age. Screening complements HPV vaccination of young girls as it protects a different cohort of females – those who are now adults.

Screening asymptomatic women using primary HPV testing enables early treatment of precancerous disease of the cervix to prevent later disease including cancer. Early treatment of the cervix for all screen-positive women in point-of-care screen-and-treat programmes, or treatment of precancerous lesions following triage with partial genotyping, cytology, VIA and/or colposcopy, is a cornerstone of cervical cancer prevention. It should also be noted that screening also has a second beneficial effect by to downstaging (detecting at an earlier stage) prevalent invasive cervical cancers.

#### 3.1 Cervical screening tests

Screening tests for cervical cancer prevention have evolved with the emergence of new knowledge and understanding of the pathophysiology of cervical cancer and its association with HPV infection.

##### HPV testing

HPV testing identifies up to 14 types of high-risk carcinogenic HPV genotypes. Primary HPV-based screening has a high negative predictive value for high-grade cervical intra-epithelial neoplasia, also known as CIN.<sup>43</sup> The WHO strongly recommends using HPV testing in all settings as the primary screening test among both the general population of women and women living with HIV. HPV tests must be suitable for screening and clinically validated, and pre-qualified by WHO.

##### Cervical cytology

Cervical cytology (also known as a Pap smear) has been the traditional method employed within cervical screening programmes.<sup>12</sup> When a result is positive, the diagnosis is confirmed by colposcopy,



and appropriate treatment is informed by biopsy of suspicious lesions for histological diagnosis.<sup>12</sup> Although the burden of cancer has been significantly reduced in many countries with effective cytology-based screening and treatment programmes in place, this method has typically not been as successful in LMIC countries. Countries currently relying on cytology-based screening should continue to provide quality-assured cytology screening while planning a transition to HPV-based screening.<sup>12</sup>

### **Visual inspection with acetic acid (VIA)**

Unfortunately, updated evidence suggests that VIA has lower reproducibility and accuracy and that there is a lack of evidence supporting effectiveness in cervical cancer incidence reductions, although there is evidence to support mortality reductions via some effect to downstaging cervical cancer.<sup>44</sup>

For countries that currently employ VIA for primary cervical screening, WHO recommends rapid transition to HPV testing because of challenges with quality assurance.<sup>12</sup> Expertise in visualization of the cervix gained under VIA-based programmes will support this within screen-and-treat programmes. Through reorientation in clinical training and operating procedures, staff would be readily able to conduct a visualization to assess eligibility for treatment, also known as a VAT, which is a prerequisite to thermal ablation. Innovations in artificial intelligence and machine-based learning also mean that new, highly accurate visualization techniques in advanced development may have an important role in future screen-triage-and-treat programmes.

Key steps for the transition from VIA-based screening to HPV screening include stakeholder engagement, mapping and building capacity, developing screening policies and guidelines, and designing the service delivery model.<sup>45</sup>

## **3.2 WHO recommendations for cervical screening**

The WHO *guideline* for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention (second edition) recommends transition to screening using primary HPV-based screening in all settings. In settings where cytology programmes are established and quality assured, WHO recommends they continue until HPV tests are established. For settings in which VIA is the primary approach, WHO recommends a more rapid transition to HPV testing, due to inherent issues with ensuring quality.

While screening is beneficial even if achievable only twice in a lifetime, the WHO guidelines state that it should start at age 30 years for HIV-negative women, and 25 years for women living with HIV, and continue until 50 years. WHO recommends a screening interval of five to 10 years for the general population and three to five years for women living with HIV.

WHO supports both self-collection and health-care provider-collection approaches for HPV-based screening.

Annex

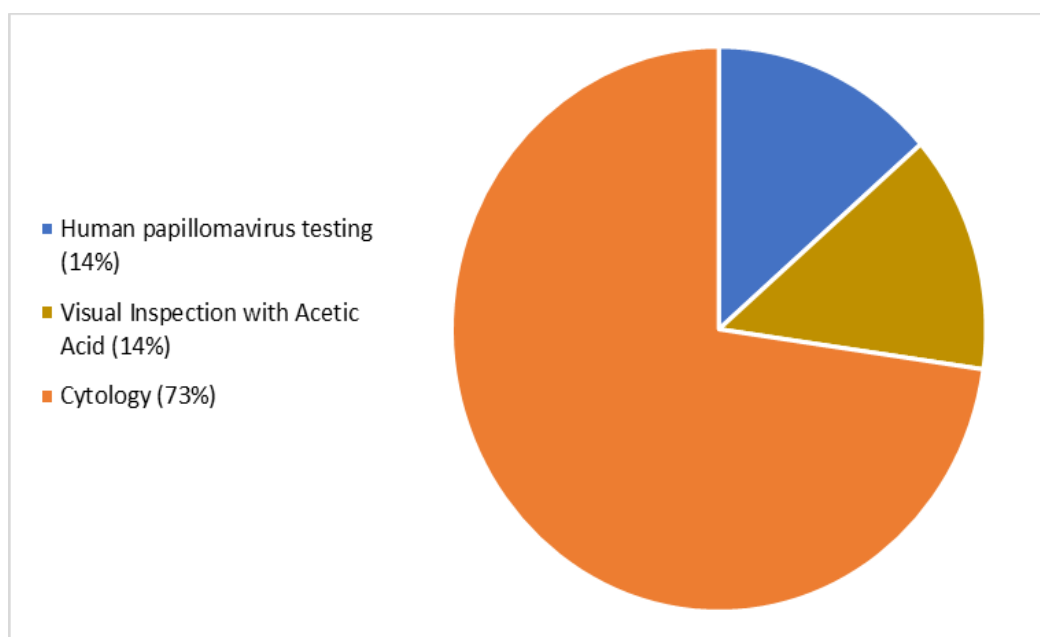
**Box 3. Self-collection of HPV samples<sup>46</sup>**

A recent systematic review and meta-analysis suggests that HPV DNA testing of a self-collected sample is as accurate as HPV testing of a clinician-collected sample for detecting high-grade precancerous lesions, when using polymerase chain reaction (PCR) testing, rather than signal-amplified tests.<sup>47</sup> HPV DNA testing with PCR, rather than HPV mRNA testing, should be used.<sup>46</sup> Self-collection is highly acceptable to participants and health-care providers, with a 2018 meta-analysis showing that a direct offer of self-sampling devices to women in under-screened communities engendered a high participation rate (> 75%) and is generally more effective than sending invitations<sup>51</sup>. Universal self-collection as a choice for all participants in the National Cervical Screening Program was introduced in Australia on 1 July 2022 and is offered within major screening implementation projects in Malaysia, Papua New Guinea and Tuvalu. The majority of screened women, as for clinician-collected testing, test negative for oncogenic HPV and can safely be discharged to routine screening at the recommended interval.

**3.3 Current status of cervical screening in Western Pacific Region**

Recent WHO cervical cancer country profiles indicate that 22 of the 37 countries and areas in the Western Pacific Region have national screening programmes, with 16 (73%) having a cytology programme and three (14%) a VIA programme. Only three countries (14%) have transitioned to HPV testing (Australia, Singapore and Vanuatu). Papua New Guinea and Malaysia are phasing in programmes by 2022 and 2024, respectively (Fig. 6). New Zealand will also transition to HPV testing in 2023. Five countries (the Lao People’s Democratic Republic, Nauru, Papua New Guinea, Samoa and Solomon Islands) indicated that they did not have national cervical screening programmes. There were 10 other countries/areas for which no data were reported within the WHO cervical cancer country profiles; however, it is understood that cervical screening programmes have been implemented in a number of countries/areas, including American Samoa, Guam and Hong Kong SAR (China).

**Fig. 6. Primary cervical screening strategy used in national programmes across the Western Pacific Region (2019)**



*Note:* Countries with primary HPV screening: Australia, Singapore, Vanuatu; phased introduction planned in Papua New Guinea, Malaysia, New Zealand within the next 12–18 months.

Countries with VIA screening: Cambodia, the Federated States of Micronesia, the Philippines.

Countries with cytology screening: Brunei Darussalam, China, Cook Islands, Fiji, Japan, Kiribati, Malaysia, the Marshall Islands, New Zealand, Mongolia, Palau, the Republic of Korea, Tonga, Tuvalu and Viet Nam.

