

## Investing in Global Cervical Cancer Prevention: Resources for Low-Income and Lower Middle-Income Countries in 2020

- In 2020, Member States of the World Health Organization approved the launch of an ambitious strategy to accelerate the global elimination of cervical cancer through the scale-up of effective prevention interventions.
- US\$ 73.7 million was invested in HPV vaccination programs and US\$ 43.4 million was invested in cervical cancer screen-and-treat programs in 2020.
- Current funding falls far short of levels necessary to achieve cervical cancer elimination in low- and lower middle-income countries.

Cervical cancer killed over 342,000 women worldwide in 2020 – with 90% of these deaths occurring in low resource settings.<sup>1</sup> Cervical cancer is the leading cause of cancer death among women in 36 countries worldwide, with mortality rates in low-resource countries as much as 18 times higher than those in high-income countries, signaling wide disparities in access to care globally.<sup>2</sup> Women living with HIV are six times more likely to develop cervical cancer than their HIV-negative peers.<sup>3</sup>

To address the rising disease burden, the World Health Organization (WHO) launched its Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem in November of 2020.<sup>4</sup> The Strategy sets specific 10-year targets (e.g., ‘90-70-90 targets’) for scaling up coverage of low-cost, effective interventions to prevent cervical cancer by:

- Vaccinating 90% of girls against human papillomavirus (HPV) by age 15;
- Screening 70% of women at ages 35 and 45 for pre-cancerous cervical lesions; and
- Ensuring that 90% of those women in need receive treatment for cervical disease.

This report, published annually by TogetHER for Health, provides a snapshot of global funding for implementation of cervical cancer prevention activities conducted in low and middle-income countries.<sup>1</sup> Cervical cancer elimination is only possible with sufficient investment toward these

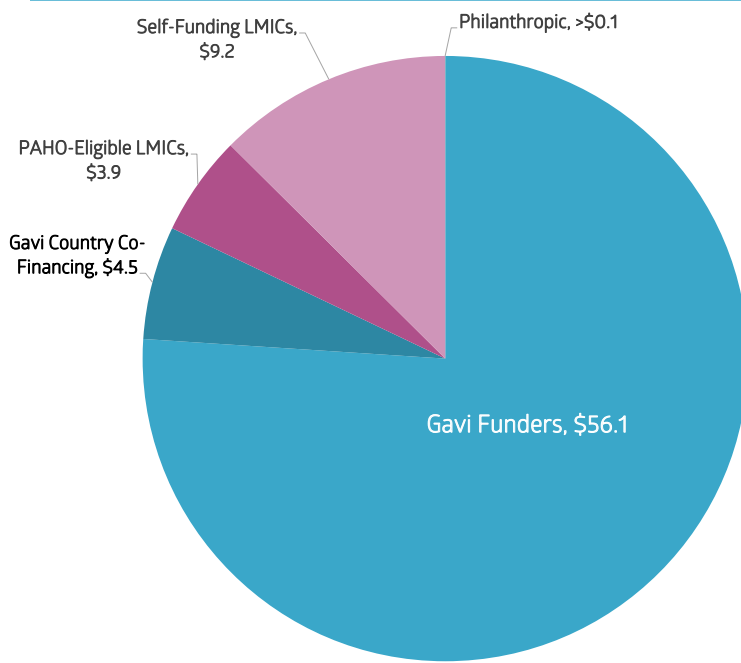
effective interventions. Annual data on investments in cervical cancer prevention programs in low-income countries (LICs) and lower middle-income countries (LMICs) can inform decision-makers and highlight areas of focus for advocates seeking to increase financial and political support for global elimination efforts. All reported figures are in US Dollars (\$).

### HPV Vaccination

Vaccines to protect against high-risk types of human papillomavirus (HPV), the virus that causes cervical cancer, are recognized as safe, effective, and more affordable for countries eligible for negotiated discounts. Most country guidelines recommend that girls between 9-14 years of age receive two doses of HPV vaccine. COVID-19-related challenges, high vaccine cost and supply constraints have hindered global efforts to increase coverage of fully vaccinated girls against HPV. A total of 70 countries reported interruptions to their HPV vaccination programs in August of 2020.<sup>5</sup> Only 35% of low- and lower middle-income countries have introduced the HPV vaccine into national immunization programs, compared to more than 88% of high-income countries.<sup>6</sup>

Total funding for HPV vaccination programs in LICs and LMICs for 2020 – including both vaccine procurement and vaccine delivery – is estimated at \$73.7 million, a slight increase of 8.8% from 2019 driven by increased support for HPV vaccination programs by Gavi, the Vaccine Alliance as well as increased investment by

<sup>1</sup> NB: These data do not include research funding or funds allocated to the treatment of cervical cancer. It does include funds allocated for prevention: HPV vaccination, cervical screening and treatment of pre-cancer lesions.

