## Estimating the impact of a gender-neutral quadrivalent human papillomavirus vaccination program in all hpv 6/11/16/18 -related diseases in Colombia

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## **Abstract**

We assessed the public health and economic impact of adding males to the existing female-only quadrivalent HPV vaccine (4vHPV) program in Colombia, analyzing different gender-neutral vaccination (GNV) vaccine coverage rates (VCRs). A published HPV-type dynamic transmission model was used to compare femaleonly vaccination (FOV) versus GNV with two-dose 4vHPV in the 9-10-year-old cohort over a 100-year timeframe in Colombia. The model compared 35% VCR for FOV with GNV at VCRs of 35% (scenario A), 50% (scenario B) and different VCRs between females/males (50%/35%, scenario C). The predicted health outcomes included HPV 6/11/16/18-related disease and deaths averted [cervical intraepithelial neoplasia, cervical, vaginal, vulvar, penile, anal and head and neck cancers, genital warts (GW), and recurrent respiratory papillomatosis], direct healthcare cost prevented by vaccination, and incremental cost-effectiveness ratios (ICERs). All GNV scenarios are estimated to provide faster and greater reductions in HPV 6/11/16/18-related diseases relative to FOV at 35% VCR, mainly scenarios B and C. The highest cumulative reductions in the incidence of HPV 6/11/16/18related disease and deaths were seen in scenario B relative to FOV at 35% VCR at year 100, averting 28,001 cervical cancer (CC) cases, 11,968 non-CC cases (4,753 in females and 7,215 in males) and 15,141 deaths. The greatest projected reductions in health care costs are due to diseases caused by HPV-6/11 infection, driven by GW. The cost savings varied from 88 (scenario A) to 184 million (scenario B) relative to FOV at 35%. The ICER for all scenarios was <0, indicating that under the model assumptions it is cost-saving to implement a GNV-4vHPV in Colombia. In Colombia, a GNV-4vHPV program is a cost-saving strategy in the three scenarios analyzed relative to the current FOV program and result in greater improvement of the public health and economic impact in both women and men.

## **Keywords**

Vaccination, Human Papilloma, HPV, Colombia.