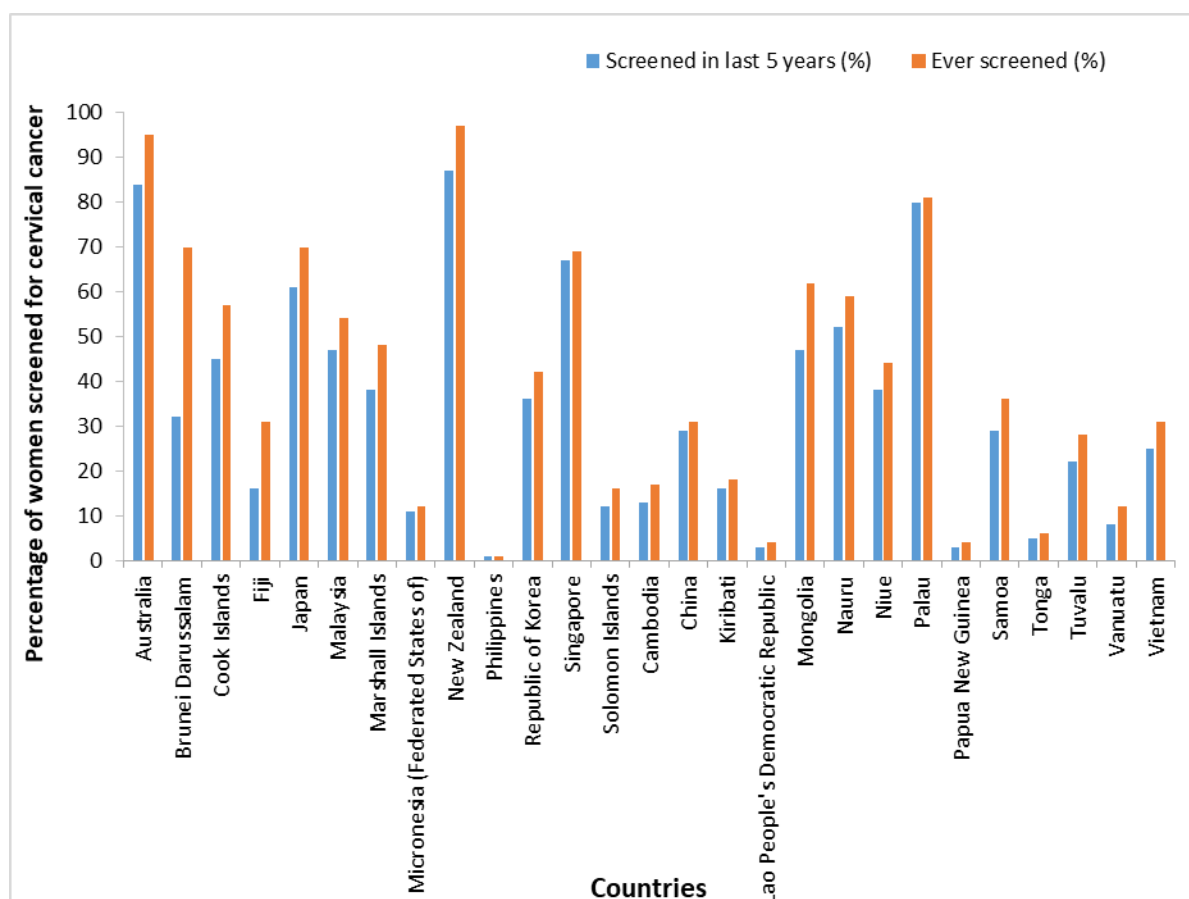
\*Data not available in WHO cervical cancer profiles for America Samoa, French Polynesia, Guam, Hong Kong SAR (China), Macao SAR (China), New Caledonia, Commonwealth of the Northern Mariana Islands, the Pitcairn Islands, Tokelau, and Wallis and Futuna (10 countries/territories).

Data source: Data on country-specific cervical screening tests were extracted from WHO cervical cancer country profiles<sup>48</sup>

Reported participation in cervical screening varies markedly across the Western Pacific Region (Fig. 7). Among the 37 Western Pacific Region countries and areas, only five (14%; Australia, Japan, New Zealand, Palau and Singapore) have met, or are close to achieving, the 70% target of women aged 30–45 years screened in the last five years; 13 (35%) reported coverage of 20–60%; while nine (24%) reported coverage of less than 20%. No data are available for 10 countries (27%).

In a review of 17 middle-income countries in Western Pacific Region, 15 had screening recommendations in place which were based either on cytology (n=10) or VIA (n=5) with no indication of a transition to primary HPV testing<sup>28</sup>.

**Fig. 7. Percentage of women 30 to 45 years of age participating in cervical screening in the Western Pacific Region (2019)**



Data source: Reported cervical screening coverage data were extracted from WHO cervical cancer country profiles<sup>48</sup>

## Annex

### Subnational and pilot HPV-based screening programmes and projects in the Region

Within the Western Pacific Region, there is implementation experience and evidence emerging to support the feasibility of implementing various HPV screening models of delivery and care, including in settings with limited resources. For example, a number of countries in the Western Pacific Region have conducted HPV-based screening pilots or subnational demonstration projects, combined with approaches to treatment of precancerous lesions. In China, Malaysia, Papua New Guinea and Vanuatu, for example, these projects have led to plans to phase in and scale up HPV-based screening at a national level.

#### Box 4. Case study: Papua New Guinea

Papua New Guinea has the highest cervical cancer incidence and mortality rates in the Asia Pacific region, with an estimated incidence five times that of Australia (ASR of 29.4 vs 6.0/10000), and mortality 12 times greater (19.8 vs 1.7/100 000).<sup>49</sup>

In 1999, a cytology-based screening initiative was established by an Australian-supported charity (the *MeriPath* programme) across more than 30 health facilities in 16 provinces.<sup>50</sup> However, the programme reached less than 4% of the target age-eligible population over 10 years, and because specimens were sent to Australia for testing, more than half of those found to have high-grade pre-cancer disease were lost to follow-up because of the delay between testing and recall.

Recognizing these constraints, a Ministerial Task Force on Cervical Cancer called for locally appropriate models of cervical screening and treatment to be evaluated in Papua New Guinea.<sup>51</sup> The Task Force favoured the screen-and-treat approach endorsed at that time by WHO for use in LMICs, based on visualization of the cervix after acetic acid (VIA), followed by ablative cervical cryotherapy. VIA was subsequently introduced and evaluated in two provincial-level clinical settings in Papua New Guinea but found to have poor performance for primary cervical screening, both alone<sup>52-54</sup> and in combination with HPV-DNA testing, reflecting findings in other LMICs.<sup>55-57</sup>

Papua New Guinea then conducted the first field trials in any setting to evaluate the point-of-care HPV screen-and-treat approach, involving more than 5000 women.<sup>52,58-60</sup> This approach integrated point-of-care HPV-DNA testing of self-collected vaginal specimens followed by same-day thermal ablation or gynaecological referral for women who test HPV positive. It had excellent clinical performance for same-day detection and treatment of cervical precancer; was highly acceptable to women, their families and health workers; could be delivered by trained nursing staff in routine primary health facilities; and was highly cost-effective and efficient compared to VIA-based primary screening.<sup>52,58,60</sup>

Following findings from these field trials, and endorsement by WHO of the HPV screen-and-treat approach for primary cervical screening in 2021, the Papua New Guinea National Department of Health and National Technical Working Group on Cervical Cancer recommended the introduction and national scale-up of the HPV screen-and-treat approach in December 2021. In 2022, major philanthropic, industry partner and donor support is driving the strengthening and expansion of the HPV screen-and-treat approach in Western Highlands<sup>61</sup>, Madang<sup>62</sup> and in neighbouring Vanuatu.<sup>61</sup> Significant new and sustained investment will, however, be required to advance nationwide scale up in Papua New Guinea to ensure no woman is left behind as the global elimination agenda advances.

### **Box 5. Case study: Programme ROSE in Malaysia – combining HPV screening with a digital health platform**

In Malaysia – an upper-middle-income country – cervical cancer is the third most common cancer in women of any age, and the second most common cancer among women 15 to 44 years of age. HPV vaccination was included in the national routine immunization programme in 2010; however, routine cervical screening reaches less than one quarter of eligible women despite awareness campaigns and broadly accessible health infrastructure.

The programme Removing Obstacles to Cervical Screening (ROSE), started as a pilot project in Kuala Lumpur, a joint project led by the University of Malaya in partnership with the Australian Centre for the Prevention of Cervical Cancer.\* The research team adopted a design-thinking approach and spent time in clinics to understand the barriers around screening within the Malaysian context, both in terms of daily challenges for providers and the concerns of women attending clinics. To overcome these barriers, ROSE adopted self-collected HPV sampling in the primary care setting, with follow-up of screened positive women in a tertiary hospital setting. This was coupled with a digital health platform, canSCREEN, that allows women to register and receive results and follow-up communications securely and conveniently via their mobile phones.<sup>63</sup>

This not only ensures test results are known to the patient, but also enables recall as it allows for follow-up and testing at five-year intervals. This is essentially a screening register. With the success of the pilot ROSE, Programme ROSE was launched in 2019. To date, more than 20 000 women have been screened since the initial launch, and the programme managers are now scaling this beyond Klang Valley and have travelled to remote communities to screen those in, for example, East Malaysia. Among 1000 participants surveyed, 97% would recommend the programme, with its speed, simplicity, and use of self-collection and results available via phone all cited as positives. Some 99% reported a preference for the self-collected HPV test versus a conventional Pap smear.

Importantly, this programme was designed to strategically use existing government clinic infrastructure without disrupting existing services or requiring further investment in infrastructure. The pilot project was funded via crowdsourcing, with individual and corporate donors providing money, test kits donated by manufacturers and expertise provided pro bono, and the ongoing programme runs on charitable funding from individual and corporate donors. Possibilities for sustainable programme funding may rely on adopting a social enterprise model, for example selling HPV testing services to private clinics, as well as further collaboration with government clinics across the country.<sup>64</sup> The ROSE programme is an example of success collaboration between aligned groups from the civil society sector from different Member States in the Western Pacific Region.

\*previously known as VCS Foundation

## **3.4 Screening and treatment of precancerous lesions**

WHO recommends that primary cervical screening and precancer treatment be fully integrated and, where possible, provided as a same-day service to maximize impact and minimize loss to follow-up.<sup>12</sup> Two overarching strategies are recommended: HPV DNA detection in a screen-and-treat approach; and HPV DNA detection in a screen-triage-and-treat approach. WHO recommends that primary cervical screening and precancer treatment be fully integrated and, where possible, provided as a same-day service to maximize impact and minimize loss to follow-up.<sup>12</sup>

### **Screen-and-treat**

Treatment in the screen-and-treat approach is based on a positive HPV DNA test result alone: there is no need for a secondary screening test or histopathological confirmation. When the primary test is positive and the woman is assessed as eligible for ablative treatment, ideally treatment should occur

## **Annex**

immediately after informed consent at the same visit (single-visit approach). Ablation can be applied after a positive HPV test, following visual inspection of the cervix to confirm the appropriateness of ablative treatment and exclude the presence of invasive cancer. For countries transitioning to HPV screening now or in the future, consideration of the screen-and-treat approach for the general population is highly recommended to maximize the number of women treated for precancer and minimize loss to follow-up.

