

Single dose HPV (Human Papilloma Virus) Vaccination for Cervical Cancer Prevention in Pakistan

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Pakistan is launching the HPV Vaccine in September 2025, in its EPI (Expanded Programme for Immunization) for 9 to 14 year old girls. This has been suggested by Professional organizations in Pakistan including SOGP (Society of Obstetricians & Gynaecologists) and AMAN (Association for Mothers & Newborns).¹ At the 2nd Global Cervical Cancer Elimination Forum held recently, world leaders announced new investments and policy pledges to expand access to HPV vaccination, screening and treatment – bringing the world closer to making cervical cancer the first cancer ever to be eliminated.² HPV vaccination can prevent the majority of cases. Combined with screening and timely treatment for precancerous Cervical intraepithelial neoplasia (CIN) and invasive cancer, it can lead to elimination. However, in 2024 only 46% of low-income countries introduced HPV vaccination nationally, compared to 98% of high-income nations.

A total of 194 countries have adopted WHO's global strategy to eliminate cervical cancer while 75 countries have globally adopted the single-dose HPV vaccine, which expands access to more girls and saves costs.²

Despite being preventable, cervical cancer claims the life of a woman every 2 minutes – 94% in low- and middle-income countries (LMICs) like Pakistan. Less than 5% of women in many LMICs receive cervical cancer screening due to health system limitations.³⁻⁵ Majority of Pakistani women die from cervical cancer because of late diagnosis. It is ranked as the 4thmost frequent cancer amongst women in Pakistan and the second most common cancer in women between 15 – 44 year ages.^{3,6,7} As the population increases, this figure is projected to rise even further

HPV infection is associated in 99% of cases of cervical cancer, and can be prevented with a single dose of HPV vaccine. Single dose is showing similar efficacy of around 95 %, in recent studies, which was seen with the previous 2 and 3 doses regimens.⁸⁻¹³ Girls aged between 9 to 14 years develop the best immune response.

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Vaccination provides **primary prevention**. Screening with Pap smears, VIA (visual inspection with acetic acid) and HPV testing provides **secondary prevention**, with possible timely curative treatment. This significantly reduces the incidence of Cervical Cancer.

Over 98% of cervical cancer deaths occur in developing countries like Pakistan.⁹ Most women die in the prime of their lives, leaving behind young children. The preventive measures remain mostly inaccessible to the girls and women who need them the most. If we follow the example of UK, Sweden, Australia and other developed countries with comprehensive vaccination, screening and treatment programmes, the mortality and morbidity will decline. Lack of awareness and stigma associated with female diseases, pose significant barriers.

Secondary prevention with universal screening (Pap Smears, VIA, HPV testing), is lacking in Pakistan. Opportunistic screening exists for women who present with other issues to health care providers. Without multi-pronged strategy, cervical cancer cases will continue to grow fast with the alarming projected population rise.

The WHO Global Strategy for the elimination of cervical cancer sets clear targets for 2030: 90% of girls to be fully vaccinated by age 15 years; 70% of women screened with a high-performance test by age 35 and again at 45 years age; and 90% of women identified with cervical disease receiving appropriate treatment. Progress across all three pillars is essential to achieve and sustain elimination. The HPV Vaccine is not available for over 5 years in Pakistan, while it was previously available in the private sector.

Pakistan has additional existing challenges: early marriage, low socio-economic status, smoking (tobacco/ chewing/ gutka/ shisha), multiparity and polygamy. Circumcision is the only protective factor against Cervical cancer.

Although Globocan³ includes data from major Cancer hospitals in Pakistan, a functional population based National Cancer Registry is needed for both government and private hospitals. SOGP has made a digital gynaecological cancer registry platform which is undergoing initial testing.

SOGP and AMAN have given guidelines for cervical cancer prevention in Pakistan¹ and also formed an advocacy group **“Teal Ribbon Alliance for Pakistan”**, in association with PPA (Pakistan Paediatrics Association) and other stakeholders. Annual advocacy and training events are held in January. These guidelines have been updated according to recent WHO recommendations, and state:

Primary Prevention: Single dose HPV Vaccination should be added to the EPI schedule (in the Child’s vaccination card). If not vaccinated between age 9-14 years, they should get vaccinated before marriage.

