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National action towards a world free of cervical cancer for all women

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There is no greater tragedy than a life lost needlessly. Since the World Health Organization (WHO) Director General's call to action to eliminate cervical cancer as a public health problem in May 2018, more than 300,000 women have died each year from cervical cancer, a disease that is completely preventable (International Agency for Research on Cancer, 2018). This call was prompted by the fact that, despite having the tools and the knowledge to prevent, screen and treat women with cervical cancer, the global health community has not tackled this disease in a coherent and consistent way. As a result, we continue to see nearly 600,000 new cases of cervical cancer each year, with disproportionate disease burden and death occurring in low and middle-income countries (LMICs) and in poor, remote, and marginalized groups within countries (Mailhot Vega et al., 2019; de Souza et al., 2016).

Despite the challenges of the covid-19 pandemic (Giuliano and Niccolai, 2020), the World Health Assembly in 2020 adopted a Global Strategy towards the Elimination of Cervical Cancer as a public health problem (World Health Organization, 2019). A step-change approach with a united goal of achieving a population-based and outcomes-focused scale-up of vaccination against human papillomavirus (HPV), screening and treatment of precancerous lesions, and management and palliative care for patients suffering from invasive cervical cancer will protect women throughout the life course. The strategy provides a roadmap using proven, evidence-based interventions. While the notion of defeating this cancer appeared beyond reach in the past, the evidence suggests that elimination of cervical cancer as a public health problem is now feasible. We can drive the incidence of cervical cancer below 4 per 100,000 women in every country in the world within a century, below that of the definition of a rare cancer, and prevent over 70 million new cases and avert a further 62 million deaths in 78 of the lowest income and highest burden settings alone (Brisson et al., 2020; Canfell et al., 2020).

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Cervical cancer elimination is an essential component of the Sustainable Development Goals (SDG) commitment to leave no one behind, tackle inequities and uphold the right of women and adolescent girls to health throughout their lives, as elaborated in the SDGs (United Nations General Assembly, 2015). The interventions for eliminating cervical cancer are consistent with the SDG approach of strengthening health care systems at every level and ensuring solid linkages between primary health care and referral services (World Health Organization, 2018a). The current unprecedented commitment to Universal Health Coverage (UHC) globally will also support cervical cancer elimination as it guarantees services for all communities, especially those that have been marginalized and excluded in the past, by protecting mid-adult women at the prime of their lives (Tsu and Levin, 2008).

The global strategy contains three pillars with associated goals: 1) increasing coverage of HPV vaccination of all girls 9–14 years of age to 90%, 2) increasing coverage of cervical cancer screening of women twice–at age 35 and age 45–to 70%, and 3) increasing coverage of treatment for all women identified with precancerous lesions and invasive cervical cancer to 90%—all by 2030 (World Health Organization, 2019). The global push to scale up and achieve high coverage is key. Whilst the current status and best practice responses are described elsewhere in this special edition (Bruni et al., 2020; Woo et al., 2020; Wentzensen et al., 2020), we note that the global coverage with the final dose of HPV currently is estimated at 15%, with 23% of countries having ≥50% coverage, but only 3% having ≥90% coverage (World Health Organization, 2020a; World Health Organization, 2020b; World Health Organization, 2020c). Similarly, although 65% of countries do have cervical screening, only 40% of countries have population-based programmes and only 7% of countries currently use HPV tests. In addition, only 18% of countries that provide screening achieve the recommended coverage target of more than 70% (World Health Organization, 2020c). Once the 90–70–90 foundation is in place and sustained, many countries will achieve elimination within another decade or two. In low and lower-middle income countries alone, 2 million cervical cancer deaths can be prevented by 2040 if this strategy is implemented (Canfell et al., 2020).

