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# Global action on financing cervical cancer elimination

Funding secondary prevention  
services in low resource settings



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## Executive summary

Cervical cancer is the fourth-most commonly detected cancer in women worldwide yet is one of the most preventable and treatable cancers if detected early. Women in low- and lower-middle income countries and the poorest within countries are disproportionately affected by cervical cancer-related morbidity and mortality. In 2020, the World Health Organization (WHO) launched a global initiative to eliminate cervical cancer as a public health problem, setting intermediate targets to be achieved by 2030.

While there are challenges in low-resource settings around long-term viability and financial sustainability of efforts to address this urgent health priority, the elimination ambition represents a renewed opportunity to adopt a full-continuum approach, building on universal health coverage, and exploring innovative approaches to financing and delivery as countries scale up elimination services.

This report by the Economist Intelligence Unit explores some high-level challenges associated with financing the elimination of cervical cancer in lower resource settings. The following set of priorities can be drawn on to engage policy and financing decision makers:

**Generate local data to inform health financing design and decision making.** An in-depth understanding of the epidemiology, and barriers to uptake of cervical cancer screening and where necessary follow up treatment services is required at the country level, and to inform prioritisation of the highest-impact and most sustainable solutions. Such analyses must also identify and address funding and resource allocation inefficiencies within health systems.

**Assess national funding and extent of high-quality services using available WHO costing and modelling tools to develop feasible, stepwise scale up plans.** Solutions designed to fit within each country's capacity and affordability constraints will be more sustainable in the long-term. The use of existing costing and modelling tools should be prioritised to identify opportunities and gaps for stepwise scaling to national level programmes. The success of elimination programmes relies on a systematic and organized approach best implemented via the framework of well-planned universal health coverage which incorporates budgeting and planning of healthcare services.

**Champion integration at a policy, financing, programme and service level to ensure success and sustainability.** Siloed approaches to addressing public health introduce financial inefficiencies which can be minimised or avoided in full. The overlap between cervical cancer and other public health priorities—such as HIV and reproductive health services—should be capitalised, and the framing of the WHO global elimination strategy leveraged to drive financial integration. Strong leadership should be nurtured at national and service delivery levels to ensure integration and associated benefits are realised.

**Utilise innovative and blended finance solutions to complement domestic funding.** Domestic funding of cancer services—including cervical cancer—in low-resource settings is insufficient to scale national programmes. The global financial consequences of the covid-19 pandemic will further impact health funding. Countries must increase domestic spending and better utilise taxation and social health insurance schemes, while leveraging alternative supplementary finance systems where available. A consortium approach which leverages development banks, blended financing and private-sector capital, expertise and speed should be considered.

## About this report

This report follows the launch of the *World Health Organization Global Strategy to Eliminate Cervical Cancer as a Public Health Problem* and associated tools in late 2020. As momentum builds towards the elimination goal, we explore the challenges that exist in delivering on the global strategy, and respond to the question of how the new global attention may be harnessed to address the critical question of financing cervical cancer elimination. A review of indexed and grey literature was conducted in October 2020, and in-depth interviews were carried out with global experts in disease elimination, international development and health financing to identify solutions and actions needed.

We thank the following individuals for contributing their experience and expertise to this research:

- **Isaac Adewole**, professor of obstetrics & gynaecology and former health minister, Nigeria
- **Rifat Atun**, professor of Global Health Systems, Harvard University
- **Marie Ba**, director, Ouagadougou Partnership Coordination Unit
- **Francois-Xavier Babin**, director international operations, Foundation Merieux
- **Eduardo Banzon**, principal health specialist, Asian Development Bank
- **Karen Canfell**, adjunct professor, School of Public Health and director, Cancer Research Division, Cancer Council NSW, University of Sydney, Australia
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- **Farley Cleghorn**, global head, health practice, Palladium Group
- **Nicholas Furtado**, advisor, Quality of care, Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH) and Resilient & Sustainable Systems for Health (RSSH), The Global Fund to Fight AIDS, Tuberculosis and Malaria
- **Filip Meheus**, health economist, Cancer Surveillance Section, International Agency for Research on Cancer (IARC)

- **Stephanie Seydoux**, ambassador for Global Health, France
- **Suneeta Sharma**, vice president health and project director of Health Policy Plus, Palladium
- **Heather Watts**, director of HIV Prevention, Office of the Global AIDS Coordinator, PEPFAR
- **Jerome Weinbach**, head of the Health & Social Protection Division, Director “Demographic and Social Transition” Department, AFD

This report was written by Jesse Quigley Jones, with research support from Amrita Namasivayam. The editor was Naka Kondo. This research was sponsored by UICC as a product of the ‘Scale Up Cervical Cancer Elimination with Secondary prevention Strategy’ project, led by Expertise France and funded by Unitaid. The content of this report is the sole responsibility of The Economist Intelligence Unit and the views expressed are not necessarily those of the sponsor or funders.

## Introduction

Cervical cancer is one of the most preventable and treatable cancers and is the fourth most commonly detected cancer among women worldwide. There were more than half a million new cases and over 300,000 cervical cancer deaths in 2018.<sup>1</sup> Cervical cancer represents not only a major public health burden, but has significant economic impact for affected women, their families, wider communities and overall economies. Women in low- and lower-middle income countries routinely lack access to preventive vaccination, screening and treatment services. This results in unacceptably high morbidity and mortality across Africa, South-east Asia and South America (see Figure 1), disproportionately impacting poor countries and the poor and marginalised communities within countries.

In November 2020, the World Health Organization (WHO) officially launched the *Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem*, which lays out three targets for member states to reach by 2030: 90% of girls fully immunised against HPV by age 15; 70% of women screened with a high-performance test by age 35 and again by age 45; and, 90% of women identified with cervical disease receiving treatment.<sup>2</sup> The WHO highlights that investing in meeting these targets will generate substantial economic and societal returns, with an estimated US\$3.20 returned to the economy for every dollar invested through 2050 and beyond, purely on women's continued workforce contribution. The figure increases to US\$26 when the effects of women's improved health on families, communities and societies are considered.<sup>3</sup> The challenge is securing commitments with the investment case to secure the upfront

financing in the highest burden countries so that they too are able to offer the opportunity of elimination to their populations.

