Update on HPV Vaccines

Briefing: Society for Women's Health Research

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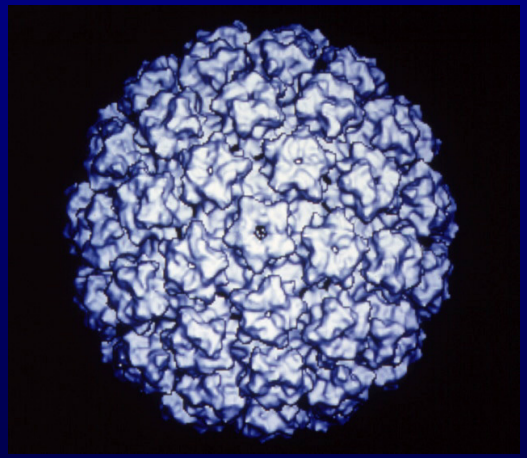
DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

Outline

- Overview of HPV Vaccines
- US Situation
- Future Policy Issues

Prophylactic HPV Vaccines

- HPV L1 major surface protein of the virus
- Expression of L1 protein uses recombinant technology
- L1 proteins self-assemble into “virus-like particles”



HPV Vaccines

	Quadrivalent (Merck)	Bivalent (GSK)
Availability in US	Licensed in 2006	Application submitted
HPV Types	HPV 6/11/16/18	HPV 16/18
Protects against	Cervical cancer genital warts	Cervical cancer
Schedule	3 doses	3 doses
Adjuvant	Alum	AS04

Both vaccines are licensed in >90 countries; implementation limited outside of Europe, North America and Australia

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HPV Vaccines in Females

- Both vaccines have 90 -100% efficacy for prevention of HPV 16 or 18 related cervical precancer lesions (among those without evidence of prior or current infection)
- Quadrivalent vaccine has ~100% efficacy for prevention of HPV 6/11 related genital warts
- No evidence of waning protection through follow-up period in clinical trials (~6-8 yrs)
- No therapeutic efficacy: Do not prevent progression of infection to disease or treat existing disease due to HPV

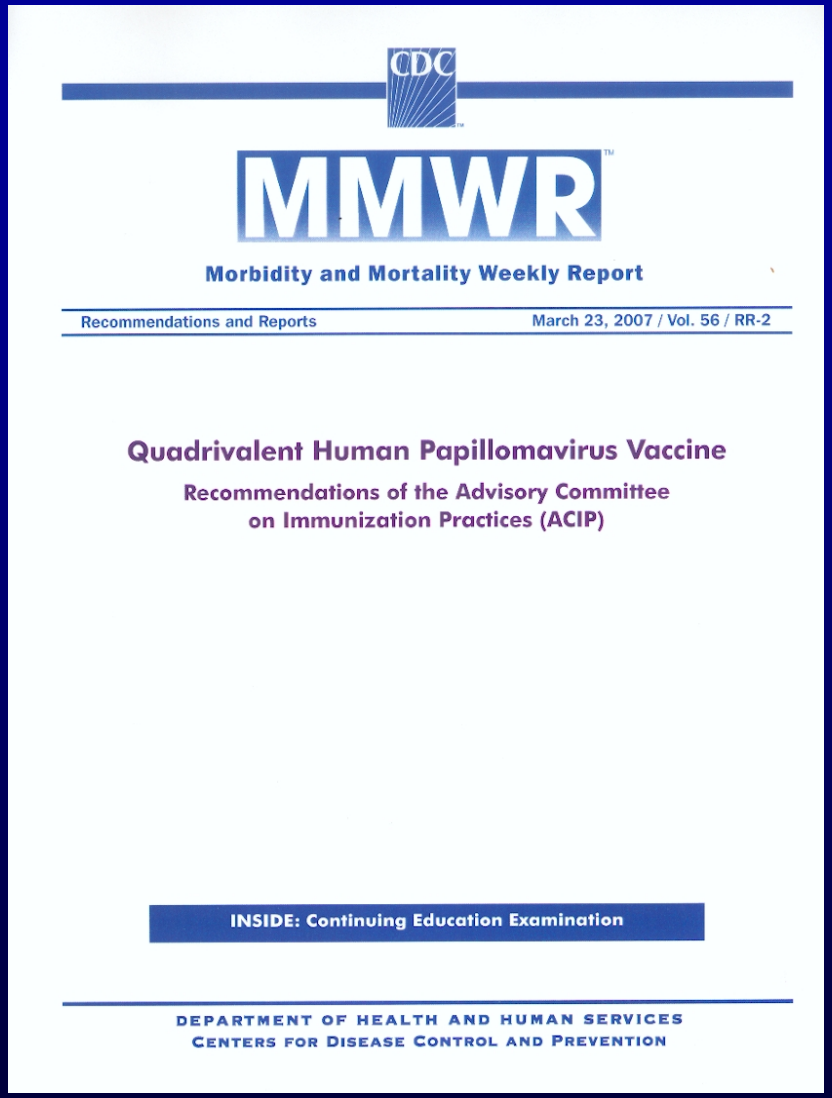
Vaccine Licensure, Recommendations and Financing