High coverage of screening, precancer treatment, and cancer management has led to substantial decreases in the past 5–6 decades in the incidence of and mortality from cervical cancer in some high-income countries (Pesola and Sasieni, 2019). It is striking to note that on average the mortality rate of cervical cancer is 3 times higher for low and medium Human Development Index (HDI) countries as compared to high HDI countries (Bray et al., 2018). It is simply unjust to tolerate these inequities. We must ensure the same impactful services are available to all girls and women, regardless of where they live or who they are. Within countries, inequities across income levels persist, driven by gender discrimination and poverty, in addition to those living in hard to reach areas, refugees, migrants, indigenous populations and other marginalized groups with limited or no access to services (Vasilevska et al., 2012; Tsui et al., 2007; Kouyoumdjian et al., 2018; Nevin et al., 2019). New community level partnerships and coalitions will be needed to identify and include representation from these vulnerable groups to tailor approaches as services expand. Failure to address these inequities condemns women to social exclusion and the harrowing reality of a protracted, painful and undignified death. We therefore advocate investing in women by integration of cervical cancer prevention and control services, health systems strengthening

and sustainable financing and, in this article, we emphasise equity, financial protection, and a focus on women as agents of change and drivers of success.

Cervical cancer affects women in the prime of their lives and has a devastating impact on their families and communities (Ginsburg et al., 2017). Investing in the interventions to meet the 90–70-90 targets offers immense economic and societal returns. For every US $1 invested through 2050, an estimated US $26 is gained in societal and economic benefits (World Health Organization, 2019). Successful integrated delivery will need coordination between a range of partners in the public and private sectors. When planned for and well managed at all levels of the health system, integration has significant potential to expand the health services for pre-adolescent girls and mid-adult women as well as centralise and strengthen tertiary cancer management. For example, the Gates funded Cervical Cancer Screening and Preventative Therapy Initiative integrated secondary prevention with Family Planning Services using existing platforms, thereby reaching 1.4 million women in Kenya, Nigeria, Tanzania and Uganda (White et al., 2017). Further benefits include meeting multiple global health commitments and community needs, achieving better overall health for women, enabling synergies and efficiencies in health service delivery, building community engagement, addressing stigma and misconceptions, and strengthening health systems.

WHO defines integrated service delivery as the management and delivery of health services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health system (World Health Organization, 2008). By transcending common health service dividing lines integration supports transition to a healthcare user-centred approach, building on existing and trusted community services (Hall et al., 2020). Data show that an integrated package of services brings in a greater diversity in the profile of clients, providing a platform for multiple health needs to be met in a single visit to a health facility (Mayhew et al., 2017a). There is potential for swift scale-up of cervical cancer prevention services by, for example, building on existing service delivery platforms such as laboratory services (Phiri et al., 2016); in addition, new technologies, such as self-sampling, HPV-testing and thermal ablation of cervical precancers offer women-centric options that are increasing the feasibility of community level care and offering more choices to women (Cubie and Campbell, 2020). This is especially important for women, who often have heavy family and household responsibilities that cannot be easily set aside for health care visits (Woo, 2019).

To increase access to and uptake of services with an equity lens, integration needs to be reflected in the organization and management of all levels of the health system, noting that whilst integrated services do not always lead to cost savings at the facility level, they often lead to efficiencies that reduce costs across the value chain (Raus et al., 2020). Health-care provider capacity needs to be developed to deliver multiple services to a larger number of users, requiring investments in training existing and new service providers. Whilst some studies show that integration leads to greater provider satisfaction, others show that the increased client load resulting from integration causes providers to be over-worked (White et al., 2017; Mayhew et al., 2017b). Successful integration efforts will therefore require careful triaging, age-specific targeting and increasing staff capacity and opportunities for career

development. Logistics need to be carefully managed to ensure uninterrupted availability of supplies for the delivery of integrated services, and importantly, the capacity of health management information systems needs to be enhanced (Suter et al., 2009).

