

Immunization Update 2015

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**California Immunization Coalition Summit
Riverside, California
April 26, 2015**

***Representing the Immunization Action
Coalition, Saint Paul, MN**



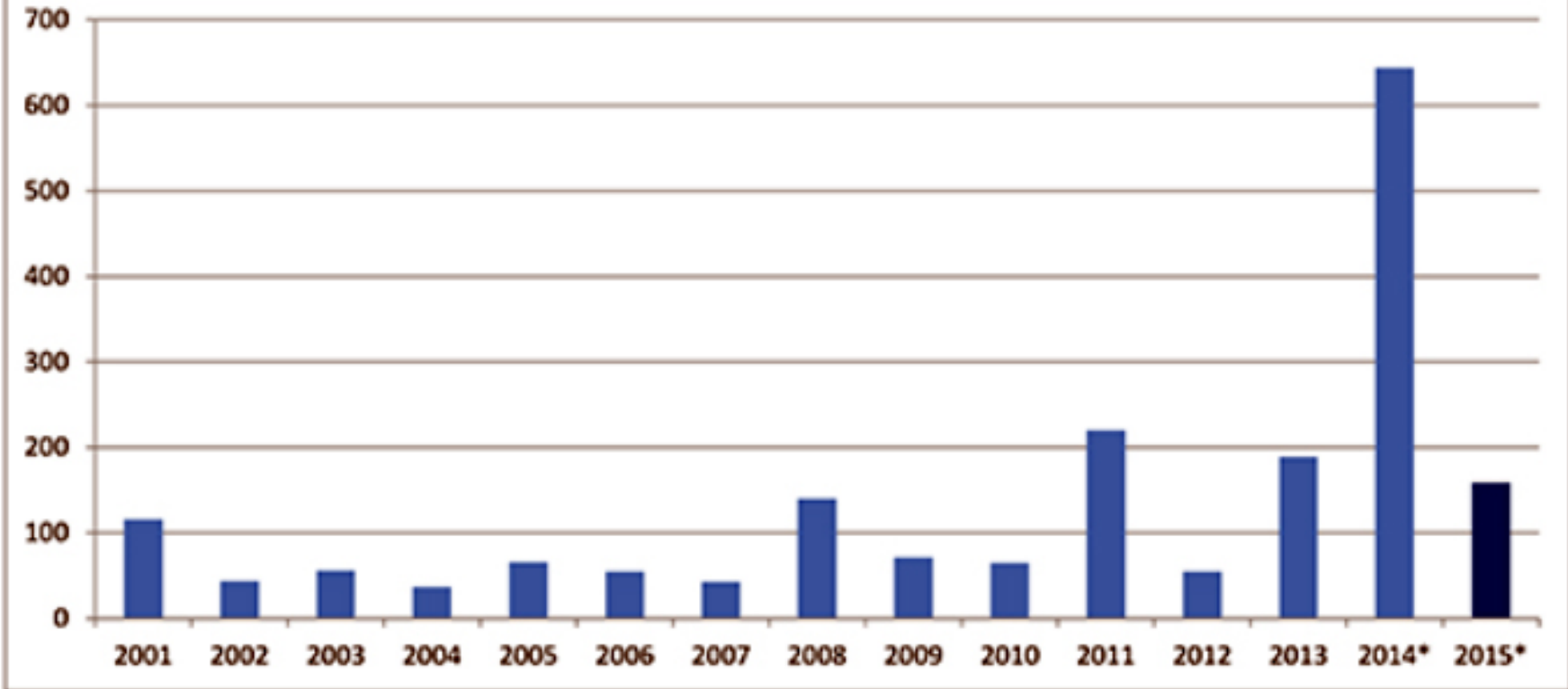
Advisory Committee on Immunization Practices (ACIP)

- **The recommendations to be discussed are primarily those of the ACIP**
 - **composed of 15 experts in clinical medicine and public health who are not government employees**
 - **provides guidance on the use of vaccines and other biologic products to the Department of Health and Human Resources, CDC, and the U.S. Public Health Service**

ACIP Recommendations

- **Recommendations approved by the Committee are just the first step**
- **Recommendations do not become official policy until**
 - **approved by the CDC Director**
 - **published in *Morbidity and Mortality Weekly Report* (MMWR)**

U.S. Measles Cases by Year



*Provisional data reported to CDC's National Center for Immunization and Respiratory Diseases

