



# Background – HPV Vaccines Session

**Lauri Markowitz, MD**

Division of Viral Diseases

Advisory Committee on Immunization Practices

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# Outline

- **Background for policy issues being considered today**
  - Harmonization of catch-up vaccination through age 26 years
  - Vaccination of adults older than age 26 years
- **Global HPV vaccine landscape**

# Policy Issues

# HPV vaccines licensed in the United States

Before October 2018

| Vaccine              | HPV types                     | Manufacturer    | Licensure ages             |
|----------------------|-------------------------------|-----------------|----------------------------|
| Bivalent (2vHPV)     | 16,18                         | GlaxoSmithKline | Females 9–25 yrs           |
| Quadrivalent (4vHPV) | 6,11,16,18                    | Merck & Co.     | Females and males 9–26 yrs |
| 9-valent (9vHPV)     | 6,11,16,18,<br>31,33,45,52,58 | Merck & Co.     | Females and males 9–26 yrs |

## Availability

- Since end of 2016, only 9vHPV has been distributed in the United States

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## Vaccine licensure and use in adults in other countries

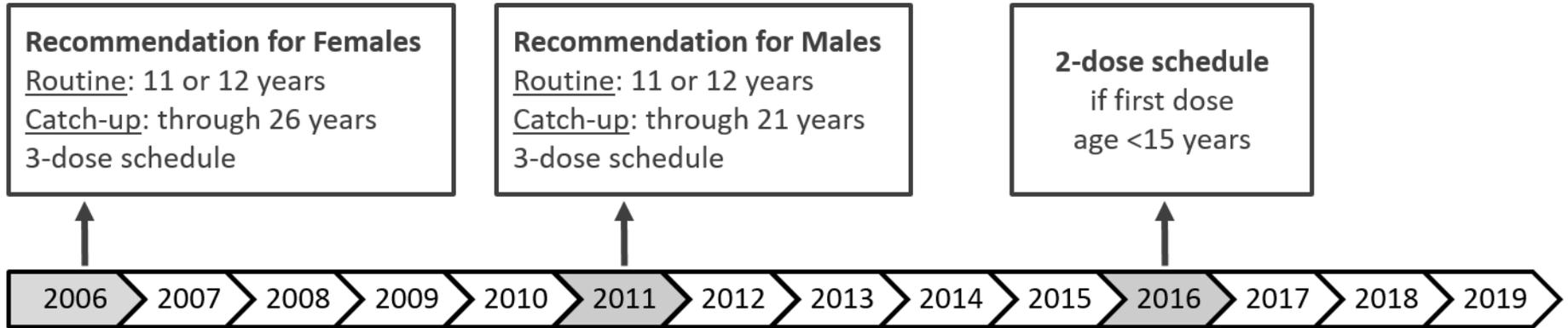
- HPV vaccines have been licensed through age 45 years or older in other countries
- No country has a public health vaccination program targeting adults older than 26 years

# Current recommendations for HPV vaccination

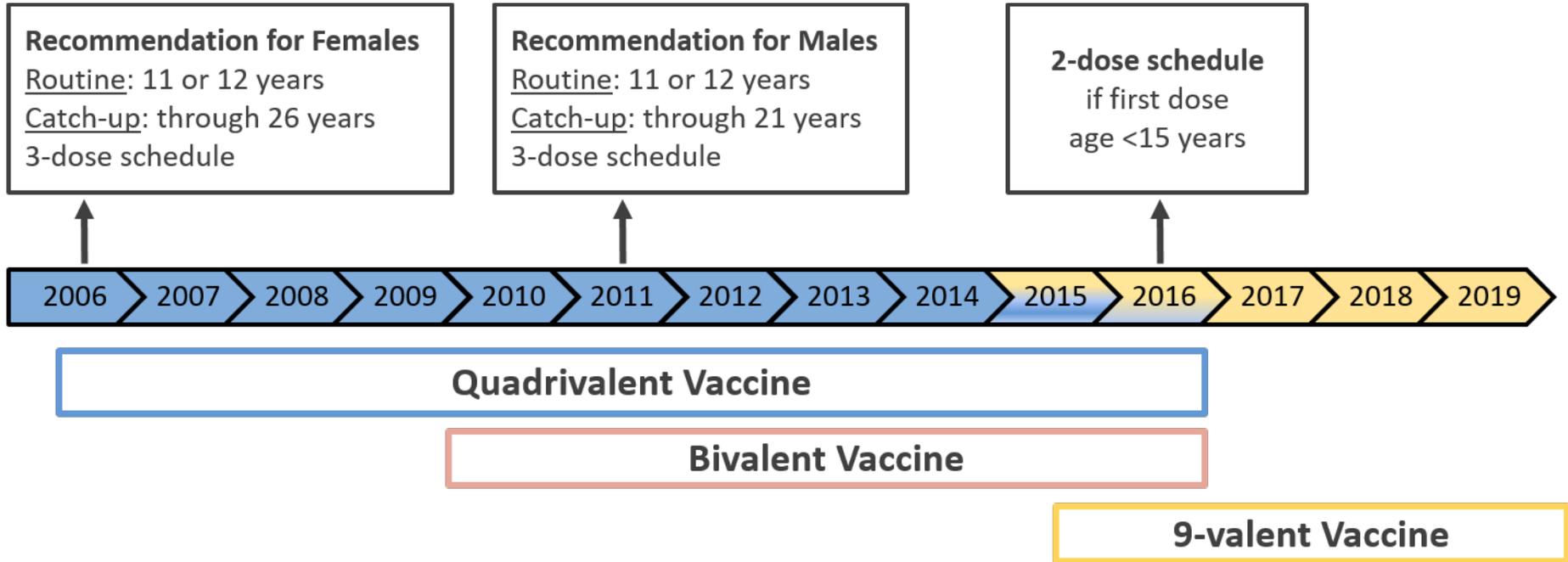
- **Routine vaccination**
  - Age 11 or 12 years
  - Vaccination can be started at age 9 years
- **Catch-up vaccination**
  - Females through age 26 years
  - Males through age 21 years
  - Certain populations through age 26 years\*
- **Males aged 22 through 26 years may be vaccinated**