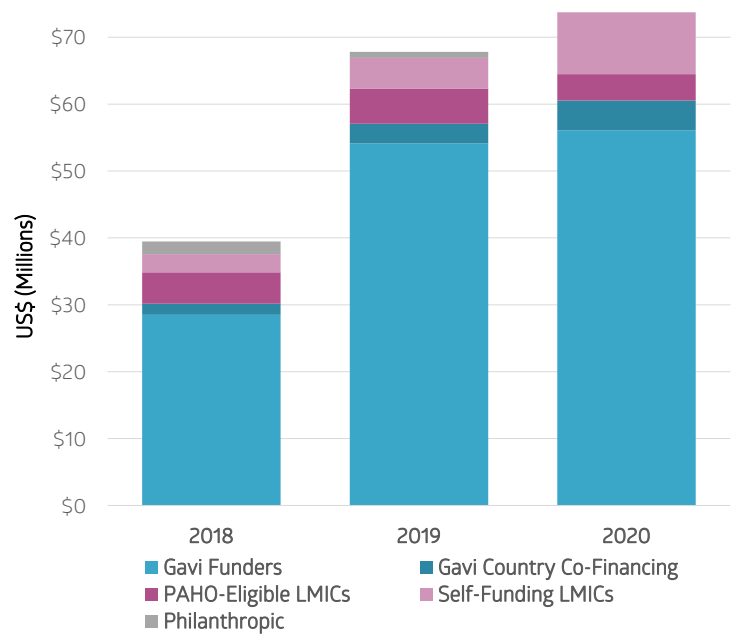


**Figure 1. Support for HPV Vaccine Programs in LICs and LMICs Totaled \$73.7 Million in 2020.**

Gavi-eligible countries co-financing for their domestic programs, and middle-income countries (MICs) funding their own HPV vaccination programs, continuing a three-year trend of increased investment in this area.

HPV vaccines for public program use in LICs and in some lower-middle income countries are funded by Gavi, the Vaccine Alliance, and procured through the services of UNICEF.<sup>7,8</sup> Gavi expenditures for HPV vaccination in 2020 – including country demonstration projects, national routine immunization programs, and operational costs for multi-age cohorts – totalled around \$56.1 million,<sup>9</sup> with per-dose purchase prices (currently \$4.50) set through manufacturer offers during the most recent UNICEF tender exercise.

Gavi is funded from a diverse group of donors – including the United Kingdom, Norway, the United States, the Bill & Melinda Gates Foundation (BMGF) and the International Finance Facility for Immunisation (IFFIm). Most Gavi-eligible countries must provide co-funding for routine HPV vaccination programs, with such country contributions totaling \$4.5 million in 2020.<sup>10</sup> HPV vaccine supply is expected to increase in the Gavi 5.0 program from both existing (GlaxoSmithKline and Merck Sharp &



**Figure 2. Support for HPV Vaccine Programs in LICs and LMICs Increased by 8.8% in 2020.**

Dohme) and new manufacturers (Innovax, Serum Institute of India, and Walvax). Provided additional supplies are available and the impact of COVID-19 on demand and country uptake is minimized, Gavi aims to vaccinate as many as 84 million girls between 2021-2025.<sup>11</sup>

MICs are ineligible for Gavi support, and thus must procure HPV vaccines via other mechanisms. MICs in the Americas that are Members of the Pan-American Health Organization (PAHO) can purchase discounted HPV vaccines from suppliers through PAHO’s Revolving Fund.<sup>12</sup> In 2020, lower middle-income PAHO Members supported domestic HPV vaccination programs totaling an estimated \$3.9 million, with an estimated purchase price of \$9.98 per dose.<sup>13</sup> Concerns about consistent HPV vaccine access and affordability have been exacerbated by the omission of HPV vaccines from PAHO’s 2019 and 2021 vaccine pricing lists, although they were listed in 2020.<sup>14, 15</sup>