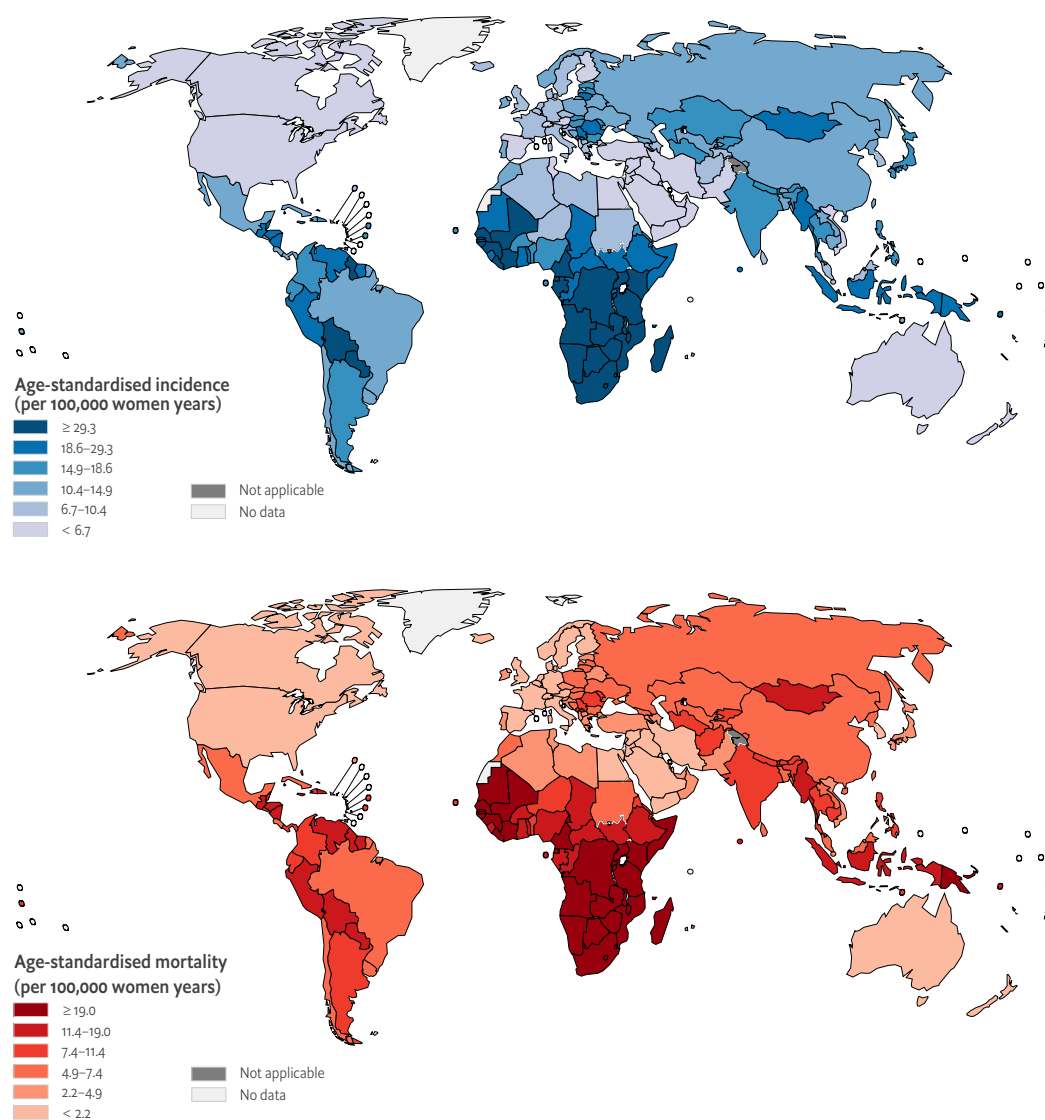


### **Cervical cancer affects women in their peak, leaving children without mothers and impacting productive life years.**

Heather Watts, director of HIV Prevention, Office of the Global AIDS Coordinator, PEPFAR

The WHO estimates that a total of US\$10.5bn is required to fund cervical cancer elimination in low- and lower middle-income countries by 2030, with a large portion of this—equivalent to US\$1.8 per capita—being front-loaded to establish and quickly scale services.<sup>4</sup> More than half of this figure is required for vaccination programmes (see Figure 2). An analysis of spending by TogetHER for Health found that only one-seventh of this investment—or US\$121.3mn—was made in these countries in 2019.<sup>5</sup>

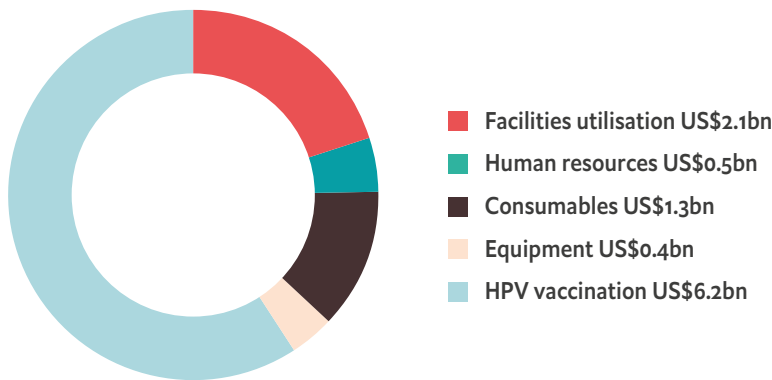
**Figure 1. Age-standardised cervical cancer incidence (top panel) and mortality (bottom panel) per 100,000 women-years, 2020**



Source: GLOBOCAN 2020



**Figure 2. Breakdown of components of US\$10.5bn required for elimination of cervical cancer in low- and lower middle-income countries by 2030**



Source: WHO, TogetHER for Health, 2020<sup>45</sup>

### Broad challenges in investing in infrastructure

Cancer is not a singular condition and instead encompasses a set of chronic and complex diseases that challenge both health policy, services and the boundaries of universal health coverage.<sup>19</sup> What is common across cancers types however, is the need for a series of interventions along the care-continuum. These cover everything from public health education, screening, diagnosis, treatment and palliative care. This is, unsurprisingly, a daunting task for health systems and comes with a mindset among policy makers and budget holders that ‘cancer is expensive’, according to interviewees.

Investing in cervical cancer prevention has its own preconceptions to overcome. “Over the last couple of decades we’ve seen a large number of small-scale demonstration projects

or implementation efforts that have not had the traction we would have liked,” says Karen Canfell, director of the Cancer Research Division, Cancer Council NSW, Australia. “There is therefore a level of disillusionment [among] policy makers. The problem has been that we actually haven’t had the technology to deliver screening at-scale until recently.” (see Box 1).

“Getting HPV vaccination into the expanded programme for immunization [EPI] for children and adolescents is within the capabilities of most countries, and the biggest barrier is around sourcing vaccines and ongoing costs,” says Farley Cleghorn, global head of health practice, Palladium Group. “Establishing a screening, referral and treatment pathway for cervical cancer [however], requires multiple investments in people, infrastructure and materials.” Significant demand- and supply-side barriers exist to implementing cervical

### **Box 1: Primary and secondary prevention of cervical cancer**

Human papillomavirus (HPV) is the cause of cervical cancer, with high-risk HPV types 16 and 18 leading to around 70% of all cervical cancers globally.<sup>6</sup> Primary prevention of cervical cancer via immunisation is one of the three pillars of the global strategy and long-term elimination efforts. Effective vaccines against HPV were first licensed in 2006, and analyses suggest that an optimal coverage of 70% of target populations nationally is required for cost-effectiveness.<sup>7</sup>

Given that millions of women in low- and middle-income countries are beyond the target age for HPV vaccination, secondary prevention with screening and early treatment of pre-cancerous cervical lesions remains critical for preventing a leading cause of death among women and ensuring equity and efficiency in the coming decades.<sup>8</sup>

Women can be screened through detecting cellular changes or pre-cancerous cervical lesions, or testing for HPV infection. Conventional cytological screening—via Pap smear—has historically been the technique used in cervical cancer programmes in high-income settings. Increasingly this technique is being replaced by newer methods such as liquid cytology, based on cost-efficiency, ease of programmatic implementation and quality. In resource-constrained settings which lack necessary infrastructure and quality assurance processes, cytological screening is often not feasible. Instead, visual inspection (with acetic acid [VIA] and/or Lugol's iodine [VILI]) has been adopted as a primary screening technique.<sup>9</sup> This method utilises a simple option where the cervix is viewed with the naked-eye, and does not require specialised machinery or laboratory access. VIA/VILI are limited, however, by lack of appropriately trained providers and high intra-provider variability in specificity and sensitivity. Momentum is now building towards the widespread use of precision HPV testing, which is demonstrated to be more cost-effective than conventional cytology in multiple settings.<sup>10–16</sup> Widespread adoption of HPV testing is currently limited by affordability for many lower-income countries. The opportunities for community-based self-collection for HPV testing is another exciting development being explored, which may further extend geographical coverage and reduce programmatic costs.<sup>12</sup>

The WHO 2013 guidelines for screening and treatment of precancerous lesions for cervical cancer prevention recommends the use of HPV,<sup>17</sup> and in 2020, the WHO issued a detailed guide for introducing and scaling up testing for HPV as part of a comprehensive cervical cancer prevention and control programme which includes a framework of planning, implementation through to monitoring and scaling.<sup>18</sup>

cancer screening programmes in low-resource settings. Published data from rural settings in Africa highlight several such examples: on the supply side (that is health system capabilities) these include lack of outreach, gender of provider, workforce shortages, lack of supplies and affordability; on the demand side (that is client and community level) these include awareness, knowledge and education, personal/social values, geographic reach and inability to pay.<sup>20</sup> Challenges in educating and engaging women to attend services where they do exist should not be underestimated. Further analyses from Sub-Saharan Africa found multiple common cultural barriers despite the region's diversity. These include fear of screening procedures and negative outcomes, embarrassment, privacy concerns, lack of spousal support, stigma and cost of services, among others.<sup>21</sup>

The challenges of managing screen-positive women in LMICs are well-documented.<sup>22</sup> WHO guidelines recommend either cryotherapy or loop electrosurgical excision procedure (LEEP) as essential components of any screen-and-treat programme, and a detailed WHO guideline for the use of thermal ablation for cervical pre-cancerous lesions was released in 2019.<sup>23</sup> The shift from cryotherapy—which requires expensive gas often in short supply—to thermal ablation for treating VIA-positive lesions has been demonstrated to be effective in low-resource settings such as rural Malawi, with the initial costs recouped within a period of months compared with the recurring costs of cryotherapy assuming sufficient (~80-90) women are screened.<sup>24</sup> Still, these services are reliant not only on available machines,

but appropriate clinical settings and trained providers as well as robust quality assurance. Women are frequently referred to higher-level facilities—often in geographically different locations—with subsequent impact on compliance with recommended follow-up if they are unable or unwilling to attend.<sup>22</sup> Designing a successful screening programme is highly country-specific and must balance coverage with efficiency. In most settings this will comprise a mixed model of screen-and-treat in rural settings, which may help ensure women are reached, and high-throughput testing in a centralised lab in urban settings, which where women can more easily access services.