The outcomes-focus of the WHO Global Strategy emphasises the importance of acting immediately on three fronts. A comparative modelling analysis demonstrates that incremental scale-up and a shift to early detection and prevention over the next century would save more than 62 million women's lives (Canfell et al., 2020). Critically, in the next 10 years, a one-third reduction in premature cervical cancer mortality in LMICs is possible, contributing to the realisation of the SDGs, but will rely heavily on the immediate availability and scale-up of cervical cancer treatment (World Health Organization, 2017a). However, in 2019, while more than 90% of high-income countries reported that comprehensive treatment and palliative care services for cancer were available in the public health system, fewer than 15% of low-income countries had them (World Health Organization, 2020c). Therefore, systematic planning and investment is required across the health systems building blocks in support of clinical decision-making based on the effective, safe and cost-effective use of cancer diagnostic and therapeutic services, such as cancer surgery, radiation and chemotherapy (World Health Organization, 2020c; World Health Organization, 2007; World Health Organization, 2017b). Regional and sub-regional technical partnerships and networks will be key to creating centres of excellence for the management of cervical cancer, facilitating cross-sectoral cooperation between health professionals, as well as ensuring the training of personnel at all levels of health systems (World Health Organization, 2017b). This represents an opportunity to build resilience and add value for the effective management of all cancers, in line with the WHO investment case ("best buys") for NCD prevention and control (World Health Organization, 2018b; Martin-Moreno et al., 2012).

Efficient referral mechanisms are critical for success (Lima et al., 2020). Approaches have been effective in ensuring community-based treatment of appropriate precancers, whereas women with larger lesions or cases of suspected invasive cancer requiring referral to higher-level care are often lost to the system, despite the urgency for confirmatory diagnosis and treatment (World Health Organization, 2013a). Innovative technologies and e-health solutions such as smartphone enhanced training, quality assurance and monitoring of screening in Tanzania and a client app in Malaysia offer new opportunities to close this gap to ensure efficient navigation and include women in the process (Cubie and Campbell, 2020; Woo, 2019; Yeates et al., 2020). Fostering partnerships between government, nongovernmental and patient organizations has been shown to be critical in further supporting women to complete screening and necessary treatment (Schear et al., 2015; Lynge et al., 2012, Greer et al., 2017).

For the WHO call for cervical cancer elimination to take root and bring the envisaged future free from cervical cancer in the next 100 years, there is a need to work with community stakeholders to rethink how we address current perceptions, and mitigate misconceptions that could emanate from implementation of the WHO global strategy. Anticipated learnings from HPV vaccination, for example, will not only improve uptake of HPV vaccine but

should provide useful insights on how to reduce gender inequities in access to other vaccines and prevention services.

Some commonly reported myths and misconceptions about cervical cancer include perceptions that cervical cancer is caused by witchcraft, promiscuity, and curses; beliefs that the disease is a punishment for sins; a result of poor hygiene; or that it is an inescapable fate/destiny (Chirwa et al., 2010; Ngutu and Nyamongo, 2015; Ololade et al., 2019; Gregg, 2011; Mosavel et al., 2009). Regrettably, these beliefs can perpetuate stigma against women with cervical cancer or precancer (Gupta et al., 2015). The stigma can be self-perpetrated or community driven, bringing about feelings of shame or guilt, resulting in anxiety and depression as well as self-isolation out of fear of discrimination or social rejection. Research has shown that these myths and misconceptions have for long contributed to the high incidence of cervical cancer in LMICs, since they negatively influence health seeking behaviours among women, with significant delays that result in late presentation and, ultimately, diagnosis with late stage cervical cancer when treatment costs are high and chances of recovery are minimised. Conversely, there are excellent emerging examples of successful collaboration with religious groups, traditional healers and trusted voices in the communities such as village councillors that are helping to reduce these barriers (Nene et al., 2007; Alliance for Cervical Cancer Prevention, 2004; Sophy and Mavis, 2008).

A focus on behaviour change communications interventions that are culturally appropriate is one way to reduce stigma and address the root cause of hesitancy to vaccination and screening (Erwin et al., 2019). This may in the long run prove to be equally important to secure ownership and increase demand. But as has been pointed out in studies that advocate for communications as a tool to address misconceptions, care should be taken to ensure that the information given is not further reinforcing the myths and misconceptions (Lewandowsky et al., 2012). Since the risk behaviours for reproductive health, HIV and cervical cancer are intertwined and often associated with unsafe sexual behaviours, integrated services help to reduce stigma associated with individual services in the package (Huchko et al., 2015).