Secondary Prevention

Regular Pap Smears / Liquid based cytology (LBC), HPV testing or VIA screening should start after 3 to 5 years of marriage at 3 to 5 yearly intervals. Follow the same protocol as Pap Smear for VIA. By the age of 35 years at least one Pap Smear/LBC/ HPV Test or VIA screening should be done, and repeated at 45 years. Stop doing Pap smears at 65 years age if previous smears/ screenings have been normal, and no other risk factors exist.

VIA training should be ensured for Trainee Gynaecologists and nurses.

Treatment: Colposcopic guided LLETZ (large loop excision of the transformation zone), hysterectomy for women with completed family or with other co-morbid.

It is sad to note that special insulated surgical Instruments, diathermy loops for Colposcopy, are made in Pakistan, get exported but not marketed locally.

SAGE (WHO Strategic Advisory Group of Experts on Immunization) recommends updating dose schedules for HPV as follows:^{11,12}

- One or 2 dose schedule for the primary target of girls aged 9-14 years
- One or 2 dose schedule for young women aged 15-20 years
- Two doses at 6-months interval for women > 21 years old

Any of the available vaccines may be employed. It is also effective in women 45-50 years old regardless of HPV DNA status at the time of vaccination.

Vaccination safety is endorsed by all international and national review boards. More than 500 million doses have been administered globally till 2022, showing excellent vaccine safety profile.¹⁴⁻¹⁶ Since licensure of HPV vaccines,

GACVS has found no new adverse events of concern based on many very large, high-quality studies. The new data has strengthened this position. *High Efficacy (>95%) irrespective of schedule after 1, 2 or 3 doses of 4vHPV, over 10 years.¹⁵

Current evidence suggests that the bivalent, quadrivalent and nonavalent vaccines offer comparable immunogenicity and efficacy for the prevention of cervical cancer (mainly caused by HPV types 16 and 18). The nonavalent HPV vaccine (9vHPV) protects against the next five most common cancer-causing HPV types (HPV 31,33,45,52,58). Phase III clinical studies have demonstrated high vaccine efficacy (>90%) against cervical, vulvar, and vaginal pre-cancers caused by these additional types, and have shown comparable immunogenicity to the shared genotypes to quadrivalent HPV vaccine (4vHPV). Modelling studies predict that high antibody titres could be sustained for decades and Single dose is sufficient. Several reports including a 2018 Cochrane systematic review of 26 trials, with 73,428 participants, found that HPV vaccination reduces HPV-16 and HPV-18-associated CIN2+ by 99% when administered to females aged 15–26 years.¹⁵⁻¹⁷

Vaccination is likely to be the most effective option to reduce the incidence of cervical cancer in the absence of universal screening in Pakistan. However, screening should continue after vaccination

AMAN & SOGP have produced advocacy videos¹⁸ for Cervical Cancer prevention and conduct trainings. Investments in communication are essential for acceptance of HPV vaccination and needs to continue for several years

Self-sampling innovations are improving reach and feasibility, in low-resource countries. Universal National vaccination, screening and treatment programmes should be scaled up with enhanced investment by the government, to ensure that women receive timely curative care, against this silent and preventable disease.

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References

1. Pal Sadiq Ahsan. Cervical cancer prevention in Pakistan. J Soc Obstet Gynaecol Pak. 2015;5:66-8
2. World Health Organization. Global leaders unite to accelerate

