

# An Overview of Adult Immunizations for OB/GYN Providers



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## CONFLICT OF INTEREST DISCLOSURE: FACULTY/PLANNING COMMITTEE/REVIEWER/STAFF

- Kevin A. Ault, MD – Research: Inovio and NIH; Consultant: ACI Clinical, Moderna Therapeutics, NIH, CDC, and ACOG; Data and Safety Monitoring Board: NIH, CDC and Novartis
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- Laura E. Riley, MD – Author: UpToDate; Published Author: Wiley Publishing
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# Our Recommended Hardware and Software Configuration is the Following:

## Windows



Processor: 850MHz or faster processor (or above)  
Operating System: Windows XP/2000/98  
Memory: 512MB of RAM (or above)  
Screen Resolution: 1024 x 768 (or above)  
Microsoft Internet Explorer 5.5 (or higher) or  
Mozilla Firefox 1.5  
Adobe Flash Player 8 (or higher)  
Adobe Acrobat 6 (or higher)

## Macintosh



Processor: G3 500MHz or faster processor (or above)  
Operating System: OS 10.3 (or above)  
Memory: 512MB of RAM (or above)  
Screen Resolution: 1024 x 768 (or above)  
Mozilla Firefox 1.5 or Safari 1.2.2 browser supported for Mac OS X 10.3 or higher  
Adobe Flash Player 8 (or higher)  
Adobe Acrobat 6 (or higher)

# Course Faculty

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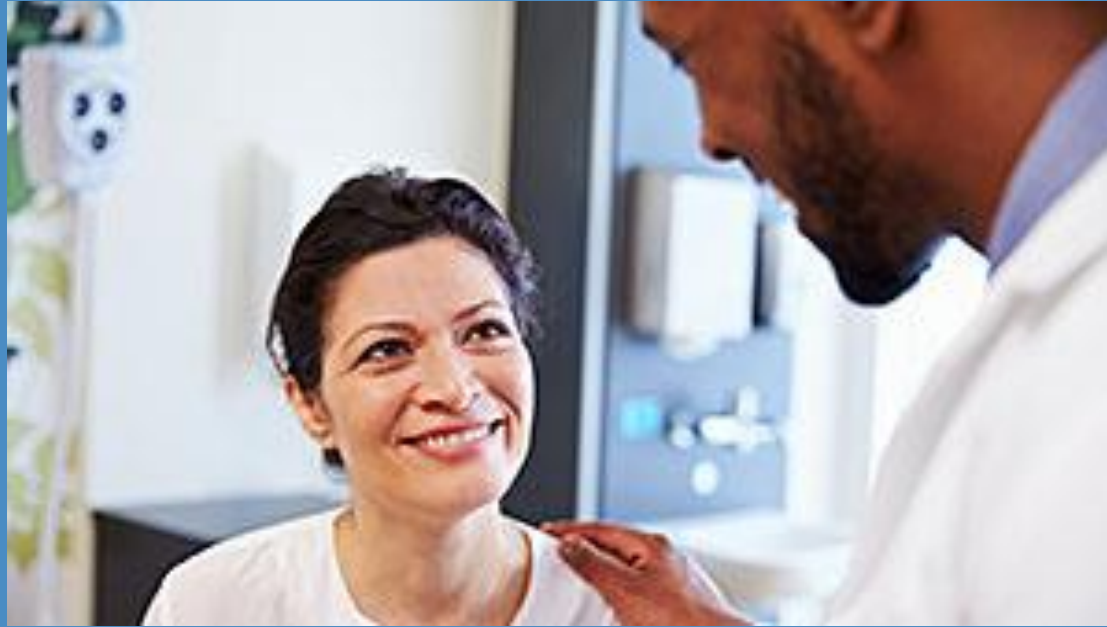
Centers for Disease Control and Prevention

National Center for Immunization and Respiratory Diseases

# Objectives

Upon completion of the presentation, participants will be able to:

- Identify vaccines recommended for routine use in their adult patients
- Effectively describe and communicate the burden of vaccine preventable disease in adult patients
- Incorporate immunizations into routine ob-gyn practice
- Identify, locate, and provide patient resources to address adult immunizations with patients



**Vaccine-preventable diseases disproportionately affect adults**



# Background

- Vaccine preventable diseases cause substantial morbidity and mortality among adults.
- Vaccinations have decreased the burden of illness in adults.
- The vaccine effectiveness varies by vaccine type, the disease outcome being measured, and the age or health of the person vaccinated.



<https://phil.cdc.gov/phil/quicksearch.asp>

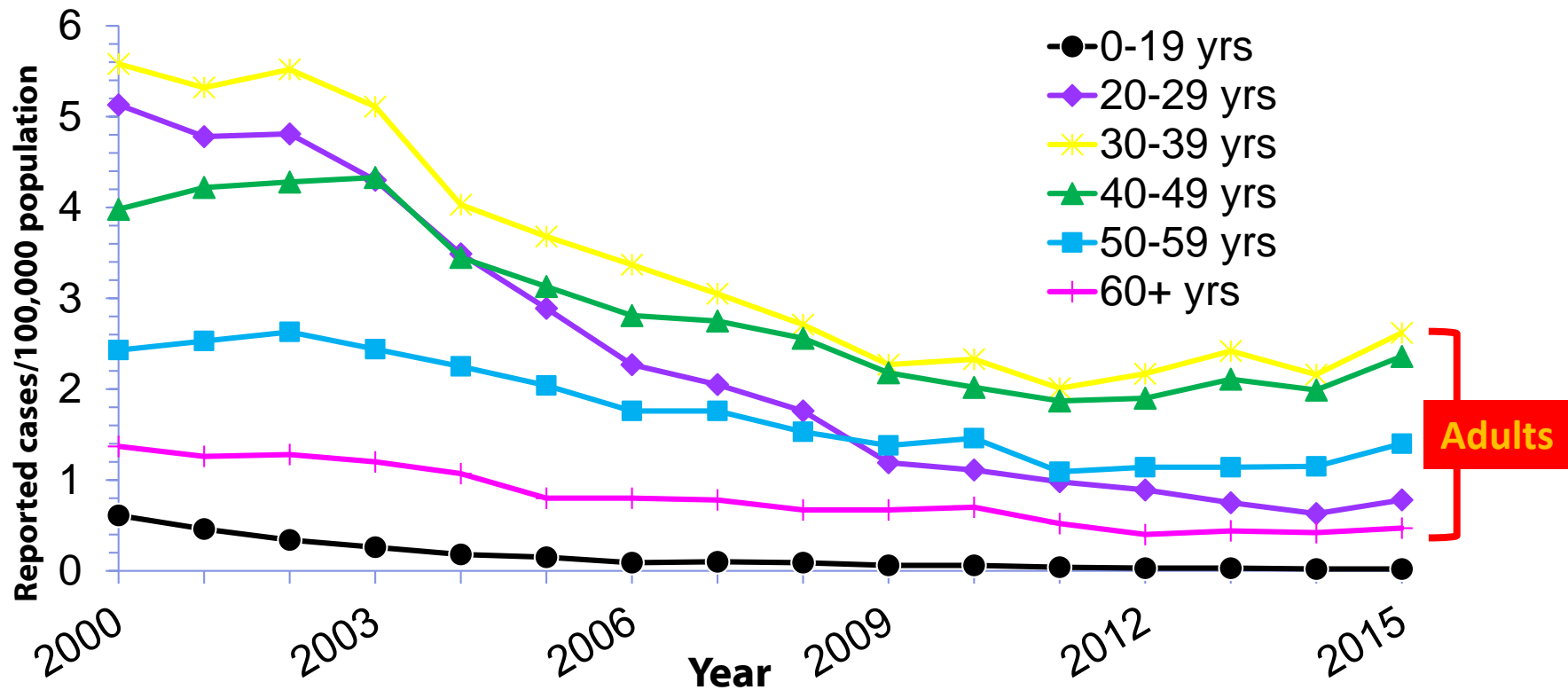
# Burden of Disease among U.S. Adults – Hepatitis B

- Liver infection caused by Hepatitis B virus (HBV).
- ~3,218 cases of acute Hepatitis B were reported in US in 2016 (but after adjusting for under-reporting, an estimated 20,900 acute hepatitis B cases occurred).
- ~95% of new HBV infections occur among adults.
- Persons with diabetes are at twice risk of Hepatitis B.