FDA Licensure

epidemiology
acceptability
implementation
cost effectiveness

Advisory Committee on Immunization Practices (ACIP)

Vaccines for Children (VFC)

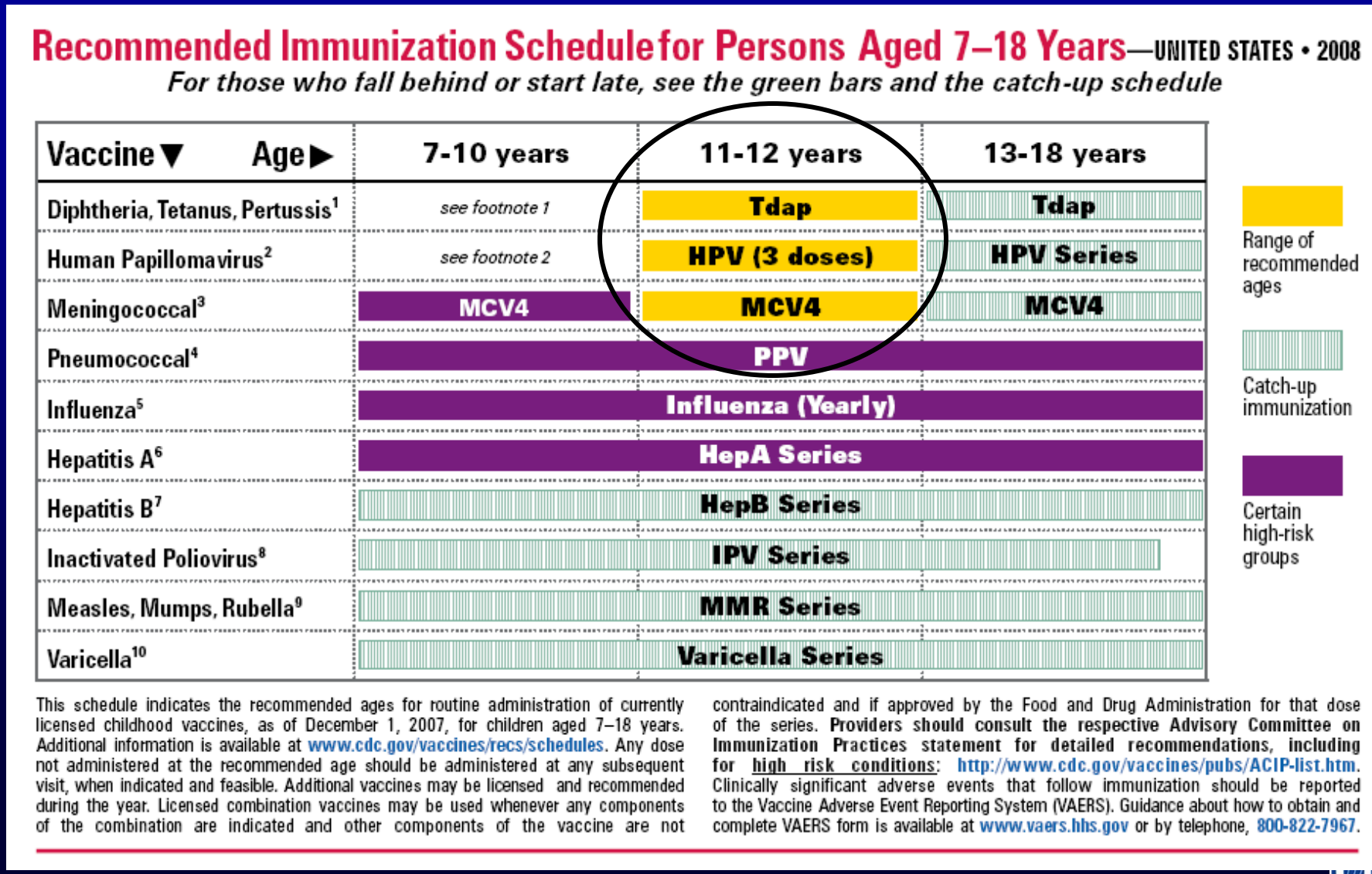


Advisory Committee on Immunization Practices (ACIP) Recommendations for Quadrivalent HPV Vaccine