While MICs outside the Americas are sometimes eligible for discounted vaccines from UNICEF, the discounted rates may still cost up to three times Gavi’s negotiated price.<sup>16</sup> Otherwise, MICs can purchase directly from suppliers, although prices may be quoted as high as the \$150 per dose price paid in high-income countries. Such pricing

significantly limits the ability of MICs to purchase HPV vaccines.<sup>17</sup> Self-purchasing LMICs spent an estimated \$9.2 million in 2020 on HPV vaccination programs.<sup>18</sup>

### Cervical Cancer Screening and Pre-Cancer Treatment

Early detection of cervical abnormalities through screening is a critical component of cervical cancer elimination. Women may be screened by testing for high-risk HPV strains, by cytology (Pap smear) or using visual methods to detect pre-cancer lesions. If women test positive for high-risk HPV and/or pre-cancerous lesions are detected on the cervix, these lesions can be treated using ablative treatments, either cryotherapy or thermal ablation. Women above the age of 50 and those with large lesions are generally referred for colposcopy and/or LEEP (Loop Electrosurgical Excision Procedure). Diagnosed invasive disease should be treated – and ideally removed – in medical facilities with appropriate cancer treatment capabilities.

While programs to expand these services have grown in recent years, many women in LICs and LMICs continue to lack adequate access to services across the continuum of care. Estimated total funding for cervical cancer screen-

ing and preventive treatment in LICs and LMICs totaled \$43.4 million in 2020, a significant reduction from 2019 figures, but much higher than 2018 funding levels.

The United States government (USG) invests in cervical cancer screening and preventive treatment in LICs and LMICs, most notably through the Centers for Disease Control (CDC) and U.S. Agency for International Development (USAID) as implementing agencies of the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR). In the last two years, PEPFAR investments in cervical cancer screening were substantially increased under the Go Further program, a public-private partnership organized with the George W. Bush Institute, the Joint United Nations Programme on HIV/AIDS (UNAIDS), and Merck. The Go Further program was launched in eight African countries of high HIV burden (Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, Zambia, and Zimbabwe) through 2020, aiming to screen all women ages 25-49 living with HIV on antiretroviral drugs and, where necessary, refer them to treatment. In 2020, planned PEPFAR investments through the Go-Further program totaled \$23.0 million, reflected reductions from 2019, in which significant investments reflect program start-up costs. In 2021, the Go Further program will expand to four additional countries (Ethiopia, Kenya, Tanzania, Uganda).<sup>19</sup>

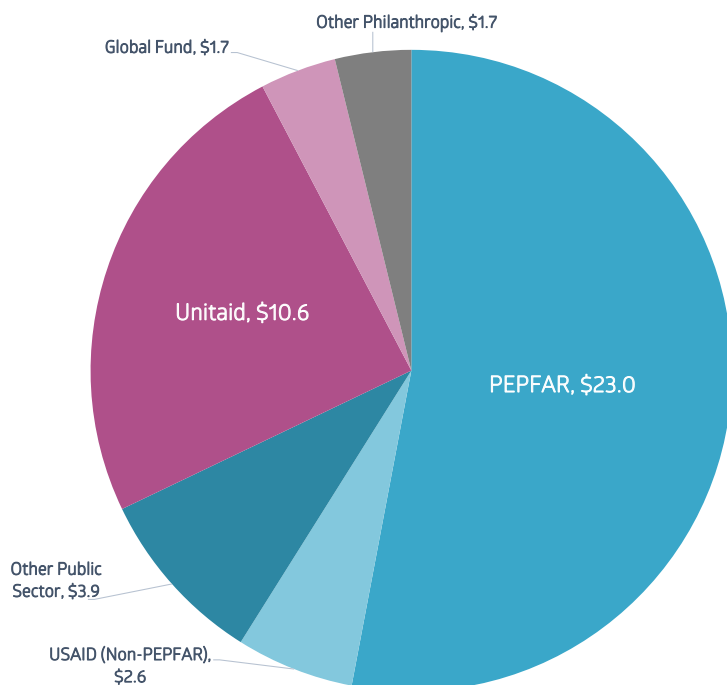


Figure 3. Support for Cervical Cancer Screen-and-Treat in LICs and LMICs totaled \$43.4 million in 2020.