<https://www.fda.gov/ForPatients/Illness/HepatitisBC/ucm20041759.htm>

# Reported Acute Hepatitis B Incidence by Age Group, United States, 2000-2015



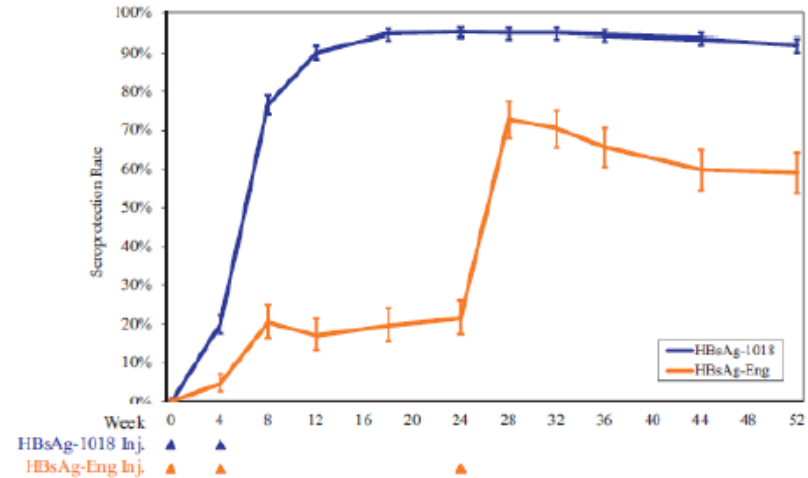
Source: National Notifiable Diseases Surveillance System (NNDSS)

# Impact of Hepatitis B Vaccination

- 90- 100% of subjects receiving HEPLISAV-B (2 doses), a new Hepatitis B vaccine with a novel **adjuvant**, demonstrate seroprotection vs. 71%- 90% of subjects in comparison group (3 doses)
  - Type 2 diabetes mellitus: 90% (HEPLISAV-B, 2 doses) vs. 65% (comparator, 3 doses)
  - Chronic kidney disease: 90% (HEPLISAV-B, 3 doses) vs. 82% (comparator, 4 double doses)

## Proportion of subjects with anti-HBs $\geq 10$ mIU/mL following HEPLISAV-B or comparison vaccine

Healthy adults aged 40-70 years;  
n= 1101-1123 (Heplisav-B); 353-359 (comparator)



# Burden of Disease among U.S. Adults – Herpes Zoster (Shingles)

- Shingles is caused by the varicella zoster (chickenpox) virus. After recovering from chickenpox, the virus stays dormant in the body and can reactivate years later, causing shingles.
- About 1 million cases of shingles annually in U.S.
  - 10-11/1000 per year in persons  $\geq 60$  yrs
  - Lifetime risk: 32%
- Thoracic, cervical, and ophthalmic involvement are most common
- Approximately 10-25% with complication of eye (herpes zoster ophthalmicus)



FIGURE 2. Case of herpes zoster ophthalmicus



Photo/MN Oxman, University of California, San Diego

# Impact of Vaccination – Herpes Zoster

## ■ Zoster vaccine live (ZVL)

- 51% against shingles
- 66% against post-herpetic neuralgia (PHN)<sup>1</sup>
- Among vaccinated adults  $\geq 60$ y, efficacy wanes within 5y and protection  $>5$ y uncertain

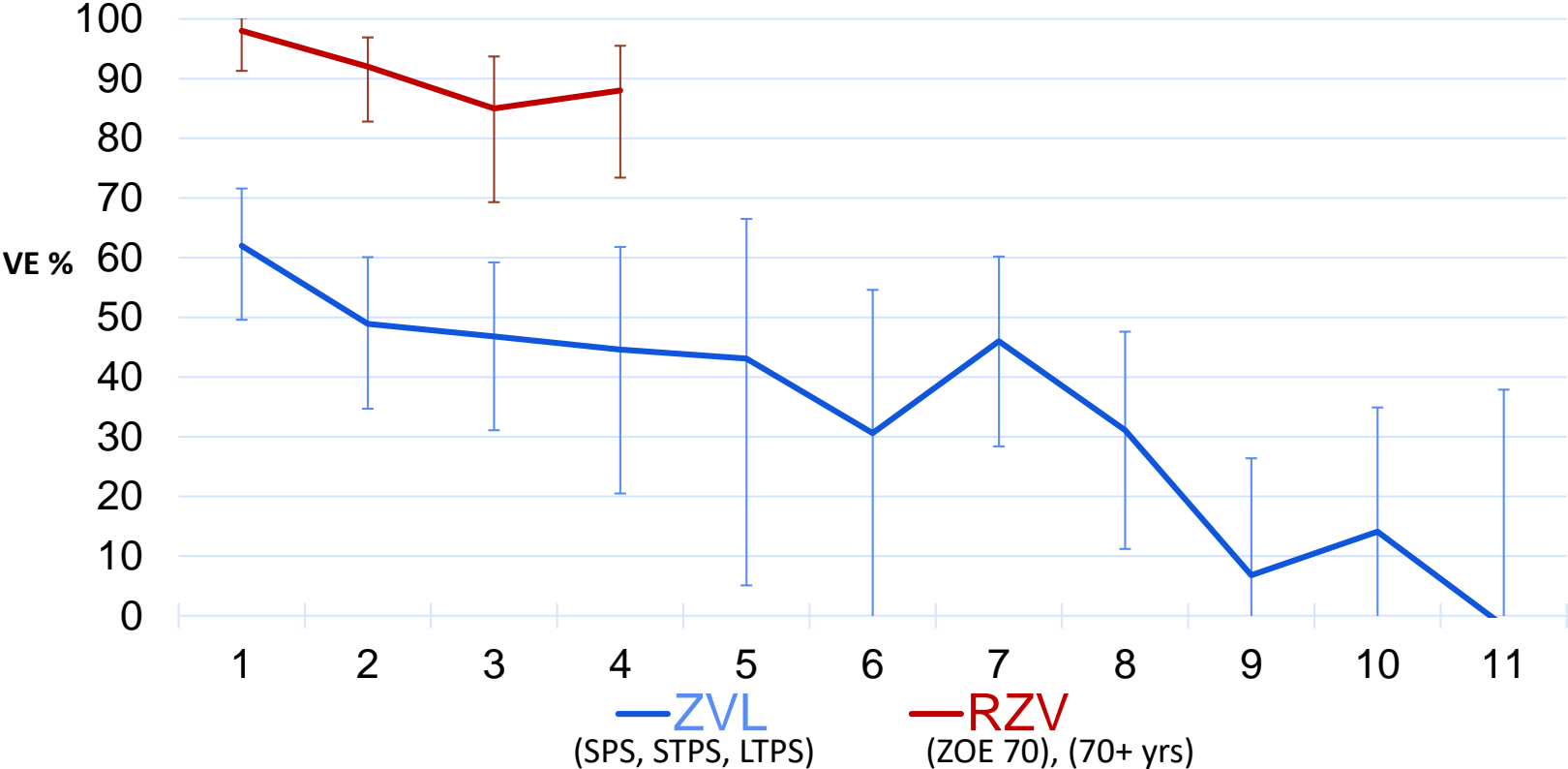
## ■ **NEW** Recombinant Zoster (RZV) subunit vaccine—**PREFERRED over ZVL**

- 96% (95% CI 93,98) efficacy among 50-, 60-, 70-year olds<sup>2</sup>
- Subsequent 90% (95% CI 84,94) effectiveness among  $\geq 70$ y<sup>3</sup>
- Immunogenicity persisted through 9y post-vaccination

“I watched my sister suffer with shingles, that’s why I made sure we both got vaccinated.”



# Vaccine Efficacy Against Herpes Zoster for ZVL and RZV, by Year following Vaccination



—ZVL  
(SPS, STPS, LTPS)

—RZV  
(ZOE 70), (70+ yrs)

2-part, phase III RCT, >30,000 subjects

Note: The Shingles Prevention Study, Short-term Persistence Study, and Long-term Persistence Study followed the same study population over time.

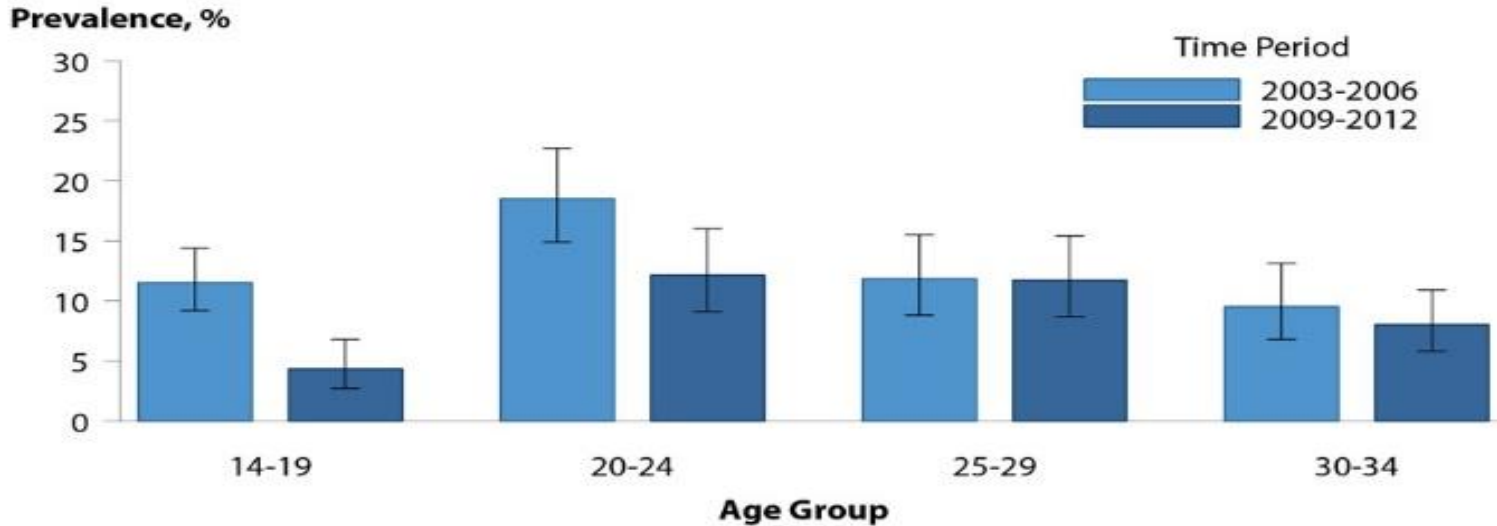
# Burden of Disease among U.S. Adults – Human Papilloma Virus (HPV)

- ~14 million people become infected with HPV each year<sup>1</sup>.
- The symptoms resolve without intervention in 9 of 10 people within two years.
- HPV infections can last longer and can cause certain cancers.
- HPV causes 30,700 cancers in men and women annually.