As of April 10, 2015



Measles – United States, 2015*

- **159 measles cases have been reported from 18 states**
 - **117 (74%) cases linked Disney amusement parks**
 - **source of outbreak virus not determined**
- **Age range 6 months to 70 years**
- **9 known importations**
- **90% of cases either unvaccinated or unknown vaccination status**

*as of April 10, 2015. www.cdc.gov/measles/cases-outbreaks.html

Immunization Schedules

- **Revised annually**
- **Intended to reflect and summarize current recommendations, not to create new recommendations**
- **2015 child and adolescent schedule released on January 26, 2015**
- **2015 adult schedule released on February 3, 2015**
- **Available on CDC website at**
www.cdc.gov/vaccines/schedules/index.html

Child/Adolescent Immunization Schedule Changes 2015

- **Changes in the influenza bar to clarify IIV only for children younger than 2 years**
- **Addition of purple (“high risk”) MMR bar for children 6 through 11 months who travel or live outside the U.S.**
- **Addition of 4 month “minimum interval” for DTaP4 to footnote**
- **Clarification of meningococcal and pneumococcal footnotes**
- **Revised contraindications for LAIV in footnote**

Influenza Summary – 2014-15 Season*

- **Influenza activity widespread or regional in 21 states**
- **Influenza A H3N2 is predominant**
 - **78% of H3N2 isolates are antigenically different (“drifted”) from the vaccine H3N2 strain**
- **The proportion of deaths attributable to pneumonia and influenza is below the epidemic threshold**
- **125 pediatric deaths due to influenza have been reported to date**

***as of April 10, 2015. www.cdc.gov/flu**

Influenza Vaccine Virus Strains for 2015-16

- **Trivalent vaccines will contain:**
 - **an A/California/7/2009 (H1N1)-like virus**
 - **an A/Switzerland/9715293/2013* (H3N2)-like virus, and**
 - **a B/Phuket/3073/2013*-like virus (Yamagata lineage)**
- **Quadrivalent vaccines also contain:**
 - **a B/Brisbane/60/2008-like virus (Victoria lineage)**

***different from 2014-15 formulation. www.cdc.gov/flu/weekly/**

Live Attenuated Influenza Vaccine (LAIV) for Children

- **Two randomized studies have been conducted in young children that compare the benefits provided by the LAIV and IIV**
 - **one study was conducted in children 6 to 59 months of age and the other was conducted in children 6 to 71 months of age**
- **Both studies indicated that LAIV provided about 50% better protection than IIV in young children**

LAIV Preference, 2014-2015

- **When immediately available, LAIV should be used for healthy children aged 2 through 8 years who have no contraindications or precautions**
- **If LAIV is not immediately available, IIV should be used**
- **Vaccination should not be delayed to procure LAIV**

Influenza Vaccine Effectiveness for 2014-15

- **During November 10, 2014–January 2, 2015 overall vaccine effectiveness (VE) against laboratory-confirmed influenza associated with medically attended ARI was 23% (95% CI = 8%–36%)**
- **VE for 24% for persons 6 months-17 years, 14% for 50 years and older**
- **Low VE consistent with circulation of drifted influenza A H3N2 strain**
- **Clinicians should have low threshold for use of influenza antiviral drugs**

LAIV – No Preference, 2015-2016

- **During 2013-2014 neither LAIV nor IIV provided protection against H3N2**
- **Recommendation passed at February 2015 ACIP meeting:**
 - **for healthy children aged 2 through 8 years who have no contraindications or precautions either LAIV or IIV can be used**
 - **no preference for LAIV or IIV for any person aged 2 through 49 years for whom either vaccine is appropriate**

Pneumococcal Conjugate Vaccine (PCV13) and Adults

- **FDA approved PCV13 for use among adults 50 years of age and older in December 2011**
- **Immunogenicity of PCV13 was found to be non-inferior to PPSV23**
- **ACIP recommended 1 dose of PCV13 for adults at high risk of invasive pneumococcal disease* in October 2012**
- **Recommendation for healthy adults deferred pending additional data**

***immunocompromised, functional or anatomic asplenia, cochlear implant, CSF leak**

CAPITA trial

- **Community-Acquired Pneumonia Immunization Trial in Adults**
- **Intended to determine if PCV13 was effective in reducing the risk of a first episode of CAP among persons 65 years and older**
- **Double-blind, placebo controlled**
- **84,496 persons 65 years or older in the Netherlands**