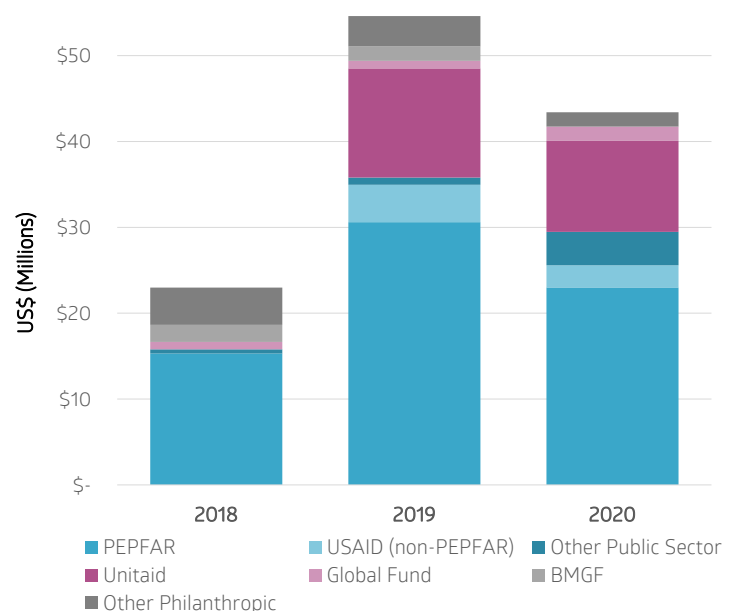


Figure 4. Support for Cervical Cancer Screen-and-Treat in LICs and LMICs decreased by 20.5% in 2020.

Other USG investments in cervical cancer screening and preventive treatment in 2020 included \$2.6 million spent in support from USAID and the National Academies of Sciences, Engineering & Medicine, toward the integration of innovative cervical cancer screen and treat services into voluntary family planning programs in Malawi and Mozambique under the Partnerships for Enhanced Engagement in Research (PEER) award.

The multilateral partnership, Unitaid, provided \$10.6 million in 2020, continuing its support for introduction of innovative tools for screening and treatment of pre-cancerous lesions, including innovative service delivery models, HPV self-sampling, HPV testing, expansion of portable thermal ablation devices, as well as developing an artificial intelligence-based screening tool. Unitaid's investments are implemented in collaboration with the Clinton Health Access Initiative (CHAI) in sub-Saharan Africa and India, and with Expertise France and Jhpiego in Côte d'Ivoire, Burkina Faso, Guatemala and the Philippines.

The Global Fund to Fight AIDS, TB, and Malaria supports programs to integrate HIV treatment and cervical cancer services in 20 countries, providing an estimated \$1.7 million in 2020. Public sector contributions to screen-and-treat programs from non-U.S. countries – including the United Kingdom, Sweden, Germany, and Japan – totaled an estimated \$3.9 million in 2020. Philanthropic contributions to screen-and-treat programs totaled \$1.7 million in 2020.

### Current Challenges and Opportunities on the Horizon

COVID-19's pervasive disruptions were deeply felt in cervical cancer prevention programs in low-resource settings this past year. Each HPV vaccination missed due to COVID-19 increases the risk that a woman unprotected against high-risk HPV is at increased risk of persistent infection of HPV. Each lost screening opportunity heightens the chances that pre-cancerous lesions, left undetected and untreated, may develop into early or invasive disease which presents too late for intervention. In 2020, COVID-19 prevention measures and national lockdowns contributed to significant delays in planned national HPV vaccine introductions in Mauritania, Sao Tome, and Sierra Leone in 2020.<sup>20</sup> In the early months of

the pandemic, 50% of countries reported disruptions in screening for and treatment of cervical cancer.<sup>21</sup> Despite these challenges, healthcare providers in LICs and LMICs applied tenacity, ingenuity, and burgeoning strategies in an attempt to safeguard patients at risk from cervical cancer.<sup>22</sup>

The WHO's Elimination Strategy is built upon enhanced scale-up of existing tools. In July of 2021, the WHO formally recommended HPV DNA testing as the preferred method for cervical cancer screening in the latest updated global guidance for screening and treatment of cervical pre-cancer lesions.<sup>23</sup> HPV DNA testing offers the potential to more accurately screen a higher number of women without requiring physical visits to clinics. Notably, HPV DNA testing has seen increased use during COVID-19 to screen women while maintaining social distancing protocols.