The covid-19 pandemic, which has impacted every aspect of health systems, presents several specific challenges for cervical cancer prevention. Immunization rates dropped in 2020 to levels not seen since the 1990s, and women were less likely to be screened and treated for cancers in 2020 compared with 2019.<sup>5</sup> Introducing and scaling covid-19 testing has absorbed workforce and laboratory capacity from other areas of testing. In settings where cervical cancer screening services have been able to continue these have generally been scaled back and reached fewer women. As covid-19 vaccines are rolled out, the competition for cold-chain storage and delivery resources may further negatively affect other routine immunization programmes. Most critically, the global financing crises caused by the covid-19 pandemic is likely to have devastating and long-lasting impacts on available health budgets. Countries will need to adapt to these realities in designing and financing

scaled-up programmes, but should also seize this rare opportunity during the recovery phase to leverage recently enhanced public engagement in health screening and vaccination and identify synergies in upscaling covid-19 and cervical cancer testing and vaccination programmes. Where possible this should also include newer technologies such as self-collected HPV sampling and remote care/digital health to ensure coverage and service viability (see Case Study: Malaysia's Program ROSE).

The remainder of this report explores the funding situation for cervical cancer elimination efforts in lower resource settings. Section 1 explores challenges and opportunities in building momentum towards sustainable financing of cervical cancer elimination programmes with a focus on screening and early treatment. Section 2 explores some of the financial mechanisms available that could be applied to the cervical cancer elimination goal.

## SECTION 1: Building the momentum towards financing cervical cancer elimination—opportunities and challenges

### Cervical cancer elimination—a clear case for investment

A key element of efforts to address cervical cancer, is positioning elimination as an investment in not only the health system, but in terms of the broader societal and economic impact. “Cervical cancer affects women at an age where they are contributing significantly to society, leaving children without mothers and impacting productive life years,” says Heather Watts. Children whose mother dies before they reach the age of 10 are more likely to die from any cause, and modelling suggests that where this additional mortality is considered an increment of deaths associated with breast and cervical cancer may rise by up to 30% in some African countries.<sup>25</sup> In Poland, 2012 estimates put the productive working days lost for patients and caregivers at over 700,000, and over 950,000 days lost due to mortality. Over 66% of the economic value lost was attributed to women’s mortality.<sup>26</sup>

Given that cervical cancer affects women and predominately those in low and lower-middle income settings, the efforts towards elimination support the attainment of several Sustainable Development Goals (SDGs) including: SDG 1 to end poverty in all its forms everywhere; SDG 5 to achieve gender equality and empower all women and girls; and SDG 10 to reduce inequality within and among countries. Recognising these key interdependencies allows the leverage of a wider set of options in terms of collaboration and different modalities of investment opportunities.

Those interviewed for this paper agreed that financing cervical cancer elimination should be viewed as an investment in broader health system capacity and contribute across SDGs, that will pay dividends in the future. These downstream impacts should be emphasized in discussing funding needs. “Innovation and strengthening of health systems are keywords to address this issue,” says Stephanie Seydoux, ambassador for Global Health, France. “Further, this will contribute to SDGs 3.8 and 3.4, progressing towards universal health coverage (UHC) and reducing premature mortality from non-communicable diseases by a third by 2030.”

Expanding financial protection services towards UHC—as outlined by the WHO—requires increasing the proportion of service costs covered, the breadth of covered services and the proportion of the population covered. Cancer service coverage often comes later in the development of social health insurance schemes, beginning with cancers that are curable with access and adherence to treatment.<sup>19</sup> “Making funding decisions is often seen as a *zero-sum game*—where anything assigned to addressing cancer is directly taking away from another area of health needs” says Raveena Choudhry. There should instead be a discussion on investment, costing and making prioritisation decisions based on cost-effective interventions. This is impossible without critical pieces of data that are needed to inform these decisions, based on deep understanding of local epidemiology, geography and socio-economic situation.

These data are all-to-often not available in low-resource settings.

“Understanding the population-level burden using cancer registry data is critical and complimenting this with innovative ways of identifying cervical cancer hotspots can be invaluable to design a cost-efficient supply-side solution” says Suneeta Sharma. “This kind of additional data can be easily crowd sourced and collected cheaply through digital and can be used to not only design services that are well-received and utilised by the target population but can inform investment and infrastructure decisions—for example designing and locating high-volume specialised facilities—and incentivise pooled funding models.”



**As cervical cancer is caused by [HPV infection], it is the first cancer where we can aspire for elimination. This will make people start to think differently—and ask what is the next chronic disease we could eliminate?**

Eduardo Banzon, Asian Development Bank

Finally, while it is difficult to make a case for more money for specific disease programmes, the promise of *elimination* can be an inspiring motivator to invest with an integrated approach, especially where it's demonstrable that overall costs will be reduced in the long-term. “The global

elimination ambition can inspire high burden countries to be ambitious and approach cervical cancer with the past enthusiasm seen with malaria and dengue elimination efforts”, says Eduardo Banzon.

### Integration is key

One theme that interviewees were unanimous on is the need for integrated planning, financing, procurement and service delivery to address cervical cancer, in terms of operational success but also cost-efficiency and long-term sustainability. “If you look at countries that have done well in advancing HPV vaccination and screening for cervical cancer, it is those where they have [both] technical capacity in the Ministry of Health to take a programme forward, and the ability to integrate into existing disease programmes,” says Nicholas Furtado, advisor in the RMNCAH and RSSH division at The Global Fund. All too often, integration opportunities are overlooked or not incentivised due to vertical roll-out of health programmes. An analysis of breast and cervical cancer services provided by public, private, employment-based health services and NGOs in Argentina, found a clear lack of coordination between services offered, with each institution focussing on only one aspect of prevention related to their customer base rather than addressing the requirements of an effective prevention programme addressing the totality of women's needs.<sup>27</sup>

“If you only think about HPV vaccination programmes, you get one set of people. If you think only about screening the cervix for neoplastic lesions, you have a different set of people”, says Farley Cleghorn.

“The challenge is to bring all those people together into a holistic plan that has some likelihood of success.” Raveena Choudhury, head of CIFF Projects and Cervical Cancer Prevention, Global Projects Unit at Marie Stopes International, agrees, adding “the problem is that there are only a handful of people who understand what it means for integration to take place at a policy level, ensuring consistency at a country level, at a district level and finally at the service delivery level.”

Programmatic integration should be explored with the view to ensure cost-efficiency. More often than not, these opportunities can reach women through existing channels delivering family planning, maternal health and HIV services. “There is absolutely more room for integration,” says Marie Ba, director of the Ouagadougou Partnership Coordination Unit. “It’s something we need to make progress with for family planning—we have been talking about integration with nutrition, vaccination, post-partum care and HIV care—but cervical cancer is rarely considered in these conversations.” Integration at the service delivery level can capitalise on medical interdependencies. Women living with HIV have around a five-fold higher risk of persistent HPV infection and development of cervical cancer. Approximately 25% of women living with HIV will have lesions that cannot be simply treated with cryotherapy or thermal ablation therapy—compared with only ~5% of women without HIV.

