Elimination of cervical cancer: Implementation in action

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Emily Warrender October 14, 2025

Professor Karen Canfell and Paul Grogan from the Cancer Elimination Collaboration at the Sydney School of Public Health discuss the WHO strategic plan for elimination of cervical cancer and how a combination of prevention, screening, and treatment can effectively achieve this goal

In principle, cancers could be eliminated via a strategic combination of prevention, screening, early detection, and treatment strategies. Progress towards this goal will depend on the level of shared commitment to the goal from all sectors, including government, business, and civil society.

Global strategy to eliminate cervical cancer

The World Health Organization's Global Strategy for the Elimination of Cervical Cancer as a Public Health Problem provides a framework to put the concept into practice.

While the strategy, launched in 2020, is specific to cervical cancer, the concept of disease elimination is not new. Public health authorities have been promoting it since the early 1990s, as a stage between disease 'control' and disease 'eradication'.

The goal of the WHO strategy is to eliminate cervical cancer by reducing it to no more than four cases per 100,000 per annum globally. This would be a huge achievement. In several low- and middle-income countries, incidence is over 50 cases per 100,000 people. This is why cervical cancer causes more than 340,000 deaths and leaves more than 200,000 children without a mother every year. Yet, every cervical cancer death could be prevented through a combination of vaccination against human papillomavirus (HPV), screening to detect HPV infection and early-stage disease, and referral to precancer or cancer treatment. These interventions form the pillars of the WHO elimination strategy, which sets targets for each: 90% vaccination coverage, 70% screening participation, and scaling to 90% treatment access.

Two journal articles, [1, 2] co-authored by our team, with colleagues from Université Laval and Harvard University, estimated that meeting the 90-70-90 targets by 2030 would avert over 74 million cases and save 62 million lives over the century.

Diversified approaches to cancer control

A real-world demonstration of the prospects for eliminating a cancer in the near term can be found in Australia, which is set to be the first country to actively eliminate cervical cancer. Whilst HPV immunisation is a catalyst, Australia's prospects for early elimination

are also the result of the transformation of the screening program to incorporate more sensitive molecular HPV testing, and population-wide access to quality treatment.

So, the key to elimination is the organised implementation of established interventions, adapted to the immediate and evolving needs of different population settings – in regions, countries, and areas, and subpopulations within countries. This requires commitment from stakeholders in all sectors.

This type of integrated cancer elimination strategy deserves to capture the imagination of the community in the same way as the possibility of finding a ‘cure for cancer’. Drug development and ongoing improvements in other treatments, such as radiotherapy and systemic therapies, are vital to effective cancer control. But the word ‘cure’ could imply that the elimination of cancers hinges on a single biomedical intervention. The evidence paints a different picture. Increasingly diversified approaches to cancer control, from primary prevention through screening and early detection, to improved targeting of therapies to disease subtypes, can work together to fast-track major reductions in incidence and mortality. This is where cancer ‘control’ starts to look more like ‘elimination’.

Thousands of cancers are ‘cured’ every day, with people benefiting from established interventions and living long, cancer-free lives.

In the case of cervical cancer, the development of a vaccine for HPV has been pivotal to elimination. Just as critical has been the increased effectiveness of screening, with the more sensitive primary HPV testing approach replacing the Pap test. The key to accelerating elimination is integrating vaccination (the long-term strategy) with staged implementation of screening and referral to treatment, the latter of which will deliver immediate benefits in terms of lives saved.

Cervical cancer outcomes are among the most inequitable of any disease, with 94% of deaths occurring in low-and middle-income countries. In the Indo-Pacific, our team is involved in a major collaboration, jointly funded by the Australian Government and the philanthropic Minderoo Foundation, and supported by in-country partners, aimed at addressing these disparities. The Elimination Partnership in the Indo-Pacific for Cervical Cancer (EPICC) is seeking to fast-track the WHO elimination strategy, based on the specific needs of partner countries – saving lives now while building a core around which to implement sustainable plans to meet the WHO elimination targets and achieve elimination over the longer term.

An integrated, evidence-based approach to cervical cancer elimination is one of the ‘best buys’ for any government, philanthropic, or civil society organisation that wants to see profound impact from investing in improved and fairer health outcomes. Localised design and delivery are driven by countries. For example, our Elimination Planning Tool utilises landscape analyses and modelling to support governments and advocates to build the investment case for elimination. Political will and sustained government support are the most crucial elements in achieving the overarching goal of saving 62 million lives.

What can be learnt from cervical cancer interventions?

So what does the cervical cancer story imply for other cancers? No other cancer is almost entirely caused by a single virus for which there is a vaccine and a screening test. However, for many other cancer types, there are already well-established interventions in prevention, screening, and early detection.

In many high-income countries, cancer mortality rates have fallen by around 20% over the past two decades. No single intervention has driven these improvements.

In Australia, for example, the biggest improvement over the past 20 years among high-burden cancers has been in relation to colorectal cancer, which has been driven almost entirely by opportunistic then organised screening. Projections show that two of the cancers expected to deliver the largest mortality improvements over the next 20 years will be lung cancer and melanoma, driven mainly by primary prevention. For other cancers, breakthroughs in treatments at all stages of diagnosis have been the main driver of mortality reduction.

Biomedical innovations in cancer control are vitally important. But we need to recognise that prevention and screening research, and its translation into practice, are just as critical.

We still need to do more to globally scale existing and proven technologies to control cancer, and the current momentum in cervical cancer elimination is a promising template.

References

1. Canfell, Karen et al. 'Mortality impact of achieving WHO cervical cancer elimination targets: a comparative modelling analysis in 78 low-income and lower-middle-income countries'. The Lancet, Volume 395, Issue 10224, 591 – 603. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30157-4/fulltext
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Declarations: KC declares she is co-PI of an investigator-initiated trial of HPV screening in Australia ('Compass'), which is conducted by the ACPCC, a government-funded health promotion charity. The ACPCC has previously received equipment and a funding contribution for the Compass trial from the Australian government and Roche Molecular Systems USA. She is also co-PI on a major implementation program, "Elimination Partnership for Cervical Cancer in the Indo-Pacific," which receives support from the Australian government, the Minderoo Foundation, and equipment donations from Cepheid and Microbix.

Primary Contributor

Karen Canfell
The University of Sydney

Additional Contributor(s)

Paul Grogan
The University of Sydney