Routine vaccination
Females age 11-12 years

Catch-up
Females age 13-26 years

Adolescent Vaccination in the US



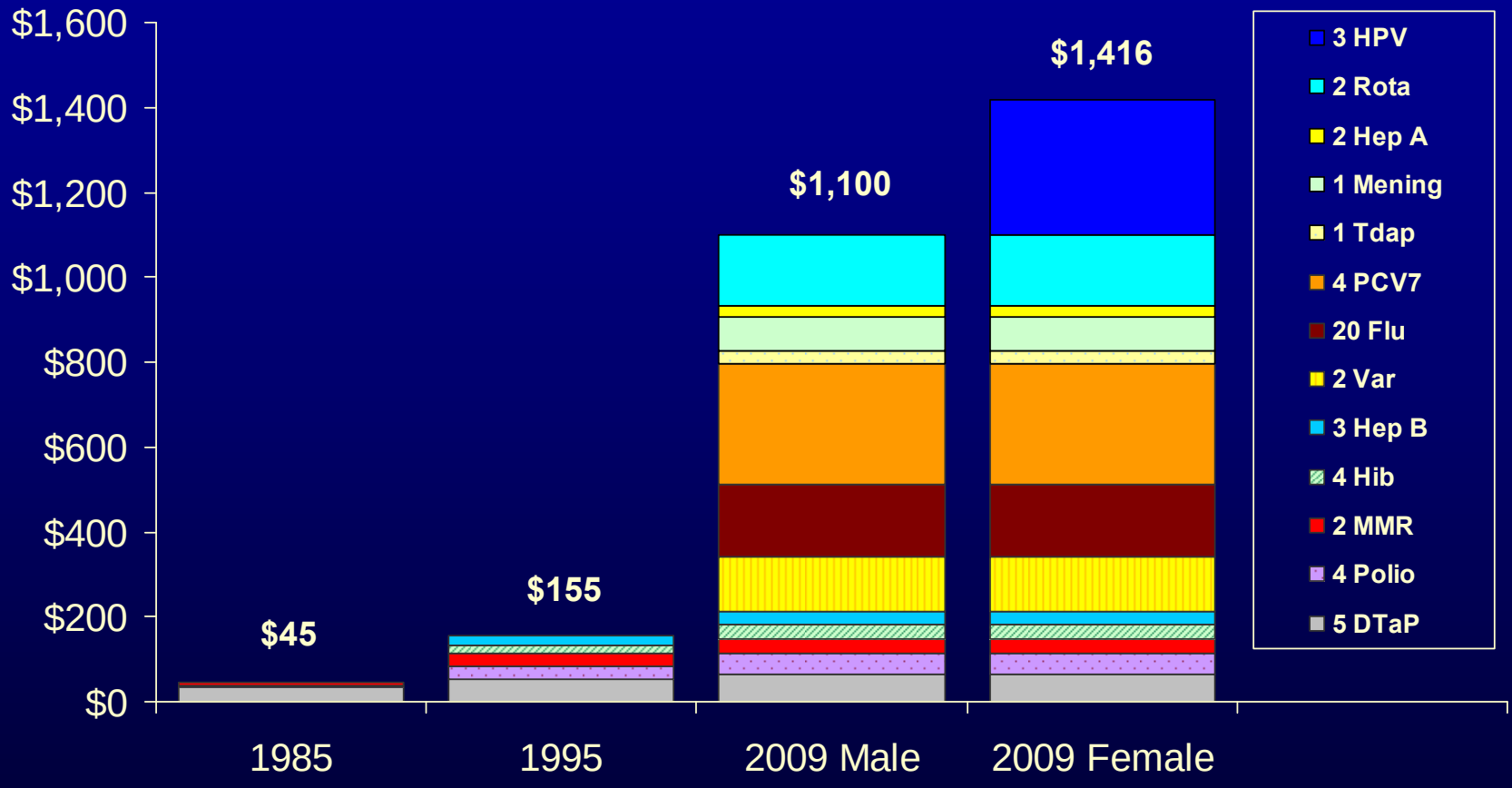
This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2007, for children aged 7–18 years. Additional information is available at www.cdc.gov/vaccines/recs/schedules. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. **Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations, including for high risk conditions:** http://www.cdc.gov/vaccines/pubs/ACIP-list.htm. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete VAERS form is available at www.vaers.hhs.gov or by telephone, 800-822-7967.