Examples exist that show integrating cervical cancer services is effective. Marie Stopes International (MSI), working with Population

Services International and funded by the Bill and Melinda Gates Foundation were able to integrate cervical cancer screening and cryotherapy services into reproductive health services via health centres, mobile outreach and social franchise networks over a 4-year period.<sup>28</sup> Ultimately, these targeted outreach and dedicated service centres suffer when international funding comes to an end. Limited services were able to continue in MSI’s programme—where it was possible to charge a local service fee and social franchisees recognised this as a business opportunity—but sustainable delivery to the most vulnerable continues to be challenging, according to Raveena Choudhry. Local corporate funding may offer an opportunity to fund these programmes—with longer-term commitment associated with locally relevant and emotive health areas such as cervical cancer—and these should be explored and encouraged.

There is increasingly a push for coordination at a procurement level to secure cost savings through bulk purchasing and negotiations with common providers. “Currently, reagent prices [for testing] tend to be negotiated on a programmatic basis there is a lack of coordination at a procurement level”, says Francois-Xavier Babin, director of international operations at Foundation Merieux. “This may benefit some disease programmes, but overall leads to inefficiencies.” This pooled procurement can take place across different parts of a country’s health system (e.g. groups of hospital systems, provinces or on a national level) but also at the international level. The pooled procurement model has long been used by GAVI for forecasting demand and procuring vaccines—including against HPV—

for low- and lower middle-income countries and is now also being leveraged by Unitaid-CHAI for agreements with manufacturers of thermal ablation devices and HPV tests—new technologies which the opportunity to screen and treat women for pre-cancerous lesions up to ten times cheaper than with existing screening and cryotherapy methods. Early Unitaid-CHAI negotiations were able to negotiate down HPV testing prices by one third (to less than US\$9 per test, on average) and secure an average 50% reduction on the cost of thermal ablation devices, which promises increasing affordability as global demand for these technologies increases.

Our interviewees highlight that barriers to integration are both programmatic and political. Health service delivery organizations are mainly financed through a diverse range of bilateral, multilateral, and private sector funders. As a result, these donor funds usually finance vertical and segmented programs with specific requirements, target populations, priorities, and outcome indicators.<sup>28</sup> Challenges are experienced, for example, trying to persuade an existing programme to run HPV testing samples on already-funded machines, even when they're used at half capacity. This fragmented approach also disincentivises integration where target populations for specific services do not fully align, and the life course approach is not recognised. For example, integrating family planning and cervical cancer programmes offers the chance to deliver information and education to women of all ages, but can result in missed opportunities if only age-specific screening and contraceptive services are delivered in silos.<sup>28</sup>

Coordination among different ministries remains vital to achieve financial integration. “There is often a disconnect between the Ministry of Finance and Ministry of Health,” says Marie Ba. “The Ministry of Health will make commitments to elimination targets, but the finance ministry will have no visibility on these commitments. You also need to include departments of budgeting and others.” To solidify support for integrated programmes, and maintain political engagement and funding commitments, it is necessary to develop quantifiable key health outcomes.<sup>29</sup> Utilising a common set of progress indicators, for example by integrating cervical cancer into existing health frameworks, not only allows for a common approach but also can underscore the contributions that cervical cancer elimination can make to existing goals and objectives. Countries should also look to make use of existing investments and political momentum, for example ongoing work on HIV and polio eradication, where proven systems, excess capacity and financing streams can be utilised for cervical cancer.

Discussion around integration takes place predominantly in the context of primary healthcare but “the problem is that elimination is often treated as separate health strategy from routine health delivery strategies”, warns Suneeta Sharma. Elimination services must instead be viewed as a key primary healthcare step, and the push for cervical cancer elimination by 2030 represents an opportunity to adopt a broader approach within primary care that can expand to cover other cancers and NCDs in the future. This change in mindset must be accompanied with a change in financing approach—moving



from siloed verticals to broader investment in strengthening health systems and achieving health outcomes. The potential for UHC to drive this fresh approach should be exploited. “The success of vaccination and screening programs rely on a systematic and organized approach,” says Jerome Weinbach head of the Health & Social Protection Division and director Demographic and Social Transition Department, AFD, “which would be best implemented via the framework of well-planned UHC which incorporates budgeting and planning of healthcare services.”

### **Mobilising civil society**

One underlying success factor is strong civil society advocacy and public engagement. “Very little change has been achieved in health without civil society being a key part,” says Nicholas Furtado. The diversity among civil society organizations (CSOs) offers catalytic potential across a spectrum of activities, notably transforming health data into human stories and moral arguments, building coalitions beyond the traditional healthcare sector, democratising policy debates, enhancing the legitimacy of global health initiatives, serving as watchdogs and advocates for accountability and demanding action on universal health care.<sup>30</sup> Examples of successful civil society organisation actions are numerous. Malaysian CSOs adopted approaches beyond public health and successfully lobbied the government to include a ‘tobacco carve out’ to prevent tobacco companies from using investor state dispute mechanisms to weaken public health measures as part of the Trans Pacific Partnership Trade Agreement. CSO delegates

to the Global Fund advocated the creation of the Dual Track Financing mechanisms, and civil society participants in UNAIDS working groups ensure monitoring indicators reflect the needs and experiences of service delivery organisations and key populations. In addition, CSOs often produce independent country reports or shadow reports where official reporting is in doubt. Lastly, CSOs play vital roles in overcoming some of the ‘last mile’ delivery challenges, providing health education, promoting screening, and reaching target populations that may be otherwise marginalised or inaccessible.

If the goal to eliminate cervical cancer is to be met, civil society groups will need to scale up their activities alongside that of the health system. Established organisations in cancer, HIV and women’s reproductive health should be encouraged to adopt the cervical cancer elimination strategy into their work, to provide a unified and integrated movement towards the goals. These organisations, however, tend to be small grassroots groups and can be politically and financially fragile. Global funding for civil society is perhaps less than 4% of investments, according to our interviewees, a figure they would like to see reach up to 30%. Few civil society organisations successfully transition from donor-funding to receive government funding for their activities, a key step for their long-term sustainability.

The challenge for funders is in balancing standards of services and risk. Civil society organisations do not all have progressive healthcare aims and may sometimes lack the ability and accountability to achieve their stated aims, or be vulnerable to corruption. Where examples of broad collaborative

work exists, there is also a risk of these organisations becoming highly siloed and requiring encouragement to work across the care continuum and health issues in support of elimination. “In funding civil society organisations you have to have a tolerance for risk that we don’t have in the development field,” says Nicholas Furtado. Governments, however, have the capacity to fund, design and implement frameworks within which these organisations can work, including aspects of transparency and accountability, and provide a conducive environment in which civil society organisations can receive funding and achieve their goals.

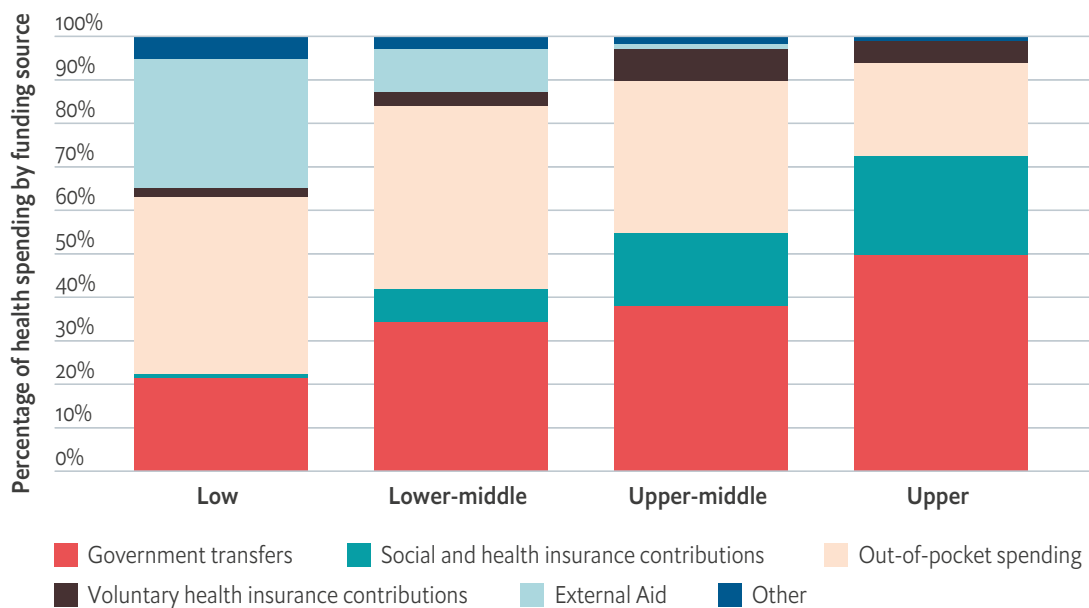
## SECTION 2: Financing approaches for cervical cancer elimination

In low and lower-middle income countries, domestic funding remains the dominant source of financing for cancer services; primarily via out-of-pocket spending by individuals (either at the point of care or less often via private insurance), or public spending (via some form of public insurance system or other taxation-derived funding).<sup>19</sup> An analysis of 2018 health spending shows that low and lower-middle income countries continue to rely heavily on out-of-pocket spending, with limited government spending or use of social health insurance schemes (see Figure 3).