- cervical cancer elimination efforts. Joint News Release, Bali, Indonesia. Available from <https://www.who.int/westernpacific/news/item/19-06-2025-global-leaders-unite-to-accelerate-cervical-cancer-elimination-efforts> (accessed 1.8.25)
3. International Agency for Research on Cancer. Globocan 2022: Pakistan Fact Sheet. Available from: <https://gco.iarc.who.int/media/globocan/factsheets/populations/586-pakistan-fact-sheet.pdf> . (accessed 1.8.25)
 4. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2021;71:209-49. doi: 10.3322/caac.21660
 5. Bhimani S, Khatri AG, Hasan MM. Routine Pap smear screening in Pakistan: A current perspective. *Ann Med Surg (Lond).* 2022;83:104498. doi: 10.1016/j.amsu.2022.104498
 6. Chughtai N, Perveen K, Gillani SR, Abbas A, Chunara R, Manji AA, et al. National cervical cancer burden estimation through systematic review and analysis of publicly available data in Pakistan. *BMC Public Health.* 2023;23:834. doi: 10.1186/s12889-023-15724-6
 7. Awan UA, Khattak AA. Has Pakistan failed to roll back HPV? *Lancet Oncol.* 2022;23:e204. doi: 10.1016/S1470-2045(22)00125-0
 8. Okunade KS. Human papillomavirus and cervical cancer. *J Obstet Gynaecol.* 2020;40(5):602-8. doi: 10.1080/01443615.2019.1634030
 9. World Health Organization. One-dose human papillomavirus (HPV) vaccine offers solid protection against cervical cancer. 2022. Available from: [https://www.who.int/news/item/11-04-2022-one-dose-humanpapillomavirus-\(hpv\)-vaccine-offers-solid-protection-against-cervical-cancer](https://www.who.int/news/item/11-04-2022-one-dose-humanpapillomavirus-(hpv)-vaccine-offers-solid-protection-against-cervical-cancer) (accessed 1.8.25)
 10. International Federation of Gynecology and Obstetrics (FIGO). WHO launches cervical cancer elimination strategy. 2022. Available from: <https://www.who.int/news/who-launch-cervical-cancer-elimination-strategy> (accessed 19.4.22)
 11. SAGE (WHO Strategic Advisory Group of Experts on Immunization) recommends updating dose schedules for HPV as follows (WHO 2022)
 12. Toh ZQ, Kosasih J, Russell FM, Garland SM, Mulholland EK, Licciardi PV. Recombinant human papillomavirus nonavalent vaccine in the prevention of cancers caused by human papillomavirus. *Infect Drug Resist.* 2019;12:1951-1967 <https://doi.org/10.2147/IDR.S178381>
 13. World Health Organization. Evidence to recommendation table on choice of HPV vaccine. Geneva: WHO; 2017. Available from: http://www.who.int/entity/immunization/policy/position_papers/hpv_choice_recommendation_table.pdf <https://www.who.int/groups/global-advisory-committee-on-vaccine-safety/topics/human-papillomavirus-vaccines/safety> (accessed 1.8.25)
 14. Basu P, Malvi SG, Joshi S, Bhatla N, Muwonge R, Lucas E, et al. Efficacy of a single dose of human papillomavirus vaccine in young women in India: a multicentre, open-label, non-inferiority, randomised controlled trial. *Lancet Oncol.* 2021;22:1518-29. doi:10.1016/S1470-2045(21)00453-8
 15. Arbyn M, Xu L, Simoens C, Martin-Hirsch PP. Prophylactic vaccination against human papillomaviruses to prevent cervical cancer and its precursors. *Cochrane Database Syst Rev.* 2018;5:CD009069. doi: 10.1002/14651858.CD009069.pub3
 16. M, Xu L, Simoens C, Martin-Hirsch PP. Prophylactic vaccination against human papillomaviruses to prevent cervical cancer and its precursors. *Cochrane Database Syst Rev* 2018; 5:CD009069.
 17. Davies CJ, Cao J, Baker-Rand H, Morrison H, Crosbie JE. Cervical elimination: What , How an Who? *TOG The Obstetrician and Gynaecologist.* 2025;27;241-251 Available at: <https://obgyn.onlinelibrary.wiley.com/doi/10.1111/tog.12984>
 18. Fernández-Go´mez, P, Leong D, Berg G, Brennan F, Caruso T, Trevor C. Charles TC, et.al. Harnessing agri-food system microbiomes for sustainability and human health. *Front Sci* 2025;3: 2-20 DOI 10.3389/fsci.2025.1575468.