If a woman is ineligible for ablative treatment, WHO recommends excisional treatment, for example, large-loop excision of the transformation zone (LLETZ). If excisional treatment is available, this would ideally be provided on the same day at the same screening clinic or health facility. If not available onsite, women should be referred for excisional treatment.

### **Screen-triage-and-treat**

In the screen-triage-and-treat approach, the decision to treat is based on a positive primary screening test followed by a positive second test (a “triage” test), with or without histological diagnosis. WHO recommends partial HPV genotyping, colposcopy, VIA or cytology as a triage test, depending on country experience and established programmes. WHO also recommends that the screen-triage-and-treat approach be considered among women living with HIV, given the higher prevalence of HPV infection in this population, and greater risk of cervical precancer and cancer compared with the general population.

Given the younger age of screening initiation and older age at first childbirth, standard practice in high-income countries is to obtain a histologic diagnosis prior to treatment in order to reduce obstetric complications resulting from excisional procedures. LLETZ is the most common procedure and can be performed in clinic with topical anaesthesia. Specimens should be placed in appropriate preservatives for transport to pathology laboratories for processing and analysis as quickly as possible with prompt return of histopathology results to the gynaecologist. Training to perform LLETZ should be part of the standard training curriculum for obstetrician-gynaecologists. Some health systems may also find it appropriate to train gynaecologic nurse-practitioners and/or nurse-midwives in these techniques.

#### **Box 6. Acceptability of screen-and-treat approaches**

It is recognized that the cervical screening and treatment pathway continuum, and in particular a diagnosis of invasive cancer, can be associated with distress, anxiety and exacerbation of pre-existing mental health problems. Experience reported from Papua New Guinea suggests that any anxiety among women participating in a point-of-care screen-and-treat programme was short-lived for the vast majority of screening participants. Integration of services to support the mental health needs of women across the care continuum is essential, both in community as well as hospital settings, particularly for those diagnosed with invasive cancer.

**Box 7. Progressive realization for implementing screen-and-treat programmes**

- Where prioritization is necessary, for the general population not living with HIV, it is recommended that screen-and-treat approaches should screen women between ages 30 and 49 years a minimum of twice in a lifetime – 10 years apart.
- More intensive screening should be prioritized first for WLHIV. For this group, priority should be given to women aged 25–49 every three to five years, using test, triage and treat strategies.
- Building on this for the general population, and as resources permit, consideration could be given to reducing the screening interval to no more often than five years, and adding triage testing to manage HPV-positive women.

### 3.5 Strategic and interim action recommendations

#### Current situation

The greatest and most rapidly achieved benefits in reducing invasive cervical cancer incidence rates and reducing morbidity in the short term in relation to the *Global strategy to accelerate the elimination of cervical cancer as a public health problem* are in scaling up secondary prevention through screening. However, current capacity to effectively implement cervical screening in a programmatic setting is low and varies widely, with only 11% of countries in the Region identifying as having the infrastructure to achieve 70% screening coverage in the foreseeable future. Tailored, incremental approaches will be vital to optimize the potential to save lives through screening, as capacity is built long term.

#### Strategic actions to meet the WHO screening targets

- Cervical cancer screening strategies should be tailored to country needs, and screening should be integrated into national cancer control programmes and/or national women's health programmes, ensuring its roll-out is in accordance with WHO-endorsed principles and guidelines for cervical cancer screening and precancer treatment.
- Develop tailored economic assessment equipping countries for appropriate pricing negotiations to ensure affordability of HPV tests and thermal ablation and other equipment.
- From inception, build screening registries in parallel with screening roll-out, to collect and monitor population data and integrate over time with population-based cancer registries to ensure appropriate surveillance of screening delivery.

#### Interim actions to build screening capacity incrementally

- Actions must be taken to ensure screening is rolled out in parallel with the provision of clinical services for managing HPV infection and precancerous conditions, and appropriate referral to cancer treatment services (see Treatment and Health System Capacity-building sections).
- Plans for screening roll-out must ensure supply and demand are developed and promoted in steps; where screening is promoted, services must be available; where services have been introduced or scaled up, they must be fully utilized. Where Pap-test cytology or VIA screening programmes are in place, Member States should develop transition plans for moving towards HPV-based screening, leveraging existing clinical and laboratory-based skills and

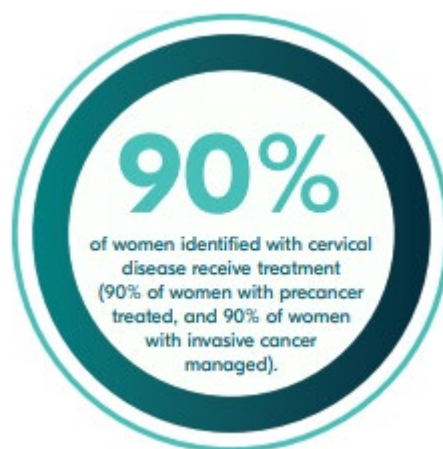
**Annex**

infrastructure. In the case of VIA, transition should be implemented as soon as feasible and practical.

- Clarity on screening parameters, including target age range, interval and triage approach (if any), should be established and communicated in settings where incremental or tailored approaches to inviting under-screened populations are employed.
- Self-collection of HPV tests should be encouraged and embedded in some settings to enhance participation among under-screened populations and enable workforce task shifting to focus on women with HPV detected.
- Screening should be conducted in line with the WHO screening guidelines that will be regularly updated to incorporate evidence in emerging screening and triage technologies. Within this context, innovative approaches to reaching marginalized populations are encouraged, within the context of implementation research, evaluation and dissemination of the findings.
- Expanded cervical cancer screening services should be integrated with sexually transmitted infections (STIs) and HIV management clinics, sexual and reproductive health, and/or maternal and child health clinics, where appropriate. For the community not living with HIV, these services will be integrated into PHC; for WLHIV consideration should be taken to integrate with HIV care.
- Task sharing/shifting for screening and treatment of precancers through upskilling and capacity-building of nurses and midwives should be implemented in specific settings.
- Capacity-building partnerships should be established to meet local needs for colposcopy and LLETZ procedures where local services are not available.
- Health professional training should be tailored and adaptable for multiple settings, ranging from tertiary facilities to outreach multipurpose health services with relevant accreditation as part of continued professional development.



## 4. Treatment of invasive cervical cancer



The third pillar of the WHO the *Global strategy to accelerate the elimination of cervical cancer as a public health problem* involves scaling up access to cancer treatment services, including diagnostic pathology, basic surgical services, radiotherapy, chemotherapy palliative care and supportive care services. On current evidence, reaching the 90% treatment target in the Western Pacific Region is the most challenging of the three pillars of the Global Strategy due to the complexities of treatment, limited capacity and differing health systems across the Region. However, achieving the 2030 target of 90% access to precancer and cancer treatment services for women that require it is critical to realizing a one-third reduction in rates of cervical cancer mortality by 2030, and thus critical to the realization of the SDGs.<sup>4</sup>

### 4.1 WHO recommendations for treatment

Progress in the third treatment pillar of the Global Strategy can be the most challenging to achieve, especially in resource-constrained settings. The WHO goal of access to treatment for 90% of women should be qualified as guideline-concordant treatment. This would entail that each country have clinical treatment guidelines,<sup>25</sup> based on existing evidence, and adapted to the clinical, geographic and economic situations with some pre-established minimum treatment services.

### 4.2 Cervical cancer diagnosis and staging

The evaluation of cervical cancer requires an appropriate biopsy and accurate pathological diagnosis, an assessment of the stage of disease, and consideration of the options available to treat each stage. There is significant variation in diagnostic capacity across the Western Pacific Region, with steps needed to ensure patient access to a facility where a biopsy can be obtained by a trained provider followed by analytical laboratory capacity and a systems-based approach to communicate and monitor the results.

Histologic diagnosis is essential to enable appropriate treatment and should, as a minimum, include haematoxylin and eosin staining and evaluation. In many settings, this will require an integrated network of laboratories such that community-based specimens can be processed at district- and higher-level laboratories.<sup>65</sup> Appropriate pathological assessment should be integrated with a population-based

## **Annex**

cancer registry. Where pathology equipment and expertise are lacking, support through the development of local capacity for specimen processing coupled with telepathology may be useful.

Cervical cancer remains a clinically staged disease, with International Federation of Gynaecology and Obstetrics 2018 staging allowing for the use of imaging to guide staging, where available. Clinical evaluation and assigning of a presumptive stage is critical to guide treatment, particularly in settings where there is no access to imaging. Clinical evaluation includes systematic examination for lymphadenopathy, and a speculum and vaginal exam to determine the size of tumour and an assessment of vaginal involvement, and a vaginal and rectal examination for assessment of parametrial invasion and rectal invasion. Bladder invasion can be assessed with cystoscopy where available. In instances where of no imaging is possible, a stage should be assigned based on clinical examination.

If imaging is available, a minimum assessment includes a chest X-ray. Where more comprehensive imaging is available, a computed tomography scan, also known as a CT scan, of the chest, abdomen and pelvis allows for assessment of disease outside of the clinical evaluation, particularly of pelvic and para-aortic lymphadenopathy. Where radiology expertise is not consistently available, teleradiology capacity should be developed. There is considerable variation across the Western Pacific Region in terms of access to CT scanning.

Patient management should be discussed in a tumour board. The use of tumour boards or multidisciplinary team meetings in the evaluation of cervical cancer provide optimized evaluation and staging, as well as appropriate assigning of patients to the ideal treatment, and allows for education and professional development.<sup>66</sup>

### **4.3 Primary treatment modalities**

Treatment of cervical cancer depends on the stage of cancer and may involve surgery, radiation therapy and/or chemotherapy, often combined with palliative care for symptom control and psycho-social support. Follow-up during treatment is essential and can be supported through the development of registries. Where access to these treatments is extremely limited or non-existent due to equipment costs, training and workforce challenges, strategies are needed to enable access for all in need.