Another important misperception– that cervical cancer is a death sentence– can best be countered by providing an alternate, compelling reality and bringing cervical cancer survivors in as advocates and educators (PATH, 2015). For example, cervical cancer survivors were involved as champions for the HPV vaccine launch in Kenya in 2019, with the first girl to be vaccinated in the national routine immunization being a daughter of a cervical cancer survivor (Ongaji, 2020). Bringing the voice of survivors to programme design and implementation will not only attract bright minds with lived experience but also showcase success stories, thereby positively influencing perception, and in turn playing a critical role to destigmatise the disease. Survivors form a credible community of influencers, utilising the profound knowledge of their communities to break down barriers and act as a bridge to a future without cervical cancer.

WHO has succeeded in creating a vision and a pathway for international actors and member nations to invest in cervical cancer elimination. This vision must now be shared with women to inspire broad uptake of screening to downstage disease, timely follow through on

treatment, and engagement as agents of change in support of vaccinating girls. It is important that we shift the mind-set of communities as a whole and particularly for women to see prevention as being in their own best interest, ultimately making elimination a personal commitment by women and girls. A new generation of informed girls will also help to build health literacy and sustain the momentum required to achieve elimination.

As the elimination of cervical cancer requires sustained efforts over many years, it is imperative that funding streams are built into national systems. Public and private insurance schemes can provide the needed revenue and remove barriers to care for many individuals, but if they leave the most vulnerable behind they can exacerbate cancer disparities (Gelband et al., 2016; Maruthappu et al., 2016). The 2019 Political Declaration of the UN high-level meeting on universal health coverage reaffirmed that health is a precondition for, and an outcome and indicator of, all dimensions of sustainable development, and countries strongly recommitted themselves to achieving universal health coverage by 2030. Cervical cancer services across the care continuum are included in and considered a priority for achievement of the SDG health target. Further, sustainability of the 90–70-90 coverage targets will be greatly facilitated by the successful realisation of universal health coverage in countries (SDG targets 3.8 and 5.6).

The goal of UHC, according to WHO, is to ensure that all people are able to obtain the health services that they need without suffering financial hardship because they cannot afford to pay for them (United Nations General Assembly, 2013; World Health Organization, 2013b). Many LMICs are working to achieve greater financial protection in health care, with funding that combines public insurance and prepayment. Incremental establishment of universal entitlement to key services through guaranteed benefits packages is a cornerstone of these efforts (Knaul et al., 2015). The package of cervical cancer elimination services therefore poses a ready opportunity to integrate financial protection measures into UHC approaches, taking into consideration the proportion of the service cost covered, the breadth of covered services, and the proportion of the population covered as services are scaled up over time (World Health Organization, 2010).

Domestic funding in the vast majority of LMICs does pay for the bulk of cancer prevention and care. Analyses such as that of Disease Control Priorities show that while implementation of an essential package of cost-effective cancer interventions, including cervical cancer prevention and control services, was considered feasible in all settings, in terms of annual expenditure per capita, introduction in low-income countries would need external support (United Nations General Assembly, 2013). In order that we leave no country behind, some countries will require international assistance to make the upfront health systems investments needed to meet the 2030 targets. In addition, global initiatives are needed to reduce the costs of key inputs for an elimination package, including large-scale commodity purchases. In the WHA resolution, Member States particularly recognised the importance of strengthening HPV vaccine supply and access, including by improving affordability to facilitate its inclusion into national immunization programmes. Gavi, the Vaccine Alliance, has a key role to play in ensuring long-term sustainability (Gavi, 2020; Hanson et al., 2015).

Partnerships such as the pan-UN *Cervical Cancer Elimination Initiative* are forming in response to the global call to action towards elimination of cervical cancer as a public health concern. Multi-stakeholder partnerships are needed both at regional and national levels to activate resources, share expertise and best practices to guide national efforts, and support coordinated investment in people, technology and infrastructure, as well as to align and implement policies and programmes that accelerate all countries towards the threshold for elimination.

