Increasing HPV Vaccination Rates by Linking to Provider Recommendations for Adolescent Vaccines

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UMKC School of Medicine

BEST CHILDREN'S HOSPITALS U.S.News RANKED IN 10 SPECIALTIES 2018-19

MAGNET RECOGNIZED AMERICAN NURSES CREDENTIALING CENTER

HPV Infection

- Almost **EVERYONE** will be infected with HPV at some point in their lives
- 79 million Americans currently infected.
- 14 million new infections annually
- HPV infection can lead to cancer
- Routine HPV vaccination recommended at age 11
- HPV vaccination rates lower than other adolescent vaccines

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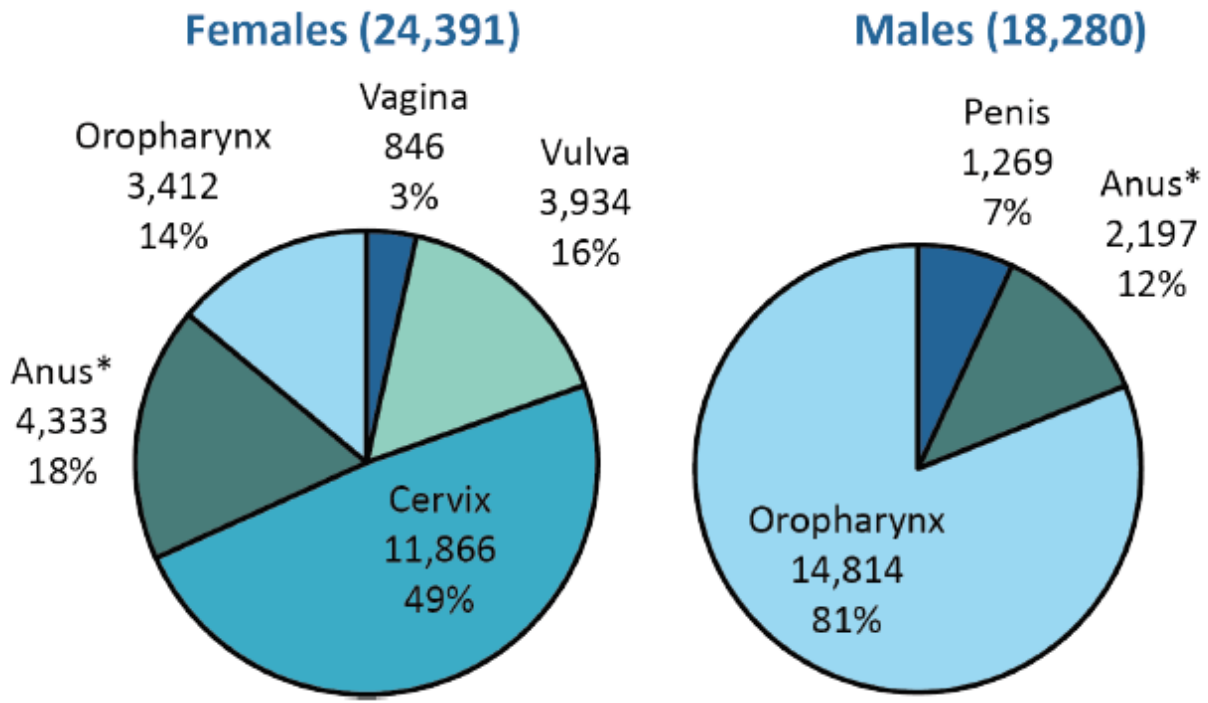
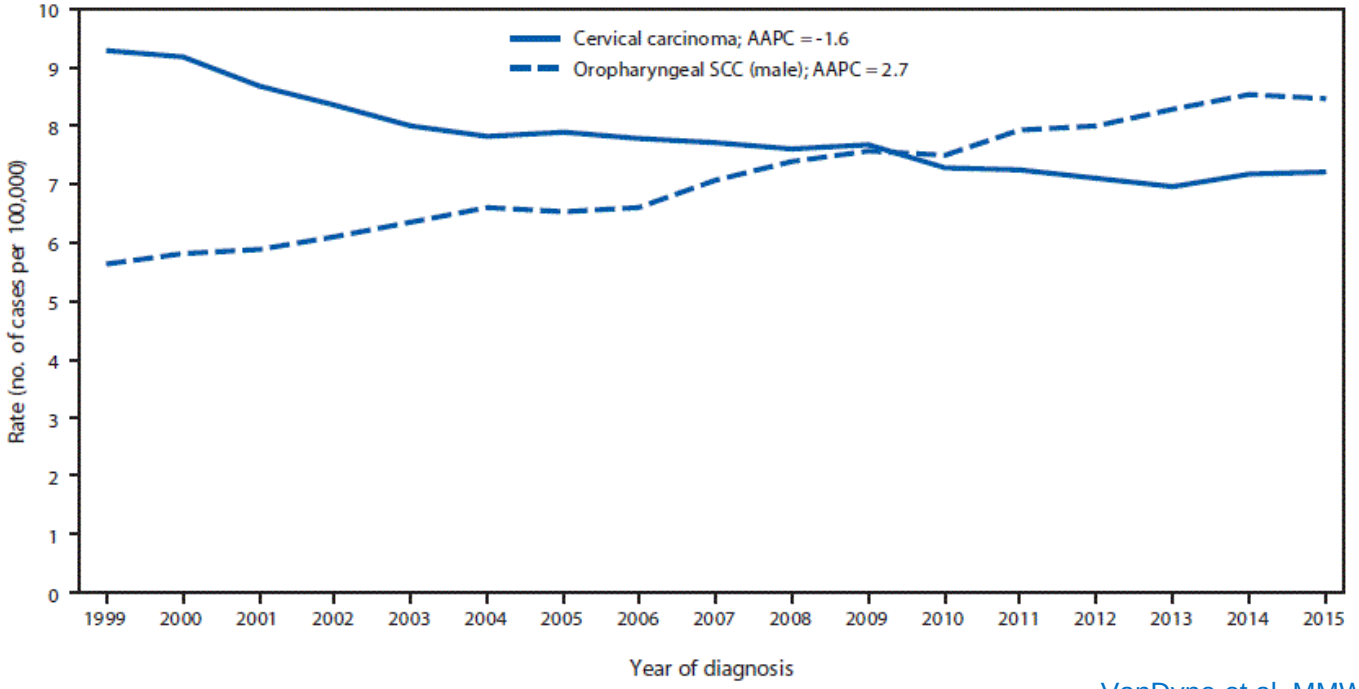
Average Number of New HPV-Associated Cancers by Gender, in the United States, 2011-2015



