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Human Papillomavirus Vaccination: Is it Cost-Effective in Iran?

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Human papillomaviruses (HPVs) are the most common sexually transmitted infections. By August 2014, 58 countries (30%) had introduced HPV vaccine in their national immunization program. One study has been conducted on efficacy of national vaccination in Iran. Khatibi et al. (2014) (1) assessed the following parameters to assess the cost-effectiveness of HPV vaccination in Iran. This study updated parameters on cost-effectiveness of HPV vaccine (2-6) (Table 1).

In conclusion, HPV vaccination can be cost-effective in Iran due to the presented method by the world health organization (WHO).

References

1. Khatibi M, Rasekh HR, Shahverdi Z, Jamshidi HR. Cost-effectiveness evaluation of quadrivalent human papilloma virus vaccine for HPV-related disease in Iran. *Iran J Pharm Res.* 2014;**13**(Suppl):225–34. [PubMed: 24711850].
2. Markowitz LE, Dunne EF, Saraiya M, Chesson HW, Curtis CR, Gee J, et al. Human papillomavirus vaccination: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep.* 2014;**63**(RR-05):1–30. [PubMed: 25167164].
3. Iarc Working Group on the Evaluation of Carcinogenic Risks to Humans . Biological agents. Volume 100 B. A review of human carcinogens. *IARC Monogr Eval Carcinog Risks Hum.* 2012;**100**(Pt B):1–441. [PubMed: 23189750].
4. de Sanjose S, Quint WG, Alemany L, Geraets DT, Klaustermeier JE, Lloveras B, et al. Human papillomavirus genotype attribution in invasive cervical cancer: a retrospective cross-sectional worldwide study. *Lancet Oncol.* 2010;**11**(11):1048–56. doi: 10.1016/S1470-2045(10)70230-8. [PubMed: 20952254].
5. Lacey CJ, Lowndes CM, Shah KV. Chapter 4: Burden and management of non-cancerous HPV-related conditions: HPV-6/11 disease. *Vaccine.* 2006;**24 Suppl 3**:S3/35–41. doi: 10.1016/j.vaccine.2006.06.015. [PubMed: 16950016].
6. WHO . Human papillomavirus vaccines: WHO position paper, October 2014. *Wkly Epidemiol Rec.* 2014;**89**(43):465–91. [PubMed: 25346960].

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Table 1. HPV Vaccine

Parameters Used in the Study of Khatibi et al. (2012 - 2013)		Updated Parameters in Cost-Effectiveness of HPV Vaccine in the Present Study
Vaccine efficacy, %	100	100
Protection duration	Lifelong	Lifelong
Time horizon, y	59	59
Vaccine coverage, %	70	70
Euro exchange rate, Rials	33,500	30,541
Price of Gardasil, Euro	85.5	85.5
Margins	1.46	1.6
Vaccine cost, Rial	4,181,805	4,178,009
Vials of vaccine needed without considering the booster dose	3	3
Vaccine cost per series, Rial	12,545,415	12,534,026
Health discount rate (Annually), %	3	3
Life expectancy, y	74	74
Lost QALY without vaccine	22,468	22,468
Lost QALY with vaccine	12,295	12,295
Three times of Gross Domestic Product (GDP) per capita	427,035,000	440,200,566
15-year-old female population of the country	629,400	629,400
Covered population (70 percent)	440580	440,580
Total cost of vaccination	5,527,258,940,700	5,522,241,351,312
Total cost of treatment in the absence of vaccination	1,060,714,746,135	1,272,857,695,362
The total incremental cost of vaccination	4,466,544,194,565	4,249,383,655,950
Cost per QALY gained	439,058,704	417,711,949
Is it cost effectiveness?	NO[a]	Yes[a]

[a]The numerical value of “cost per QALY gained” is less than “three times per capita GDP”.