Saving millions of women's lives in the coming decades will be greatly facilitated by making a concerted effort to achieve the 90–70–90 coverage targets by 2030. Three drivers for success in the next ten years are: first, a focus on addressing intolerable inequities in access to health information, prevention, early detection, treatment and palliative care services; second, structuring of cost-effective approaches that progressively realise the targets, ensuring sustainable financial support and social protection; and third, engaging women, including cancer survivors, as agents of change, creating platforms for them to have a voice in society and influence policy (Markham, 2013; Kapambwe et al., 2013). Making communities the heart of the response and putting women at the centre is essential to eventual success. With the adoption of the WHO Global Strategy we are at a significant moment in history for addressing women's health and cancer globally. For the first time, a generation is making a global commitment to eliminate a specific cancer. We call on all stakeholders to recognise the enormity of the opportunity and be bold in their response.

References

Alliance for Cervical Cancer Prevention, 2004. Improving Screening Coverage Rates of Cervical Cancer Prevention Programs: A Focus on Communities. ACCP, Seattle. https://screening.iarc.fr/doc/RH_accp_improve_screening.pdf (Accessed 26th September, 2020).

Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A, 2018. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J. Clin. 68, 394–424. [PubMed: 30207593]

Brisson M, Kim JJ, Canfell K, Drolet M, Gingas G, Burger E, et al., 2020. Impact of HPV vaccination and cervical screening on cervical cancer elimination: a comparative modelling analysis in 78 low-income and lower-middle-income countries. Lancet 395, 575–590. [PubMed: 32007141]

Bruni L, et al., 2020. The status of HPV vaccination introduction worldwide and WHO and UNICEF estimates of national HPV immunization coverage 2010–2018. Effective design and quality implementation of HPV vaccination programs in low-resource countries. Prev. Med.

Canfell K, Kim JJ, Brisson M, et al., 2020. Mortality impact of achieving WHO cervical cancer elimination targets: a comparative modelling analysis in 78 low-income and lower-middle-income countries. Lancet 395, 591–603. [PubMed: 32007142]

Chirwa S, Mwanahamuntu M, Kapambwe S, et al., 2010. Myths and misconceptions about cervical cancer among Zambian women: rapid assessment by peer educators. Glob. Health Promot. 17, 47–50. [PubMed: 20595342]

Cubie HA, Campbell C, 2020. Cervical cancer screening – the challenges of complete pathways of care in low-income countries: focus on Malawi. Womens Health (Lond) 16. 10.1177/1745506520914804.

de Souza JA, Hunt B, Asirwa FC, Adebamowo C, Lopes G, 2016. Global health equity: cancer care outcome disparities in high-, middle-, and low-income countries. J. Clin. Oncol. 34, 6–13. [PubMed: 26578608]

Erwin E, Aronson KJ, Day A, et al., 2019. SMS behaviour change communication and eVoucher interventions to increase uptake of cervical cancer screening in the Kilimanjaro and Arusha regions

of Tanzania: a randomised, double-blind, controlled trial of effectiveness. BMJ Innovat. 5 10.1136/bmjinnov-2018-000276.

Gavi, 2020. Human Papillomavirus Vaccine Support. Gavi, The Vaccine Alliance, 23 Jan 2020. https://www.gavi.org/types-support/vaccine-support/human-papillomavirus (Accessed 26th September, 2020).

Gelband H, Sankaranarayanan R, Gauvreau CL, et al., 2016. Costs, affordability, and feasibility of an essential package of cancer control interventions in low-income and middle-income countries: key messages from disease control priorities, 3rd edition. Lancet 387, 2133–2144. [PubMed: 26578033]

Ginsburg O, Bray F, Coleman MP, et al., 2017. The global burden of women's cancers: a grand challenge in global health. Lancet 389, 847–860. [PubMed: 27814965]

Giuliano A, Niccolai L, 2020. Foreword to the special edition elimination of HPV-related cancers. J. Prevent. Med.

Greer SL, Wismar M, Pastorino G, Kosinska M (Eds.), 2017. Civil Society and Health: Contributions and Potential. WHO Regional Office for Europe, Copenhagen, Denmark.