# Impact of Vaccination – HPV

**Human Papillomavirus — Cervicovaginal Prevalence of Types 6, 11, 16 and 18 Among Females Aged 14–34 Years by Age Group and Time Period, National Health and Nutrition Examination Survey (NHANES), 2003–2006 and 2009–2012**



**NOTE:** Error bars indicate 95% confidence interval.

# Burden of Disease among U.S. Adults – Influenza

- Influenza disease burden varies year to year
  - Millions of cases and average of 226,000 hospitalizations annually with >75% among adults<sup>1</sup>
  - 3,000-49,000 deaths annually, >90% among adults<sup>2</sup>
- Direct medical costs in U.S.: ~\$10.4 billion<sup>3</sup>
- Add in loss of work and life: ~\$87 billion

1. Thompson WW, et al. Influenza-Associated Hospitalizations in the United States. *JAMA* 2004; 292: 1333-1340

2. CDC. Estimates of deaths associated with seasonal influenza – United States, 1976-2007. *MMWR*. 2010;59(33):1057-1062.

3. Molinari, et al. The annual impact of seasonal influenza in the US: Measuring disease burden and costs. *Vaccine* 2007;25 :5086–5096.

# Influenza Severity in Pregnant Women

- During seasonal influenza, ~19.5-33.5% of lab-confirmed influenza hospitalizations among women 15-45 years are pregnant<sup>4</sup>
- During 2009 H1N1 pandemic, 6.3% of all influenza-related hospitalizations, 5.9% of ICU admissions, and 5.7% of deaths were among pregnant women<sup>1,2</sup>
  - In contrast, only 1% of US population pregnant at a given time
- Risk of influenza-related hospitalization increases with trimester (5-fold difference from 1<sup>st</sup> to 3<sup>rd</sup> trimester)<sup>3</sup>

1. Memoli MJ, Harvey H, Morens DM, Taubenberger JK. Influenza in pregnancy. *Influenza Other Respir Viruses*. 2013 Nov;7(6):1033-9.

2. Rasmussen SA, Jamieson DJ, Uyeki TM. Effects of influenza on pregnant women and infants. *Am J Obstet Gynecol*. 2012 Sep;207(3 Suppl):S3-8.

3. Neuzil KM, Reed GW, Mitchel EF, Simonsen L, Griffin MR. Impact of influenza on acute cardiopulmonary hospitalizations in pregnant women. *Am J Epidemiol* 1998; 148:1094–1102.

<https://gis.cdc.gov/grasp/fluview/FluHospChars.html>.

# Impact of Vaccination - Influenza

- Effectiveness varies based on antigenic match and age and health of person being vaccinated
  - ~60–70% effective in younger adults when good match
  - ~30% in adults  $\geq 65$  years against medically attended influenza when good match<sup>1</sup>
  - Reduces antibiotic use, medical visits, loss of work days
- 2017-18 interim VE estimate for US flu season: 36% (95% CI = 27%- 44%) against medically-attended laboratory-confirmed influenza<sup>2</sup>

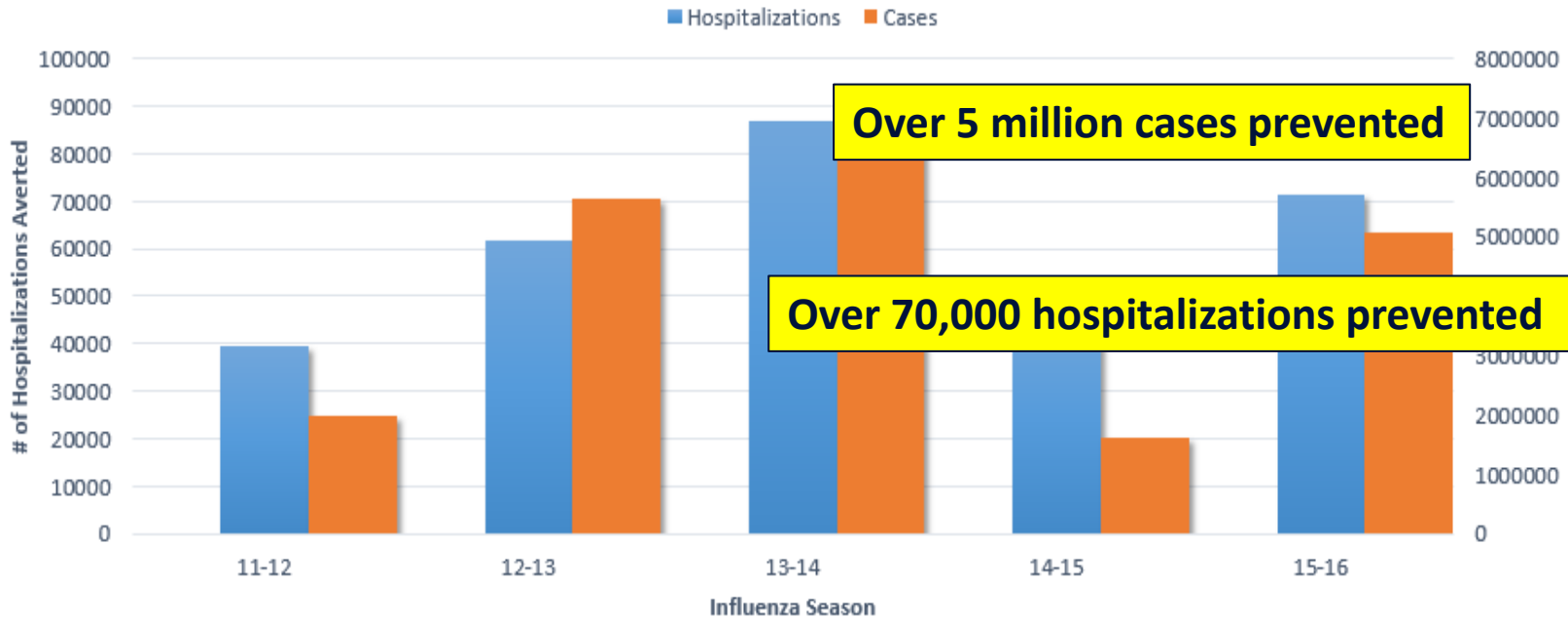


<https://phil.cdc.gov/phil/quicksearch.asp>

1. CDC. Prevention and Control of Seasonal Influenza: Recommendations of the ACIP – U.S., 2016-17. MMWR 2016  
2. [https://www.cdc.gov/mmwr/volumes/67/wr/mm6706a1.htm?s\\_cid=mm6706a1\\_e](https://www.cdc.gov/mmwr/volumes/67/wr/mm6706a1.htm?s_cid=mm6706a1_e)

# Impact of Influenza Vaccination— Illnesses and Hospitalizations Prevented, 2011–2016

## Cases and Hospitalizations Averted by Vaccination



# Influenza Vaccine Effectiveness for Persons with Chronic Conditions

- High risk medical conditions<sup>1</sup>
  - 78% reduction in deaths attributable to any cause
  - 87% reduction in hospitalization attributable to acute respiratory or cardiovascular disease
- Diabetes<sup>2</sup>
  - 56% reduction in any complication, 54% reduction in hospitalizations, 58% reduction in deaths
- Chronic obstructive lung disease<sup>3-4</sup>
  - Reduced COPD exacerbation

# Burden of Disease Among U.S. – *Streptococcus pneumoniae*

- Can cause pneumonia, ear infections, sinus infections, and invasive pneumococcal disease (IPD), including meningitis and bacteremia
- Adults at increased risk for pneumococcal disease include:
  - Adults aged  $\geq 65$  years
  - Certain adults aged 19- 64 years
    - With chronic illnesses (chronic heart, liver, kidney, or lung [including chronic obstructive lung disease, emphysema, and asthma] disease; diabetes; or alcoholism)
    - With conditions that weaken the immune system (HIV/AIDS, cancer, or damaged/absent spleen)
    - With cochlear implants or cerebrospinal fluid leaks
    - Who smoke cigarettes
- 24 cases IPD per 100,000 in 2016 among adults  $\geq 65$  years
- 8 cases IPD per 100,000 in 2016 among all adults aged 19-64 years

# Impact of Vaccination – Pneumococcal Vaccines

- PCV13 (pneumococcal conjugate vaccine) among adults aged  $\geq 65$  years:
  - 45% effective against vaccine-type pneumococcal pneumonia
  - 75% effective against vaccine-type invasive pneumococcal disease (IPD)
- PPSV23 (pneumococcal polysaccharide):
  - 74% (CI: 55-86%) effective in meta-analysis against IPD
  - Not effective against non-IPD pneumonia



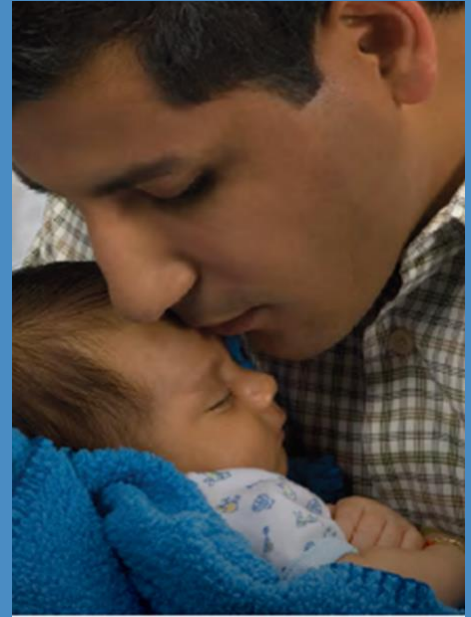
# Burden of Disease Among U.S. Adults – Tetanus, Diphtheria, and Acellular Pertussis

- Tetanus and diphtheria are rare in U.S.
- Pertussis: 15,808 provisional cases reported in 2017\* (3,429 cases among adults)<sup>1</sup>
  - Burden in older adults unknown:
    - Under-recognized cause of cough illness
    - Atypical clinical presentation in adults
    - Low suspicion by providers
  - Maternal Tdap vaccination (during pregnancy) has a high level of effectiveness of 88% in preventing pertussis in infants before their first dose of DTaP<sup>2</sup>

# Impact of Vaccination – Td/ Tdap

- Tdap is ~70% effective against pertussis in the first year after vaccination.
- Effectiveness decreases each year: 4 years post-vaccination, effectiveness is 30-40%.
- Vaccinated persons who are infected with pertussis are less likely to have a serious infection.