Vaccines for Children (VFC)

- Provides vaccine to eligible children <19 yrs
  - Medicaid eligible, uninsured, underinsured*, Alaska Natives and American Indians
- ACIP determines vaccines to be included in VFC
- Federal government establishes contract with manufacturer
- Government supplies vaccine to providers who are enrolled in the VFC program

*seen at qualified health centers

Federal Contract Prices for Vaccines Recommended Universally from Birth Through 18 Years of Age: 1985, 1995, 2009



-1985 and 1995 represent the average federal contract price to account for price changes within the respective year.

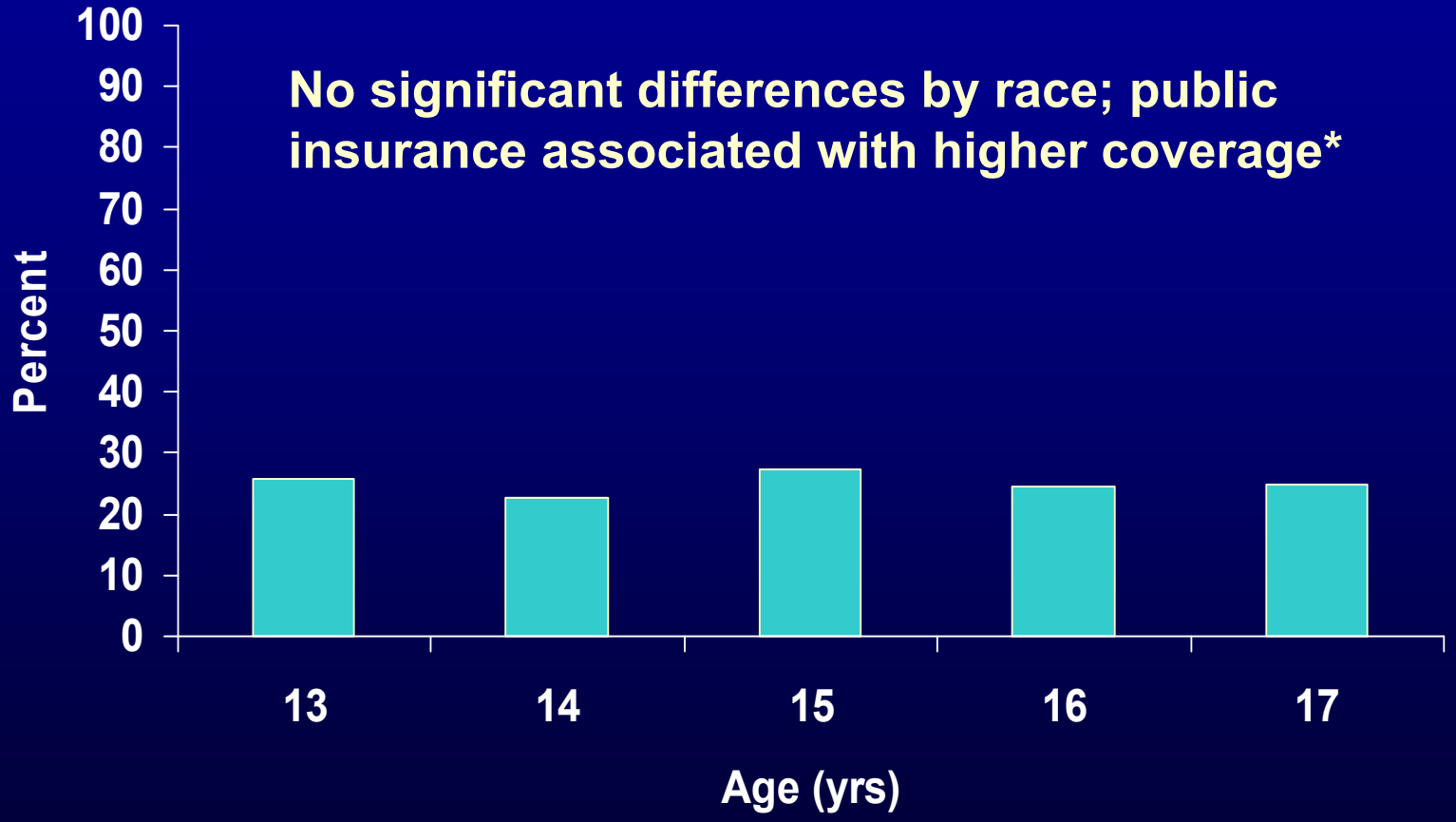
-2009 represents the minimum cost to vaccinate a child (birth to 18 years of age) and is based on the April 2, 2009, federal contract price.