Gregg JL, 2011. An unanticipated source of hope: stigma and cervical cancer in Brazil. Med. Anthropol. Q. 25, 70–84. [PubMed: 21495495]

Gupta A, Dhillon PK, Govil J, Bumb D, Dey S, Krishnan S, 2015. Multiple stakeholder perspectives on cancer stigma in North India. Asian Pac. J. Cancer Prev. 16, 6141–6147. [PubMed: 26320509]

Hall MT, Smith MA, Simms KT, Barnabas RV, Canfell K, Murray JM, 2020. The past, present and future impact of HIV prevention and control on HPV and cervical disease in Tanzania: a modelling study. PLoS One 15, e0231388. [PubMed: 32374729]

Hanson CM, Eckert L, Bloem P, Cernuschi T, 2015. Gavi HPV programs: application to implementation. Vaccines (Basel) 3, 408–419. [PubMed: 26343194]

Huchko MJ, Maloba M, Nakalembe M, Cohen CR, 2015. The time has come to make cervical cancer prevention an essential part of comprehensive sexual and reproductive health services for HIV-positive women in low-income countries. J. Int. AIDS Soc. 18 10.7448/IAS.18.6.20282.

International Agency for Research on Cancer, 2018. Cervix Uteri Fact Sheet. https://gco.iarc.fr/today/data/factsheets/cancers/23-Cervix-uteri-fact-sheet.pdf (Accessed 26th September, 2020).

Kapambwe S, Parham G, Mwanahamuntu M, Chirwa S, Mwanza J, Amuyunzu-Nyamongo M, 2013. Innovative approaches to promoting cervical health and raising cervical cancer awareness by use of existing cultural structures in resource-limited countries: experiences with traditional marriage counseling in Zambia. Glob. Health Promot. 20, 57–64.

Knaul F, Horton S, Yerramilli P, Gelband H, Atun R, 2015. Financing cancer care in low-resource settings. In: Gelband H, Jha P, Sankaranarayanan R, Horton, S (Eds.), Cancer: Disease Control Priorities,, Third ed.vol. 3. The International Bank for Reconstruction and Development / The World Bank, Washington (DC) http: //www.ncbi.nlm.nih.gov/books/NBK343629/. (Accessed 26th September, 2020).

Kouyoumdjian FG, McConnon A, Herrington ERS, Fung K, Lofters A, Hwang SW, 2018. Cervical cancer screening access for women who experience imprisonment in Ontario, Canada. JAMA Netw. Open 1 (8), e185637. [PubMed: 30646279]

Lewandowsky S, Ecker UKH, Seifert CM, Schwarz N, Cook J, 2012. Misinformation and its correction: continued influence and successful debiasing. Psychol. Sci. Public Int. 10.1177/1529100612451018 published online Sept 17.

Lima MS, Brito É de A C, Siqueira HFF, et al., 2020. Trends in cervical cancer and its precursor forms to evaluate screening policies in a mid-sized Northeastern Brazilian city. PLoS One 15, e0233354. [PubMed: 32428033]

Lynge E, Tornberg S, von Karsa L, Segnan N, van Delden JJM, 2012. Determinants of successful implementation of population-based cancer screening programmes. Eur. J. Cancer 48, 743–748. [PubMed: 21788130]

Mailhot Vega RB, Balogun OD, Ishaq OF, Bray F, Ginsburg O, Formenti SC, 2019. Estimating child mortality associated with maternal mortality from breast and cervical cancer. Cancer 125, 109–117. [PubMed: 30383913]

Markham S, 2013. Women as Agents of Change: Having Voice in Society and Influencing Policy (English). http://documents.worldbank.org/curated/en/773451468150287912/Women-as-agents-of-change-having-voice-in-society-and-influencing-policy (Accessed 26th September, 2020).

