

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 female-only 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 6/11/16/18-related 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.