# Updates to the Adult Immunization Schedule



**Figure 1. Recommended immunization schedule for adults aged 19 years or older by age group, United States, 2018**

This figure should be reviewed with the accompanying footnotes. This figure and the footnotes describe indications for which vaccines, if not previously administered, should be administered unless noted otherwise.

Vaccine	19–21 years	22–26 years	27–49 years	50–64 years	≥65 years
Influenza <sup>1</sup>	1 dose annually				
Tdap <sup>2</sup> or Td <sup>2</sup>	1 dose Tdap, then Td booster every 10 yrs				
MMR <sup>3</sup>	1 or 2 doses depending on indication (if born in 1957 or later)				
VAR <sup>4</sup>	2 doses				
RZV <sup>5</sup> (preferred) or ZVL <sup>5</sup>				2 doses RZV (preferred) or 1 dose ZVL	
HPV–Female <sup>6</sup>	2 or 3 doses depending on age at series initiation				
HPV–Male <sup>6</sup>	2 or 3 doses depending on age at series initiation				
PCV13 <sup>7</sup>					1 dose
PPSV23 <sup>7</sup>	1 or 2 doses depending on indication				1 dose
HepA <sup>8</sup>	2 or 3 doses depending on vaccine				
HepB <sup>9</sup>	3 doses				
MenACWY <sup>10</sup>	1 or 2 doses depending on indication, then booster every 5 yrs if risk remains				
MenB <sup>10</sup>	2 or 3 doses depending on vaccine				
Hib <sup>11</sup>	1 or 3 doses depending on indication				



Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection



Recommended for adults with other indications





No recommendation

**Figure 2. Recommended immunization schedule for adults aged 19 years or older by medical condition and other indications, United States, 2018**


This figure should be reviewed with the accompanying footnotes. This figure and the footnotes describe indications for which vaccines, if not previously administered, should be administered unless noted otherwise.

Vaccine	Pregnancy <sup>1,6</sup>	Immuno-compromised (excluding HIV Infection) <sup>3-7,11</sup>	HIV infection CD4+ count (cells/ $\mu$ L) <sup>3-7,9-10</sup>		Asplenia, complement deficiencies <sup>7,10,11</sup>	End-stage renal disease, on hemodialysis <sup>7,9</sup>	Heart or lung disease, alcoholism <sup>7</sup>	Chronic liver disease <sup>7,9</sup>	Diabetes <sup>7,9</sup>	Health care personnel <sup>3,4,9</sup>	Men who have sex with men <sup>6,8,9</sup>	
			<200	$\geq$ 200								
Influenza <sup>1</sup>	1 dose annually											
Tdap <sup>2</sup> or Td <sup>2</sup>	1 dose Tdap each pregnancy	1 dose Tdap, then Td booster every 10 yrs										
MMR <sup>3</sup>	contraindicated			1 or 2 doses depending on indication								
VAR <sup>4</sup>	contraindicated			2 doses								
RZV <sup>5</sup> (preferred)				2 doses RZV at age $\geq$ 50 yrs (preferred)								
or				or								
ZVL <sup>5</sup>	contraindicated			1 dose ZVL at age $\geq$ 60 yrs								
HPV-Female <sup>6</sup>			3 doses through age 26 yrs			2 or 3 doses through age 26 yrs						
HPV-Male <sup>6</sup>			3 doses through age 26 yrs			2 or 3 doses through age 21 yrs					2 or 3 doses through age 26 yrs	
PCV13 <sup>7</sup>			1 dose									
PPSV23 <sup>7</sup>			1, 2, or 3 doses depending on indication									
HepA <sup>8</sup>			2 or 3 doses depending on vaccine									
HepB <sup>9</sup>			3 doses									
MenACWY <sup>10</sup>			1 or 2 doses depending on indication, then booster every 5 yrs if risk remains									
MenB <sup>10</sup>			2 or 3 doses depending on vaccine									
Hib <sup>11</sup>			3 doses HSCT recipients only		1 dose							

 Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection

 Recommended for adults with other indications

 Contraindicated

 No recommendation

# Adult Immunization Updates – New Hepatitis B Vaccine with a Novel Adjuvant for Adults

- FDA licensed (Nov 9, 2017) and approved by ACIP in Feb 2018
- Single antigen HepB (Heplisav-B) for all HBV subtypes for ≥18y
- 5<sup>th</sup> inactivated HepB in U.S. (Engerix-B, Recombivax HB, Pediarix, Twinrix)
- Contains yeast-derived recombinant HBsAg with Cytosine-phosphate-Guanine (CpG) adjuvant
- **2 doses** 1 month apart
- No preferential recommendation for use of HepB-CpG over HepB-alum
- HepB-CpG may be used in 3-dose HepB-alum series
  - 3 doses of HepB are needed unless 2 doses of HepB-CpG are administered 1 month apart
- Safety and reactogenicity profiles are similar
  - Mild: 45.6% (Heplisav-B) vs. 45.7% (Engerix-B)
  - Serious: 5.4% (Heplisav-B) vs. 6.3% (Engerix-B)

Jackson S, Lentino J, Kopp J, et al. Vaccine 2017; 36:668-74

Janssen R, Bennett S, Namini H, et al. Journal of Hepatology 2013; 58(Suppl 1):S574

HEPLISAV-B™ [Hepatitis B Vaccine (Recombinant), Adjuvanted] package insert. <https://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM584762.pdf>

# Adult Immunization Updates – Herpes Zoster Vaccination

	<b>Recombinant zoster vaccine (RZV)- - PREFERRED</b>	<b>Zoster Vaccine Live (ZVL)</b>
<b>Storage</b>	Refrigerator	Freezer
<b>Vaccine type</b>	Adjuvanted recombinant protein subunit vaccine (non-live)	Live
<b>Route of administration</b>	Intramuscular	Subcutaneous
<b>Dose interval</b>	2 doses (2–6 mos apart to adults ≥50y regardless of past herpes zoster or receipt of ZVL)	1 dose
<b>Age of patient recommended</b>	≥50 years, immunocompetent	≥60 years old, immunocompetent
<b>Side effects</b>	1 in 6 people experience grade 3 side effects	No more than 0.9% reported grade 3 side effects

# Adult Immunization Updates – HPV Vaccination Recommendations

- Adult females through age 26 and adult males through age 21 (and males 22–26 who may receive vaccination) who initiated HPV vaccination series before age 15 and:
  - Received 2 doses at least 5 months apart are considered adequately vaccinated and do not need additional dose of HPV vaccine
  - Received only 1 dose, or 2 doses less than 5 months apart, are not considered adequately vaccinated and should receive 1 additional dose of HPV vaccine



# Adult Immunization Updates – **Influenza** Vaccination Recommendations

- Annual influenza vaccination recommended for persons ≥6 mos
  - Options for adults include high-dose IIV for ≥65y, adjuvanted IIV for ≥65y, intradermal IIV for 18–64y, cell culture-based IIV for ≥18y, RIV for ≥18y, or LAIV for adults ≤49y
  
- The updated ACIP recommendation **for 2018–2019 season – Reinstigate use of LAIV<sup>2</sup>**
  - Contains new H1N1 strain (A/Slovenia)

# Influenza Vaccination Recommendation Updates (cont.)

- “Providers should offer vaccination by the end of October, if possible” (previously “by October”)
- Changes to egg allergy recommendations
  - If hives-only, use any licensed age-appropriate influenza vaccine
  - If other than hives, may use any age-appropriate vaccine in medical setting

# Adult Immunization Updates – Tdap Vaccination Recommendations

Pregnant women should receive 1 dose of Tdap during each pregnancy, preferably during the early part of gestational weeks 27–36, regardless of prior history of receiving Tdap