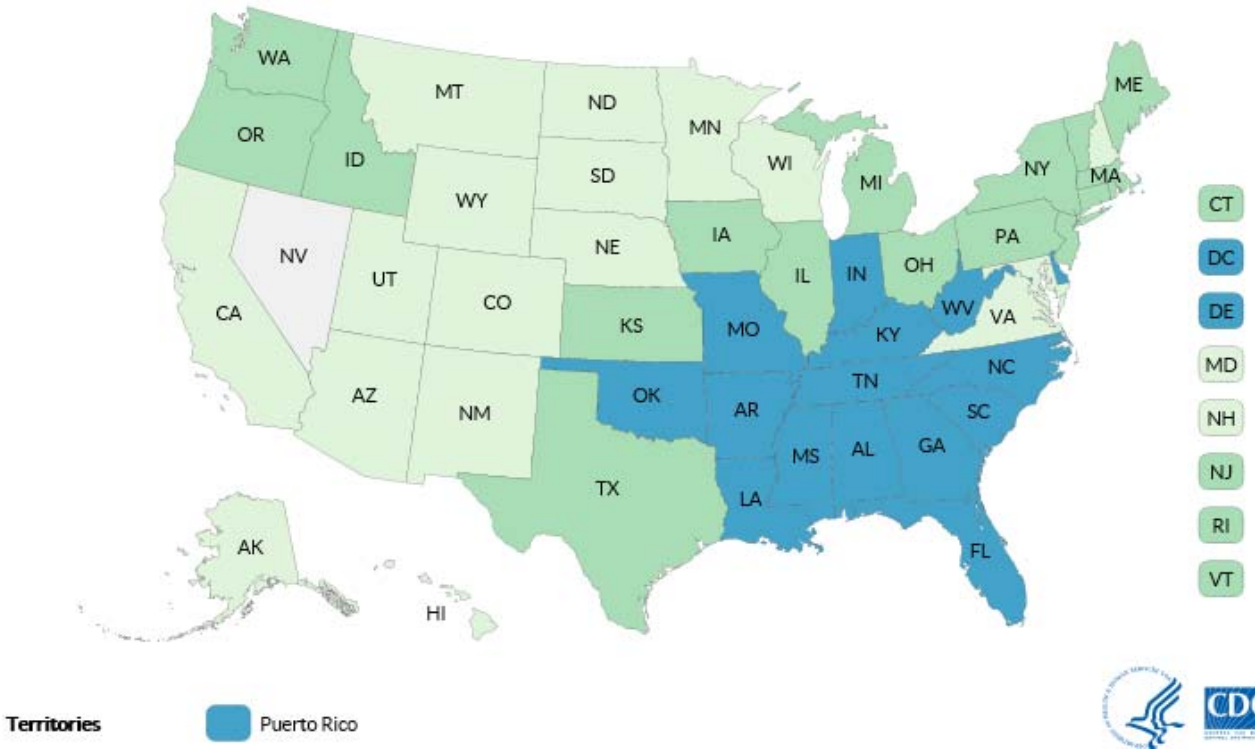
HPV Oropharyngeal Cancers

Trends* in age-adjusted incidence of cervical carcinoma among females and oropharyngeal SCC among men,† – United States,§ 1999–2015



