

Country review and roadmap for action

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Photo: UNFPA India / Arvind Jodha

India

Cervical cancer is one of the most preventable cancers. However, in 2020, an estimated 341,800 women died from cervical cancer globally.¹ The annual number of new cases of cervical cancer has been projected to increase from 570,000 to 700,000 between 2018 and 2030, with the annual number of deaths projected to increase from 311,000 to 400,000². Most of these deaths occurred in low- and lower-middle income countries (LMICs) due to inadequate access to cervical cancer prevention, screening and treatment.

In November 2020, the World Health Organization launched a Global Strategy to accelerate the elimination of cervical cancer as a public health problem. The Strategy proposes an elimination threshold of 4 cases per 100,000 women, achieved by implementing the triple intervention targets by 2030:

- 90% of girls fully vaccinated with the HPV vaccine by age 15.
- 70% of women screened with a high-performance test (such as the HPV test) by 35, and again by 45 years.
- 90% of women identified with cervical precancer or invasive cancer receive adequate treatment and care.²

If this Strategy is implemented globally, **a total of 74 million cervical cancer cases could be prevented and 62 million women's lives could be saved over the next century.**^{3,4} This Strategy also represents the most cost-effective approach across 95% of countries analyzed, and is expected to offer immense economic and societal benefits, with **an estimated**

US \$3.20 returned to the economy, rising to US \$26.00 when societal benefits are incorporated, for every dollar invested through 2050 due to increases in women's participation in the workforce.²

In India, cervical cancer is the second most common cancer in women, with 96,922 new cases (14.7 per 100,000 women) and 60,078 deaths (9.2 per 100,000 women) in 2018.¹ It was predicted that without any intervention, **a total of 5,774,738 women in India will die from cervical cancer by 2070 and 13,182,465 by 2120.**³

Although cervical cancer screening guidelines have been developed for India,⁵ coverage across the country is low.⁶ Pilot projects for HPV vaccination started in 2009 but were paused due to apparent adverse events, which were later found to be unrelated to HPV vaccination. Efforts are being made to introduce the HPV vaccine into the immunization programmes in some other states, with some success.⁷ However, to reach the elimination targets, organized national programmes for both HPV vaccination and cervical cancer screening and treatment need to be implemented across the whole country, and competencies of health workforce will need to be strengthened across all three pillars (HPV vaccination, cervical screening and treatment) for long-term success on the path towards elimination.

India could eliminate cervical cancer by 2063, and halve mortality rates by 2036

Pillar 1: HPV Vaccination

The introduction of HPV vaccines into the national immunization programme is a crucial first step to be able to achieve a high coverage of HPV vaccination. Scale-up of HPV vaccination coverage could be facilitated by considering multisectoral delivery platforms, including a school-based strategy targeting adolescent females aged 9-14 years, or innovative community-based strategies. It is not cost-effective to vaccinate boys as well as girls. It is also important to secure sufficient and affordable HPV vaccines, through a concerted effort to negotiate for reasonable prices and with international partnerships and support, including

from Gavi. Improving monitoring systems and implementing vaccination registers are critical for ensuring that high coverage is met. Educating the community on the importance of HPV vaccination to prevent cervical cancer and having strategies to deal with misinformation are also important for maintaining confidence in the programme.

Pillar 2: Cervical Cancer Screening

Cervical cancer screening programmes represent the second pillar of the three-pronged Strategy. These screening programmes could be integrated with existing services such as primary care services, for instance by offering **HPV testing** at sexual health clinics, ante-natal care consultations, family planning consultations or women’s health clinics. Integrating cervical cancer screening with facilities that offer services for HIV control should be considered to ensure women at high risk of cervical cancer have access to cervical cancer screening. This would minimize unnecessary referrals and reduce transport costs and waiting time for women. Understanding social and cultural barriers will be create an environment where women feel comfortable attending screening visits.

cancer treatment can be treated in the same visit. Screening scale-up should utilize clinically validated high sensitivity tests, and strengthening of laboratory services and quality assurance programmes will ensure the programme is effective. Implementing surveillance and monitoring systems are also critical for ensuring women are not lost to follow-up and for monitoring programme success nationally.

Pillar 3: Cervical Cancer Treatment

Lastly, developing and implementing national cervical cancer management guidelines is essential to providing women with high quality cancer treatment and care.

The establishment of strong referral networks between all aspects of the cancer care spectrum is needed to ensure the timely management of patients and reduce loss-to-follow-up. Diagnosis, treatment, and monitoring of invasive cervical cancer will require high-quality pathology services and oncology services. Safe, effective, and timely surgery accompanied by supportive services such as anesthetic services and intensive care units are important for the treatment of early stage cancers.

If the three pillars of elimination are established, India could avert almost 100,000 deaths due to cervical cancer over the next decade, and 10 million deaths over the next century.