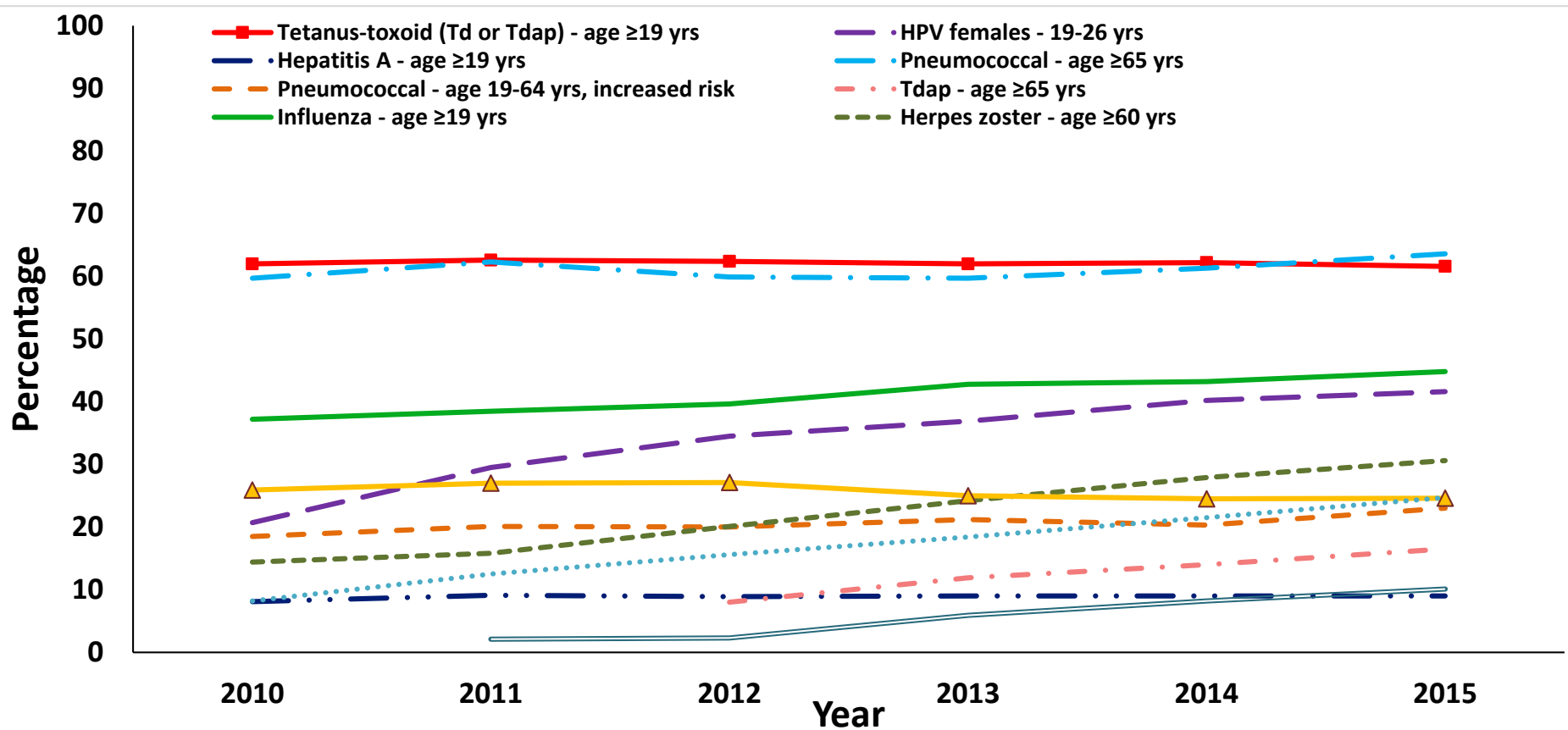
# Improving Use of the Adult Immunization Schedule

- HCP want to see immunization recommendations from their professional organizations
  - ACOG developed the [Maternal Immunization Committee Opinion 741](#),<sup>1</sup> a summary of maternal immunization recommendations
- Many HCP treating adults are not using the adult immunization schedule
  - Prompts for age-based recommendations built into EHRs
  - No prompts built in for risk-based recommendations

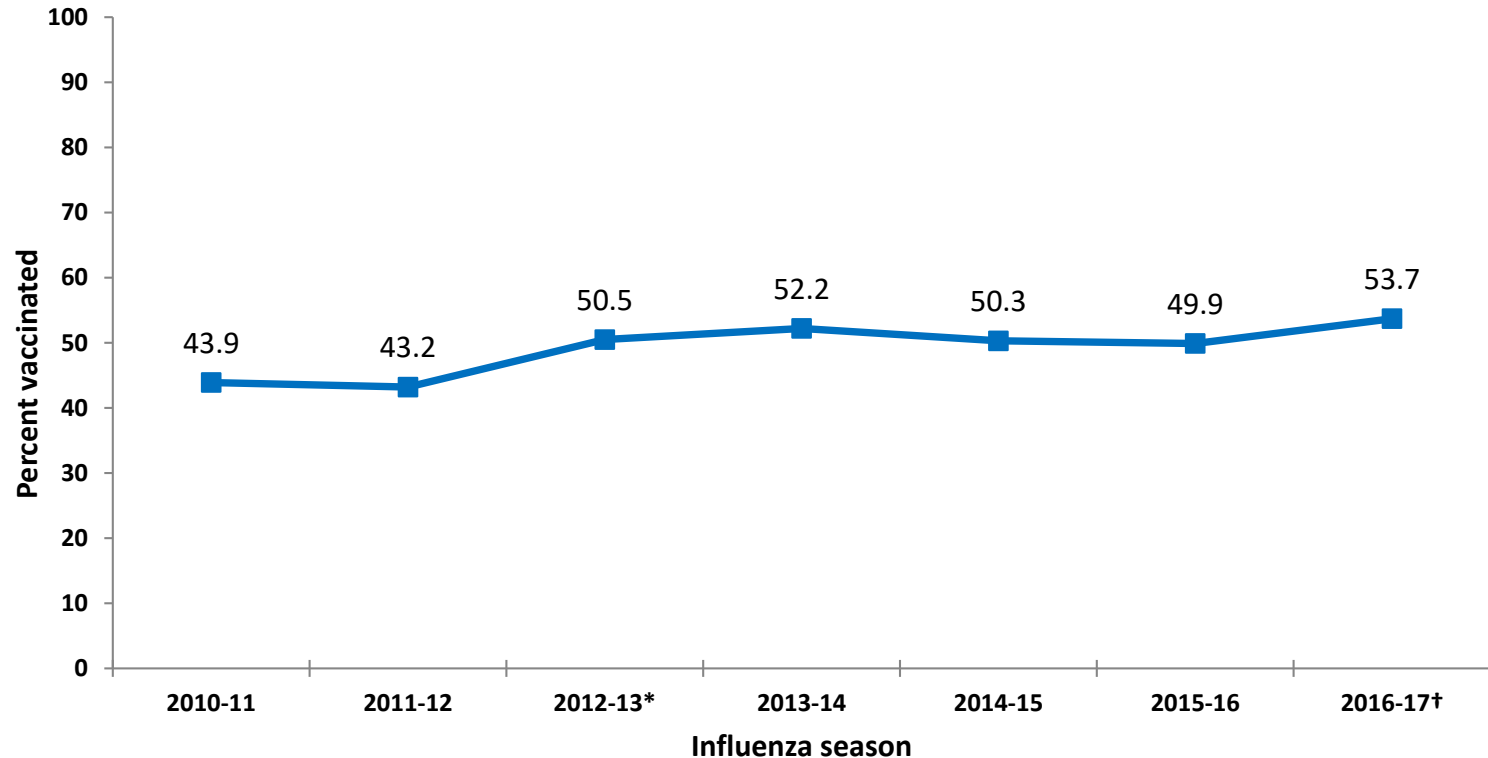


**Adult immunization coverage rates are persistently low**

# Proportion of Adults Aged $\geq 19$ Years Who Received Selected Vaccines, by Age Group and Increased Risk Status — National Health Interview Survey, United States, 2010–2015



# Influenza Vaccination Coverage Among Pregnant Women, 2010-11 through 2016-17 Influenza Seasons



\* Beginning in the 2012-13 season, women vaccinated since July 1 were counted as vaccinated; in prior seasons, only women vaccinated since August 1 were counted as vaccinated

† 2016-17 estimate is preliminary

# Vaccination Coverage Among Older Adults, by Race/Ethnicity, 2015

	<b>Influenza Adults ≥65 years 2014–2015</b>	<b>Pneumonia Adults ≥65 years 2015</b>	<b>Tdap Adults ≥65 years 2015</b>	<b>Zoster Adults ≥60 years 2015</b>
<b>White</b>	<b>75.1%</b>	<b>68.1%</b>	<b>18.2%</b>	<b>34.6%</b>
<b>Black</b>	<b>64.3%</b>	<b>50.2%</b>	<b>9.7%</b>	<b>13.6%</b>
<b>Hispanic</b>	<b>64.1%</b>	<b>41.7%</b>	<b>9.1%</b>	<b>16.0%</b>
<b>Asian</b>	<b>83.5%</b>	<b>49.0%</b>	<b>13.8%</b>	<b>26.0%</b>
<b>Overall</b>	<b>73.5%</b>	<b>63.6%</b>	<b>16.5%</b>	<b>30.6%</b>



# Health Insurance Status and Vaccination Coverage

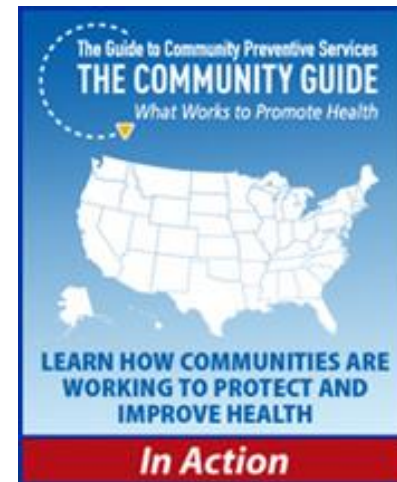
- 87% reported some type of health insurance
- Vaccination coverage 2–5x higher with health insurance for influenza, Tdap, zoster, and HPV vaccinations
- Among insured persons with  $\geq 10$  physician contacts in past 12 months, 24–89% were missing recommended vaccines
  - 65% adults with diabetes missing hepatitis B vaccination
  - 61% adults 19–64y at high risk missing pneumococcal vaccine



## What can be done: Implementing the Standards for Adult Immunization Practice

# Components of Successful Vaccination Programs

- Use combination of approaches
- Strategies shown to improve coverage:
  - Use of standing orders
  - Use of reminder-recall systems
  - Efforts to remove administrative barriers
  - Provider and practice assessment of vaccination and feedback
  - Use of immunization registries
  - Education of both providers and public (component)



# Meta-Analysis of Interventions to Increase Adult Vaccine Uptake

<b>Intervention</b>	<b>Odds Ratio*</b>
<b>Organizational change</b> (e.g., standing orders, separate clinics devoted to prevention)	<b>16.0</b>
<b>Provider reminder</b>	<b>3.8</b>
<b>Patient financial incentive</b>	<b>3.4</b>
<b>Provider education</b>	<b>3.2</b>
<b>Patient reminder</b>	<b>2.5</b>
<b>Patient education</b>	<b>1.3</b>