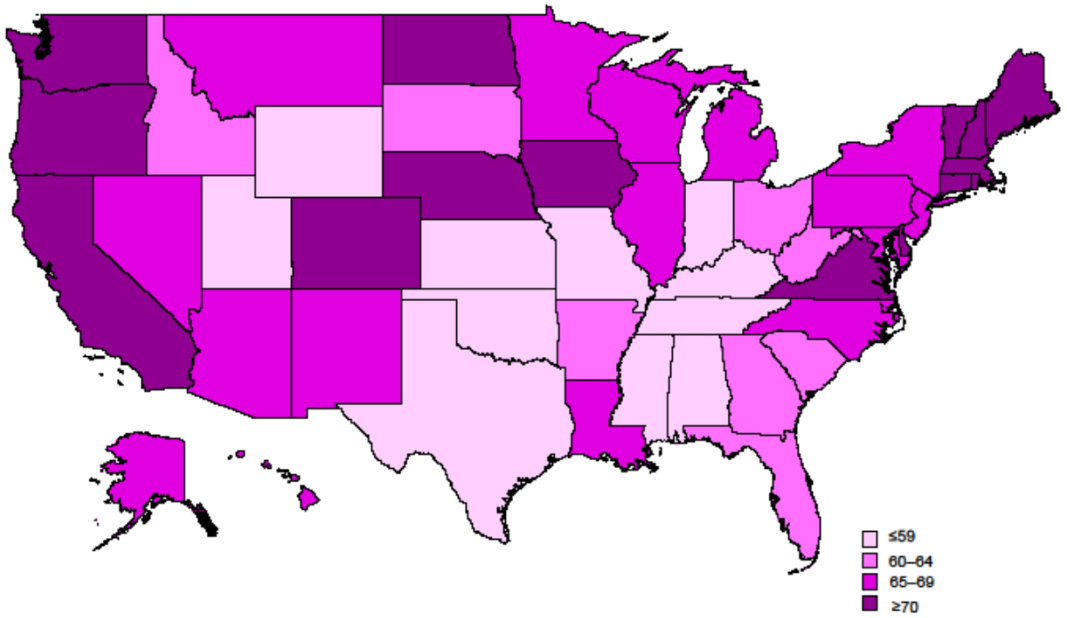
VanDyne et al. MMWR. 2018;67:918-24.

Rates of HPV Related Cancer by State



Viens LJ, et al. *MMWR.* 2016; 661-666.

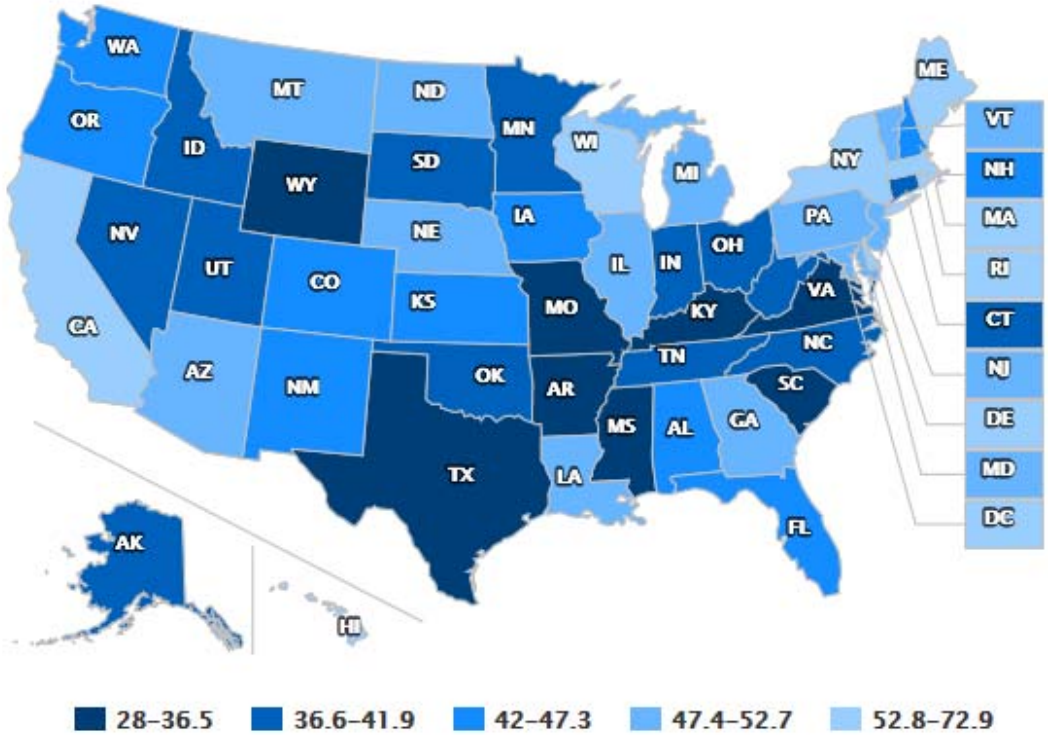
SUPPLEMENTARY FIGURE 2. Estimated coverage with ≥ 1doses of HPV vaccine* among adolescents aged 13–17 years† — National Immunization Survey-Teen, United States, 2017