Progressive realization of treatment capacity across the board is required. Tailored and targeted approaches to building capacity will be crucial to achieving optimal treatment outcomes as the Global Strategy for elimination is implemented. In general terms, alongside infrastructure investments, strategic investment in training programmes is critical, and these should be enabled with clear linkages to health system improvement in the context of realizing UHC.

Patients with early-stage cancer (stages 1A1-IB2 and IIA1) are often treated with surgery as a primary treatment. Surgery could entail excisional cone biopsy or total hysterectomy in case of IA1 disease or a modified radical hysterectomy with lymph node dissection in patients with IA2 disease and beyond. Performance of a total hysterectomy may be included as part of training for both obstetrician/gynaecologists and general surgeons. However, a radical hysterectomy with lymph node dissection is more extensive and complicated surgery. If there are high-risk features noted during surgery, such as lymph node involvement, positive nodes or positive margins, adjuvant radiation or chemoradiation may be warranted.<sup>67</sup> Patients with locally advanced disease (IB3, IIA2 and IIB-IVA) are ideally treated with concurrent chemoradiation including brachytherapy.<sup>68</sup> Image-guided brachytherapy is the optimum modality<sup>69</sup> to achieve a high level of radiation doses to the cervix.<sup>69</sup>

Chemotherapy plays several roles in the treatment of cervical cancer. For primary treatment, when low-dose cisplatin is added to radiation therapy, a survival benefit is noted; chemo sensitization (adding chemotherapy to primary radiation therapy) is currently the standard of care when patients with more than local disease are not recommended to undergo primary curative surgery. Chemotherapy is also an option for the treatment of recurrent disseminated or metastatic cancer or for palliation of advanced disease. Responses to chemotherapy are short lived, however. The use of chemotherapy must be balanced against the cost of the chemotherapy, as well as the potential toxicity.

#### **Box 8. Models for overseas treatment for small Member States**

Overseas treatment will be an essential component of the third pillar of the cervical cancer elimination agenda for a significant proportion of the Western Pacific Region, particularly the Pacific island countries and areas (PICs), as an incremental step on the way to sustainable local service delivery. Two models currently exist: visiting specialist medical teams (VSMT) and overseas medical referral schemes (OMRS). A 2019 report by the Nossal Institute for Global Health, the Pacific Community and WHO demonstrated the critical role of these approaches in the management of NCDs.<sup>70</sup> In 2017, across 15 PICs, 2808 patients were referred for overseas treatment at an average cost of US\$ 23 089 per patient and a total cost of almost US\$ 65 million. In addition, around 200 VSMT-delivered services in the Region were supported by a range of organizations including NGOs, professional societies and governments.

Key challenges in the provision of these services include:

- demand for overseas treatment outstripping the capacity to fund these services with expenditures at a country level often constituting a significant proportion of health spending (51% Tuvalu for 1.5% of the population; 33% Nauru for 2.3% of the population);
- escalation of overall costs; and
- a lack of attention to monitoring of outcomes or assessment of service quality.

There is an opportunity to develop a PIC best-practice approach that supports local capacity-building. OMRS and VSMT are managed as stand-alone services with little coordination. A best-practice approach to OMRS and VSMT for the elimination of cervical cancer would include:

- creation or strengthening of a small number of treatment hubs for PICs to reduce the distance and cost of overseas travel and to serve as bases for VSMT;
- bilateral and multilateral cooperation across OMRS and VSMT aimed at supporting each country in achieving its elimination agenda, with consideration given to a coordinating mechanism to assist PICs in establishing fair and transparent services and affordable costs;
- local coordination with simplified access processes that provide timely access to OMRS with coordination of diagnosis, treatment planning and follow-up between local and overseas medical teams;
- provision of a mechanism to monitor and evaluate OMRS and VSMT programmes and their contribution to elimination;
- expansion of current within and cross-country training programmes to ensure appropriate multimodality care, for instance, the two-year sub-specialization programme run by the International Gynecologic Cancer Society (IGCS) could be expanded; and
- the provision of sustainable radiation and cytotoxic chemotherapy services in the long term.

Annex

#### 4.4 Symptom management and palliative care

The World Health Assembly has resolved that “palliative care is an essential responsibility or component of health systems”. Understood as the prevention and relief of suffering, palliative care is crucial for women with cervical cancer because of the associated suffering often is severe and complex. Palliative care is not an alternative to treatment and not just for patients near the end of life. Suffering may occur at any time in the course of cervical cancer, due either to the disease or the treatment, and palliative care often is needed from the time of diagnosis, even when the disease may be curable. It has been shown to improve the quality of life of cancer patients, provide financial risk protection to their families and, sometimes, to prolong life and to reduce costs to health-care systems.

Most patients in need of palliative care are at home, so most palliative care should be provided by primary care clinicians/nurses working at the district or community level and by community health workers who visit patients at home. With several hours of training, community health workers can serve as the eyes and ears of their supervising clinicians by recognizing and reporting inadequately controlled pain, serious social problems such as lack of food or transportation for cancer treatment, or improper use of medicines. The same community health workers also can educate their communities about HPV vaccination and screening, possibly give HPV vaccinations, help with the transport self-collected vaginal swabs for testing and help assure that patients adhere to treatment.

Palliative care, primary prevention, screening and treatment should be integrated with support through the development of national palliative care policies.

##### **Box 9. Case study: Strengthening training**

The International Gynecologic Cancer Society (IGCS) was created in 1985 to unite global cancer efforts for the prevention and treatment of gynaecologic cancers with the creation of 13 training sites in low-resource countries. Each training site includes gynaecologic oncology fellows-in-training, local country mentors and international mentors from high-resource countries. Training programmes include tumour boards with case presentation, lectures, and surgical training and mentoring. Two of the current 13 training sites are located in the Western Pacific Region.

Da Nang Oncology Hospital in Da Nang, Viet Nam was the first fellowship site for the IGCS Global Curriculum and Mentorship Programme. The international mentors for this site reside in Singapore and the United States of America. This site has graduated its first fellow, who has continued to train upcoming gynaecologic oncologists. In addition, there are currently two gynaecologic oncology fellows in training. A virtual tumour board model has been shown to improve diagnosis and treatment of gynaecologic cancer patients in low-resource settings without significantly delaying treatment. Additionally, tumour board discussions result in significant changes in clinical diagnosis, pathologic diagnosis and, in particular, treatment.

Another IGCS training site is situated in Fiji, which has a population of over 900 000 people. Fiji and other small island developing nations in Melanesia have among the highest incidence of cervical cancer and cervical cancer mortality (33.3 cancers per 100 000 females and a mortality of 20.7/100 000 females). At the start of this programme, there were no gynaecologic oncologists in Fiji. The international mentors for this programme are faculty from New Zealand.

## 4.5 Strategic and interim action recommendations

### Current situation

On current evidence, reaching the 90% treatment target in the Western Pacific Region is the most challenging of the three pillars of the Global Strategy for elimination, due to the complexities of treatment, limited capacity and differing health systems across the Region. Challenges range from suboptimal integration of limited screening infrastructure with referral for appropriate treatment, through to limited access to palliative care and pain management for people with advanced disease. Tailored and targeted approaches to building capacity will be crucial to achieving optimal treatment outcomes as the Global Strategy is implemented.

### Strategic actions to meet the WHO treatment targets long term

- Where cancer plans exist, or as they are developed, ensure cervical cancer is included. Consider positioning cervical cancer as the template for scaling up access to cancer treatment services more broadly in national plans.
- Foster an integrated approach to building treatment capacity, leveraging medium- and long-term cost benefits in the screening and treatment of precancers, and the identification of earlier stage invasive cancers in order to fund improved cancer treatment services.
- Establish a platform and community of practice for dissemination and local/regional adaptation of international treatment guidelines for invasive cervical cancer (see WHO Support, section 4.6) to inform best practices in cervical cancer treatment as progress towards UHC is realized.
- Take actions to ensure that immediate steps for reducing suffering are factored into all short-, medium- and long-term plans, such as urgent provision of pain medication.
- Embed strategic support and communications into long-term capacity-building of cervical cancer treatment, from planning through implementation in order to foster improved understanding of the benefits of treatment and the role of specific modalities, such as palliative care.

### Interim actions to build treatment capacity incrementally

- Recognize and act on the urgency of providing pain relief and symptom management as a priority in advancing UHC. Embed training in and understanding of palliative care in all health disciplines, including general practice and nursing.
- Adapt international best-practice guidelines to diverse settings and recognize the roles of various sectors, such as the importance of faith-based organizations in areas such as palliative and psychosocial care in specific countries.
- Consider the logistic requirements of clinical practice across the treatment spectrum, from triage to palliation and multiple related infrastructure requirements, including workforce, infrastructure and equipment.
- Conduct health system audits and gap analyses on cervical cancer treatment capacity developed for specific settings. Publish audit reports to inform the tailoring of technical advice on optimal ways to build treatment capacity aimed at reducing mortality, morbidity and improving treatment outcomes on a prioritized basis.
- Consideration could be given to early introduction of diagnostic services harnessing telepathology and teleradiology.
- Explore new intercountry opportunities to treat women with curative disease, including formal partnerships between Tier 1, 2 and 3 countries.