CAPITA trial

- **46% efficacy against vaccine-type CAP**
- **75% efficacy against vaccine-type invasive pneumococcal disease**
- **More effective in persons younger than age 75**
- **35% of recipients reported local AE (mostly pain)**

Pneumococcal Conjugate Vaccine (PCV13) and Adults

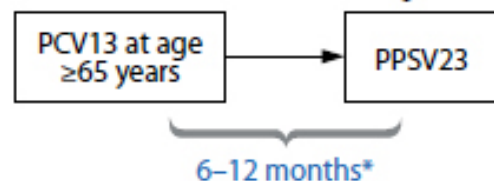
- **At a special remote session on August 13, 2014 ACIP voted to recommend that**
 - **both PCV13 and PPSV23 should be routinely administered in series to all adults age 65 years and older**
- **Recommendations were published in MMWR on September 19, 2014**

Pneumococcal Vaccines for Persons Age 65 Years and Older

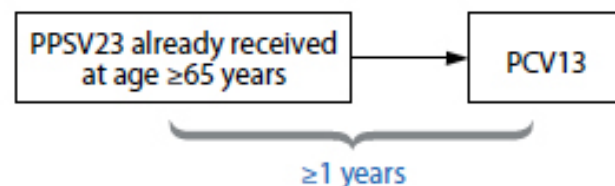
- **One lifetime dose of PCV13 for adults**
- **PCV13 and PPSV23 should NOT be administered at the same visit**
- **Administer PCV13 before PPSV23, whenever possible**
- **PCV13 should be administered to those who have already received PPSV23**

BOX. Sequential administration and recommended intervals for PCV13 and PPSV23 for adults aged ≥ 65 years — Advisory Committee on Immunization Practices, United States

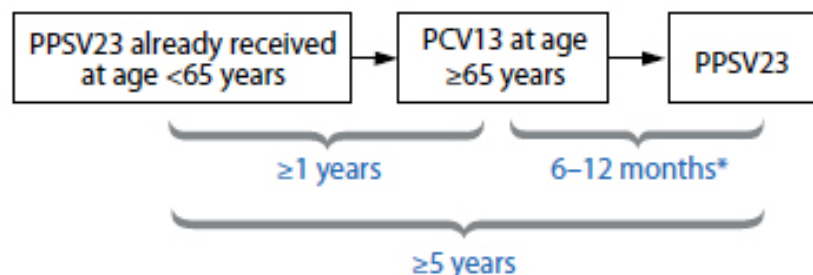
Pneumococcal vaccine-naïve persons aged ≥ 65 years



Persons who previously received PPSV23 at age ≥ 65 years



Persons who previously received PPSV23 before age 65 years who are now aged ≥ 65 years



Abbreviations: PCV13 = 13-valent pneumococcal conjugate vaccine; PPSV23 = 23-valent pneumococcal polysaccharide vaccine.

* Minimum interval between sequential administration of PCV13 and PPSV23 is 8 weeks; PPSV23 can be given later than 6-12 months after PCV13 if this window is missed.

Recommendations for PCV13 and PPSV23 in Pneumococcal Vaccine-Naïve Adults

- **For high-risk adults (asplenia, immunocompromised, etc)**
 - **single dose of PCV13**
 - **dose of PPSV23 at least 8 weeks later**
- **For persons 65 years or older who are not at high risk**
 - **single dose of PCV13**
 - **dose of PPSV23 6 to 12 months later**

Pneumococcal Vaccine Minimum Intervals

- **The minimum interval between PCV13 and PPSV23 is 8 weeks**
- **The minimum interval between PPSV23 and PCV13 is 12 months**
- **The minimum interval between doses of PPSV23 is 5 years**
- **CDC does not recommend repeating a dose of PPSV23 or PCV13 if the minimum interval between doses is violated**

CDC, personal communication

Pneumococcal Vaccines and Medicare

- **Effective September 19, 2014 Medicare will cover**
 - an initial pneumococcal vaccine to all Medicare beneficiaries who have never received the vaccine under Medicare Part B; and
 - a different, second pneumococcal vaccine one year after the first vaccine was administered (that is, 11 full months have passed following the month in which the last pneumococcal vaccine was administered)