Abbreviation: HPV = human papillomavirus virus.
* Nine-valent, quadrivalent, or bivalent. Percentages reported among females and males are combined.
†Includes adolescents born January 1999 through February 2005.

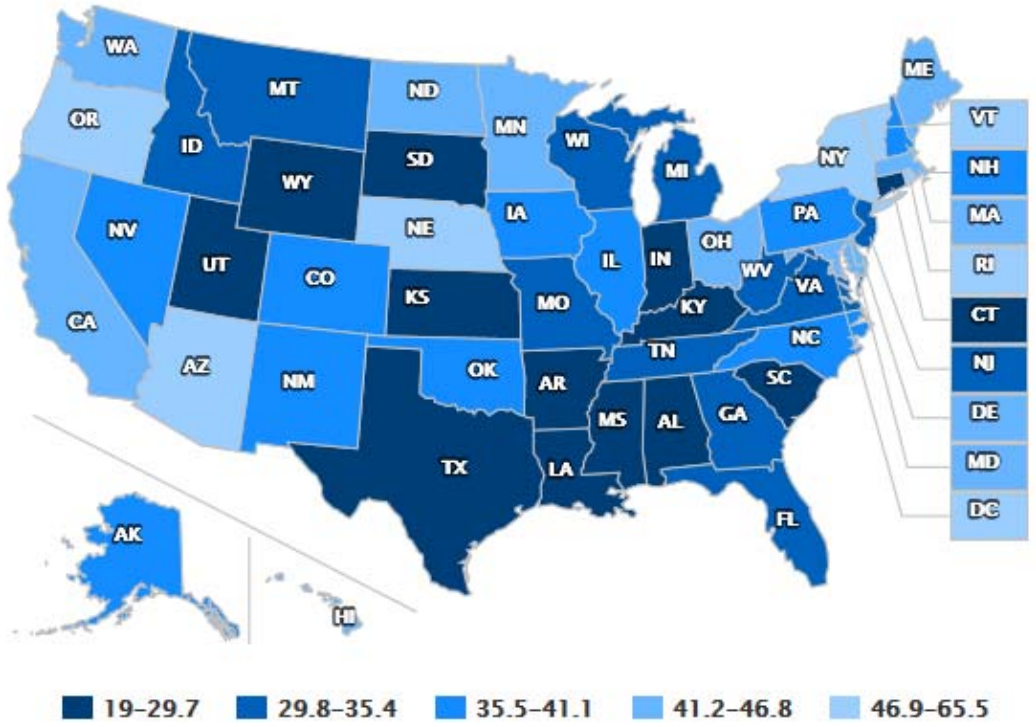
MMWR August 24, 2018

2 or 3 doses of HPV Vaccine in Female Adolescents 13-15 years



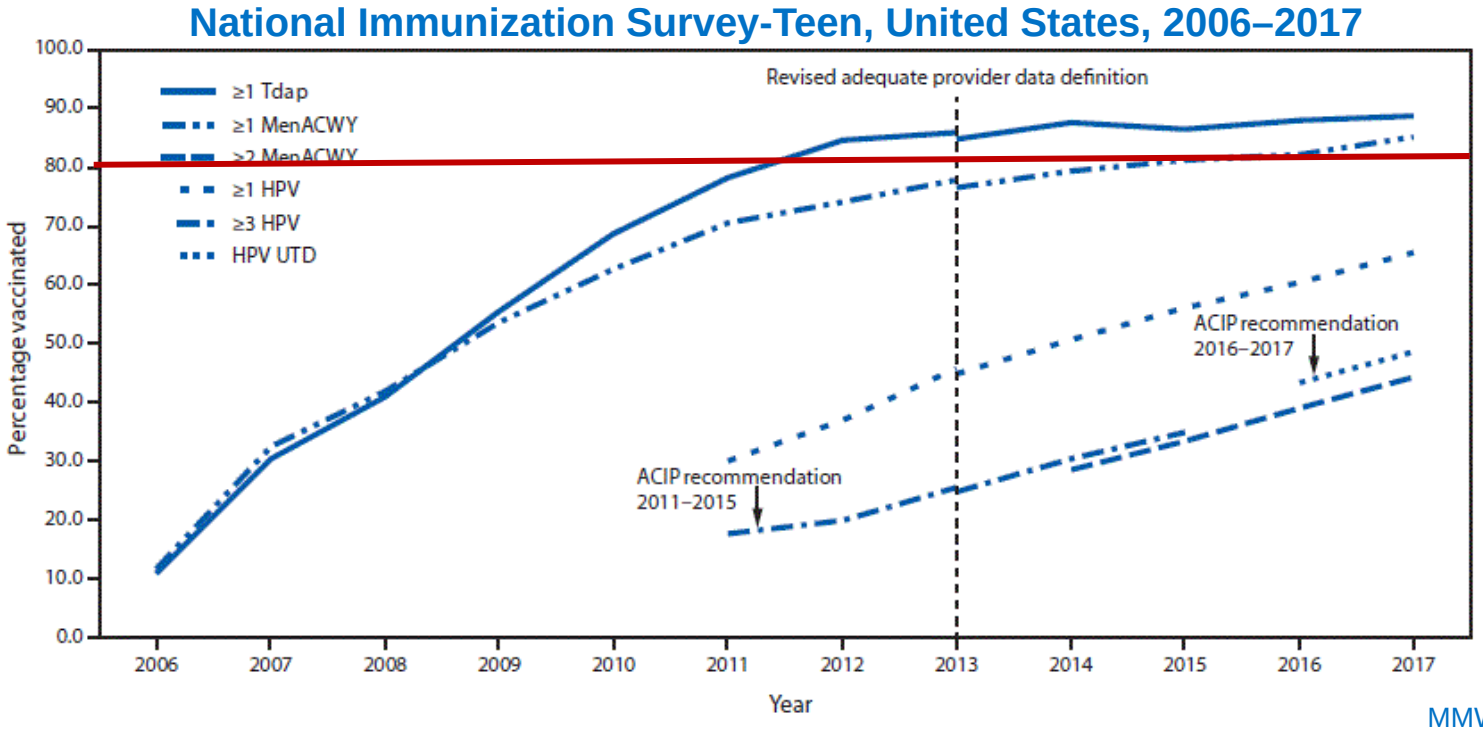
NIS-Teen; Centers for Disease Control and Prevention, 2016