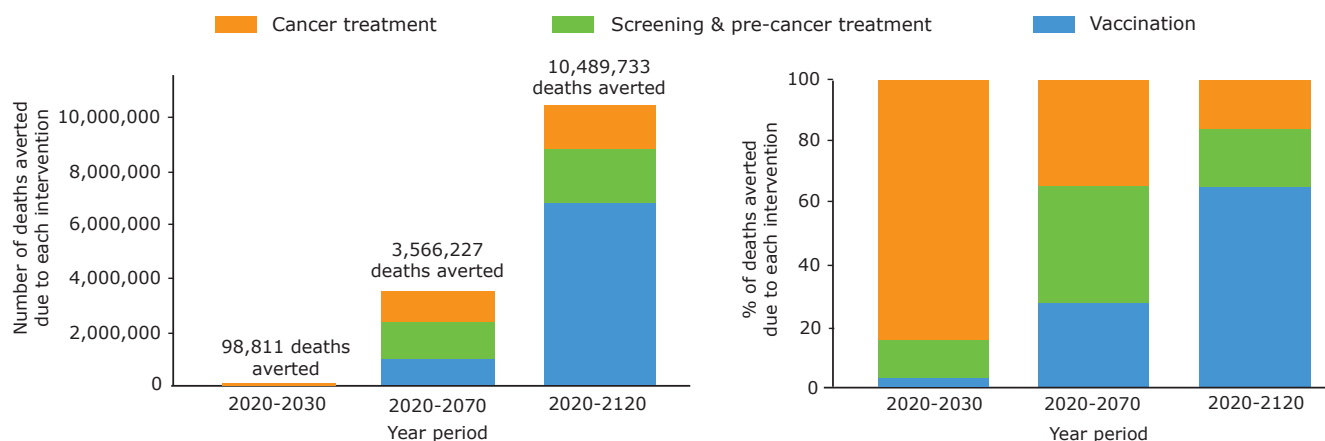
Furthermore, expanding access to radiotherapy units and access to chemotherapy services, as well as palliative care services, is crucial.

Additionally, it is essential to provide information and education for women on the importance of cervical cancer screening, and potentially offering self-collection for HPV testing, or point-of-care HPV testing in rural areas, so that women who need pre-

The Elimination Implementation Checklist on the final page summarizes the steps that countries should take to ensure the three pillars for elimination are successfully implemented and maintained over the longer term.

Figure 1:

Contribution of each elimination pillar to deaths averted in India.



The contribution of vaccination is calculated by comparing model outputs for vaccination versus status quo. The contribution of screening is calculated by comparing modelled outputs for vaccination and screening versus vaccination. The contribution of cancer treatment is calculated by comparing modelled outputs for vaccination, screening and cancer treatment versus vaccination and screening. Contributions of the pillars may not sum to total due to rounding.

Table 1:

Cervical cancer deaths averted, attributable to each pillar of the elimination strategy.

| Year | Vaccination | Screening & pre-cancer treatment | Cancer treatment | Total |
|------------------|-------------|----------------------------------|------------------|------------|
| 2020-2030 | 3,045 | 12,266 | 83,500 | 98,811 |
| 2020-2070 | 979,882 | 1,367,842 | 1,218,502 | 3,566,227 |
| 2020-2120 | 6,828,101 | 1,985,657 | 1,675,975 | 10,489,733 |

Prospects for Cervical Cancer Elimination in India

Concerted action now across all three elimination pillars is critical. The timing of impacts will vary, but action now will have substantial long-term impacts.

If all three elimination pillars are reached by 2030, a total of 98,811 cervical cancer deaths will be prevented by 2030, 3,566,227 deaths prevented by 2070 and 10,489,733 cervical cancer deaths by 2120 (Table 1).

India could eliminate cervical cancer by 2063.

The effects of HPV vaccination will be seen after a few decades (Figure 1). HPV vaccination would have limited impact before 2030, but the results will be seen in subsequent decades: HPV vaccination could prevent nearly 979,882 cervical cancer deaths by 2070, and 6,828,101 cervical cancer deaths by 2120 (Table 1).

The effects of cervical cancer screening and pre-cancer treatment will be seen mainly in the mid-term, after 2030 (Figure 1). Cervical screening would prevent an additional 12,266 cervical cancer deaths by 2030, 1,367,842 deaths by 2070 and 1,985,657 cervical cancer deaths by 2120 (Table 1).

Cervical cancer treatment scale-up will have immediate impacts on deaths averted (Figure 1). Scale-up of cancer treatment would prevent an additional 83,500 cervical cancer deaths by 2030, 1,218,502 deaths by 2070 and 1,675,975 cervical cancer deaths by 2120 (Table 1).

India is at a crucial stage in its efforts to prevent and treat cervical cancer, and a concerted strategic plan to accelerate the elimination of cervical cancer needs to be developed and implemented. There will be many challenges along the way, including vaccine and screening test supply and delivery challenges, human resource capacity and the infrastructure challenges associated with scale-up of invasive cancer diagnostics, treatment, and supportive and palliative care services. However, the tools and technology are now available; research has shown that elimination strategies are cost-effective and will prevent over 10 million deaths over the next century. Both HPV vaccination and cervical cancer screening and treatment have been identified by WHO as best buys and are included in the list of national health plan recommendations by WHO. The elimination agenda is a component of the United Nations Global Strategy for Women's, Children's and Adolescent's Health.