PPSV23 at 65 Years or Age

- **Recommendations for PPSV23 have not changed**
- **All adults are eligible for a dose of PPSV23 at 65 years of age regardless of previous pneumococcal vaccination**
- **Maximum of 3 lifetime doses of PPSV23**
- **Adults vaccinated with PPSV23 at/after age 65 require no further doses of PPSV23**

***Neisseria meningitidis* Epidemiology**

- **Incidence falling since 2000 (before licensure of MCV4)**
- **Incidence of all serogroups falling, including serogroup B which is not in MCV4**
- **556 cases reported in 2013**
- **Of cases with known serogroup (n=258)**
 - **55% ACWY (n=142), 38% B (n=99)**
- **Highest incidence among infants (2.1/100,000), more than half is serogroup B**

Groups at Increased Risk for Meningococcal B Disease

- **High-risk medical conditions:**
 - **persistent complement component deficiencies**
 - **functional or anatomic asplenia**
- **Certain microbiologists**
- **Populations at risk during an outbreak**
- **NOT at increased risk: international travelers, first year college students**

Outbreaks of Meningococcal Disease

- **Meningococcal outbreaks are rare, historically causing ~2-3% of US cases**
- **Five serogroup B meningococcal disease clusters/outbreaks on college campuses**
 - **Princeton: 1,400 fold increased risk; 5,800 recommended vaccine**
 - **UCSB: 200 fold increased risk; 20,000 recommended vaccine**

Meningococcus Serogroup B (MenB)

- **MenB capsular polysaccharide is poorly immunogenic and structurally similar to certain proteins in human tissue**
 - **concern (unproven) about auto-immunity created by using MenB capsular polysaccharide in a vaccine**
- **Vaccine research has focused on surface proteins**
- **However, MenB strains are highly diverse with more than 8,000 genetically different B strains identified**

Meningococcal Serogroup B Vaccines

- **rLP2086 (Trumenba, Pfizer)**
 - **2 fHbp (factor H-binding protein) subvariants (B/v1 and A/v2-3)**
- **4CMenB (Bexsero, Novartis)**
 - **Single subvariant of fHbp (B/v1)**
 - **NadA (Neisserial adhesin A)**
 - **NhbA (Neisserial heparin binding antigen)**
 - **Outer membrane vesicles of the New Zealand epidemic strain (OMV - NZ)**

Meningococcal Serogroup B Vaccines

- **rLP2086 (Trumenba, Pfizer)**
 - Licensed by FDA on October 29, 2014
 - Approved for 10 through 25 years of age
 - 3 dose series (0, 2, 6 months)

- **4CMenB (Bexsero, Novartis)**
 - Licensed by FDA on January 23, 2015
 - Approved for 10 through 25 years of age
 - 2 dose series (0, 1 months)

ACIP Recommendations for Meningococcal B Vaccine

- Recommendation approved at the February 2015 ACIP meeting
- A serogroup B meningococcal vaccine [series] should be administered to persons aged 10 years and older* at increased risk for meningococcal disease
 - persistent complement component deficiency
 - anatomic or functional asplenia
 - risk in a serogroup B meningococcal disease outbreak
 - certain microbiologists
- Will be included in VFC

*age 26 years and older is off-label for both vaccines

ACIP Recommendations for Meningococcal B Vaccine

- **ACIP will consider a permissive (Category B) recommendation to vaccinate a larger population at their June 2015 meeting**
 - **All adolescents (to align the MenB recommendations with those for MenACWY)?**
 - **College students?**

HPV Infection Is the Most Common Sexually Transmitted Disease in the United States

- **Approximately 79 million Americans are currently infected**
- **14 million new infections/year in the United States**
 - **about half of these new infections occur among persons 15-24 years of age**
- **Almost all sexually active men and women will be infected at some point in their lives**
- **Immunocompromised persons have higher rates of HPV acquisition and progression to disease**

Average Annual HPV-Attributable Cancers in the United States, 2006-2010

- 26,900 HPV-associated cancers diagnosed annually
 - 9,300 in men
 - 17,600 in women

Site	Male	Female	Total Cancers
Cervix	0	10,400	10,400
Anus	1,400	2,600	4,000
Vagina	0	600	600
Oropharynx	7,200	1,800	9,000
Vulva	0	2,200	2,200
Penis	700	0	700

Anal, oral, penile, and vulvar cancer rates are increasing

HPV-Associated Cancers

	16,18	31,33,45,52,58
Cervical	66%	15%
Vaginal	55%	18%
Vulvar	49%	14%
Anal (M)	79%	4%
Anal (F)	80%	11%
Penile	48%	9%
Oropharyng (M)	63%	4%
Oropharyng (F)	51%	9%
Overall	64%	10%