2 or 3 doses of HPV Vaccine in Male Adolescents 13-15 years



NIS-Teen; Centers for Disease Control and Prevention, 2016

Vaccination rates by year in 13-17 year olds

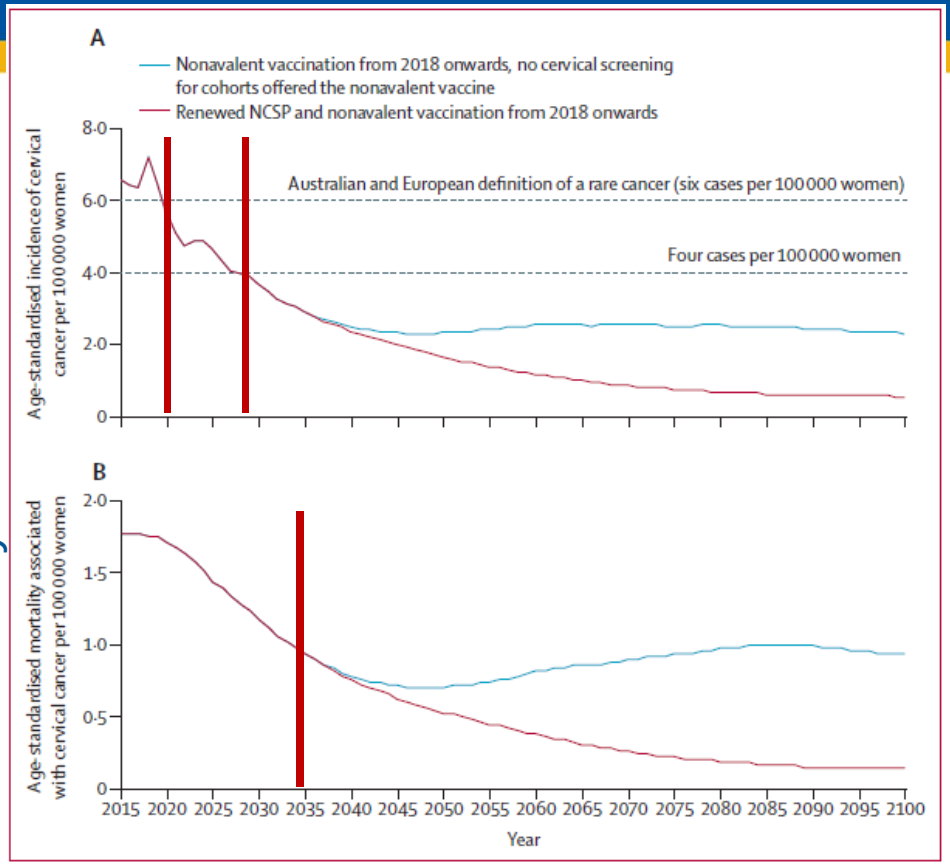


MMWR 2018;67:909–917.