Where government spending in low and lower-middle income countries is allocated to health, the majority is spent on infectious or parasitic diseases (including HIV and malaria) and reproductive health services (see Figure 4). NCDs, including cancer, make up a much smaller proportion of spending compared with upper-middle income countries.

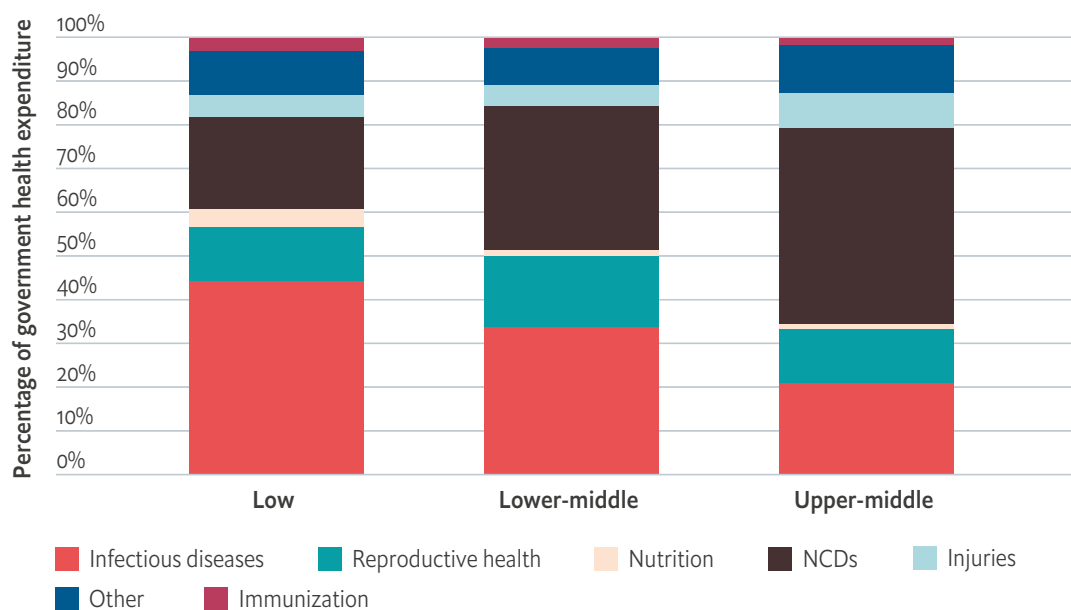
Given the need to front-load the financing of cervical cancer efforts—particularly in building necessary infrastructure and in catch-up HPV vaccination programmes—there is a need for substantial additional and immediate investment in low- and lower middle-income settings.

**Figure 3. Proportion of 2018 health spending by funding source and World Bank income groups**



Source: World Health Organization, 2020<sup>31</sup>

**Figure 4. Domestic government health spending in 2018 by disease area and World Bank income group**



Source: Economist Intelligence Unit, World Health Organization

### Catalytic funding

Catalytic funding provides external sources of capital for establishing the supply and/or demand of health services, with little to no expectation of financial return. Sources of this funding typically comes from global development assistance donors.

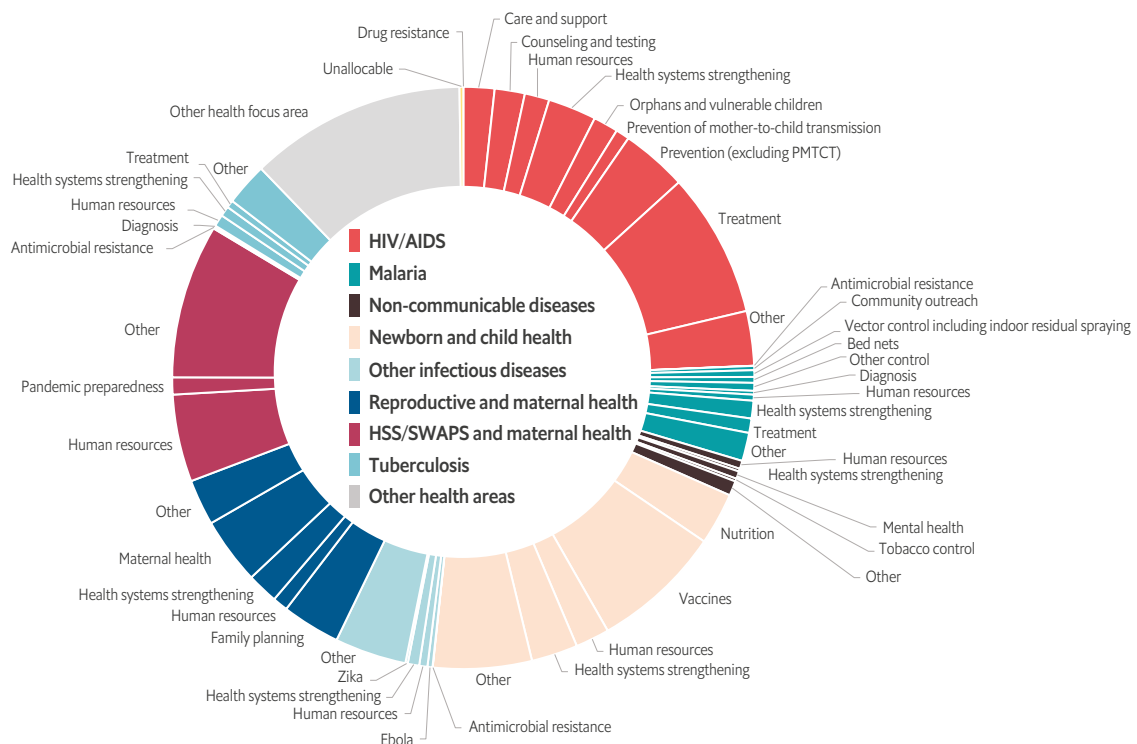
### Global development assistance

Total global development assistance for health was US\$38.9bn in 2018, down from over 40bn in 2017. The source of these funds remains mostly government donors, with relatively small funding from private philanthropic foundations or other private-party contributions. Between 2000 and 2018, the biggest recipients of global funding

were programmes focused on HIV (~25%) and reproductive, maternal, new-born and child health (~30%). Non-communicable diseases, such as cancer, accounted for only 2% of funding (see Figure 5).<sup>32</sup> It is clear from these figures that global funding is available, and adopting an integrated approach that is recognised by funders and implementers could allow for inclusion of the cervical cancer elimination support within existing funding mechanisms.

