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## Impact of Increasing HPV Vaccination Coverage on Preventing Oropharyngeal Cancer: A Cost-Effectiveness Study

Abhishek Choudhary Dr.  
*Harvard University*, [abhi.achoudhary@gmail.com](mailto:abhi.achoudhary@gmail.com)

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## **Abstract**

**Background:** The incidence of oropharyngeal cancer (OPC) has been rising, especially among middle-aged men. While Human Papillomavirus (HPV) has been irrevocably implicated in the pathogenesis of OPC, the current HPV immunization uptake rate remains low in the US. The aim of our study was to evaluate the impact of increased HPV vaccination coverage on HPV-associated OPC incidence and costs.

**Methods:** A decision analytic Markov model was constructed. Separate analyses were conducted for hypothetical cohorts of 9-year-old boys and girls. Two strategies were compared: 1) Status quo (maintaining the current vaccination uptake rates); 2) Increasing HPV vaccination uptake rates to the Healthy People 2020 target (80%) for both genders. Sensitivity analyses were performed to determine the impact of model input uncertainties on results.

**Results:** Increasing HPV vaccination uptake rates to the Healthy People 2020 target would be expected to prevent nearly 100,000 cases of OPC and save \$544 million by saving more than twice the amount for each dollar spent on vaccination over lifetime. Increased HPV vaccination coverage would result in 8,290 QALY gains in the overall population, and it would be cost-saving for males and cost-effective for females with an incremental cost-effectiveness ratio of \$42,365 per QALY gained for females.

**Conclusion:** Expanding HPV vaccination rates would likely provide a cost-effective way to reduce the incidence of OPC in the US, particularly among males given their higher baseline risk of OPC and lower vaccination levels compared to females. Furthermore, widespread vaccination coverage would provide health benefits for other HPV-associated diseases.