Eliminating Cervical Cancer

Incidence

Mortality

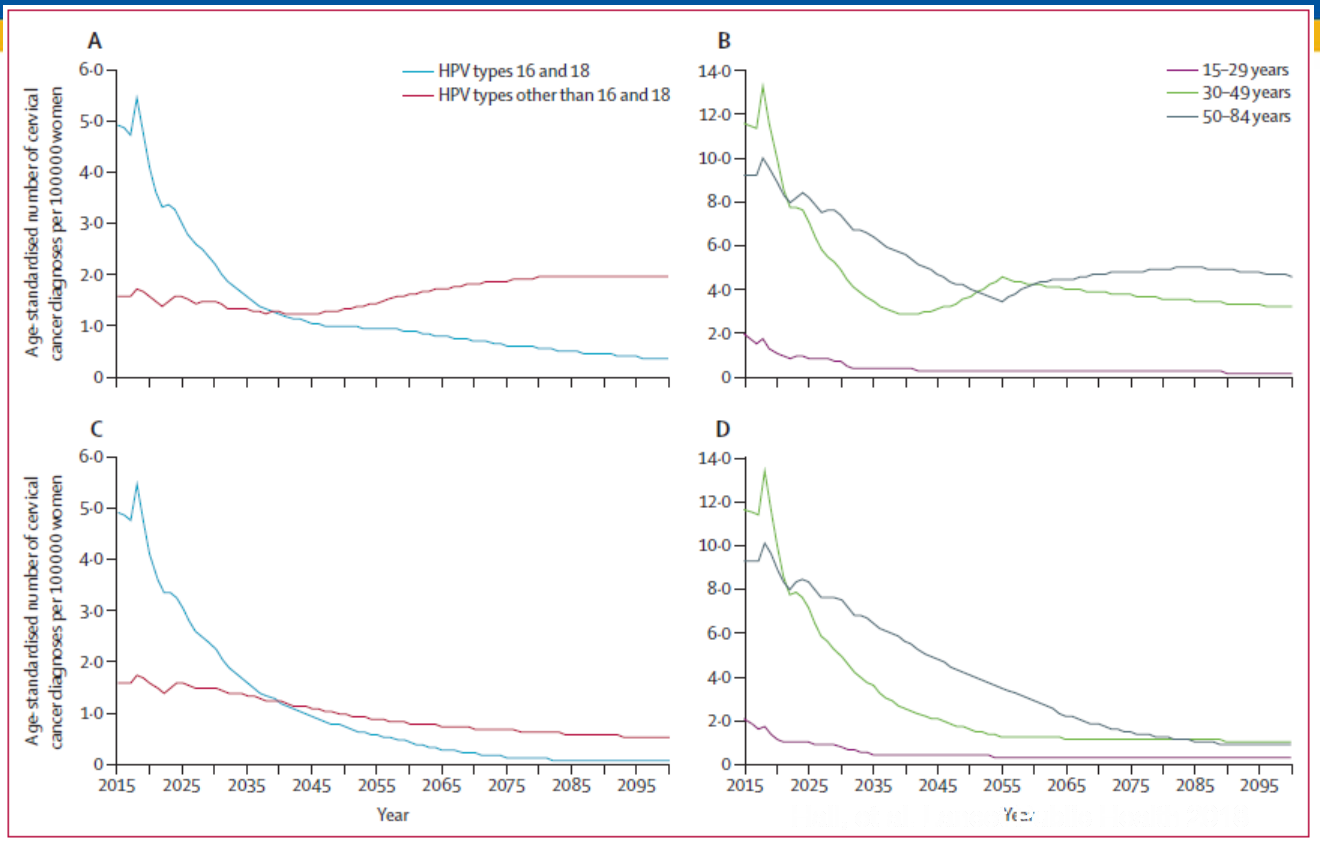


Hall, et al. Lancet Public Health 2018

Eliminating Cervical Cancer

Stopped

Continued



New Approval for HPV Vaccine

- HPV9 for women aged 9 through 45 yrs
- HPV9 for men aged 9 through 45 yrs

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Data on Women

- 3817 women aged 24-45 yrs for 4 yrs
  - Efficacy 94% CIN any grade; 100% condyloma
- LTFU of 600 women aged 27-45 yrs
  - Median 8.9 yrs
  - 95% efficacy preventing CIN and condyloma