A growing body of research suggesting that one dose of HPV vaccine is nearly as efficacious as two also presents a more efficient pathway to cervical cancer elimination, amplifying the number of girls who can be vaccinated with the same supply while reducing the logistical burden associated with follow-up vaccinations.<sup>24</sup> New vaccine suppliers are also entering the field, as the WHO has prequalified a new vaccine against HPV from Inovax while other manufacturers may obtain WHO prequalification in the next three years for their HPV vaccines.<sup>25, 26</sup>

Continued investments into new tools and strategies – which totaled US\$ 98 million in 2020 – are critical to improving and expanding efforts to prevent cervical cancer.<sup>27</sup> The U.S. National Cancer Institute recently announced plans for new research funding through its HIV/Cervical Cancer Prevention 'CASCADE' Clinical Trials Network. CASCADE aims to conduct pragmatic clinical trials evaluating the effectiveness of proven interventions to optimize cervical cancer screening, management, and precancer treatment cascade for women living with HIV in low- and middle-income countries and in regions with health disparities in the United States.<sup>28</sup>

Smaller, targeted support to determine the feasibility of innovative cervical cancer prevention strategies in low-re-

source settings has also been made available through the Project to Eliminate Cervical Cancer from the International Federation of Gynecology and Obstetrics (FIGO) and TogetHER's Cervical Cancer Grants Program.<sup>29,30</sup>

Cutting-edge screening techniques using artificial intelligence to identify precancerous lesions are being tested in low-resource settings, as are lower-cost HPV DNA tests and less expensive, easier-to-use treatments.

### The Case for Investing in Cervical Cancer Prevention

The continued impacts of COVID-19 on global health funding – including for cervical cancer prevention programs – remain unclear. The data presented in this report may not yet reflect funding challenges to cervical cancer elimination efforts related to COVID-19. The one clear conclusion that can be derived from this report's updated funding estimates is that funding for cervical cancer prevention for low- and lower middle-income countries is falling far short of the resources needed to manifest the ambitious goals of the global elimination agenda.

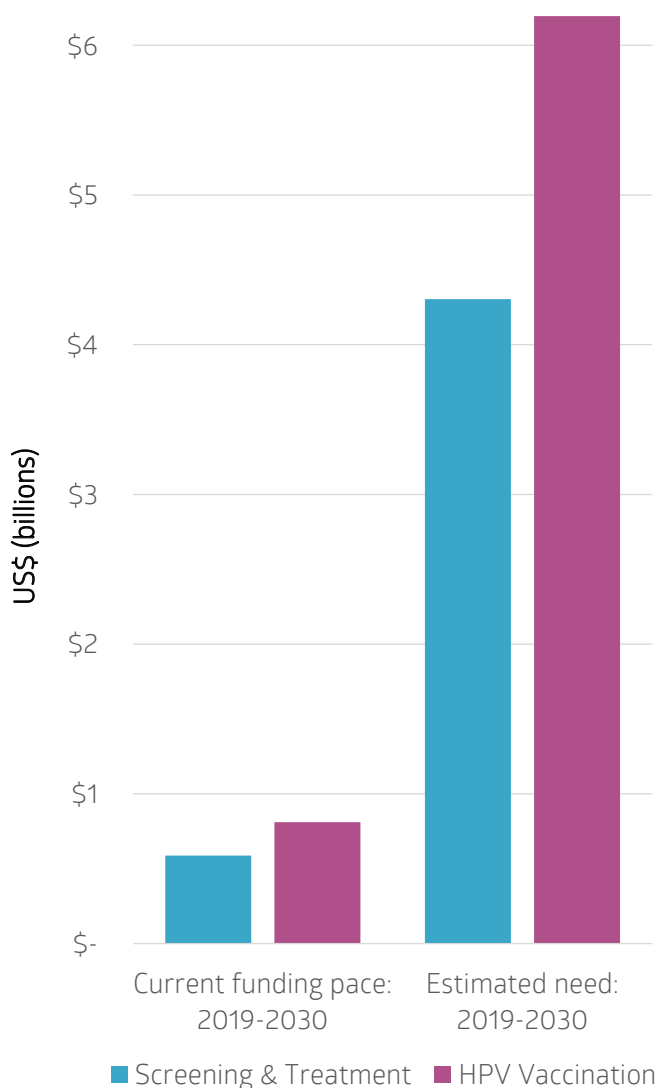
According to WHO projections, an estimated \$10.5 billion in total funding will be needed between 2019 and 2030 to sufficiently resource cervical cancer elimination in low- and lower middle-income countries.<sup>31</sup> TogetHER estimates for actual funding in 2019 and 2020 – the first two years of the 12-year projections – only total \$240 million, setting a funding pace of only \$1.4 billion for the 12-year period, less than 10% of WHO's projected need. Failing to rise to this funding challenge will have dire consequences for millions of women and the family, social, and economic networks they sustain.