\*Compared with usual care or control group, adjusted for all remaining interventions

# Standards for Adult Immunization Practice

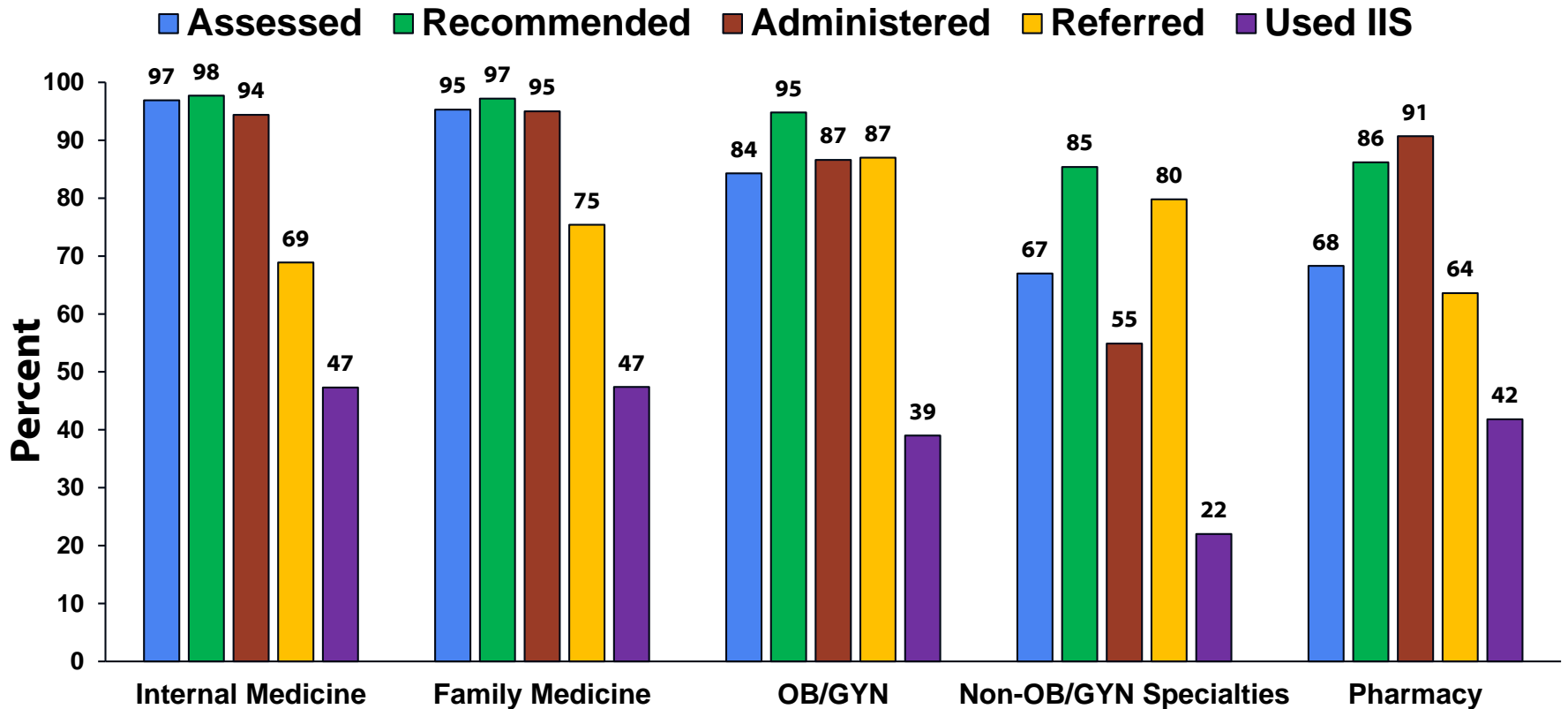
- In 1990, the National Coalition for Adult Immunization developed the Standards for Adult Immunization Practice (the “Standards”), outlining basic strategies to improve vaccine delivery to adults.
- Updated in 2014 by the National Vaccine Advisory Committee
  - More vaccinators and vaccination locations (e.g., pharmacies, workplaces, OB-GYN practices)
  - Increased use of electronic health records and immunization registries (and social media)
  - Changes in healthcare system (e.g., Affordable Care Act)

# Standards for Adult Immunization Practice

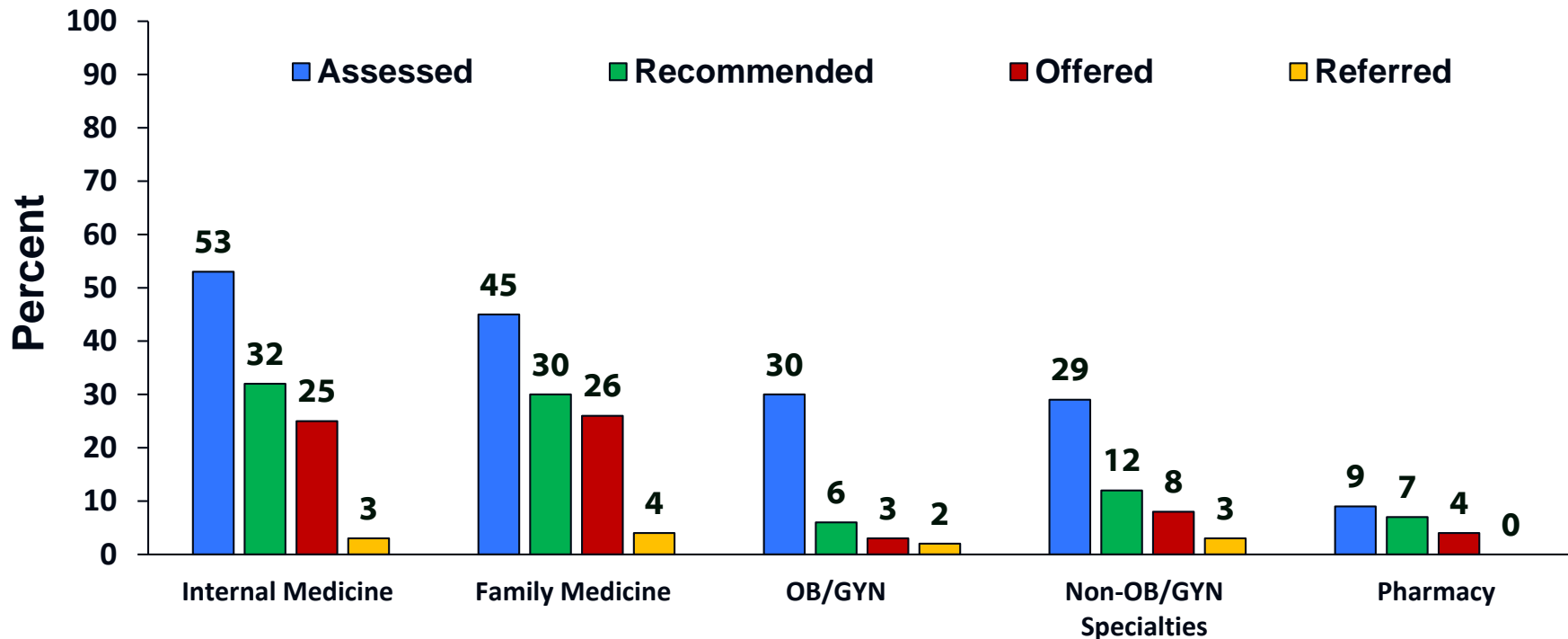
The Standards were revised to emphasize the responsibility of all HCP who treat adults to:

- Conduct routine **assessments** of a patient's vaccination needs during every clinical encounter
- Strongly **recommend** vaccines that patients need
- **Administer** needed vaccines or **refer** patients for vaccination
- **Document** administered vaccinations in IIS (state vaccine registries)

# Reported Implementation of Standards Components among HCPs, by Provider Specialty, United States, 2016 (N=1,918)



# Reported Implementation of Standards Components, Patients' Perspective, Internet Panel Survey, 2016, United States







# Tools for implementing the Standards for Adult Immunization Practice

# HCP Series: Implementing the Standards for Adult Immunization Practice

**5 Vaccine Documentation**

**4 Vaccine Referral**

**3 Vaccine Administration**

**2 Vaccine Recommendation**

**1 Vaccine Needs Assessment**  
A Series on Standards for Adult Immunization Practice

**SHARE**

**DON'T WAIT. VACCINATE!**

## Overview

### A Series on Standards for Adult Immunization Practice

**2012 U.S. Adult Vaccination Rates**

Only 54% of adults 19 years or older had received 5 key vaccines. Over 400,000 cases of pertussis were reported in 2012—and more than 100,000 may have gone unreported. About 1 in 10 adults with pertussis are hospitalized and others may have complications, which could include pneumonia, brain aneurysms, and even death from pertussis, making it critical for programs across the country to get vaccinated in every pregnancy.

Only 20% of adults 60 years or older had received another vaccination. Nearly 1 million Americans experience the common cold each year, and about half of all cases occur in adults 65 years or older. Older adults are also most likely to experience severe pain from the disease and lose 20% of their earnings.

Only 20% of adults 19 to 64 years of age had received pneumococcal vaccination. With an average lifespan of 75 years or older to bring them an average of 10 years left to live, there are approximately 22,000 cases of invasive pneumococcal disease in 2012, and about 2,000 of those resulted in death.