Among funds spent on cervical cancer screening and treatment in low- and lower-middle income countries (see Figure 6), more than three quarters came from just two sources in 2019: USAID (US\$30.6mn) and Unitaid (US\$12.7mn).<sup>33</sup> Very few countries specifically receive cervical cancer funding

**Figure 5. Development assistance for health by programme and focus area, 2000-2018**

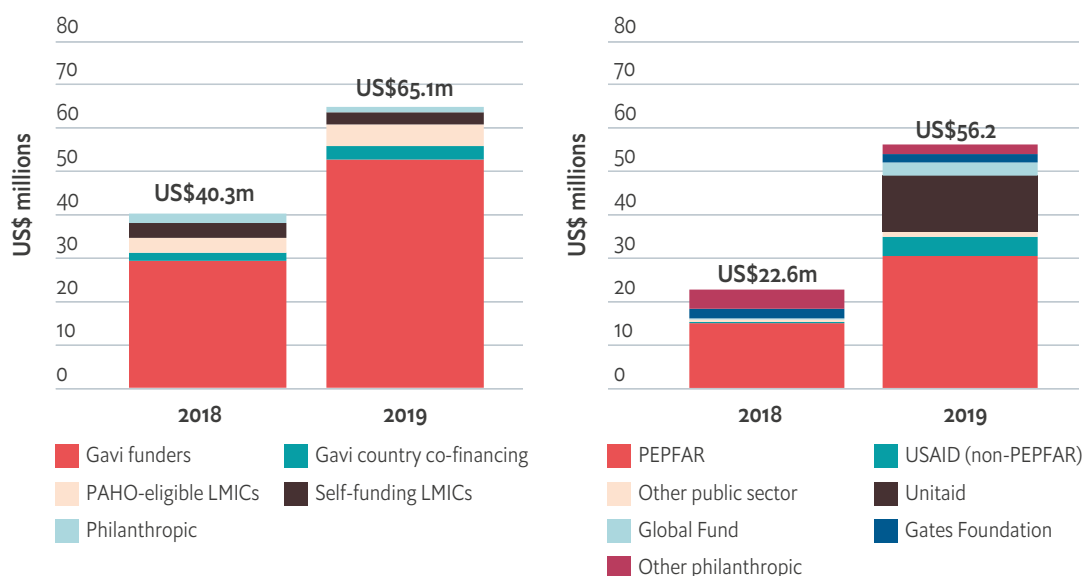


Source: Financing Global Health database, 2018<sup>32</sup>

from the USAID health portfolio,” says Farley Cleghorn. The US President’s Emergency Plan for AIDS Relief (PEPFAR) has mandated that funding needs to be used for cervical screening of women living with HIV, and integration of these services into anti-retroviral therapy clinics and places where women living with HIV receive care. A novel development in funding cervical cancer in low- and middle income countries in 2019 came from Unitaid, which was significant in that it introduced dedicated funding of US\$57m for two programmes addressing new technologies for screening and treating precancerous lesions, and

scaling up secondary prevention services. While activities associated with these dedicated funds have been critical contributors to inform the global elimination strategy, reliance on these sources for anything more than limited initial catalytic funding risks the long-term sustainability of programmes. It is incumbent on both donors and recipients to ensure that receipt of donor funding is tied to scale-up planning and long-term budgeting. In the absence of increased global funding to support cervical cancer elimination efforts, countries will need to look to other sources of financing to front-load screening and vaccination

**Figure 6. Financial support for HPV vaccination programmes (left) and cervical cancer screen-and-treat programmes in low- and lower middle-income countries, 2018-2019**



Source: TogetHER for Health, 2020<sup>5</sup>

programmes, including access to loans and utilising private capital.

### Development banks

Another source of financing available to governments is via development bank lending. Here, few specific examples exist in cervical cancer, but broader development bank alignment with SDGs and support for UHC make them a ready partner for the elimination of cervical cancer. Precedent has been set in investments towards child and maternal health and malaria elimination. For example, the Asian Development Bank (ADB) launched its Regional Malaria

and Other Communicable Disease Threats Trust Fund in 2013, with the remit to support developing member countries in developing multi-country, cross-border and multisector responses. This five-year programme funded projects that successfully reduce the burden of disease, trained providers, developed leadership and strengthened regulatory and health impact assessment bodies.<sup>34</sup> Notably, this programme contributed to the launching of ADB's first health bond, which mobilised US\$100mn of private investment channelled into supporting access programmes and UHC expansion projects in developing member countries.

“The ideal set-up might include a form of cervical cancer elimination bonds, with global donors subsidizing interest rates and the money used to front-load elimination programmes,” says Eduardo Banzon. One existing approach in cervical cancer comes from the Islamic Development Bank (IsDB), which in partnership with the International Atomic Energy Agency launched the ‘Saving Women’s Lives from Cancer’ initiative in 2019. This partnership provides funding through a blended financing structure that includes stakeholders from the private sector, development agencies and multilateral agencies to address the diagnosis and treatment of breast and cervical cancer. IsDB has pledged US\$10m in grant funding for this initiative.

### Outcomes-based financing

Various referred to as outcomes-based financing, social impact bonds or development impact bonds, this blended-finance mechanism aims to secure capital from private investors to fund social programmes, with development partners repaying initial investment when outcomes are achieved. An outcomes funder—which could be a government or an international development agency—agrees to pay for a defined, measurable outcome (if it is achieved) and without any initial risk. Investment typically comes from the private sector in terms of up-front capital and taking on the initial risk with the view for potential reimbursement and opportunity for financial return. This model has the benefit to not only mobilise private sector capital, but drive efficiencies by paying only when results are achieved.<sup>35</sup> It also offers the benefit of shorter

timeframes and incentivising practices that can show rapid results.<sup>36</sup> There are currently five development impact bonds in the market addressing issues of global health, with a further nine expected to launch in 2021.<sup>36</sup>

A recent example comes from Cameroon, where the 2.5 year Cameroon Kangaroo development impact bond was launched in 2018 to increase access to the Kangaroo Mother Care (KMC) programme which aims to improve weight gain for low birth weight and premature babies.<sup>36</sup> US\$2m up-front capital was provided by Grand Challenge Canada as the investor which will be reimbursed if the project is successful, along with a US\$800,000 grant for upgrading facilities and training healthcare providers. The outcome funder—ultimately paying for each outcome achieved—is the Cameroon Ministry of Public Health and the Global Financing Facility. The development impact bond mechanism was chosen for this programme given the need for a large up-front investment in capacity, and the novelty of introducing a programme with demonstrated efficacy in Colombia, into the Cameroonian setting. Interim measures of success were seen in 2019, with eight out of a target ten hospitals adequately trained and providing services, and 500 infants enrolled ahead of the 323 forecasted.

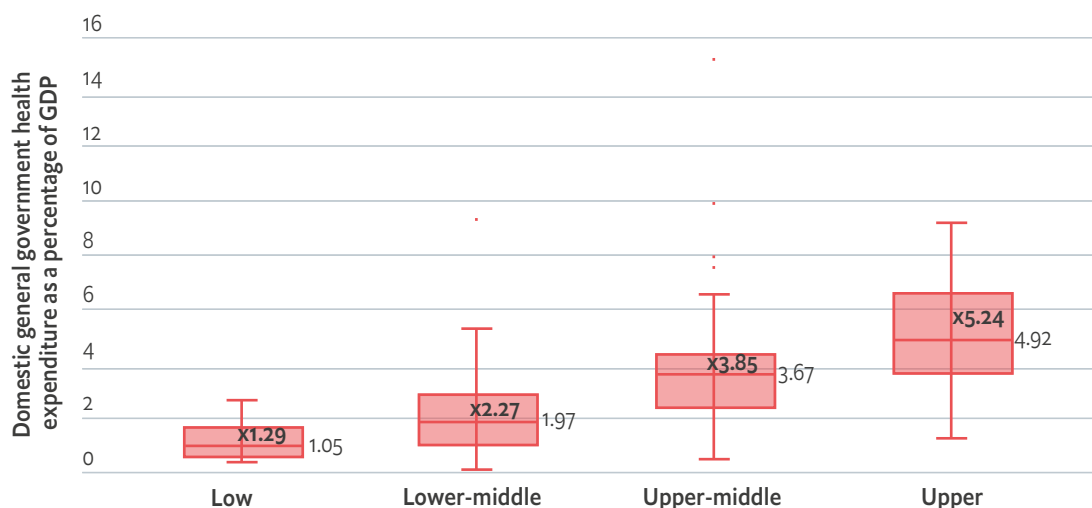
Further in-depth analysis and scenario planning for development impact bonds have been applied to areas such as malnutrition and reproductive health, the links with which make this a ready opportunity to extend existing models to include cervical cancer services. While these financing models offer innovative alternatives to the problems at

hand, they are not suitable in all situations. “In some countries, there are too many basic health system barriers that would not accommodate a space for results-based financing,” says Farley Cleghorn. “We need to do more basic health infrastructure and health system work in order to accommodate any of these innovative approaches.” For cervical cancer, those countries lacking basic infrastructure are also those with the highest disease burden, reinforcing the need for foundational investments to enable downstream sustainable financing solutions. In the absence of this, the drive towards elimination risks widening disparities in cervical cancer incidence and mortality between countries even further.