## Annex

### 4.6 WHO support for the three pillars

WHO can play a pivotal supporting role in supporting the three pillars of cervical cancer elimination – vaccination, screening and treatment – by promoting HPV vaccination roll-out, capacity-building for screening, and treatment in line with the Global Strategy for elimination, with a focus on optimal reduction in morbidity and mortality as UHC evolves. Key opportunities for WHO technical support and practical assistance include:

- Facilitate the design of innovative models that support vaccine affordability and provide technical advice on tailored clinical innovations such as one-dose vaccination in specific settings.
- Facilitate multi-country procurement of HPV vaccines and HPV test consumables and equipment, particularly for smaller Member States.
- Develop a shared interactive online technical resource to complement the Strategic Framework, adaptable for varying settings and conditions, for scaling up vaccination coverage and uptake, cervical cancer screening and treatment (for all three pillars of elimination).
- As part of an interactive technical resource, develop accessible and adaptable toolkits, guidance notes and clinical guidelines complementary to the Strategic Framework to inform tailored approaches to optimal, incremental vaccine roll-out, cervical cancer screening and treatment.
- Establish platforms for sharing case studies to highlight progress, best-practice models and outcomes in varying settings in order to support advocacy and inform innovative approaches to vaccine roll-out, cervical cancer screening and treatment.
- Establish a platform for integrating local knowledge with technical expertise to inform the development of treatment pathways in a priority-driven, evidence-based way towards meeting the 90% access target.
- Promote regional centres of expertise and technical support for laboratory and clinical training in HPV testing and precancer treatment and coordinate regional treatment hubs where required, including capacity-building and shared services such as pathology and diagnostic radiology.
- Consider development of regional, and where appropriate subregional, WHO interactive online and adaptable treatment and clinical practice guidelines for all stages of invasive cervical cancer for the Western Pacific Region, revised as capacity towards UHC is built.
- Ensure guidelines are clear, implementable recommendations to inform evidence-based best practices in specific settings as clinical care (including gynaecology, surgery and oncology) and optimal service delivery towards treatment targets are realized, including ideal times to diagnosis and referral within existing and evolving health system capacity.
- Support technical advisers visiting Member States to conduct in-country training and support to develop professional expertise in screening and to promote treatment guidelines.
- In consultation with specific Member States, develop resources and foster linkages to support intercountry partnerships for treatment of women with curable disease, where appropriate.
- Conduct/commission ongoing regional situation analyses on cervical cancer screening and the treatment of precancers.

## **5. Health system and services strengthening**

### **5.1 Review of current barriers to access**

Mapping of existing services regarding screening, diagnosis, and precancer and cancer treatment at all levels of health system should be reviewed and updated to ensure they are linked within a smooth flow without bottlenecks. This will reduce delays in diagnosis and treatment and mitigate the risk of patients being lost to follow-up due to long waiting times and multiple facility visits.

A review of how existing national policies, laws and treatment guidelines may affect women's ability to access screening and treatment is required to identify possible barriers within the health system. For example, in some countries "husband approval" is legally required for women to attend screening, receive cryotherapy and undergo a hysterectomy.<sup>71,72</sup> All of these procedures are fundamental to cervical cancer control, and ideally there should be no legal barriers to women exercising their right to health. Additionally, some countries limit access to cervical cancer screening and treatment to married women, resulting in a major barrier to access for women who are sexually active, but not legally married, or cannot provide proof of marriage for other reasons.

### **5.2 Surveillance, monitoring and evaluation**

WHO has recommended that countries consider the use of unique personal identifier numbers (UPINs) or national identifier numbers in health systems to track individuals through the health system. The use of UPINs in health systems could permit linkage of records across primary, secondary and tertiary levels.<sup>73</sup> Cancer registries can be linked to death registries, for example. Cancer treatment information can be linked to cancer diagnosis. In addition, UPINs can facilitate the development of accurate vaccination and screening registries.

Local data is essential to shape health policy, inform health financing design and decision-making, and guide prioritization of the most-sustainable and high-impact solutions. An in-depth understanding is required at the country level of the epidemiology – and barriers – to the uptake of cervical cancer screening, and where necessary, follow up-treatment services. Linkages between cervical cancer data on the one hand and screening and immunization information systems on the other will enable the development of a comprehensive set of measures capable of assessing the short- and long-term achievements and impact of initiatives working towards elimination of cervical cancer.

#### **Vaccine registers**

Vaccination registers ideally record demographic information about people receiving vaccines, the health-care provider, the date and time of vaccination, and the vaccination received, for all immunizations recommended under a Member State's national vaccination programme. Vaccine registers provide the basis for estimates of vaccine coverage, and are critical to support course completion, with appropriate spacing of doses, where multiple vaccine doses are recommended. They also facilitate the avoidance of vaccination of individuals with a vaccine that they have already received, or vaccination being delivered in excess of the recommended number of doses.

Some Member States have long-standing vaccination registers and others have established vaccine registration to support the roll out of COVID-19 vaccines. Member States with existing vaccine registration systems could consider extending these to capture HPV vaccination data, noting that single-dose courses are now supported as one delivery option by WHO. The register functionality should

## **Annex**

enable vaccinators to “look up” whether an adolescent has already been vaccinated or not, and to record the details of vaccination.

The vaccine register data can be used to track progress towards the WHO 90% vaccine target, provided denominator data (birth registration or census data) are available. Over time it should be possible to understand vaccine coverage in different geographic areas and priority populations so that efforts can be focused on addressing barriers to vaccination in communities with lower coverage.

In the longer term, linking HPV vaccination data to screening and cancer data will allow demonstration of the effectiveness of vaccination and its contribution to achieving elimination. In the future, middle-age women vaccinated as young adolescents may not require as intensive screening as their unvaccinated counterparts, especially if they have received the 9-valent vaccine. Therefore, linking HPV vaccine information with the screening register could facilitate a future risk-based approach to screening.

### **Screening registers**

Screening registers are fundamental to organized and effective approaches to screening. Screening registers have two major functions. Firstly, as a safety net, supporting health-care staff to identify and contact women who have not presented for scheduled follow-up review and/or treatment. Through this process, high rates of follow-up assessment and treatment can be achieved among participants in whom HPV is detected. Participants can also be recalled for rescreening at the agreed interval. Follow-up rates of over 90% were achieved in Malaysia using this method in programme ROSE (see Box 5).<sup>63</sup>

Secondly, screening registers can provide real-time programme management data on screening participation by geographical location and socio-demographic characteristics, HPV positivity and treatment rates. Screening registers should link to and share cervical cancer data with population-based cancer registries (see below).

### **Population-based cancer registries**

Population-based cancer registries (PBCRs) are vital to the assessment of the cancer burden and in monitoring and evaluating national progress in cervical cancer surveillance and control.<sup>73</sup> The initiation and sustainable development of PBCRs should be prioritized at an early stage in the scale-up of cancer control activities, as an essential means to ensure progress is successfully monitored and appraised. PBCR data systems play a crucial role in providing reliable information on cancer incidence and mortality and for the monitoring and evaluation of cancer prevention and control activities.

Data from IARC and the Global Cancer Observatory show that many high-income countries have PBCR systems, which provide detailed epidemiological data over time. In contrast, PBCR systems to manage data quality are underdeveloped in many LMIC due to a lack of investment in infrastructure.<sup>74</sup>

It is important that countries in the Western Pacific Region pay attention to strengthening and expanding their cancer registry systems to capture data from the population in both urban and rural regions. In some countries, death certificates are not used and death data from vital registration systems are not linked to cancer registry systems, resulting in underreporting the cancer burden. IARC has developed technical advice to countries wishing to develop and implement PBCRs as reliable databases to inform cancer control policies.<sup>74</sup>



### 5.3 Strengthening services and capacity-building

#### HPV vaccine delivery

The recent WHO SAGE recommendation supporting one or two doses of the HPV vaccine for young adolescents is expected to greatly facilitate both delivery and supply of HPV vaccines. Most Member States already have some vaccination delivery systems in place. However, for many, HPV would be the first adolescent vaccine offered. Current WHO recommendations are that countries that can procure sufficient doses should start with vaccination in females with multi-age catch up (9–14 years). Reaching adolescents will require careful planning. For many Member States, a school-based approach will be appropriate, with studies demonstrating overall better coverage and equity when this approach is used.<sup>75</sup> However, there remain equity issues for the schools-based approach, and careful consideration should be given as to how to reach those girls who are no longer at school or not in attendance of the day that vaccination is offered.

#### **Box 10. Case study: HPV in Cook Islands**

Screening and treatment of precancerous lesions

Building capacity and capabilities that will not only strengthen but also expand services by delivering screening and treatment of cervical precancer is essential. Within the context of the WHO guidelines for cervical screening and treatment, it will be critical to explore and adopt innovative technologies that are simpler, faster and more cost-effective (such as self-collected HPV testing), with a focus on rapid triage and testing in order to reduce loss to follow-up. Given the limited health workforce in many LMICs in the Region, strategies for such as task shifting and task sharing are critical for the successful introduction and eventual scale up of HPV-based screening

In 2011, Te Marae Ora (TMO) Cook Islands Ministry of Health made a decision to introduce the HPV vaccine only for girls in Cook Islands. The rationale for the decision was based on a number of surveys conducted during that period showing that sexually transmitted infections were very high in Cook Islands. In May 2011, the HPV immunization programme commenced in Rarotonga and before extending to the outer islands.

Prior to the vaccination roll-out, an information campaign was run on all TMO media platforms to inform the Ministry of Education, principals, teachers, parents and students about the planned introduction and benefits. Consent forms were delivered to schools.

The target population number was identified (n=409) in particular those born from 1998 to 2000. Thirteen schools where the target age group were located were involved in the programme. The vaccination roll-out commenced on 16 May and ended on the 18 May 2011.

There were two teams of three public health nurses and a doctor assigned to three or four schools at a time. Over the period of three days, 380 female students from the 13 schools (10 primary and three secondary schools) were vaccinated. Of the 409 students in the target population, six were absent on the days, 15 had not yet turned 9 years (but would in coming months) and eight refused. A second dose was given over a three-day period from 18–20 July, with a total of 369 girls vaccinated – encouragingly, 90% of a population that had not previously been invited for immunization against HPV. Among the 10% of the target population who were absent or refused the vaccine, reasons varied and included religious beliefs, concerns about vaccine safety, efficacy and a perception that the roll-out had been rushed.