Quadrivalent HPV Vaccine Introduction Timeline in the US

FDA licensure	June 2006
ACIP recommendation	
Vaccines for Children vote	
Vaccines for Children contract	Oct 2006
ACIP statement published	March 2007
All states purchased VFC vaccine	April 2007

> 24 million doses distributed in the US through 4/09

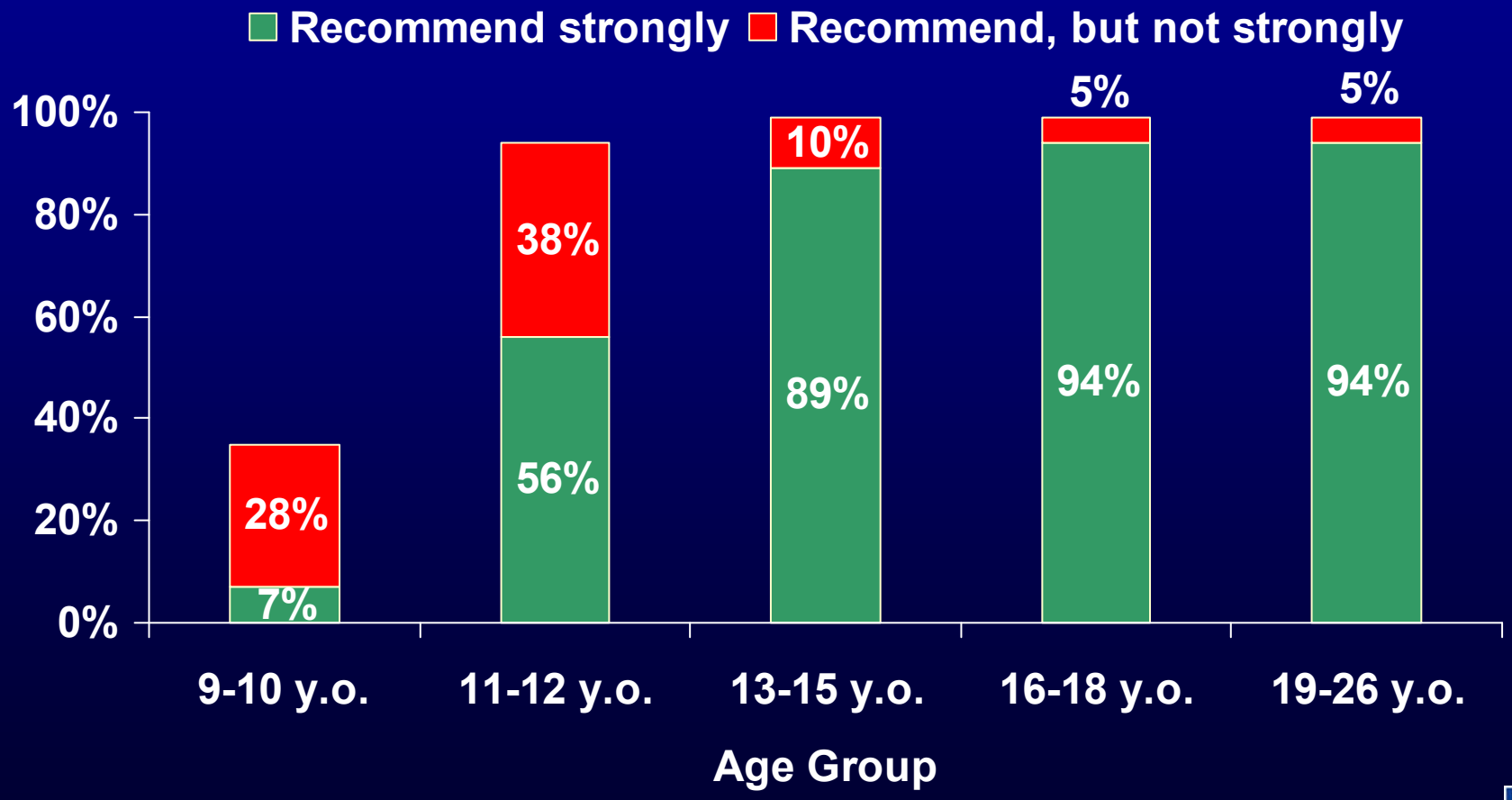
Estimated ≥ 1 Dose HPV Vaccine Coverage, Females 13-17 Years, 2007