Achieving cervical cancer elimination in India will support several sustainable development goals (SDGs) and targets, including SDG 3 (good health and well-being), SDG 5 (gender equity) and SDG 10 (reducing inequalities). The implementation of HPV vaccination, cervical cancer screening and cancer treatment access will be facilitated by the full realization of universal health care in India, and collaboration with other sectors for sharing knowledge, financial resources and expertise in achieving the SDG goals will be crucial. Cervical cancer elimination is within our reach and we urge all stakeholders to support this effort by investing in the comprehensive approach as a national priority.

References

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Elimination Implementation Checklist*

Strategic actions to achieve elimination targets

Completed

| | | |
|----------|---|--------------------------|
| 1 | Develop a comprehensive costed National Cervical Cancer Elimination Strategy and seek endorsement among government, country leaders, policymakers, and communities | <input type="checkbox"/> |
| 2 | Communication and public outreach | |
| 2.1 | Develop a comprehensive communications strategy to accompany each component of the elimination strategy engaging health workers, community leaders, parents, teachers, and young people to maintain confidence in the programme and address stigma and misconceptions. | <input type="checkbox"/> |
| 3 | National HPV vaccination programme | <input type="checkbox"/> |
| 3.1 | Introduce the HPV vaccine for girls aged 9-14 years into national immunization programme. | <input type="checkbox"/> |
| 3.2 | Secure sufficient and affordable HPV vaccine and ensure an adequate cold-chain system for vaccine storage and delivery is in place. | <input type="checkbox"/> |
| 3.3 | Achieve and maintain high coverage of HPV vaccination by identifying appropriate multi-sectoral vaccination delivery platforms. | <input type="checkbox"/> |
| 3.4 | Establish or improve monitoring systems or vaccination registers to enable measurement of coverage and vaccine schedule adherence. | <input type="checkbox"/> |
| 4 | National cervical cancer screening and pre-cancerous treatment programme | |
| 4.1 | Develop a national cervical cancer screening programme with clinical protocols for primary HPV testing and pre-cancer treatment, involving relevant stakeholders when appropriate. | <input type="checkbox"/> |
| 4.2 | Integrate screening and pre-cancer treatment into existing primary care and Universal Health Care (UHC) packages, including sexual and reproductive health services, HIV clinics, antenatal care. | <input type="checkbox"/> |
| 4.3 | Establish continuing professional development in-service programmes to build capacity of providers in cervical cancer screening and pre-cancer treatment. | <input type="checkbox"/> |
| 4.4 | Understand social, financial, cultural, societal, and structural barriers to accessing services and create an enabling environment for cervical cancer screening and pre-cancer treatment. | <input type="checkbox"/> |
| 4.5 | Strengthen laboratory capacity and quality assurance (QA) programmes and develop data systems that link laboratory information, screening registry data and other data systems (such as medical records and cancer registries). | <input type="checkbox"/> |
| 5 | Invasive cancer treatment and palliative care | |
| 5.1 | Develop and implement cervical cancer management guidelines and clinical protocols. | <input type="checkbox"/> |
| 5.2 | Establish effective referral pathways for women at all stages of care. | <input type="checkbox"/> |
| 5.3 | Strengthen pathology services, particularly at regional pathology centres and, if appropriate, make use of telepathology platforms to improve the capacity to interpret samples. | <input type="checkbox"/> |
| 5.4 | Expand surgical capacity through training programmes, and expand access to radiotherapy and chemotherapy services and strengthen oncology services. | <input type="checkbox"/> |
| 5.5 | Strengthen and integrate palliative care services by developing treatment plans that incorporate not only end-of-life care and pain relief, but also psychological and family support. | <input type="checkbox"/> |
| 5.6 | Optimize health workforce competencies throughout the continuum of care by establishing a long-term continuous training and education strategy for a multidisciplinary workforce. | <input type="checkbox"/> |
| 5.7 | Reduce cancer stigma by providing comprehensive support to enhance quality of life and address mental and sexual and reproductive health challenges faced by cancer survivors. | <input type="checkbox"/> |
| 6 | Monitoring and evaluation | |
| 6.1 | Strengthen governance and accountability of cervical cancer related programmes (HPV vaccination, cervical cancer screening, cancer treatment) and conduct regular reviews to ensure that national strategies, plans, and resource allocations reflect actual country needs. | <input type="checkbox"/> |
| 6.2 | Set country-specific targets, milestones, and indicators for monitoring and evaluating implementation of the National Cervical Cancer Elimination Strategy. | <input type="checkbox"/> |
| 6.3 | Improve current population-based cancer registries and develop new population-based cancer registries as needed to track the progress of the elimination targets. | <input type="checkbox"/> |
| 6.4 | Track patients throughout the continuum of services (screening, diagnosis and treatment). | <input type="checkbox"/> |

*This checklist was developed based on the WHO strategy for cervical cancer elimination². For more guidance on the implementation of cervical cancer screening and treatment, see the WHO guide to strengthening cervical cancer prevention⁸ and the WHO guidelines for pre-cancer treatment.⁹