HPV VACCINATION TRENDS AMONG COMMERCIALLY INSURED US ADULTS AGED 27-45 BEFORE AND AFTER ACIP RECOMMENDATION CHANGE IN THE US, 2007-2020

Ryan Suk, Kaiping Liao, Cici X. Bauer, Catherine Basil, Meng Li

UTHealth Houston The University of Texas Health Science Center at Houston
UTSA The University of Texas at San Antonio™
THE UNIVERSITY OF TEXAS MD Anderson Cancer Center Making Cancer History®

Introduction

- In 2019, the Advisory Committee on Immunization Practices (ACIP) advised that patient-clinician shared decision-making be employed for human papillomavirus (HPV) vaccination among adults aged 27 to 45 years.
- However, there is limited knowledge about the trends in HPV vaccine administration for this age group before and after the implementation of this updated recommendation.
- Our aim of this study was to examine the association between the ACIP recommendation update and the HPV vaccine administration among US adults aged 27 to 45 years. .

Methods

- **Study design:** Population-based cohort study
- **Data source:** Optum Clinformatics commercial insurance database for validated claims from January 1, 2007, through December 31, 2020.
- **Study population:** Adults aged 27-45 years (The sex variable is categorized as binary (men, women), and gender identify was not available in the data)
- **Primary outcome:** The first-appearing HPV vaccination claim per individual was defined as a new HPV vaccine administration
- **Secondary outcome:** The annual proportions of vaccination cases by sub–age groups and valent types were also estimated.
- **Statistical analysis:** 1) Descriptive statistics for population characteristics, 2) Interrupted time-series analysis to assess the effect of ACIP recommendation update (trend break assumption: ACIP update second quarter of 2019) 3) Proportions of sub-age groups among vaccinated participants calculated by year (27-30, 31-34, 35-39, 40-45 years)
- **Sensitivity analysis:** Alternative hypothesis testing with a trend break in the fourth quarter of 2018 (FDA approval).

Results

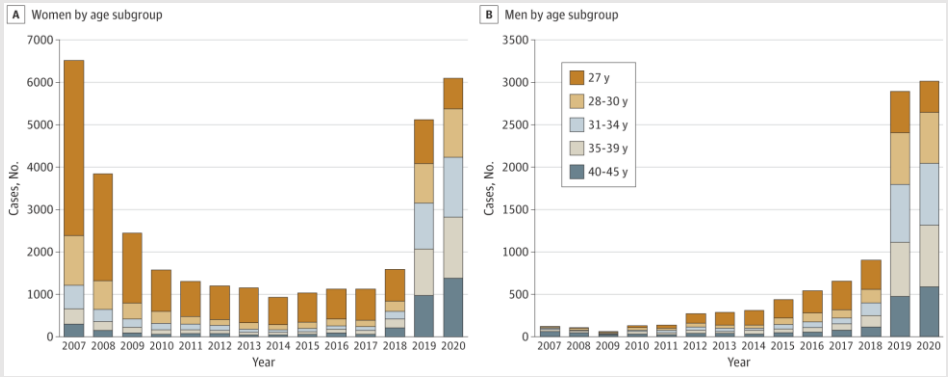
Table. Interrupted Time-Series Analysis of HPV Vaccine Administration Rates Among Adults Aged 27-45 Years by Sex Before and After ACIP Recommendation Update or FDA Approval

	Estimate of immediate change[b]		Estimate of slope change[c]	
Variable	Coefficient β_2 (95% CI)	*P* value	Coefficient β_3 (95% CI)	*P* value
ACIP update				
Women	40.18 (8.85 to 71.52)	.01	9.62 (1.12 to 18.12)	.03
Men	27.54 (20.49 to 34.59)	<.001	0.16 (−1.41 to 1.73)	.84
FDA approval				
Women	22.53 (−2.33 to 47.39)	.08	10.06 (4.80 to 15.31)	<.001
Men	9.25 (0.70 to 17.80)	.04	3.12 (1.28 to 4.96)	.001

Key findings:

- In this large commercial claim-based cohort study of 22.6 million enrollees aged 27 to 45 years in the US, the HPV vaccine administration rates in both women and men showed a statistically significant increase associated with the age-expanded Advisory Committee on Immunization Practices recommendation update.
- Age at vaccine administration shifted over time (eg, women aged 40-45 years comprised only 4.9% of vaccinations in 2017, then 19.0% in 2019, and 22.7% in 2020).

- Among 22,600,520 adults aged 27-45 during the study period; majority was men (50.9%) and non-Hispanic White (53.4%)
- ACIP update was associated with: Immediate increase in vaccine administration rate for women (β2: 40.18 per 100,000 persons; P=0.01); Increased slope for women over time post-update (β3: 9.62 per 100,000 persons per quarter; P=0.03); and Immediate increase in vaccine administration rate for men (β2: 27.54; P<0.001) (**Table**)



- Age at vaccine administration shifted over time (e.g., women aged 40-45 years: 4.9% in 2017, 19.0% in 2019, 22.7% in 2020) (**Figure**)

Discussion

- Patient-clinician shared decision-making may have been the main associated factor for this increase.
- Further research is warranted to explore the decision-making process in receiving HPV vaccination and to develop effective decision aids to maximize the cancer prevention benefit in this age group.