The experience has provided important lessons and shown that vaccines can be acceptable in diverse populations and that the reasons for vaccine hesitancy in some people could be addressed long term, with support from community leaders and the majority of girls (and their families) who were vaccinated safely and effectively. Thirteen years on, and following COVID-19 disruption, public health nurses are working to catch up on HPV vaccinations while promoting the benefits.

## **Annex**

Consideration of the impact of anti-vaccination sentiment and vaccination hesitancy is important prior to rolling out HPV vaccination programmes. Stigma associated with HPV can add to vaccine hesitancy. Community support for vaccination is highly variable among Member States. For all Member States, prior to the introduction of the HPV vaccination programme, it is important to understand the level of support in the community and engage with community and faith leaders prospectively. Ideally, key community and faith leaders are engaged in the launch of the programme, reassuring their communities that the vaccine is safe, effective and appropriate for their adolescent girls.

Policies and regulations relating to health worker scope of practice and settings will need to be updated based on evidence of success in optimizing the skills of the health workforce. Development of theoretical and practical competency-based training at all levels of the workforce, with the potential for shared initiatives across the Region utilizing innovative virtual platforms, will be essential, as will the development of quality measures to support delivery of accountable and consistent safe-and-effective care.

Taking a fit-for-context stepwise approach to align the needs of introducing new technologies without loss of quality while transitioning from existing approaches is imperative. Community mobilization through consistent locally appropriate and co-designed messaging with multi-modal delivery to improve and optimize screening participation will draw on grass roots organizations, while self-collection of HPV samples can harness the momentum of the WHO self-care interventions for health and well-being.

Although WHO now recommends countries transition from VIA to HPV testing as soon as possible, the current reach of existing screening services can be greatly increased by offering HPV tests with self-collected samples, repurposing the VIA workforce for assessment of HPV-positive women. The VIA-trained staff can be reserved to see only those women in whom HPV is detected and are well placed to be trained in assessing suitability for treatment and to deliver treatment, regardless of whether they assess the cervix to be normal or abnormal, in a screen-and-treat approach.

Transitioning from cryotherapy to thermo-coagulation greatly facilitates the delivery of treatment to screen-positive patients and is well tolerated by patients.<sup>76,77</sup> The thermo-coagulators can run on a chargeable battery and, unlike cryotherapy, do not require gas cylinders for operation. Together with portable point-of-care PCR instruments for HPV testing, it is now possible to reach more remote communities.

### **Treatment of invasive cervical cancer**

Accurate cancer diagnosis, staging and management require strengthening imaging and laboratory capacity. WHO is working with partners to implement the recommendations of The Lancet Commission on Diagnostics regarding imaging and laboratory services.<sup>78</sup> As countries work to build UHC systems, UHC should routinely cover diagnostic and imaging tests required for cancer diagnosis, staging and management. Increased diagnostic capacity will also help facilitate the roll-out of HPV testing as part of screening, as well as diagnosis of precancer. Currently, access to and the quality of imaging and laboratory services vary widely across Western Pacific Region Member States. Special attention will need to be paid to increase access for individuals living in some PICs and other island and rural communities for whom imaging and laboratory services are often many kilometres away.

Necessary treatment services include surgery, radiation therapy, chemotherapy and palliative care across the continuum, including symptom relief, psychosocial and spiritual support, as well as end-of-

life care. Development of the role of nurses in clinical care, support provision and system navigation can greatly enhance patient outcomes and has potential to alleviate workforce challenges with treating clinicians. Building cervical cancer treatment capacity would deliver synergistic benefits in strengthening overall cancer treatment capacity and advancing UHC.

Across the Western Pacific Region there is significant variation in capacity to provide the full range of treatments for cervical cancer. Treatment availability will be a particular challenge for small island nations and weaker economies. In some of these countries, it may be desirable to develop regional centres of excellence for treatment (see Chapter 4).

### **Capacity-building for the workforce**

For many middle-income countries in Western Pacific Region, the health systems follow hierarchical structures, and workforce levels are specified according to this health systems structure. However, health-care workers at every level require training in cross-cutting areas including data collection and anti-stigma training to ensure inclusive care across the continuum of services.<sup>74</sup> To ensure timely and high-quality care for an individual woman, mechanisms for the exchange of health-care information must be in place, between health-care providers at the primary, secondary and tertiary levels, including diagnostic information and treatment and follow-up plans.

### **Regional and national level (tertiary health facilities)**

Health facilities at regional and national levels are usually tertiary centres that can provide specialized diagnosis and treatment services. This infrastructure requires a sufficiently sized health workforce, with staff who have highly specialized training and access to the equipment required for providing cervical cancer diagnosis and treatment, as well as palliative care services. Regional and national staff should understand patient referral systems and processes to ensure patients are attended to in a responsive, empathetic manner and then referred back to the referring health facility for appropriate follow-up care.

Tertiary centres also provide health workforce teaching, supervision and technical support. When appropriate, the cascade/train-the-trainers approach can be adopted wherein a core team at the regional/national level are trained as master trainers, facilitators or learning coaches to provide training for staff at lower levels in the health system. WHO recommends that to safeguard quality and effectiveness of cascade training, the number of training levels should be minimized and training should be well planned and participatory.

Capacity-building can also be delivered via a blended delivery mode including face-to-face training, webinars, activity-based learning, tutorials, practical learning sessions and simulated practice. Ongoing learning reinforcement, coaching and mentoring can occur through the creation of “communities of practice” and other knowledge- and experience-sharing mechanisms.

### **Provincial level (secondary health facilities)**

Provincial hospitals generally provide broad-spectrum medical services, receive referred patients from primary health care level and refer patients to the regional/national level. Facilities should have a sufficiently sized health workforce, with staff who have capacity to deliver cervical screening and to diagnose and treat precancers with ablative techniques and LLETZ. This level should have capacity to diagnose and provide treatment for early-stage invasive cervical cancer, supported by anatomic pathology services and staff trained in equipment maintenance. Staff at this level should have the capacity and skills to provide supervision, mentoring and quality care support through relevant

## Annex

communities of practice. Additionally, staff should provide training and support for the primary health care level as needed, and systems to receive and send referrals should be in place.

### **District and community level (primary health care)**

Health facilities at primary health care level are often the first point of contact for patients. Staff at this level are trained in basic counselling, cervical screening, ablative treatments for precancers and cervical cancer symptom awareness and early diagnosis. Follow-up of patients treated for invasive cancer at higher-level facilities is best undertaken at this level.

From the perspective of cervical screening services, tailored approaches, such as self-collection of HPV tests, should also be considered and promoted to increase participation, where appropriate. In some contexts, a screen-and-treat approach can be employed to reduce loss to follow-up, with a referral system in place for screen-positive women who are ineligible for immediate ablative treatment.

Staff at this level should also be able to organize periodic community outreach activities to generate increased demand for services, clarify and correct myths and misconceptions, minimize fears, and reduce the distress of women, girls and their families. Outreach initiatives, if designed as festive community gatherings, also open up opportunities for dialogue on cervical cancer and generate widespread support from community elders, political leaders and family members.

Additionally, assistance may be needed on how to integrate cervical screening services into women's health, sexual and reproductive health, and STI and HIV services to increase screening participation. Due consideration should be given on how to effectively minimize effects of cultural taboos or negative norms on access to services through community linkages.

Primary care providers also play a key role in palliative care to relieve suffering across the continuum of care, including in the management of pain and other symptoms associated with invasive cervical cancer and/or its treatment.

Primary care providers need to feel supported in asking questions and requesting guidance from experts at the secondary and tertiary level, as needed, and in turn they need the skills and capacity to support community health workers in their role as health-care navigators for women diagnosed with invasive cancer and their families.

### **5.4 Systems integration at PHC level**

PHC has a critical role to play across the continuum of cervical cancer control, from prevention to screening, treatment and palliative care.<sup>79</sup>

The responsibilities of primary care clinicians should include informing parents about the safety of HPV vaccination of adolescent girls and its effectiveness in preventing the suffering and early death associated with cervical cancer. Ideally, primary care clinicians also should be able to provide HPV vaccination, especially for age-eligible, out-of-school girls.

Screening for HPV infection and cervical cancer should be provided both in PHC and as part of integrated sexual and reproductive health services. Information and education should be provided for the community about the importance of screening, as a recommendation to screen from a trusted health provider is one of the strongest determinants of an individual's decision to screen.<sup>80,81</sup> PHC and reproductive health-care providers also should assist patients whose screening test is positive to

navigate the health-care system so as to promptly obtain any indicated further assessment and treatment. The same providers can enter data in a cancer screening register.

WLHIV require screening beginning at age 25 and repeated every three years. To assure access to appropriate screening for this vulnerable population, it should be offered either as part of PHC or in HIV/AIDS clinics or both. A screen-and-treat approach is likely to result in substantial overtreatment given the high prevalence of HPV among WLHIV. Therefore, WLHIV who screen positive should receive assistance to receive prompt triage and treatment.

For patients diagnosed with cervical cancer, PHC providers and community health workers supervised by PHC providers have an important role in recognizing and reporting new or worsening symptoms that may indicate disease progression or adverse effects of treatment.<sup>82</sup> They also can help to assure that patients do not miss appointments for treatment or follow-up. Further, most palliative care for women with cervical cancer, and for people with any serious illness, should be provided by PHC clinicians because most patients in need of palliative care are at home. Therefore, PHC providers should have training in basic palliative care, basic palliative care should be one of their official responsibilities, and all medicines and simple equipment in the WHO essential package of palliative care should be accessible at community health centres and district hospitals.<sup>83,84</sup> Care must be taken to minimize the risk of diversion of morphine for non-medical purposes while also maximizing access by prescription for pain relief.<sup>85</sup> Ideally, oncologists with more advanced palliative care training and palliative care specialists should be available for consultation and for referral of patients with complex or refractory suffering.