  - NO cases found during follow up period
  - Continued exposure to non-vaccine strains

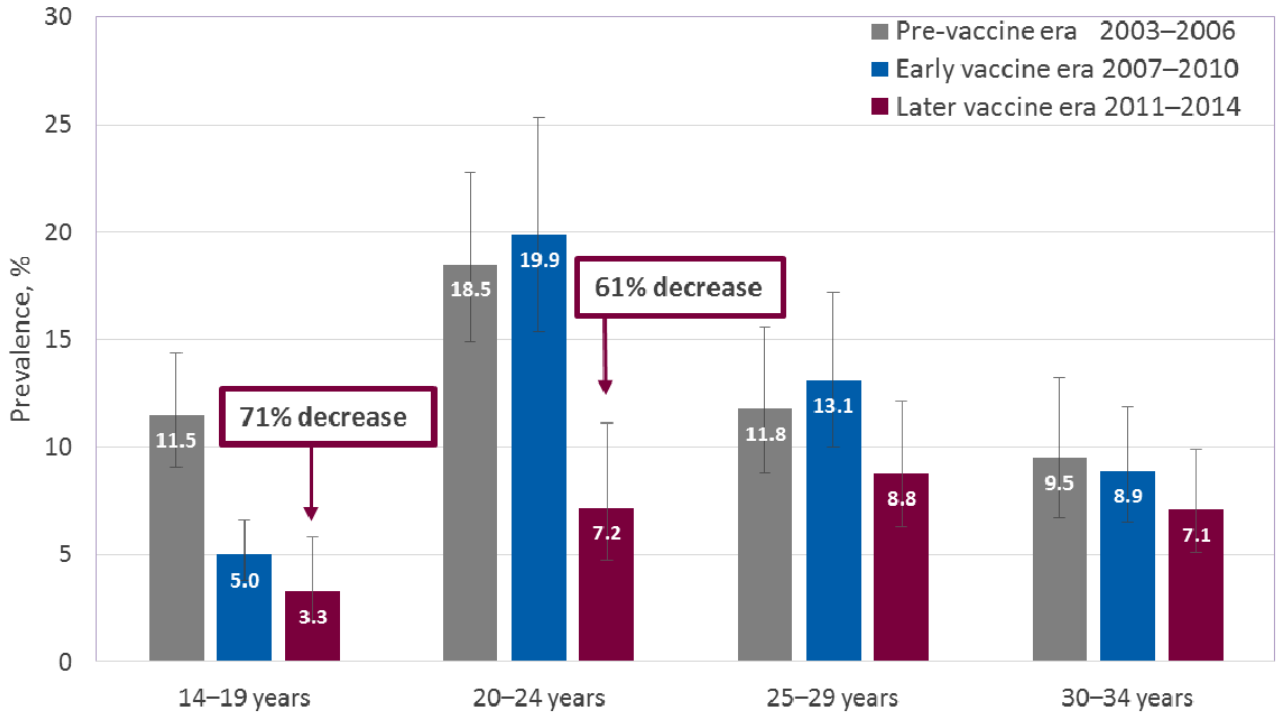
Luna et al. PLoS One.2013;8:e83431
Castellsague et al. Br J Cancer.2011;105:28-37

Data on Men

- 150 men from Florida and Mexico 27-45 yrs 100% seroconverted to all 4 vaccine components
- Efficacy 75% in per-protocol group for anal neoplasia
- Comparable vaccine response titers to younger men

Giuliano AR et al. Vaccine. 2015; 33:5640-46.
Palefsky et al. NEJM. 2011;365:1576-85.