### Transition to sustainable domestic financing

Successful transition from catalytic funding to apportioning sustainable and efficient domestic spending remains paramount for Nick Furtado. Transition planning must form a key component of any application for financial assistance—even in the absence of transition funds being available at the time of planning. The best buys for health are often basic interventions, and the heavy lifting needed for addressing cancer requires both time and a concerted push to get onto the agenda for the Ministry of Finance. “If there is no scheme to improve domestic resource mobilization at the end of a funding period, the programme will

**Figure 7. Government spending on health in 2018 as a proportion of gross domestic product (GDP) by World Bank income group**



Source: Economist Intelligence Unit, World Health Organization  
 Boxplots show median (blue line) and interquartile range (25th to 75th percentile); x represents mean; circles show outliers.



collapse,” adds Isaac Adewole. Lack of long-term sustainability ultimately compromises efforts to reach elimination targets.

Another key challenge in transition planning is ensuring high risk populations are assured access to government funded programmes, noting that potential for increased stigma needs to be mitigated against. Experience from work with people living with HIV has shown that this very support can lead to extensive discrimination and must be kept in mind as cervical cancer plans are shaped. The direct funding of CSOs has been used as a way to bridge the gap and reach these populations in a sensitive manner. “In West Africa, there’s still quite a bit of taboo around cancer, especially for women and their reproductive health”, says Marie Ba. Research funding is a critical component of getting the community messaging right for cervical cancer.



**Any funding source for cancer should be evaluated in terms of revenue-generating potential and how it affects the guiding principles of UHC**

Filip Meheus, health economist for the International Agency for Research on Cancer

Fundamentally, low and lower-middle income countries are not prioritising health spending within their budgets: government health spending as a proportion of GDP is only 1.3% in low income and 2.3% in lower-middle income

countries compared with more than 5% in high income countries (see Figure 7).

The WHO recommends that countries spend at least 5% of GDP on healthcare to adequately provide UHC.<sup>37</sup>

Prioritisation within healthcare spending remains a critical step, with emphasis on those diseases and programmes where intervention will be cost-effective. HPV vaccination and screening have long-been considered very cost-effective and are included as ‘best buys’ in the WHO Global NCD Action Plan.<sup>38</sup> “Any funding source for cancer should be evaluated in terms of revenue-generating potential and how it affects the guiding principles of UHC”, says Filip Meheus, health economist for the International Agency for Research on Cancer (IARC). Defining affordability in the local context, and designing programmes based on this, offers better potential for long-term programme sustainability. “Some of the most successful development programmes do not rely on external funding but are built on the local economy: designing services that balance affordability, compatibility with local delivery capabilities, and of sufficient quality that ultimately can build trust with the population,” says Franxois-Xavier Babin. For cervical cancer programmes, this means looking at the cost-benefit of point-of-care testing versus using a centralised laboratory service which must be addressed by analysis of individual local situations. A stepwise approach is often necessary, with pilot schemes determining the cost-effectiveness of different mechanisms, and the best options scaled up with a detailed and realistic business model.

Framing cervical cancer elimination around the global strategy’s 90:70:90 targets enables

a fresh look at the scale-up and integration of people-centred services as countries expand their UHC packages. Multiple tools have been developed to assist countries in this process. The WHO's comprehensive tool on cervical cancer costing—which covers vaccination, screening and treatment of precancerous lesions—enables assessment of funding needs and shaping of feasible, phased scale-up plans, linking with similar tools for integration into cancer and NCD plans.<sup>39</sup> These disease-specific tools should be used to assess domestic funding capacity, with early dialogue to explore ways to integrate cervical cancer interventions into the benefit package within the framework of UHC, with commitment and assurances by both donors and recipients towards this goal.

Long-term sustainable funding of cancer services will rely on expanding government funding via the use of compulsory pre-payment funding sources (that is taxation or compulsory health insurance mechanisms). Several additional financing mechanisms have been used to supplement funding for cancer care and increase financial protection which warrant consideration. These mechanism are highly situation-dependent and include compulsory medical saving accounts, lottery-based funding, earmarked sin taxes and compassionate use models.<sup>40</sup>

Population-level compulsory medical savings accounts are used exclusively in Singapore (at the national level) and Mainland China (at a provincial/city level), where government-run schemes earmark individuals' savings for health expenditures. The feasibility and sustainability of such systems require higher income levels per

capita, a culture for saving and personal responsibility, and a well-functioning and transparent health regulatory system.<sup>40</sup> Furthermore, recent analyses of the impact of these schemes suggest they are generally inefficient and inequitable and have not provided adequate financial protection, with the long-term impact on healthcare costs unclear.<sup>41</sup>

The Philippines has adopted a lottery-based funding model for funding for health and welfare-related projects. The Philippine Charity Sweepstakes Office is a governmental department that collects revenue from charitable sweepstakes, lotteries and races, and assigns associated revenue to national health initiatives, medical assistance programs, and charities that provide health services. Panama introduced a sin tax on consumption of sugar-sweetened beverages in 2019, with 75% of tax revenue directed towards the health sector and 40% of total revenue earmarked for NCDs targeting diabetes and cancers. This consumption tax is projected to generate US\$30mn annually.<sup>40</sup> There are no reports of these being applied to scale cervical cancer services as yet. In addition, the vulnerability of these financing sources to changing economic circumstances should be recognised, particularly given the evolving economic impact of the Covid-19 pandemic.

### **Micro-insurance and micro-financing**

Several micro-finance and micro-insurance programmes have been used as alternative financing solutions to empower individual contributions and incentivise prevention activities in low-income settings.

Learnings suggest that where micro-finance—the provision of small loans to those otherwise without access to credit—is integrated with health interventions it is associated with a reduction in illnesses affecting business activity and positive impacts on knowledge, health behaviours, use of health services and health outcomes.<sup>42,43</sup> In sub-Saharan Africa, microcredit has shown positive impacts on health, savings, and asset accumulation.<sup>44</sup> Micro-finance and health programmes have been used in HIV, reproductive and child health, and malaria.<sup>45</sup> The inclusion of cervical cancer screening and education services into existing programmes targeting women, or the design of novel programmes to reach key populations should be considered, however revenue-generating and population coverage potential of such programmes remains limited by cost and difficulty in scaling-up programmes. In Latin America, the women's development organisation Pro Mujer included a basic health screening programme and primary care services in conjunction with micro-finance loans in Argentina, Bolivia, Mexico, Nicaragua and Peru. The programme addressed four dimensions of healthcare access: geographic accessibility, availability, affordability, and acceptability and included screening for diabetes, hypertension, obesity and breast/cervical cancer. On average, 13% of eligible Pro Mujer clients receive cervical cancer screening and 21% receive breast screening each year.<sup>46</sup> An additional programme in Bolivia covers cancer detection and treatment with funding from financial services reserves.<sup>40</sup>

Several microinsurance programmes focussing on convenience and extending reach—utilising

existing infrastructure and low-cost, low-commitment products—have been launched in Africa and Asia. A similar approach could be adopted to address cervical cancer in settings where populations have the capacity to buy such plans. In Thailand, the Office of the Insurance Commission initiated micro-insurance plans with five leading insurance companies, that provide easily accessible and low-cost coverage against risks such as cancer. The policies are sold at convenience stores and are designed to be simple to understand.<sup>40</sup> In Africa, several micro-insurance products have been developed with telecom companies, either as rewards for customer loyalty, or leveraging mobile networks as a payment method. A programme in Kenya launched by M-PESA Foundation's CarePay in partnership with PharmAccess and local telco Safaricom utilises mobile connectivity to allow users to save towards, as well as pay for, health care costs via SMS. The programme—called M-Tiba—also allows for the collection of anonymised health data and real-time mapping of health trends.<sup>47</sup> Donors and insurers can use the platform to offer healthcare financing products, which have included offerings from both private companies, corporate employers, institutional donors and the Kenyan National Hospital Insurance Fund.