## 5.5 Strategic and interim action recommendations

The following recommendations are a synthesis of evidence collected, reviewed and documented in the Strategic Framework and feedback collected through stakeholder consultations:

### Strategic actions

- All countries could consider establishment of a body similar to a National Multidisciplinary Cervical Cancer Control Steering Committee (or equivalent governance mechanism), involving stakeholders from all disciplines and the community. Countries could consider that the minimum composition of such as group could include specialists from gynaecology and oncology (if available), palliative care nursing, pathology, primary care and epidemiology. This will serve as the governance and leadership mechanism providing technical guidance and strategic advice for shaping policy, resource allocation and monitoring the progress of planned initiatives. Potential linkages between workforce capacity-building and research will provide the evidence-base for sustainable health systems and services.
- Clearly outlined pathways are necessary for integration of services to enable appropriate parallel development across the three pillars of vaccination, screening and treatment to enable priority setting. These pathways should draw on established guidelines and processes, for example WHO screening guidelines and clinical care guidelines, as appropriate (see Chapters 3 and 4).
- Capacity-building of health professionals should not be limited to training. It should also include ongoing coaching, mentoring and other appropriate modalities. A competency-based

## **Annex**

framework needs to be developed to guide the choice of learning modalities and the development of learning materials.

- Strengthen support for integrated programmes and sustain funding commitments with development of quantifiable key health outcomes. Utilize a common set of progress indicators and align cervical cancer elimination to existing health and development goals and objectives.
- Consider the strategic role of telehealth expertise solutions for referrals, confirmation for histopathology and exchange of technical expert opinions on treatment in some settings experiencing geographical challenges.

## **Interim actions**

- Development or strengthening of cancer registries (population based and/or hospital based) and capacity-building for all health professionals in data and information management must be embedded into all plans designed to implement the Global Strategy for elimination.
- Incremental, stepwise approaches to building health systems capacity will be required in settings at different stages of implementation. Health services planning must consider balancing and synchronicity of supply and demand for all services and recognize where life-threatening delays to diagnosis and treatment are occurring.
- Evolving service frameworks, health systems and processes needs to integrate technical expertise with local knowledge, enabling health systems and services to develop in ways that deliver optimal short-, medium- and long-term outcomes.
- Strengthening data collection and efficient registration in step with the development and promotion of screening and treatment of precancers with linkages across data systems supporting vaccination, screening, and treatment of precancers and invasive cancers.
- Integration of patient navigators, along with regularly upskilling community members, across health systems to assist with process flow and patient access to services.
- Capacity-building for non-clinical cancer workers such as data managers, health education specialists, oncology counsellors, community volunteers and patient navigators to optimize inclusivity and continuity of care.

## **WHO actions**

- Provide support to Member States to develop appropriate vaccine, screening and treatment registries for their settings.
- Assist PICs in exploring partnership options with other countries in the Region for the diagnosis and management of invasive cancers. Promote harmonized health-care systems across PICs.
- Support development of well-placed regional centres of excellence, particularly for PICs, including laboratories, cancer diagnosis and treatment facilities to support sustainable collaborative efforts and grow local expertise. Support development of funding strategies and processes for selection and maintenance of such centres. Provide continued training and mentorship, network with fellowships and training, as well as professional bodies and societies.

## 6. Sustainable financing mechanisms

### 6.1 Introduction

As for other chronic diseases, cancer patients require long-term medical treatment and follow-up, incurring a substantial economic burden to health-care systems, patients and their families.

Even for patients who are eligible for health insurance, out-of-pocket expenses remain high. Findings from a systematic review showed that among all cancers, adult patients and caregivers spent US\$ 180 to US\$ 2600 per month in the United States of America, compared to US\$ 15 to US\$ 400 in Canada, US\$ 4 to US\$ 609 in Western Europe, and US\$ 58 to US\$ 438 in Australia.<sup>86</sup>

The economic burden for cancer patients in LMICs is enormous and magnified, given the disproportionality between treatment costs and family incomes. For example, many households have been pushed into poverty due to cancer treatment in Viet Nam.<sup>87</sup> In some countries, even those with insurance can face discriminatory barriers to reimbursement due to the perpetuation of stigma associated with HPV.

Cervical cancer affects women during productive and childbearing ages. Consequently, the loss of a woman means a family has lost a woman who can contribute to family income and their children have lost a mother and carer. Fortunately, cervical cancer is now preventable and curable when all tools are available. Evaluations have shown that vaccines and screening-and-treatment technologies are effective and cost-effective, even in LMICs.

The investment case informing the WHO Global Strategy for cervical cancer elimination demonstrates that investment in achieving WHO elimination targets will generate economic benefits from women's contributions to the workforce that are estimated to be US\$ 3.20 per every US dollar invested through 2050 and beyond. The return increases to US\$ 26 per dollar invested when all societal benefits are taken into account.<sup>88</sup>

### 6.2 Situation in the Western Pacific Region

The majority of LMICs have decentralized financing systems, which can lead to a fragmented funding for health financing in general and, in particular, for cervical cancer control.<sup>89</sup> Additionally, cervical cancer prevention and control requires a comprehensive strategy with close collaboration among multiple government agencies responsible for planning, budgeting and coordination of HPV vaccination, cervical screening, and precancer and cancer treatment. Therefore, it is crucial to advocate for these agencies to closely collaborate on planning, implementation, monitoring and evaluation activities for cervical cancer elimination.

Sustainable funding for cervical cancer elimination will require governments to ensure that the health sector is prioritized within overall economic growth. According to the World Bank database in 2019, low-, lower-middle and upper-middle-income countries spend 4.87%, 3.71% and 5.33% of gross domestic product on health expenditure, respectively, compared to 12.53% by high-income countries.<sup>90</sup>

Given that HPV vaccination, screening and cervical cancer treatment are provided across all health system levels, government funding must be able to cover services at each of these levels. Although many countries have expanded their limited health expenditure to try to cover health services for many emerging health issues, this can result in the fee thresholds that are too low, with high out-of-pocket

## Annex

expenditures for cancer treatment and care.<sup>86</sup> All governments involved in cervical cancer elimination should therefore work together to integrate services where possible to produce an efficient and smooth patient flow between preventive, treatment and care services. Covering the costs of HPV vaccination and cervical cancer screening, as a minimum, through universal health insurance should be advocated for as a priority.

Additionally, LMICs in the Western Pacific Region should look to expand and diversify their domestic resources and fundings to nongovernmental sectors and the private sector via public–private partnerships that can play an important part in providing health-care services. Mobilizing the private sector to contribute or share resources with the public sector around cervical cancer prevention and control and health care more broadly would maximize the benefits to women, potentially reduce costs and improve the quality of care.<sup>91</sup>

### Box 11. Innovative financing for vaccines

Plans by Gavi, the Vaccine Alliance, to adapt the UNICEF (United Nations Children's Fund) Supply Division procurement mechanism could lead to more sustainable prices for HPV vaccine, in line with tiered pricing principles to support middle-income countries. This mechanism would provide demand over the long term to suppliers and provide liquidity for country-bridge financing to ensure short-term predictability and payment of invoices to suppliers by leveraging Gavi's financing capacities. Gavi is also exploring ways to standardize manufacturer price commitments to ensure that future Gavi-transitioning countries can sustain their immunization programmes after price commitments expire.<sup>42</sup>

## 6.3 Strategic action recommendations

Successful and sustainable long-term solutions for addressing the financing gap in cervical cancer care, control and elimination will be highly country- and situation-specific. Solutions designed to fit each country's capacity and financial constraints will be more sustainable in the long term.

The following set of priorities can be considered:

### Strategic actions

- Position cervical cancer elimination as an investment in the whole health system, society and broader economy, with positive, longer-term returns on investment. The societal and economic impact of cervical cancer, which affects women in their most productive years, leaving bereaved families/children behind, is profound, and should be concretely communicated to fund managers and decision-makers.
- Generate local data to inform prioritization of the most sustainable, high-impact solutions and to shape health financing design. An in-depth understanding of the epidemiology and barriers to uptake of cervical cancer screening, treatment and follow-up services is required at the country level. It must also identify and address funding and resource allocation inefficiencies within the health systems.
- Use existing WHO costing and modelling tools to assess national funding and the current scope of services, as well as identify opportunities and gaps for stepwise scaling up.
- Unlock financing opportunities and obtain new sources of funds from multiple, diversified resource streams; utilize innovative and blended finance solutions to complement domestic



**Annex**

funding (for example, official development assistance, public–private partnerships, securing grants from international development partners or international philanthropic institutions, acquiring loans from international financing institutions or high-income countries, issuance of development bonds, partnership with international banks, etc.).

- Leverage investments into COVID-19 vaccination and PCR testing infrastructure to accelerate delivery of HPV vaccination and testing.
- With the coordination and support of WHO, collaborate with other Member States in the Region and the WHO Regional Office for the Western Pacific to undertake market-shaping interventions (for example, pooled procurement, bulk purchasing, negotiations with common providers, etc.).
- Increases taxes on unhealthy consumer products such as tobacco to reduce consumption, reduce preventable cancer risk and raise new revenue to help fund health services.

**WHO actions**

- Assist countries in identifying how to better utilize taxation and social health insurance schemes, while leveraging alternative supplementary finance mechanisms, where available.
- Collaborate with experts and country-level key staff to develop an investment plan/business case for cancer/cervical cancer per country for the Region or per cluster of countries with similar characterization, for example, PICS. Provide data on cost-effectiveness as evidence to these plans.
- Assist countries with taking these investment/fiscal plans and business cases to governments for fiscal commitment.
- Support capacity-building of key staff in Member States on how to increase local revenue streams and effectively utilize funds for health services including cervical cancer services.
- Look into the feasibility of adopting the matching grants approach for complementary investment in cervical cancer programmes.
- Host “Investing for the Future”, a cervical cancer-focused forum for potential donors and financing partners.
- Provide guidance and support for the assessment of the role of public–private partnerships in the implementation of programmes in procurement of HPV vaccines, HPV tests and other relevant equipment that are supported by scientific evidence and underpinned by strong governance, accountability, adequate safeguards and equitable access.