Martin-Moreno JM, Anttila A, von Karsa L, Alfonso-Sanchez JL, Gorgojo L, 2012. Cancer screening and health system resilience: keys to protecting and bolstering preventive services during a financial crisis. Eur. J. Cancer 48, 2212–2218. [PubMed: 22424881]

Maruthappu M, Watkins J, Noor AM, et al., 2016. Economic downturns, universal health coverage, and cancer mortality in high-income and middle-income countries, 1990–2010: a longitudinal analysis. Lancet 388, 684–695. [PubMed: 27236345]

Mayhew SH, Sweeney S, Warren CE, et al., 2017a. Numbers, systems, people: how interactions influence integration. Insights from case studies of HIV and reproductive health services delivery in Kenya. Health Policy Plan (32), iv67–81. [PubMed: 29194544]

Mayhew SH, Hopkins J, Warren CE, 2017b. Building integrated health systems: lessons from HIV, sexual and reproductive health integration. Health Policy Plan 32, iv1–5. [PubMed: 29194546]

Mosavel M, Simon C, Oakar C, Meyer S, 2009. Cervical cancer attitudes and beliefs—a Cape Town community responds on World Cancer Day. J. Cancer Educ. 24, 114–119. [PubMed: 19431027]

Nene B, Jayant K, Arrossi S, et al., 2007. Determinants of women's participation in cervical cancer screening trial, Maharashtra, India. Bull. World Health Organ. 85, 264–272. [PubMed: 17546307]

Nevin PE, Garcia PJ, Blas MM, Rao D, Molina Y, 2019. Inequities in cervical cancer care in indigenous Peruvian women. Lancet Glob. Health 7, e556–e557. [PubMed: 31000123]

Ngutu M, Nyamongo IK, 2015. Exploring the barriers to health care and psychosocial challenges in cervical cancer management in Kenya. Int. J. Women's Health 7, 791–798. [PubMed: 26346001]

Ololade K, Alabi A, Fadipe B, Adegboyega B, 2019. The 'evil arrow' myths and misconceptions of cancer at Lagos University Teaching Hospital, Nigeria. South Afr. J. Oncol. 3 10.4102/sajo.v3i0.49.

Ongaji P, 2020. Woman Giving Dignity to Cancer Patients in Slums. Daily Nation published online March 18. https://www.nation.co.kehttps://www.nation.co.ke/dailynation/news/woman-giving-dignity-to-cancer-patients-in-slums-241622 (Accessed 26th September, 2020).

PATH, 2015. Outlook on Reproductive Health: Countering Myths and Misperceptions About Contraceptives. https://path.azureedge.net/media/documents/RH_outlook_myths_mis_june_2015.pdf (Accessed 26th September 2020).

Pesola F, Sasieni P, 2019. Impact of screening on cervical cancer incidence in England: a time trend analysis. BMJ Open 9, e026292.

Phiri S, Feldacker C, Chaweza T, et al., 2016. Integrating reproductive health services into HIV care: strategies for successful implementation in a low-resource HIV clinic in Lilongwe, Malawi. J Fam Plann Reprod Health Care 42, 17–23. [PubMed: 25902815]

Raus K, Mortier E, Eeckloo K, 2020. Challenges in turning a great idea into great health policy: the case of integrated care. BMC Health Serv. Res. 20, 130. [PubMed: 32085770]

Schear RM, Manasco L, McGoldrick D, et al., 2015. International framework for cancer patient advocacy: empowering organizations and patients to create a national call to action on cancer. J. Glob. Oncol. 1, 83–91. [PubMed: 28804777]

Sophy MM, Mavis MF, 2008. The perceptions of traditional healers of cervical cancer care at Ga Mothapo Village in Limpopo Province. Indilinga 7. 10.4314/indilinga.v7i1.26429.

Suter E, Oelke ND, Adair CE, Armitage GD, 2009. Ten key principles for successful health systems integration. Healthc. Q. 13, 16–23. [PubMed: 20057244]

Tsu VD, Levin CE, 2008. Making the case for cervical cancer prevention: what about equity? Reprod. Health Matter. 16, 104–112.

Tsui J, Saraiya M, Thompson T, Dey A, Richardson L, 2007. Cervical cancer screening among foreign-born women by birthplace and duration in the United States. J. Women's Health 16, 1447–1457.

United Nations General Assembly, et al., 2013. Global Health Foreign Policy 1–6 published online March 14. https://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/67/81 (accessed June 8, 2020).

United Nations General Assembly, 2015. Transforming Our World: The 2030 Agenda for Sustainable Development. published online Sept 25. https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E (Accessed 26th September, 2020).