**Overview**

**Patients trust you to give them the best advice on how to protect their health. Make adult vaccination a standard of care in your practice.**

**Why should adult immunization be a priority for your practice?**

- 1. Your patients are probably not getting the vaccines they need.** Even though most private insurance plans cover the cost of recommended routine adult vaccination rates in the United States are extremely low. Each year tens of thousands of adults remain unvaccinated, and even the most basic of diseases that could be prevented by vaccines.
- 2. Your patients are likely not aware that they need vaccines.** Although adults do believe immunization is important, a recent national survey showed that most adults are not aware that they need vaccines throughout their lives to protect against diseases like shingles, pertussis, and hepatitis. Many also reported receiving vaccine recommendations from their healthcare professional.
- 3. You play a critical role in ensuring that your patients are fully immunized.** Clinicians are the most trusted and cited source of health information for adults. Your patients rely on you to inform them about the vaccines they need. Research shows that a recommendation from their healthcare professional is the top predictor of patients getting vaccinated.

**DON'T WAIT. VACCINATE!**

**www.cdc.gov/vaccines/adultstandards**

[www.cdc.gov/vaccines/AdultStandards](http://www.cdc.gov/vaccines/AdultStandards)

# ASSESSMENT



# Resources For Assessment

- Patient check-in vaccine questionnaire to be used at clinics:

<http://www.cdc.gov/vaccines/hcp/patient-ed/adults/downloads/patient-intake-form.pdf>.

- Patient on-line quiz – direct patients to complete the quiz before coming to their appointment – gives them and you a starting point for talking about which vaccines they might need.

<http://www2.cdc.gov/nip/adultimmsched/>.

- CDC adult vaccine schedule app at:

<http://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html>.

## Adolescent and Adult Vaccine Quiz

### What Vaccines do **YOU** need?

Did you know that certain vaccines are recommended for adults and adolescents for people age 11 years and older.

#### Instructions:

1. Complete the quiz.
2. Get a list of vaccines you may need (this list may include vaccines you need).
3. Discuss the vaccines with your doctor or healthcare professional.


#### Part One, About You

1. Are you  
 Female  Male
2. For women only (Some vaccines can affect pregnancy.)  
 I could become pregnant  I am pregnant now

Please take a moment to fill out the questionnaire below to help us determine which vaccines may be recommended for you based on your specific health status, age, and lifestyle. Keep in mind that this list may not include every vaccine you need.

Check all that apply to you	Let's discuss these recommended vaccines
<input type="checkbox"/> I am 19 years or older	<ul style="list-style-type: none"><li>• Seasonal flu (influenza) vaccine every year</li><li>• Tetanus (Td) vaccine every 10 years</li><li>• One time dose of whooping cough (Tdap) vaccine for all adults who have never received Tdap vaccine</li></ul> <p><small>PREGNANT WOMEN SHOULD GET A Tdap VACCINE DURING EACH PREGNANCY</small></p>
<input type="checkbox"/> I am 60 years or older	<ul style="list-style-type: none"><li>• Shingles (Zoster) vaccine*</li></ul>
<input type="checkbox"/> I am 65 years or older	<ul style="list-style-type: none"><li>• Both types of pneumococcal vaccines (one dose of conjugate first, then one dose of polysaccharide 6-12 months later)</li></ul>
<input type="checkbox"/> I did not receive the Human papillomavirus (HPV) vaccine series as a child	<ul style="list-style-type: none"><li>• HPV vaccine series (3 dose series)<ul style="list-style-type: none"><li>* Female age 26 or younger</li><li>* Male age 21 or younger</li><li>* Male age 22-26 who has sex with men, who has a weakened immune system, or who has HIV</li></ul></li></ul>
<input type="checkbox"/> I was born in the US in 1957 or after and don't have immunity against measles, mumps, and rubella	<ul style="list-style-type: none"><li>• Measles, mumps, rubella (MMR) vaccine* (one dose)</li></ul>
<input type="checkbox"/> I was born in the US in 1980 or after and don't have immunity against chickenpox	<ul style="list-style-type: none"><li>• Varicella "chickenpox" vaccine*</li></ul>
<input type="checkbox"/> I am a healthcare worker	<ul style="list-style-type: none"><li>• Hepatitis B vaccine series</li><li>• Measles, mumps, rubella (MMR) vaccine*</li><li>• Varicella "chickenpox" vaccine*</li></ul>
<input type="checkbox"/> I have heart disease, asthma or chronic lung disease	<ul style="list-style-type: none"><li>• Pneumococcal polysaccharide vaccine</li></ul>

\* See your healthcare provider for more information.

 U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention



# RECOMMENDATION



# Medscape Module

- Case Presentations/Videos showing how to make strong vaccine recommendations



## How to Give a Strong Recommendation to Adult Patients Who Require Vaccination

Mary C. Anderson, MD; Marie T. Brown, MD; Marie-Michele Léger, MPH, PA-C; Aparna Ramakrishnan, MA, MSW | April 16, 2015

### Vaccination Care for Adults

Your recommendation is a critical factor in whether your patients receive the vaccines that they need. Research indicates that most adults believe that vaccines are important and are likely to receive them if recommended by their healthcare professionals (HCPs).

As a standard of practice,<sup>[1]</sup> all HCPs have the responsibility to routinely assess patient immunization status and to strongly recommend vaccines that patients need. Providers who don't stock vaccines should discuss needed vaccines with their patients, write a vaccine-specific recommendation, and then refer them to a clinic or pharmacy that provides vaccination services.

The first step in determining whether you need to discuss vaccines with your patient is assessing his or her vaccination status. Which of the following strategies has demonstrated efficacy for improving vaccine assessment?

- Standing orders
- Patient intake questionnaires
- Electronic health record prompts or reminders
- Immunization registries or information systems
- All of the above

Save and Proceed

### Vaccination Status Assessment

All of the strategies discussed here can help improve vaccine assessment, though a combination may be needed to ensure that patients' vaccine needs are routinely assessed and opportunities to vaccinate are not missed.

Standing orders or protocols for nursing staff to assess and administer needed vaccines save time and reduce missed opportunities for

[www.medscape.com/viewarticle/842874?src=par\\_cdc\\_stm\\_mscpedt&faf=1](http://www.medscape.com/viewarticle/842874?src=par_cdc_stm_mscpedt&faf=1)



# ADMINISTRATION OR REFERRAL





# Vaccine Administration Resources

- **CDC General Immunization Training**  
[www.cdc.gov/vaccines/ed/courses.htm](http://www.cdc.gov/vaccines/ed/courses.htm)
- **Immunization Skills Self-Assessment**  
[www.immunize.org/catg.d/p7010.pdf](http://www.immunize.org/catg.d/p7010.pdf)
- **Storage and Handling**  
[www.cdc.gov/vaccines/recs/storage](http://www.cdc.gov/vaccines/recs/storage)
- **Dose and Route Chart**  
[www.immunize.org/catg.d/p3084.pdf](http://www.immunize.org/catg.d/p3084.pdf)
- **Vaccine Information Statements (VIS)**  
[www.cdc.gov/vaccines/hcp/vis](http://www.cdc.gov/vaccines/hcp/vis)
- **Guide to Infection Prevention for Outpatient Care**  
[www.cdc.gov/HAI/settings/outpatient/outpatient-care-guidelines.html](http://www.cdc.gov/HAI/settings/outpatient/outpatient-care-guidelines.html)
- **Chart of Medical Management of Vaccine Reactions in Patients**  
[www.immunize.org/catg.d/p3082.pdf](http://www.immunize.org/catg.d/p3082.pdf)

# Vaccine Referral Options

- **Pharmacies**
- **Health Departments** [www.vaccines.gov/getting/where/](http://www.vaccines.gov/getting/where/)  
Check your state to see if they provide routine vaccinations or can help you identify other local vaccine providers.
- **Travel Clinics** [wwwnc.cdc.gov/travel/page/find-clinic](http://wwwnc.cdc.gov/travel/page/find-clinic)
- **HealthMap Vaccine Finder** [vaccine.healthmap.org](http://vaccine.healthmap.org)  
Free online service where users can search by zip code for providers who offer vaccines.

Remind patients to check with their insurance plans regarding which providers their insurance covers for vaccination services.

# Vaccine Finder

- Providers and patients can find vaccine providers in their area at <http://vaccine.healthmap.org>

HealthMap Vaccine Finder

Find Vaccines Near You

Showing availability within 15 miles of Atlanta, GA 30333, USA

Enter a new address or zipcode

Show flu vaccines:

- Flu Shot
- Nasal Spray
- Intradermal Shot
- High-Dose Shot

Show adult vaccines:

- Hepatitis A
- HPV
- Zoster
- Td
- Pneumococcal
- Hepatitis B
- MMR
- Tdap
- Meningococcal
- Varicella

Show related HealthMap alerts

You can also contact your physician for vaccination

What Vaccines Do I Need?

Report & See Flu Vaccine Shortages

Powered by in partnership with

Track outbreaks on [HealthMap](#), improve flu surveillance at [Flu Near You](#), Report adverse events to [MedWatch](#).


Add the [Vaccine Finder](#) widget to your website. Join the low volume [Vaccine Finder](#) mailing list.

