
The Lancet released two studies on cervical cancer

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Cervical cancer prevention © Shutterstock

Over the next 100 years, more than 74 million cervical cancer cases and 60 million deaths could be averted, and the disease eliminated in the 78 countries with the highest disease burden, according to two modelling studies published in The Lancet.

The [first study](#) [1] modelled the progress that could be made towards eliminating new cervical cancer cases by **introducing or increasing HPV vaccination coverage, or by combining high levels of vaccination with cervical screening once, or twice, in a woman's lifetime**. The [second study](#) [2] included cancer treatment in its models alongside other variables, and analysed the impact of vaccination, screening and treatment on **reducing deaths**. Both studies focused on 78 low-income and lower-middle income countries (LMICs).

Cervical cancer is the second most common cancer in LMICs and the most common cause of death from cancer in women in 42 LMICs.

In high-income countries, vaccination against HPV has dramatically improved the outlook for cervical cancer prevention among women, but the uptake of HPV vaccination and cervical screening remains very low in most LMICs. In 2018, 88% of 570 000 new cervical cancer cases worldwide and 91% of 311,000 deaths occurred in low, low-middle or upper middle income countries.

The disparity in the burden of disease between high income countries and LMICs **prompted the WHO to call for action in 2018 to eliminate cervical cancer as a public health problem**. They proposed a threshold for which cervical cancer would be considered to be eliminated as a public health problem (4 per 100,000 women-years) and drafted a strategy to put countries on the path to achieving it, with three main targets for 2030: to increase vaccination to 90% coverage, to ensure 70% of women are screened twice in their lives around the ages of 35 and 45, and to ensure 90% of women diagnosed with cervical cancer receive the treatment they need.

To examine whether elimination can be achieved and what the impact of the elimination strategy might be beyond 2030, WHO established the Cervical Cancer Elimination Modelling Consortium (CCEMC), which includes modelling

teams from Laval University in Canada, Harvard University in the USA, and Cancer Council NSW in Australia. The two new studies were carried out by researchers for the CCEMC.

“For the first time, we’ve estimated how many new cases of cervical cancer could be averted if WHO’s triple intervention strategy is rolled out and when elimination could be achieved” says **Professor Marc Brisson from Laval University, Canada**, who co-led both studies. “Our results suggest that to eliminate cervical cancer by the end of the century it will be necessary to achieve both high HPV vaccination coverage and high uptake of screening, especially in countries with the highest rates of the disease.”

The first of the current studies focused on whether and by when it might be feasible to eliminate cervical cancer cases in LMICs according to different scenarios and different definitions of elimination. The scenarios modelled were HPV vaccination of girls, vaccination combined with screening of women aged 35, and vaccination combined with screening twice in a woman’s lifetime.

The results predict that **vaccination alone could reduce the number of cervical cancer cases by 89% over the next century, averting 60 million cases in LMICs**. However, countries with an incidence today of more than 25 cases per 100,000 women could not eliminate the disease with HPV vaccination alone, using WHO’s proposed threshold of cervical cancer elimination (four or fewer cases per 100,000 women). For example, in sub-Saharan Africa, elimination would only be possible in 27% of countries.

If twice-lifetime screening is scaled-up in addition to HPV vaccination, then 100% of countries could reach elimination, reducing cervical cancer cases by 97% and averting 74 million cases by 2120. Such a strategy would also accelerate elimination by 11-31 years.

For the second modelling study, the authors analysed the **impact of all three elements of the WHO triple strategy on deaths from cervical cancer, modelling the impact of scaling up cancer treatment as well as vaccination and screening**. In 2020, there will be an estimated 13 deaths from cervical cancer per 100,000 women in LMICs. By 2030, the triple strategy could avert around 300,000 deaths, a reduction of 34%. By 2070, it could avert 14.6 million deaths, reducing mortality by 92%, compared to a reduction of 62% (4.8 million deaths) with vaccination alone. By 2120, the triple strategy could avert 62 million deaths, reducing mortality by 99%, compared to 90% (45.8 million deaths) with vaccination alone.

“Our findings emphasise the importance of acting immediately to combat cervical cancer on all three fronts,” says **Adjunct Professor Karen Canfell from Cancer Council NSW and the University of Sydney, Australia**, who co-led both studies. “In just 10 years, it’s possible to reduce deaths from the disease by a third and, over the next century, more than 60 million women’s lives could be saved. This would represent an enormous gain in terms of both quality of life and lives saved.”

The authors highlight several limitations to the studies. For example, the quality of data from LMICs on cervical cancer incidence, access to treatment and survival are poor, so the numbers of cases and deaths might be higher, making elimination take longer. Neither study explicitly modelled the interaction between HIV infection and HPV, which can increase the risk of cervical cancer after HPV infection, so the impact of HPV vaccination might be overestimated in countries with a high prevalence of HIV.

Despite these limitations, the authors highlight the **strengths of the approach and the importance of using multiple models**.

Professor Jane Kim from Harvard University, USA, who co-led both studies said: “Our finding show close concordance in predictions from three independently developed models, and highlight the very substantial health gains that could be achieved if the WHO strategy can be implemented successfully.”

Writing in a linked Comment, Professor Vivien Tsu (who was not involved in the studies) from the University of Washington, USA, says: “These two papers show us that considerable progress can be made in reducing the

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intolerable and preventable burden of cervical cancer. We now need to take the next steps of making the difficult choices of what to do first, building on what exists, laying foundations where even basic infrastructures are lacking, putting locally tailored plans in place that move us expeditiously towards the goal of making cervical cancer the rare disease it should be.”

NOTES TO EDITORS

The first study was funded by WHO, UNDP, UN Population Fund, UNICEF–WHO–World Bank Special Program of Research, Development and Research Training in Human Reproduction, Canadian Institute of Health Research, Fonds de recherche du Québec – Santé, Compute Canada, and Australia’s National Health and Medical Research Council. It was conducted by researchers from the Cervical Cancer Elimination Modelling Consortium (CCEMC) (full list at the end of the Article).

The second study was funded by WHO, UN Development Program, UN Population Fund, UNICEF–WHO–World Bank Special Program of Research, Development and Research Training in Human Reproduction (HRP), Germany Federal Ministry of Health (Bundesministerium für Gesundheit), National Health and Medical Research Council Australia, Centre for Research Excellence in Cervical Cancer Control, The Canadian Institute of Health Research, and the Fonds de recherche du Québec – Santé. It was conducted by researchers from the Cervical Cancer Elimination Modelling Consortium (CCEMC) (full list at the end of the Article).

The labels have been added to this press release as part of a project run by the Academy of Medical Sciences seeking to improve the communication of evidence.

For more information, please

see: <http://www.sciencemediacentre.org/wp-content/uploads/2018/01/AMS-press-release-labelling-system-GUIDANCE.pdf> [3]

If you have any questions or feedback, please contact The Lancet press office pressoffice@lancet.com [4]

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[1] [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30068-4/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30068-4/fulltext)

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