National Immunization Survey. MMWR 2008;57
*Molinari et al. National Immunization Conference 2009

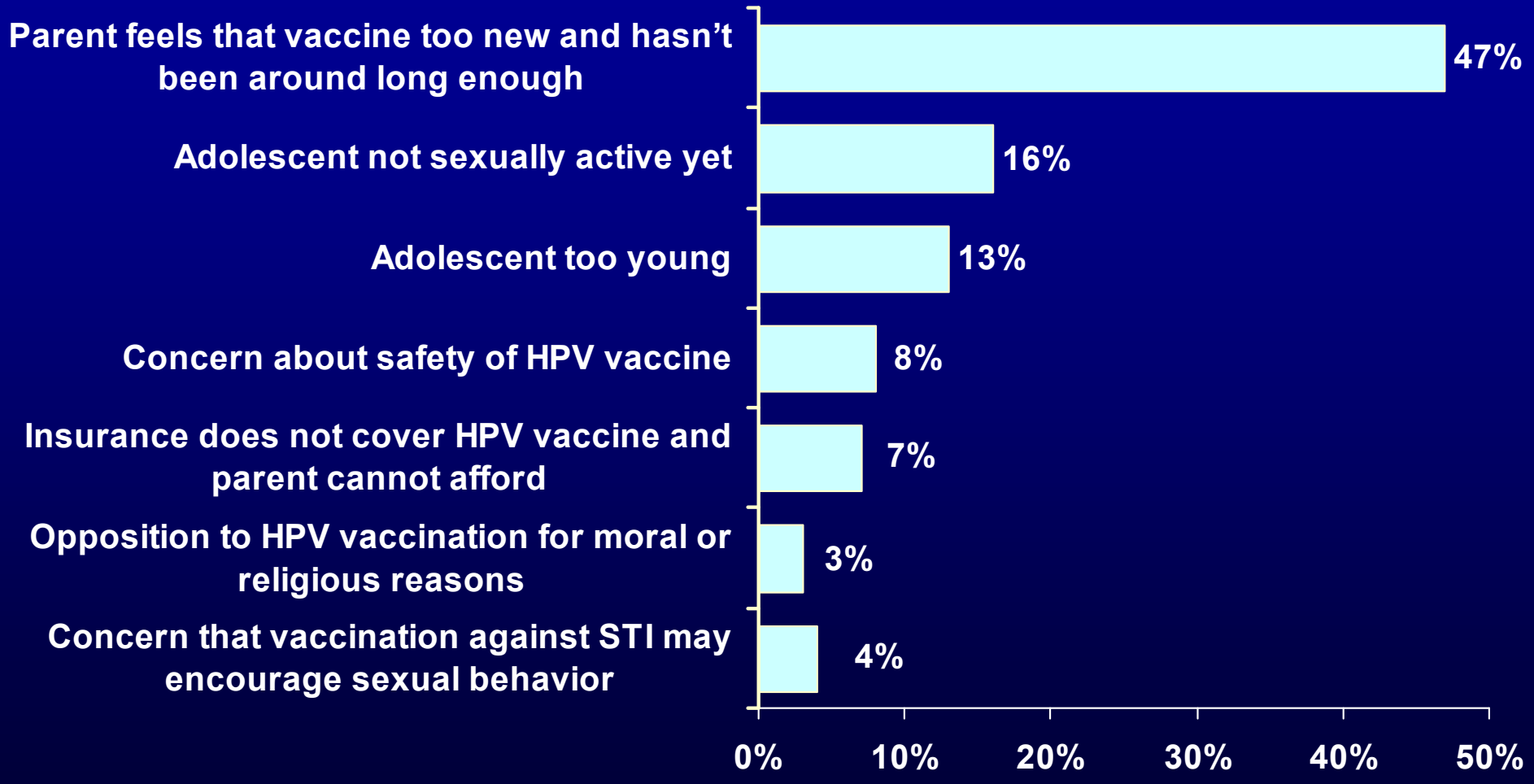
Percentage of Pediatricians Recommending HPV Vaccine to Females, by Age Group