Showing availability for 49,100 locations

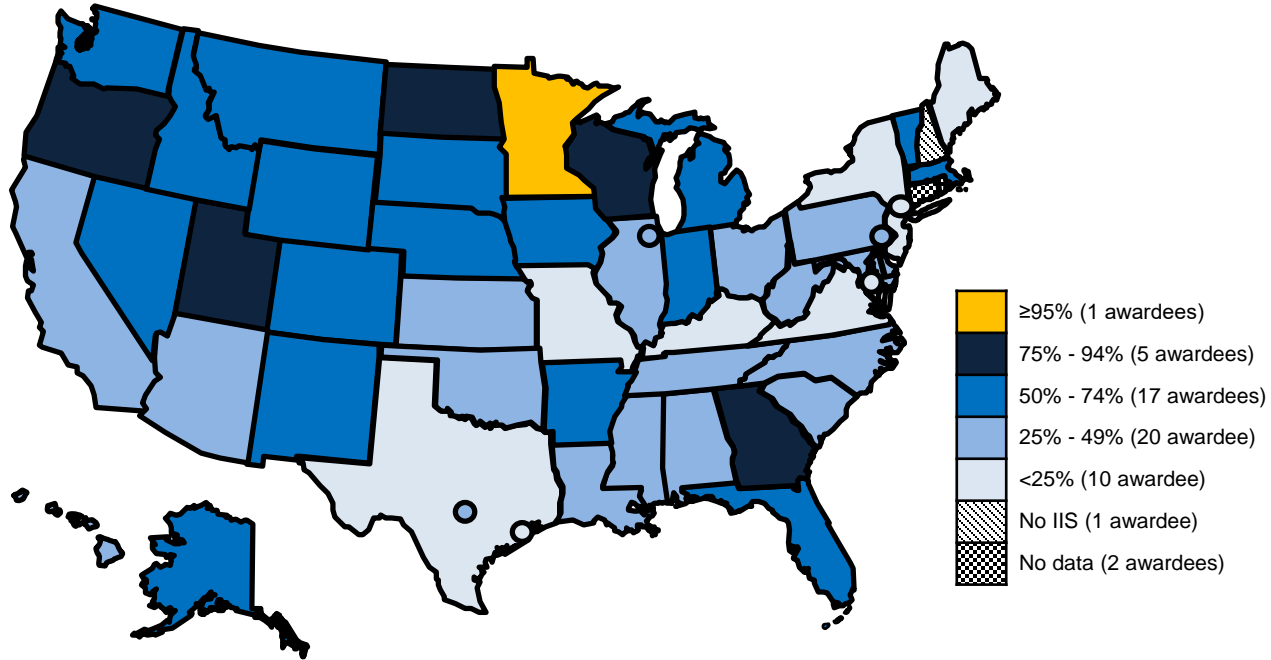
# DOCUMENTATION



# Immunization Information Systems (IIS)

- Consolidate vaccination records for patients
  - Help assess patients' immunization status
  - Ensure patients have completed necessary vaccine series
  - Reduce chances for unnecessary doses of vaccine or missed opportunities to provide vaccines
  - Facilitate use of reminder and recall notifications to send to patients
  - Make calculation of immunization coverage rates easier
- 

# Percentage of Adults Aged $\geq 19$ Years Participating in an Immunization Information System -- United States, Five Cities<sup>§</sup>, and D.C., 2015

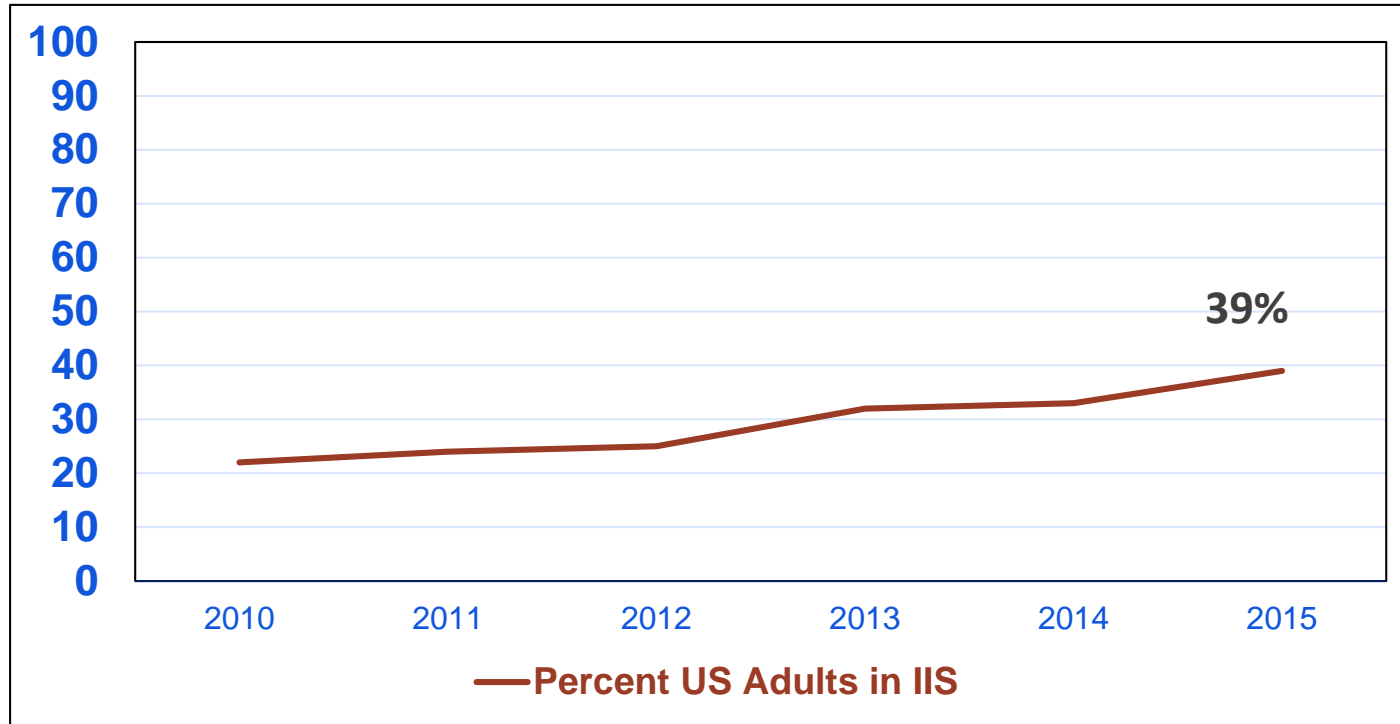


**National Participation: 39%** (excluding Territories)  
Source: CY2015 IISAR

<sup>§</sup> Chicago, IL; Houston, TX; New York City, NY; Philadelphia, PA; San Antonio, TX.

\*Awardees are federally funded immunization programs

# Percentage of U.S. Adults 19+ years with 1+ Adult Immunizations in IIS, CDC IIS Annual Report





**What can be done: Next Steps**



## Next Steps

- Improve providers' ability to see their own vaccination performance data
- Increase use of IIS and IIS/EMR interoperability
- Develop new (and utilize existing) quality measures as motivator for systems change
- Address billing and reimbursement issues
- Address state level policies in some states that result in barriers for some providers, especially pharmacies

# ACOG Resources

For Providers | For Patients | Search Immunization Site | Submit

**IMMUNIZATION for WOMEN**  
Immunization Information for Ob-Gyns and Their Patients

The American College of Obstetricians and Gynecologists

About Us | Diseases & Vaccines | Pregnancy | Vaccine Safety | Resources | Practice Management

**ACOG Update on Zika Virus**

**Updated ACOG Tool Kit!**  
**Influenza Immunization During Pregnancy 2015**

ACOG's updated tool kit includes materials to help Ob-gyns and other health care providers communicate with pregnant women about the importance of receiving a flu shot.

[Click here for more information!](#)

Pregnancy | Content Spotlight | Immunization Schedules | Immunization News

**Pregnant women are at higher risk of complications due to influenza. If your patient is pregnant she should receive the inactivated influenza vaccine, if she is breastfeeding she can receive the inactivated or live vaccine.**

**Download the ACOG app for iPhone and iPad and stay connected with authoritative information from the leading experts in women's health care. The Immunization applet is part of the ACOG app, it is a trusted and interactive resource on immunization best practices.**

**Talk to your patients about the importance of immunizations. Review the immunization schedules for any vaccinations they may need.**

- **Adult Immunization Schedule**
- **Adolescent Immunization Schedules**

[Pregnancy Overview](#)

[Go to App Store for Apple Devices](#)

[All Immunization News](#)

- ACOG app – Immunization applet
- Immunization for Women website
- Patient & Provider Resources:
  - Clinical Guidance & Recommendations
  - FAQs
  - Safety
  - Coding and Reimbursement
  - Practice Management and Tip Sheets

**Influenza Immunization During Pregnancy 2015**

**Tap Immunization 2017**

**Immunization Coding for Obstetrician-Gynecologists 2017**  
Updated With ICD 10

**Developing an Immunization Referral System**

**Frequently Asked Questions for Patients Concerning Influenza (Flu) Vaccination During Pregnancy**

**Frequently Asked Questions for Pregnant Women Concerning 'Tap' Vaccination**

**Current Provider Training Needs for Vaccine Administration**

Year	Session	Format	Start of Year	End of Year	Registration Fee
2017	Immunization for Women	Webinar	01/01/2017	01/01/2017	\$0
2017	Immunization for Women	Webinar	02/01/2017	02/01/2017	\$0
2017	Immunization for Women	Webinar	03/01/2017	03/01/2017	\$0
2017	Immunization for Women	Webinar	04/01/2017	04/01/2017	\$0
2017	Immunization for Women	Webinar	05/01/2017	05/01/2017	\$0
2017	Immunization for Women	Webinar	06/01/2017	06/01/2017	\$0
2017	Immunization for Women	Webinar	07/01/2017	07/01/2017	\$0
2017	Immunization for Women	Webinar	08/01/2017	08/01/2017	\$0
2017	Immunization for Women	Webinar	09/01/2017	09/01/2017	\$0
2017	Immunization for Women	Webinar	10/01/2017	10/01/2017	\$0
2017	Immunization for Women	Webinar	11/01/2017	11/01/2017	\$0
2017	Immunization for Women	Webinar	12/01/2017	12/01/2017	\$0

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

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