Investments in cervical cancer prevention and control save the lives of mothers, caregivers, entrepreneurs, and community leaders. Every dollar invested in cervical cancer prevention and treatment is projected to return at least \$3.20 to the economy through 2050. Investing to meet the 90-70-90 targets could keep an estimated 250,000 women across the world active in their economies, adding as much as \$28 billion to the global economy through 2050.<sup>32</sup>

### Recommendations

2020 data outlined in this report supports recommendations to critical stakeholders that can better enable the global response against cervical cancer:

**Funders** – including public sector agencies and private foundations – must continue to renew commitments in cervical cancer prevention programs through Gavi, the



**Figure 5. Pace of Funding for Cervical Cancer Prevention in LICs/LMICs (Based on 2019-2020 Data) Compared to Projected Resource Need for Cervical Cancer Elimination in LICs/LMICs 2019-2030**

Global Fund, Unitaaid and others. New bilateral commitments from high-income countries can also play a role in closing the massive funding gap to fund the elimination agenda. Investments in screening and treatment should prioritize the rollout of HPV DNA testing in low-resource settings, as outlined in updated WHO guidelines.

Even as proven interventions require resources for scale-up, funders must also continue to invest in the development of innovative cervical cancer prevention strategies appropriate for low-resource settings.

**Governments in low- and middle-income countries** should continue to expand HPV vaccine and screen-and-treat programs, and develop budgeted national cancer control plans – following the examples of Zambia, Tanzania, Mongolia, and others – that incorporate cervical cancer prevention programs and enhance disease surveillance through national cancer registries.

Where prevention programs have experienced delays in vaccine implementation or reductions in screenings, catch-up programs will be critical to get back on track to

meeting elimination goals. Governments should also consider expanding HPV vaccine programs to target boys.

**Vaccine suppliers** should increase manufacturing capacity to ensure sufficient supply, and work with procurers to support fair pricing for procurement and distribution of HPV vaccines in LICs and LMICs. As new suppliers – including generic formulations -- enter the field, **donors and partners** should utilize this new flexibility to drive down prices while increasing vaccine supply.

**Multisectoral partnerships** between donors, countries, and the commercial sector should prepare to invest in the rapid deployment of new approaches to preventing, screening and treatment of cervical cancer as their effectiveness is demonstrated in low-resource settings.

**Implementers** – including nongovernmental organizations and private sector partners - should focus on integrating cervical cancer screening and treatment into existing HIV, family planning, and reproductive health programs.

TogetHER focuses on one issue - cervical cancer - to prevent and treat the disease across the globe. We are bringing together implementers, advocates, donors, governments and policymakers to make rapid progress on preventing cervical cancer. We are coordinating partners, mobilizing critical resources for implementers, and ensuring that cervical cancer receives the attention needed to prevent unnecessary deaths.

## Methodology and Request for Data

Data included in this brief have been compiled from multiple sources. Data sources include documented budgets, data on HPV vaccine administration, program disbursements, and funding information obtained directly from donors and implementers. The report reflects available information for program implementation updates. 2019 and 2018 data were collected in the process of gathering 2020 data. TogetHER seeks feedback and contributions from donors, experts and advocates to expand our sources and to improve future iterations of this analysis. Please contact us at [info@togetherforhealth.org](mailto:info@togetherforhealth.org).