### Private sector engagement

Where domestic public funding or reliance on international donors is unrealistic in the mid to longer term, private sector engagement—both in terms of health services and insurance companies, and also other locally active industries such as

mining, telecommunications or other large employers—are infrequently used sources to address the cervical cancer burden. “The local private sector is an untapped pool when we’re talking about domestic resource mobilization in Nigeria,” says Isaac Adewole. These include investments in infrastructure through private healthcare providers, and channelling corporate social responsibility spending into priority health areas connected to local communities. Where this is done by adopting a consortium approach, involving both public and private sector actors, this also offers additional benefits of speed and ability to leverage existing platforms to scale up and combine services. One of the most notable examples of public-private sector collaborations to catalyse new cervical cancer services is the George W Bush Institute-affiliated Pink Ribbon Red Ribbon, a partnership with national governments, NGOs, multilateral organisations, foundations and corporations that leveraged public and private investment to combat cervical and breast cancer. This programme ran in five African countries (Botswana, Ethiopia, Namibia, Tanzania, Zambia) and Peru, with a focus on education, vaccination, screening and increasing access to treatment and training for healthcare providers. This programme was superseded by the Go Further, a public-private partnership between the Bush Institute, PEPFAR, UNAIDS and Merck and has completed more than 1.5m cervical screenings for women living with HIV.

### Case study: Combining HPV testing and digital health with existing health infrastructure in Malaysia—Program ROSE

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 aged 15–44 years. There were an estimated 1,682 new cases and 944 deaths due to cervical cancer in 2018.<sup>48</sup> HPV vaccination was included in the national routine immunization programme in 2010, however routine cervical screening reaches less than a quarter of eligible women aged 22–65 years despite awareness campaigns and broadly accessible health infrastructure.

Program *Removing Obstacles to Cervical Screening* (ROSE), started as a pilot project in Kuala Lumpur, as a joint project led by researchers from the University of Malaya in partnership with the VCS Foundation in Australia. 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 such services. To overcome these barriers, Program 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, allowing women to register and receive follow-up communications in a secure and convenient way via their mobile phone.<sup>49</sup> This digital aspect forms not only a closed-loop system that ensures test results are known to the patient, but also allows for building a registry, enabling recall for follow-up and testing at 5-yearly intervals. Importantly, this programme was designed to strategically use existing government clinic infrastructure without disrupting existing service provision or requiring further investment in infrastructure.

More than 8,000 women have been screened since the initial pilot launch, and the programme managers are now scaling this to a population level in the greater Kuala Lumpur area. Among 1,000 of these women who were surveyed about their experience, 97% said they would recommend the programme, with its speed, simplicity, and use of self-collection and results available via phone all cited as positives. 99% reported a preference for the ROSE test versus a conventional Pap smear.

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. In July 2019, a charitable foundation—the ROSE Foundation—was formed as a legal entity to run both Program ROSE as well as the centralised ROSE Laboratory which processes HPV samples. 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>50</sup> Future work of the programme will focus on enhancing public awareness and increasing coverage of women in Malaysia screened and referred to treatment via this mechanism.

## Conclusions

It is clear that any successful and sustainable long-term solution to addressing cervical cancer elimination will be highly country- and situation-specific. The following set of priorities can be drawn on to engage policy and financing decision makers:

**Position cervical cancer elimination as an investment in the health system, society and broader economy with positive longer-term return on investment.** Cervical cancer affects women in their most productive years, leaving children without mothers and removing them from the workforce. The societal and economic impact should be communicated to funding decision makers along with the long-term return on investments in addressing this public health priority.

**Generate local data to inform health financing design and decision making.** An in-depth understanding of the epidemiology, and barriers to uptake of cervical cancer screening and where necessary follow up treatment services is required at the country level, and to inform prioritisation of the highest-impact and most sustainable solutions. Such analyses must also identify and address funding and resource allocation inefficiencies within health systems.

**Assess national funding and extent of high-quality services using available WHO costing and modelling tools to develop feasible, stepwise scale up plans.** Solutions designed to fit within each country's capacity and affordability constraints will be more sustainable in the long-term. The use of existing costing and modelling tools should be prioritised to identify opportunities and gaps for stepwise scaling to national level programmes. The success of elimination

programmes relies on a systematic and organized approach best implemented via the framework of well-planned UHC which incorporates budgeting and planning of healthcare services.

**Champion integration at a policy, financing, programme and service level to ensure success and sustainability.**

Siloed approaches to addressing public health introduce financial inefficiencies which can be minimised or avoided in full. The overlap between cervical cancer and other public health priorities—such as HIV and reproductive health services—should be capitalised. Strong leadership should be nurtured at national and service delivery levels to ensure integration and associated benefits are realised.

**Invest in capacity to treat higher-grade cervical lesions.** Without robust referral pathways and access to healthcare facilities for treatment of more advanced cervical cancer cases, women diagnosed will still experience unacceptably high mortality.

**Utilise innovative and blended finance solutions to complement domestic funding.**

Domestic funding of cancer services—including cervical cancer—in low-resource settings is insufficient to scale national programmes. The global financial consequences of the covid-19 pandemic will further impact health funding. Countries must increase domestic spending and better utilise taxation and social health insurance schemes, while leveraging alternative supplementary finance systems where available. A consortium approach which leverages private-sector capital, expertise and speed should be considered.

## Tools and further reading

- Global strategy to accelerate the elimination of cervical cancer as a public health problem**  
World Health Organization, 2020  
[www.who.int/publications/i/item/9789240014107](http://www.who.int/publications/i/item/9789240014107)
- Introducing and scaling up testing for human papillomavirus as part of a comprehensive programme for prevention and control of cervical cancer; A step-by-step guide**  
World Health Organization, 2020  
[www.who.int/publications/i/item/9789240015166](http://www.who.int/publications/i/item/9789240015166)
- WHO Cervical Cancer Prevention and Control Costing (C4P) Tool**  
World Health Organization, 2020  
[www.who.int/immunization/diseases/hpv/cervical\\_cancer\\_costing\\_tool/en](http://www.who.int/immunization/diseases/hpv/cervical_cancer_costing_tool/en)
- WHO technical guidance and specifications of medical devices for screening and treatment of precancerous lesions in the prevention of cervical cancer**  
World Health Organization, 2020  
[www.who.int/publications/i/item/9789240002630](http://www.who.int/publications/i/item/9789240002630)
- Screening and treatment of precancerous lesions for secondary prevention of cervical cancer; Technology landscape**  
Unitaid, 2019  
[https://unitaid.org/assets/Cervical\\_Cancer\\_Technology-landscape-2019.pdf](https://unitaid.org/assets/Cervical_Cancer_Technology-landscape-2019.pdf)
- Improving data for decision-making: a toolkit for cervical cancer prevention and control programmes**  
World Health Organization, United States Centers for Disease Control and Prevention, CDC Foundation, George W. Bush Institute, 2019  
[www.who.int/ncds/surveillance/data-toolkit-for-cervical-cancer-prevention-control/en/](http://www.who.int/ncds/surveillance/data-toolkit-for-cervical-cancer-prevention-control/en/)
- Comprehensive cervical cancer control; A guide to essential practice - Second edition**  
World Health Organization, 2016  
[www.who.int/publications/i/item/9789241548953](http://www.who.int/publications/i/item/9789241548953)
- Guidelines for screening and treatment of precancerous lesions for cervical cancer prevention; WHO guidelines**  
World Health Organization, 2013  
[www.who.int/reproductivehealth/publications/cancers/screening\\_and\\_treatment\\_of\\_precancerous\\_lesions/en/](http://www.who.int/reproductivehealth/publications/cancers/screening_and_treatment_of_precancerous_lesions/en/)
- Monitoring national cervical cancer prevention and control programmes; Quality control and quality assurance for visual inspection with acetic acid (VIA)-based programmes**  
World Health Organization, Pan American Health Organization, 2013  
[www.who.int/reproductivehealth/publications/cancers/9789241505260/en/](http://www.who.int/reproductivehealth/publications/cancers/9789241505260/en/)
- Cancer Screening in Five Continents (CanScreen5); Global repository of information on cancer screening programmes**  
International Agency for Research on Cancer  
<https://canscreen5.iarc.fr/>

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