\*Men who have sex with men, transgender persons, and persons with certain immunocompromising conditions  
MMWR 2014;63 (RR-05) MMWR 2015;64:300-4 MMWR 2016;65:1405-8

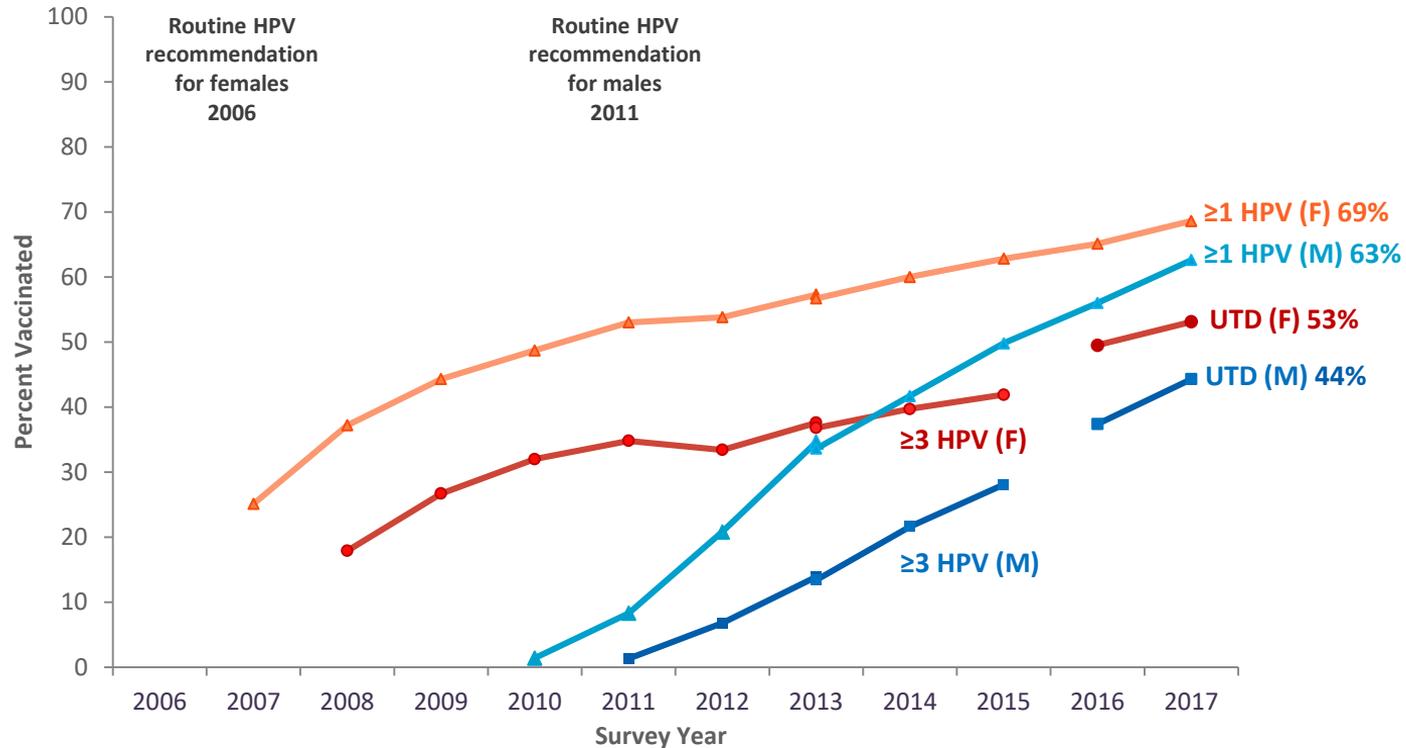
# HPV vaccination recommendations and vaccine use in the United States