HPV Vaccines

	2vHPV (Cervarix, GSK)	4vHPV (Gardasil, Merck)	9vHPV (Gardasil 9, Merck)
Virus types	16, 18	6, 11, 16, 18	6, 11, 16, 18, 31, 33, 45, 52, 59
Adjuvant	Yes – aluminum hydroxide	Yes – aluminum hydroxyphosphate sulfate	Yes – aluminum hydroxyphosphate sulfate
Licensure	Females 9-25 yrs	Females 9-26 yrs Males 9-26 yrs	Females 9-26 yrs Males 9-15 yrs
Prevents	Cervical cancer and precancer	Cervical, vulvar, vaginal, and anal cancer and precancer, genital warts	Cervical, vulvar, vaginal, and anal cancer and precancer, genital warts

9-Valent HPV Vaccine

- **9vHPV licensed by FDA on December 10, 2014**
- **Approved for females 9 through 26 years and males 9 through 15 years**
- **Same schedule as 4vHPV**
- **Both 4vHPV and 9vHPV will be available for up to 24 months after licensure**

9vHPV Clinical Trial - Efficacy

- **The rate of high-grade cervical, vulvar, or vaginal disease related to HPV types 31, 33, 45, 52, and 58**
 - 9vHPV group 0.1 per 1,000 person years
 - 4vHPV group 1.6 per 1,000 person years
- **9vHPV efficacy disease caused by the 5 additional strains was 96.7% (CI 81%-99.8%)**

9vHPV Clinical Trial - Safety

- **Local reactions (pain, swelling, etc)**
 - 9vHPV recipients 91%
 - 4vHPV recipients 85%
- **Systemic reactions (headache, fever, nausea, dizziness etc)**
 - 9vHPV recipients 56%
 - 4vHPV recipients 55%
- **No serious AEs were attributed to either vaccine**