Annex

## **7. Advocacy, health education, communication and community engagement**

### **7.1 Advocacy**

Robust advocacy and strategic partnerships are needed to inspire national governments, regional and international bodies, and civil society to prioritize cervical cancer prevention and treatment by creating a supportive and enabling environment, allocating dedicated sustainable resources and working together.

Advocacy is also crucial to translate new knowledge about advances, including HPV vaccination, screening and treatment, into timely and updated policies, changes in practice, and allocation of resources and funds.

Successful advocacy programmes require working with alliances and networks, establishing a pool of champions, using appropriate and local evidence, investing in compelling communications products, and timely and periodic monitoring and evaluation. Media must be engaged to build public support and upward pressure for policy decisions. Public demand must be generated, as well as the mobilization of professional and community groups, to evoke a response from local and national leaders.

#### **Key advocacy and communication tasks**

It is critical to build, deepen and widen shared understandings about cervical cancer and its prevention and early detection through multisectoral partnerships with community-based women's groups, youth groups, elders and faith-based groups. Creating alliances and coalitions and encouraging partnerships and multi-stakeholder and intersectoral collaborations to share and combine efforts in resource development and the scale up of programmes will support expansion of stakeholder databases and support mobilization of investments in cervical cancer programming, which link with national health and development priorities.

#### **Updating policies to support cervical cancer services and elimination**

Updated policies are essential to respond to misinformation and misconceptions around vaccination and screening and to address hesitancy in both pillars. These policies will in turn generate increased individual and community demand for services while reducing stigma and discrimination associated with cervical cancer. Advocates must realize that decision-makers will only support investment and formulate or change policies under a number of conditions, including when the issue is considered economically viable or politically disadvantageous/beneficial. Whole-of-community support for eliminating cervical cancer will be essential to its prioritization by leaders in public office.

### **7.2 Health education**

Numerous studies have shown that women's decisions regarding cervical screening are affected by many factors including sociocultural issues, knowledge, beliefs, attitudes and cancer awareness.

Fear of cancer is prevalent and powerful, but it is often not matched with knowledge of how it can be prevented and controlled. The fear relates partly to a perception that a cancer diagnosis is a "death sentence". Fear can prevent women from seeking care even with symptoms of advanced disease. For other women and their families, hesitancy to seek cervical screening is related to the belief that they are not financially capable and treatment will unnecessarily burden their families.

The association of cervical cancer with a virus that is transmitted by sexual contact can lead to stigma and shame that can deter women who are concerned about accessing health care or afraid of the consequences if they do. Incorrect information and misconceptions lead to HPV vaccine-hesitancy, delays in screening and fears of treatment.

Health education to enhance cancer literacy begins in schools for both girls and boys. It expands sexual and reproductive health knowledge, including knowledge of HPV, empowers young people to understand their bodies, to know when and where to seek credible advice, and encourages them to adapt preventive health strategies and healthy lifestyles.

Prevailing negative gender norms, roles and relations can hinder women from accessing essential health information and services, and can result in stigma and discrimination in relation to cervical cancer. Understanding and prioritization of women's health varies widely within the Region.

### **7.3 Community engagement and messaging**

The WHO *Global strategy to accelerate the elimination of cervical cancer as a public health problem* recognizes the importance of community engagement and underscores that communities must remain at the centre of all efforts. In addition, women themselves must be empowered and fully engaged in community mobilization initiatives in order to ensure that their lived experiences with cervical cancer inform and shape local strategies. The voices of women with cervical cancer, the survivors and their families need to be amplified as they provide unique and valuable insights on the cervical cancer journey, its challenges and how to successfully navigate it.

Grassroots leadership by local communities and women is essential for realizing cervical cancer elimination through leading the development and implementation of initiatives; serving as allies and champions; correcting misinformation, myths and misconceptions; countering or reducing stigma and discrimination, reducing HPV vaccine hesitancy; and by supporting those needing more complex treatment. Local volunteer health workers and primary health care facility staff can also be oriented on their roles and how they can help promote and scale up community-led initiatives.

Advocacy and communication messages and health promotion initiatives must be tailored to the sociocultural context and the on-the-ground realities. Multi-stakeholder community engagement should be ensured and sustainability plans should be developed and implemented.

Key messages include the fact that cervical cancer is preventable, it can be successfully treated and is curable, and that it is a progressive disease with no or subtle symptoms/signs in early stages.

Gaining the support of the community requires identifying and leveraging entry points in the community through special events, "popular" community gatherings and health events where messages can be embedded or piggybacked. It is imperative to inform, invite, involve and have continuing dialogue with key community stakeholders and gatekeepers in order to gain their buy-in and vocal support. These groups include influencers, women's groups, STI and HIV/AIDS groups, maternal and child health, and sexual and reproductive health groups, cancer patient support groups, youth groups, chronic illness groups, and older people. Engaging with local cervical cancer survivors who are willing to share their stories can in some settings can be an important strategy, while involvement of schools, workplaces, local businesses and faith-based groups in advocacy campaigns can also be effective strategies. Where appropriate, collaborations with local political leaders and sectoral groups in hosting a virtual town hall meeting or special gatherings for launching/promoting cervical cancer prevention initiatives, which are

## Annex

participatory, highly interactive and hopeful, can ensure increased acceptance and greater recall of messages.

### 7.4 Strategic action recommendations

The following recommendations are a synthesis of evidence collected, reviewed and documented in the Strategic Framework for elimination and feedback collected through stakeholder consultations:

#### Strategic actions

- Develop proactive and ongoing strategies to promote the public health benefits of vaccination and address misinformation about vaccines, such as the creation of coalitions of parent and community groups.
- Engage and establish functional linkages with key stakeholders from multiple sectors at all levels, including legislators, policy-makers, heads of ministries, the private sector, civil society organizations (professional associations, faith-based groups, parent–teacher associations, community-based organizations) and academia.
- Engage and involve media to build community support and strengthen the case for action from policy-makers and political leaders.
- Design innovative, collaborative initiatives to reach, engage and gain the support of people from diverse sectors, health literacy levels and all walks of life.
- Adopt a diverse mix of communication modalities to spotlight the importance and value of cervical cancer elimination, clarify and correct myths and misconceptions, and enhance understanding of the value of HPV vaccination and early screening.
- Intensify use of new technology, social media platforms, vloggers/bloggers, opinion leaders and other influencers. Build a favourable and supportive community environment by tailoring a mix of initiatives, such as engaging local community influencers (for example, political leaders and heads of departments) and sectoral leaders (for example, youth, women and older people), vaccinated girls, and survivors as vaccination and early-screening champions.
- Transform health data into compelling human stories (that is, the first-hand experiences of patients, survivors and their families). Amplify voices of cervical cancer patients, survivors and their families.
- Develop advocacy toolkits, evidence summaries and resources on key talking points that are adaptable to multiple settings and audiences to assist and enhance the confidence level of local advocates and champions.
- Ensure advocacy is evidence-based and champions integration at the policy, financing, programme, provider and service levels to underpin sustainability and facilitate scale up.
- Advocates must highlight:
  - a) the evidence that cervical cancer is a preventable disease and that HPV vaccination protects their children from cervical cancer;
  - b) the cost of inaction, doing nothing or not doing enough to combat cervical cancer is more costly in the long run;
  - c) adequate resourcing and investment on optimal prevention, screening and treatment approaches have high returns in productivity, as well as economic and health gains;
  - d) cervical cancer elimination is a long-term goal with priority actions in the short and medium terms that will save many lives;

- e) initiating a cervical cancer control programme can serve as a catalyst for addressing other cancers; and
- f) the compelling cost-effectiveness and investment case for immediate action across the three pillars of elimination.
- Educating and empowering health-care workers to ensure correct information is disseminated directly to the community.

#### WHO actions

- Conduct quarterly or semi-annual policy dialogues with heads of Member States and their key staff. Focused themes will be prioritized based on assessment of priority needs.
- Develop policy briefs to aid civil society efforts to guide country-level decision-makers.
- Champion integration at the policy, financing, programme and service levels to ensure success and sustainability.
- Collaborate with regional health committees/task forces to ensure integration of cancer/cervical cancer in their health and development frameworks and programme portfolios.
- Establish a knowledge action portal that will contain essential materials to inform and guide various key stakeholders.
- Develop and promote adaptable resources for addressing HIV stigma in relation to cervical cancer control.
- Develop manuals for community engagement in cervical cancer control to increase capacity at the community level, not just within the formal health system.

#### Box 12. Regional success story – Australia

Australia is on-track to be the first country in the world to eliminate cervical cancer as a public health problem, a testament to the power of sustained comprehensive screening and vaccination.<sup>92</sup>

Cervical cancer rates are expected to drop to less than six in 100 000 women by 2022, which would change it to a “rare” cancer. According to predictions, rates will drop to below four in 100 000 – with the associated mortality falling below one per 100 000 women – by around 2035. It is estimated that there will be only 942 new cases diagnosed and approximately 222 deaths from cervical cancer in 2022 in Australia.<sup>93</sup>

Australia has long been a leader in research and surveillance to gauge the effectiveness of programmes to fight cervical cancer.<sup>94</sup> In 2007, Australia became the first to introduce a national publicly funded HPV vaccination programme with a wide catch-up age range from 12 to 26 years. Australia introduced vaccination for adolescent males in 2013, and the next generation nonavalent vaccine was introduced in 2018.<sup>95</sup>

Since 1991, the country has had a comprehensive organized screening programme, which by 2010 had already reduced by half cervical cancer incidence rates in women aged 25 years and older.<sup>96</sup> Since 2017, Australia switched to a HPV cervical screening test every five years starting at age 25, a move that is expected to reduce cervical cancer incidence and mortality rates by at least 20%.

## Annex

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