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# Estimated HPV vaccination coverage among adolescents aged 13–17 years, NIS-Teen, United States, 2006–2017



Adapted from Walker et al. MMWR 2018; NIS-Teen, National Immunization Survey-Teen; UTD, Up-to-date  
 Note: Revised definition of adequate provider data in 2013

# HPV vaccination for males

- **Considered by ACIP**
  - After 4vHPV licensed for use in males and data available on vaccine efficacy for prevention of anal precancers in males
  - Using GRADE, including health economic analyses
    - Inclusion of males less cost-effective than female vaccination
    - Vaccination becomes less cost-effective with increasing age at vaccination
- **Vaccination recommended at age 11 or 12 years; catch-up through age 21**
  - ACIP considered health economic data when recommending age for catch-up

# Harmonization of catch-up HPV vaccination through age 26 years

- Increasing interest from partners and stakeholders in harmonizing catch-up recommendations across genders
- In 2017–2018, before CDC awareness of the manufacturer application to FDA for the 9vHPV expanded age range
  - ACIP Work Group was considering harmonization of catch-up recommendations
- **Work Group delayed consideration of harmonization**
  - FDA agreed to an expedited review for the expanded age application, April 2018
  - Unclear what health economic analyses would show for adult vaccination; wanted to avoid multiple recommendation changes in one year
  - Health economic analyses more challenging than anticipated

# Vaccination of adults older than age 26 years

- **ACIP HPV Vaccines Work Group**
  - **Considered vaccination of adults older than age 26 years harmonized across genders**
  - **Reviewed wide range of data: clinical trials, epidemiology, and natural history**
    - Uncertainty about some aspects of natural history
  - **Considered results from 5 health economic models**
    - 3 models initially; 2 additional models included after October 2018
    - 4 of 5 models predict high cost per QALY for expanding catch-up age

# Presentations today

- **Summarize data presented to ACIP over past year**
  - Evidence to Recommendations presentation
- **The only new data today**
  - Some of the health economic modeling data
  - Data from a 9vHPV immunogenicity and safety trial

# Licensure of 9vHPV for use in expanded age range

## FDA Summary Basis for Regulatory Action

- **Results of a randomized, double-blind, placebo-controlled trial (base study) of 4vHPV that included women aged 27–45 years**
- **Observational follow-up through 10 years in a subset of women in the base study**
- **A cross-study immunogenicity analysis showing statistical non-inferiority of immune responses to 4vHPV in males aged 27–45 years vs aged 16–26 years**
- **Extrapolation of data to 9vHPV in individuals aged 27–45 years**

Munoz et al. Lancet 2009; Castellsague et al. Br J Cancer 2011 (end of study results); Luna et al. PLoS One 2013 (6 year follow-up); Luxembourg (10 year follow-up presented at ACIP June 2018); Giuliano et al. Vaccine 2015; Giuliano et al. N Engl J Med 2011; Palefsky et al. N Engl J Med 2011

# GRADE for vaccination of 27–45 year-old adults

- **GRADE presented to ACIP in October 2018**
  - Evidence tables included data for 2vHPV and 4vHPV immunogenicity, efficacy and safety in adults aged 27–45 years\*
- **Work Group updated GRADE tables in June 2019**
  - To include data from 9vHPV immunogenicity and safety trial in women aged 27–45 years<sup>+</sup>