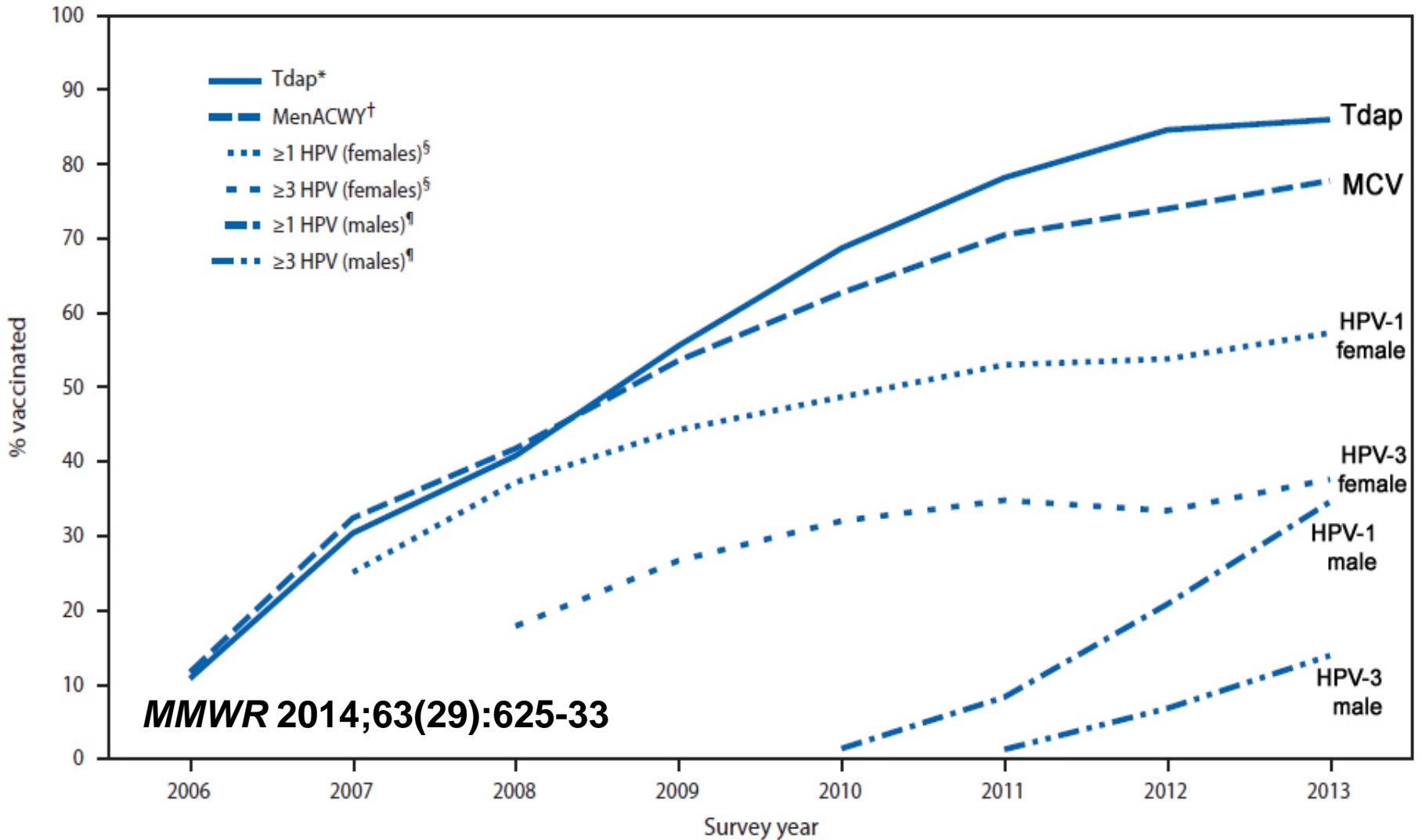
9vHPV ACIP Recommendations

- **Same as the current recommendations for 4vHPV**
 - routine vaccination at 11 or 12 years of age
 - female 9 through 26, male 9 through 21, permissive through 26 (off-label for males 16 years and older)
- **Any vaccine can be used to finish an incomplete series**
- **ACIP did not state a preference for one HPV vaccine over another**

9vHPV ACIP Recommendations

- **Same contraindication and precautions (including pregnancy)**
- **Revaccination with 9vHPV for persons who already completed a series of 2vHPV or 4vHPV was not discussed and is not included in the approved recommendation**
- **More discussion at June 2015 meeting**

National Immunization Survey – Teen, 2006-2013



HPV Vaccine Coverage Among 13-17 Year-Olds, 2013

	US	CA
• Females		
– one or more doses	57%	68%
– full series	38%	46%
• Males		
– one or more doses	35%	51%
– full series	4%	17%

HPV Vaccine Coverage Among 13-17 Year-Olds, 2013

- **If HPV vaccine was administered at the same visit where at least one other vaccine was administered, coverage for one or more doses would increase from 57% to 91% by age 13 years for adolescent girls born in 2000**

Why HPV Vaccine Coverage Is Important

- **For each year coverage remains at 30% instead of achieving 80%, 4,400 future cervical cancer cases and 1,400 cervical cancer deaths will occur**

Top 5 Reasons for Not Receiving HPV Vaccine – NIS-Teen, 2013

Parents of girls

Reason	%	(95% CI)
Lack of knowledge	15.5	(13.0–18.5)
Not needed or necessary	14.7	(12.5–17.3)
Safety concern/Side effects	14.2	(11.8–16.8)
Not recommended	13.0	(10.8–15.5)
Not sexually active	11.3	(9.1–13.9)

Parents of boys

Reason	%	(95% CI)
Not recommended	22.8	(20.6–25.0)
Not needed or necessary	17.9	(15.9–20.1)
Lack of knowledge	15.5	(13.7–17.6)
Not sexually active	7.7	(6.4–9.2)
Safety concern/Side effects	6.9	(5.6–8.5)

Practical Approaches to Improve HPV Vaccination Rates In Your Practice

- **Provide an unequivocal recommendation for the vaccine!**
- **Remind parents that the full series is 3 doses over 6 months**
- **Check vaccination status of all patients at every visit and vaccinate at every opportunity**
- **Incorporate patient reminder systems such as telephone calls, texts, postcards, or letters**
- **Many practice resources at www.cdc.gov/vaccines/who/teens/for-hcp/hpv-resources.html**

Resources

- **CDC Vaccines and Immunization Website**
 - www.cdc.gov/vaccines/
- **Immunization Action Coalition**
 - www.immunize.org
- **Vaccine Education Center at the Children's Hospital of Philadelphia**
 - www.chop.edu/service/vaccine-education-center/home.html