Vaccine Type Prevalence Among Females, NHANES



Oliver et al. *JID* 2017

Systematic Review and Meta-Analysis: Population-Level Impact of HPV Vaccination

- **Review of 20 studies in 9 high income countries**
- **In countries with *>50% coverage*, among 13-19 year olds**
  - HPV 16/18 prevalence ***decreased at least 68%***
  - Anogenital warts decreased by ~61%
- **Evidence of herd effects**
- **Some evidence of cross protection against other types**

Drolet et al. Lancet Infect Dis. 2015

Switching Gears

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Increasing HPV Vaccination Rates

- Two arm quasi-experimental research design with 4 CHN affiliated practices (Belton, KC, Lee's Summit) matched and randomized on baseline HPV vaccination rates
- Participants
  - Providers (4 per site): MD, DO, NP, RN
  - Parents (50 per site): Parent of an HPV vaccine eligible adolescent (11-18 years)
- Comparators
  - AFIX+
  - AFIX+ combined with provider vaccine commitment messaging
- Outcomes
  - HPV Vaccination Rates at 12 months (initiation and completion)
  - Parent satisfaction

Study Team

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Community Coalition Board

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Study Aims

1. **Examine relationship between adherence to AFIX strategies and HPV vaccination rates.** *Hypothesis: Compared to practices with lower adherence, practices with higher adherence to AFIX strategies will have higher HPV vaccination rates.*

2. **Assess impact of a vaccine commitment messaging intervention on HPV vaccination rates.** *Hypothesis: Practices in the commitment messaging arm will have greater increases in HPV vaccination rates at 12-months compared to practices in the AFIX only arm.*

3. **Assess impact of a commitment messaging intervention on parent and provider satisfaction.** *Hypothesis: Parents who consult with providers in the commitment messaging arm will report similar rates of satisfaction compared to parents who consult with providers in the AFIX only arm.*

Analysis

- **AIM1:** Examine bivariate relationship between HPV coverage and AFIX adherence via chi square; beta regression used to examine adjusted effects adherence to account for clustering within clinics; multivariable analysis used to quantify the variability of adherence to AFIX strategies across clinics.
- **AIM2:** Time series techniques will determine if changes in vaccination rates occurred during the intervention period, including comparing baseline and 12-month follow-up rates in the two arms; we will perform pair-wise correlations between HPV coverage and Tdap and MenACWY vaccination coverage, allowing us to determine if recommendations and uptake for HPV vaccines are intrinsically different than other adolescent vaccines
- **AIM3:** Analyze satisfaction data using a two sample Wilcoxon test to compare median satisfaction between parents in practices with commitment messaging to those without.

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AFIX+

- Assessment: Review previous year's data with each practice
- Feedback: Provide suggestions for improvement
- Incentives:
  - Award presentation for **MOST** improved practice at the CHN Committee meeting and entry into the CDC best HPV vaccination practice in the state contest
- Exchange: Updates on vaccination rates provided semi-annually and shared during a CHN Clinical Quality & Clinical Practice Standards Committee meeting

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Clinicians Underestimate the Value Parents Place on HPV Vaccine

"The perceived and real concerns of parents influence how the clinician recommends and administers HPV vaccine."

Adapted from Healy et al. *Vaccine.* 2014

Commitment Messaging

Communication training

Step 1
- **Announce child is due for 3 bundled vaccines**

Step 2* (If needed)
- Ease main concern about HPV vaccine

Step 3* (If needed)
- Recommend HPV strongly

Step 4
- **Provide all three vaccines**

Study Timeline

Baseline
Months 1-6

- Submit IRB protocol
- Meet with CHN providers
- Analyze 12-month retrospective vaccination data
- Schedule AFIX site visits
- Develop commitment posters and communication script in collaboration with the CCB
- Parent data collection

Intervention
Months 7-11

- Complete AFIX data collection and site visits
- Review baseline vaccination data
- Provide strategies for improvement
- Complete provider communication training and distribute posters/ brochures
- Parent data collection

6 month follow up
Months 13-17

- Extract 6-month vaccination data
- Complete 6-month review with practices
- Schedule 12-month clinic follow up visit
- Parent data collection

12 month follow up
Months 19-23

- Complete parent data collection
- Analyze 12-month vaccination rates
- Complete 12-month AFIX data collection and visit
- Review vaccine data with each site
- Review parent satisfaction data with each site
- Award presentation and CDC submission

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Hypothesis: Compared to practices with lower adherence, practices with higher adherence to AFIX strategies will have higher HPV vaccination rates.

- No difference in adherence to AFIX and vaccination rates
  - AFIX adherence similar across sites
    - Reminder/recall strategy p=0.049
    - 3:4 sites indicated calling for missed appointments
    - 1 site reported training front desk staff
  - Vaccination rates are similar across sites
  - All sites are incentivized to increase rates by external reimbursement

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Questions?

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