GRADE: Grading of Recommendations, Assessment, Development and Evaluation

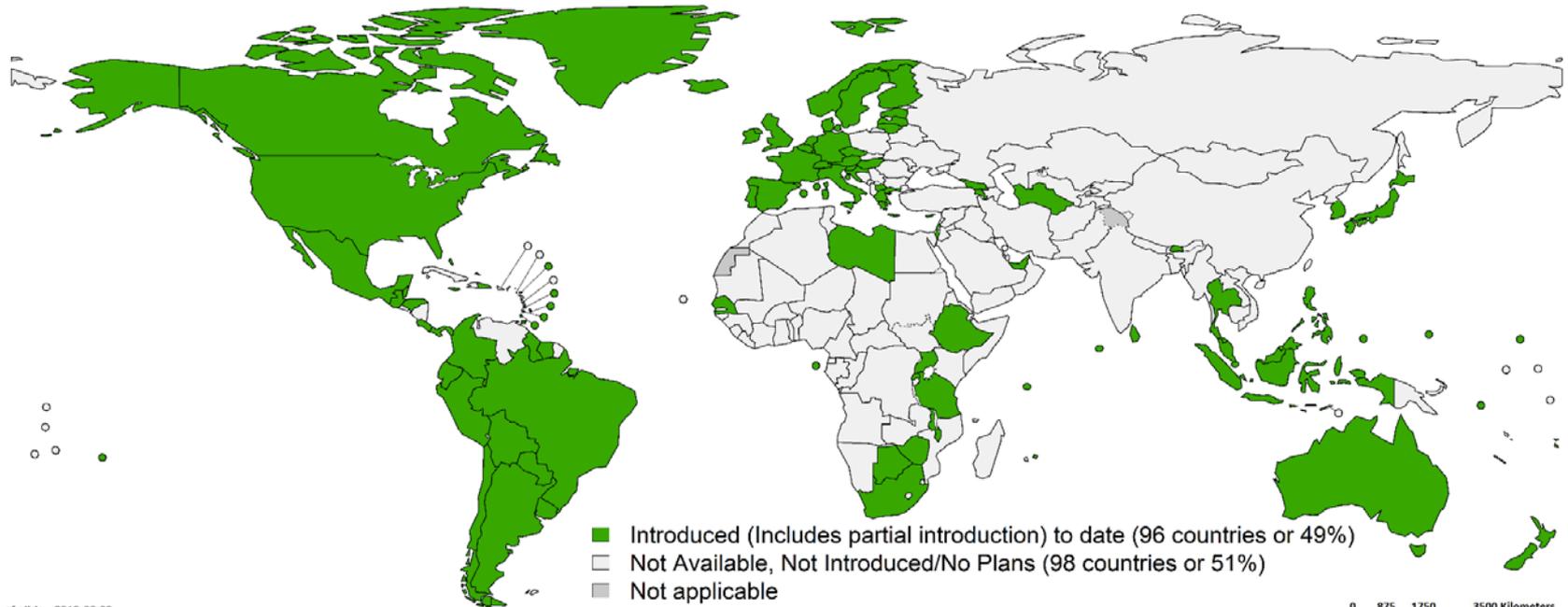
<https://www.cdc.gov/vaccines/acip/recs/grade/about-grade.html>

\*Meites, presentation at October 2018 ACIP meeting;

<sup>+</sup>Luxembourg, presentation at June 2019 ACIP meeting

# Global Landscape – HPV Vaccines

# Countries with HPV vaccine in the national immunization program, 2019



Date of slide: 2019-08-03

Map production: Immunization, Vaccines and Biologicals (IVB), World Health Organization(WHO)

Data source: IVB database as at 3rd June 2019

## Disclaimer:

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# Global HPV vaccine supply: World Health Organization SAGE meeting report, October 2018

**“Concerned about the impact of a constrained HPV vaccine supply forecast until at least 2024, SAGE urged that a globally more equitable distribution of the available doses be encouraged to ensure optimal global public health access to the vaccine.**

Countries that currently implement extended vaccination strategies (including target groups of boys, cohorts of different ages and older age groups) may consider rationalizing their vaccine use in order to make urgently needed vaccine available in countries with a high burden of disease.

Additionally, SAGE called for: (i) collaboration with all current and future manufacturers to expedite increases in the vaccine supply and (ii) comprehensive evaluation of the options for best use and allocation of the limited vaccine supply...”

# Current global HPV vaccine demand/supply imbalance

- Reasons presented to ACIP today
  - General awareness
  - Some Work Group members considered this in discussions of policy options for vaccination of adults older than 26 years

# Policy issues being considered today

- Harmonization of catch-up vaccination through age 26 years
- Vaccination of adults older than age 26 years

# ACIP HPV Vaccines Work Group

## ACIP Members

Peter Szilagyi (Chair)  
Jose Romero  
Kevin Ault

## Ex Officio Members

Jeff Roberts (FDA)  
Joohee Lee (FDA)

## CDC Lead

Lauri Markowitz

## Liaison Representatives

Shelley Deeks (NACCI)  
Linda Eckert (ACOG)  
Sandra Fryhofer (ACP)  
Amy Middleman (SAHM)  
Chris Nyquist (AAP)  
Sean O'Leary (PIDS)  
Robin O'Meara (AAFP)  
Patricia Whitley-Williams (NMA)  
Jane Zucker (AIM)

## Consultants

Joseph Bocchini  
Tamera Coyne-Beasley  
John Douglas  
Allison Kempe  
Aimee Kreimer (NCI)  
Debbie Saslow (ACS)  
Rodney Willoughby  
Rachel Winer

# CDC Contributors

Harrell Chesson  
Julianne Gee  
Elissa Meites  
Jeanne Santoli  
Mona Saraiya  
John Su  
Shannon Stokley  
Lakshmi Panagiotakopoulos  
Elizabeth Unger  
Charnetta Williams

# Thank You

For more information, contact CDC  
1-800-CDC-INFO (232-4636)  
TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)

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