

PRESS RELEASE No. 358

13 November 2024

New research highlights the potential of single-dose HPV vaccination to advance cervical cancer prevention in low-resource settings

Lyon, France, 13 November 2024 – Scientists from the International Agency for Research on Cancer (IARC) have published a series of studies exploring the potential impact of single-dose human papillomavirus (HPV) vaccination in advancing cervical cancer prevention, particularly in low- and middle-income countries with limited health-care resources.

The results are published in a special issue of the *Journal of the National Cancer Institute Monographs* and are being presented at the 36th International Papillomavirus Conference (IPVC 2024) in Edinburgh, United Kingdom. These studies could play an important role in advancing the World Health Organization (WHO) Cervical Cancer Elimination Initiative, addressing key gaps in the understanding of best practices for cervical cancer control in resource-limited settings.

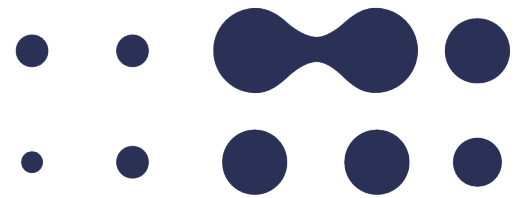
One of these studies, titled “Leveraging single-dose human papillomavirus vaccination dose-efficiency to attain cervical cancer elimination in resource-constrained settings”,¹ examined the impact of a single-dose HPV vaccination strategy combined with targeted reallocation of health-care resources.

The researchers estimated that shifting to a single-dose strategy in India, Brazil, and Rwanda – countries with various cervical cancer risks and vaccination timelines – would save approximately US\$ 435 million, US\$ 156 million, and US\$ 12 million, respectively, over 10 years.

The research team obtained these findings by using simulations adapted to country-specific data and scenarios for single-dose protection derived from a previous trial led by IARC in India. The team also explored different resource reallocation strategies based on dose efficiency, elimination attainment, and cervical cancer cases prevented, with the existing two-dose programme as a comparator.

“Significant benefits could be achieved if the resources saved by administering a single dose instead of two doses were reinvested into other scalable interventions, such as expanding the vaccination target age or sex, increasing coverage in underserved populations, or improving cervical cancer screening,” say the study’s authors, IARC scientists Dr Iacopo Baussano and colleagues. “This study shows that in countries where the

¹ Man I, Georges D, Basu P, Baussano I (2024). Leveraging single-dose human papillomavirus vaccination dose-efficiency to attain cervical cancer elimination in resource-constrained settings. *J Natl Cancer Inst Monogr*. Published online 12 November 2024; <https://doi.org/10.1093/jncimonographs/lgae035>



burden of cervical cancer remains high and a large proportion of the population is unvaccinated, single-dose HPV vaccination could greatly boost efforts to eliminate cervical cancer.”

A second study, titled “A prospective cohort study comparing the efficacy of 1 dose of quadrivalent human papillomavirus vaccine to 2 and 3 doses at an average follow up of 12 years postvaccination”,² is a 12-year observational follow-up of the IARC cohort in India. In this study, about 17 000 female participants received one, two, or three doses of the quadrivalent HPV vaccine at age 10–18 years in 2009–2010.

The researchers demonstrated that the protection provided by a single dose of the quadrivalent vaccine against persistent infection with HPV types 16 and 18 – the types responsible for nearly 80% of cervical cancers in low- and middle-income countries – is as effective as that from two or three doses of the vaccine, even 15 years after the first dose of the vaccine was administered.

“These findings indicate that single-dose vaccination offers effective, long-lasting protection against HPV infections and cervical precancers, making it a viable, simpler, and more accessible option for at-risk populations,” says Dr Partha Basu, Head of the Early Detection, Prevention, and Infections Branch at IARC. “The sustained protection observed up to 15 years after a single dose, along with the cost savings from lower HPV positivity rates and a reduced need for colposcopy and treatment, should strongly encourage many more countries to adopt a single-dose strategy in their HPV vaccination programmes.”

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The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships. If you wish your name to be removed from our press release emailing list, please write to com@iarc.who.int.

² Malvi SG, Esmy PO, Muwonge R, Joshi S, Poli URR, Lucas E, et al. (2024). A prospective cohort study comparing efficacy of 1 dose of quadrivalent human papillomavirus vaccine to 2 and 3 doses at an average follow up of 12 years postvaccination. *J Natl Cancer Inst Monogr*. Published online 12 November 2024; <https://doi.org/10.1093/jncimonographs/lgae042>