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## References

- <sup>1</sup> <https://acsjournals.onlinelibrary.wiley.com/doi/10.3322/caac.21660>
- <sup>2</sup> *ibid*
- <sup>3</sup> <https://www.who.int/news/item/16-11-2020-who-releases-new-estimates-of-the-global-burden-of-cervical-cancer-associated-with-hiv>
- <sup>4</sup> <https://www.who.int/publications-detail-redirect/9789240014107>
- <sup>5</sup> 'HPV Vaccination in the Low & Middle Income Countries.' Partha Basu, IARC. (presentation)
- <sup>6</sup> [https://path.azureedge.net/media/documents/Global\\_Vaccine\\_Intro\\_Overview\\_Slides\\_Final\\_PATHwebsite\\_2021AUG17\\_fx7PZjH.pdf](https://path.azureedge.net/media/documents/Global_Vaccine_Intro_Overview_Slides_Final_PATHwebsite_2021AUG17_fx7PZjH.pdf)
- <sup>7</sup> <https://www.unicef.org/supply/media/5416/file/Human-Papillomavirus-Vaccine-Market-Update-June2018.pdf>
- <sup>8</sup> <https://www.gavi.org/about/mission/facts-and-figures>
- <sup>9</sup> Provided by Gavi, the Vaccine Alliance.
- <sup>10</sup> *Ibid*
- <sup>11</sup> <https://www.unicef.org/press-releases/hpv-vaccine-manufacturers-commit-provide-enough-supply-immunize-least-84-million>
- <sup>12</sup> <http://www.paho.org/immunization/toolkit/vaccine-procurement-fund.html>
- <sup>13</sup> Author calculation based data on [doses administered reported to WHO](#), utilizing published 2020 price.
- <sup>14</sup> [https://www.paho.org/hq/index.php?option=com\\_docman&view=download&category\\_slug=revolving-fund-2625&alias=25038-revolving-fund-vaccine-prices-038&Itemid=270&lang=en](https://www.paho.org/hq/index.php?option=com_docman&view=download&category_slug=revolving-fund-2625&alias=25038-revolving-fund-vaccine-prices-038&Itemid=270&lang=en)
- <sup>15</sup> <https://www.paho.org/en/file/81484/download?token=rbno7k0Q>
- <sup>16</sup> <https://www.unicef.org/supply/media/5291/file/%20HPV-vaccine-prices-25092020.pdf>
- <sup>17</sup> <https://www.unicef.org/supply/media/5406/file/Human-Papillomavirus-Vaccine-Market-Update-October2020.pdf>
- <sup>18</sup> Author calculation based data on [doses administered reported to WHO](#). This total includes all countries listed as lower middle-income by [World Bank criteria](#) for each calendar year, meaning that countries included in calculation may differ year-to-year as income status changes.
- <sup>19</sup> [https://gwbcenter.imgix.net/Publications/Resources/Go\\_Further\\_Highlights/2021\\_Q2/GoFurther\\_GlobalHighlights\\_Q2\\_2021\\_Final.pdf](https://gwbcenter.imgix.net/Publications/Resources/Go_Further_Highlights/2021_Q2/GoFurther_GlobalHighlights_Q2_2021_Final.pdf)
- <sup>20</sup> <https://www.unicef.org/supply/media/5406/file/Human-Papillomavirus-Vaccine-Market-Update-October2020.pdf>
- <sup>21</sup> <https://www.who.int/news/item/01-06-2020-covid-19-significantly-impacts-health-services-for-noncommunicable-diseases>
- <sup>22</sup> <https://togetherforhealth.org/together-interviews/>
- <sup>23</sup> <https://www.who.int/news/item/06-07-2021-new-recommendations-for-screening-and-treatment-to-prevent-cervical-cancer>
- <sup>24</sup> <https://www.path.org/programs/center-for-vaccine-innovation-and-access/single-dose-hpv-vaccine-evaluation-consortium/>
- <sup>25</sup> <https://www.path.org/media-center/new-hpv-vaccine-innovax-receives-who-prequalification/>
- <sup>26</sup> <https://www.paho.org/en/documents/hpv-vaccination-towards-elimination-cervical-cancer-caribbean-countries-222329-and-30>
- <sup>27</sup> Policy Cures. "HPV & HPV-Related Cervical Cancer R&D Funding." November 2021. Due to some differences in methodology, some overlap may occur between funding covered under Policy Cures' scope and that of TogetHER's cervical cancer prevention funding analysis.
- <sup>28</sup> <https://prevention.cancer.gov/major-programs/hiv-cervical-cancer-prevention-cascade-clinical-trials-network>
- <sup>29</sup> <https://www.figo.org/project-eliminate-cervical-cancer>
- <sup>30</sup> <https://togetherforhealth.org/cervical-cancer-grants>
- <sup>31</sup> Bertram et al. The investment case of the cervical cancer elimination strategy in low and lower-middle income countries. In publication
- <sup>32</sup> <https://cervicalcanceraction.org/cervical-cancer-elimination/>