Vasilevska M, Ross SA, Gesink D, Fisman DN, 2012. Relative risk of cervical cancer in indigenous women in Australia, Canada, New Zealand, and the United States: a systematic review and meta-analysis. J. Public Health Policy 33, 148–164. [PubMed: 22377776]

Wentzensen N, et al., 2020. Treatment approaches for women with positive cervical cancer screening results in low- and middle-income countries. Prev. Med.

White HL, Meglioli A, Chowdhury R, Nuccio O, 2017. Integrating cervical cancer screening and preventive treatment with family planning and HIV-related services. Int. J. Gynecol. Obstet. 138 (Suppl. 1), 41–46.

Woo Y, 2019. The feasibility and acceptability of self-sampling and HPV testing using Cepheid Xpert® HPV in a busy primary care facility. J. Virus Erad. 5 (Suppl 1), 10–11.

Woo Y, et al., 2020. Accelerating action on cervical screening in lower- and middle-income countries (LMICs) post COVID-19 era. Prev. Med.

World Health Organization, 2007. Everybody's Business: Strengthening Health Systems to Improve Health Outcomes: WHO's Framework for Action. World Health Organization, Geneva. https://www.who.int/healthsystems/strategy/everybodys_business.pdf (Accessed 26th September, 2020).

World Health Organization, 2008. Integrated Health Services -What and Why? Technical Brief No. 1. https://www.who.int/healthsystems/technical_brief_final.pdf? (Accessed September 25, 2020).

World Health Organization, 2010. Health Systems Financing: The Path to Universal Coverage. World Health Organization, Geneva, Switzerland.

World Health Organization, 2013a. WHO Guidelines for Screening and Treatment of Precancerous Lesions for Cervical Cancer Prevention. World Health Organization, Geneva.

World Health Organization, 2013b. World Health Report 2013: Research for Universal Health Coverage. WHO, Geneva, Switzerland.

World Health Organization, 2017a. Goal 3: Ensure Healthy Lives and Promote Wellbeing for All at All Ages. published online Feb 10. https://unstats.un.org/sdgs/metadata/files/Metadata-03-04-01.pdf (Accessed 26th September, 2020).

World Health Organization, 2017b. Cancer Prevention and Control in the Context of an Integrated Approach WHA70.12. published online May 31. https://apps.who.int/gb/ebwha/pdf_files/WHA70/A70_R12-en.pdf (Accessed 26th September, 2020).

World Health Organization, 2018a. United Nations Children's Fund. Declaration of Astana. https://www.who.int/docs/default-source/primary-health/declaration/gcphc-declaration.pdf.

World Health Organization, 2018b. Saving Lives, Spending Less. A Strategic Response to Noncommunicable Diseases. World Health Organization, Geneva, Switzerland. https://apps.who.int/iris/bitstream/handle/10665/272534/WHO-NMHNVI-18.8-eng.pdf (Accessed 26th September, 2020).

World Health Organization, 2019. Draft: Global Strategy Towards Eliminating Cervical Cancer as a Public Health Problem. published online April 5th. https://www.who.int/publications/m/item/draft-global-strategy-towards-eliminating-cervical-cancer-as-a-public-health-problem (Accessed 26th September, 2020).

World Health Organization, 2020a. WHO Cancer Report 2020 Global Profile. https://www.paho.org/hq/index.php?option=com_docman&view=download&category_slug=4-cancer-country-profiles-2020&alias=51561-global-cancer-profile-2020&Itemid=270&lang=fr (Accessed 26th September, 2020).

World Health Organization, 2020b. Immunization Coverage. February 2020. https://www.who.int/news-room/fact-sheets/detail/immunization-coverage (Accessed 26th September, 2020).

World Health Organization, 2020c. WHO Report on Cancer: Setting Priorities, Investing Wisely and Providing Care for All. https://apps.who.int/iris/handle/10665/330745 (Accessed 26th September, 2020).

Yeates K, Erwin E, Mtema Z, et al., 2020. Smartphone-enhanced training, QA, monitoring, and evaluation of a platform for secondary prevention of cervical cancer: opportunities and challenges to implementation in Tanzania. J. Glob. Oncol. 6 10.1200/GO.20.00124.