National Survey - 18 Months Post-Licensure



Daley, presented at Oct 2008 ACIP meeting and National Immunization Conference 2009

Most Common Reasons Reported by Pediatricians for Vaccine Refusal/Deferral



Adapted from Daley, presented at Oct 2008 ACIP meeting

The NEW ENGLAND JOURNAL of MEDICINE

The Ethics and Politics of Compulsory HPV Vaccination

Politics, Parents, and Prophylaxis — Mandating HPV Vaccination in the United States

R. Alta Charo, J.D.

The New York Times
nytimes.com

February 26, 2007

EDITORIAL

A Necessary Vaccine

Debate over a new vaccine to prevent cervical cancer and
pitch. State legislatures are debating whether to mandate
kept voluntary. The
opposition than sup
vaccine flinched at n

Furor Over Push for a Cervical Cancer Vaccine

By STEPHANIE SAUL
and ANDREW POLLACK

Racing to embrace a new vaccine,

Some Conservatives

toward mandatory inoculation could prove counterproductive.

HPV vaccine triggers backlash in USA

The Economist February 10th 2007

Health care

God, sex, drugs and politics

NEW YORK

A new vaccine sparks controversy

"THE governor's action seems to sig- ually transmitted diseases in the coun-

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EDITORIAL

A Vaccine to Save Women's Lives

State Legislation and School Immunization Requirements

- Legislation to fund, educate the public, or for school requirements
  - ~41 states have introduced legislation
  - >19 states have enacted some type of legislation

- School Immunization requirements
  - Virginia and District of Columbia
  - Implemented in 2009-10 academic year
  - 'Require' girls entering 6th grade to have at least one dose HPV vaccine
  - Broad opt out provisions (no reason/documentation required)

Monitoring HPV Vaccination in the United States

- Vaccine coverage
- Safety
- Impact on biologic outcomes
- Provider practices

Post-Licensure Vaccine Safety Monitoring

- CDC
  - Vaccine Adverse Events Reporting System* (VAERS)
  - Clinical Immunization Safety Assessment (CISA)
  - Vaccine Safety Datalink (VSD)
- Manufacturer
  - Post marketing study in managed care organization
  - Vaccine in Pregnancy Registry
  - Nordic Cancer Registry

*with FDA

U.S. Vaccine Safety Datalink Evaluation of HPV Vaccine

- Tests hypotheses suggested by VAERS & prelicensure data
- Large database that collects medical and vaccine information > 9 million people annually from 8 managed care organizations
- Evaluated events after > 500,000 HPV vaccine doses included in *Rapid Cycle Analysis*
  - GBS, seizures, syncope, venous thromboembolic events, anaphylaxis, and stroke
  - Analyses have not identified any associations between conditions evaluated and HPV vaccine
  - Monitoring of rare adverse events is continuing

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Upcoming HPV Vaccine Policy Issues

Policy Issue	Possible Decision Date*
Quadrivalent vaccine for males	Oct 2009
Bivalent vaccine for females	Oct 2009

*By Advisory Committee on Immunization Practices (ACIP)

HPV Vaccine for Males

- Quadrivalent HPV vaccine protects against HPV 6/11/16/18-related persistent infection and genital warts in men
  - May also reduce transmission of vaccine type HPV infection between sexual partners
- A variety of data and issues are being considered for policy decision
  - Models suggest that vaccination of males may not be cost effective

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* And likely other HPV 16/18 - related cancers

Two licensed HPV Vaccines Some Questions to be Addressed

- How should recommendations be worded for two vaccines?
  - Differences related to protection against HPV 16/18, other oncogenic types, HPV 6/11?
- Can the vaccines be used interchangeably in the vaccination series (for protection against HPV 16/18)?

Summary

- US vaccination program
  - Progress is being made in vaccine implementation, post licensure vaccine monitoring is ongoing. Further efforts are needed to increase uptake. Information and educations efforts as well as other strategies will be helpful.
- Vaccines and policy issues
  - Policy issues that need to be addressed in the next few months include the bivalent HPV vaccine for females and the quadrivalent HPV vaccine for males.