

Vaccine update & Implementation

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From Charles Darwin:

“It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.”



Disclosures



- Grant/Research Funding for clinical trials
 - GSK, Merck, Novartis, Sanofi-Pasteur, Pfizer

Objective



- Epidemiology/Vaccine information
- Vaccine updates
 - kids
 - Teens
 - Pregnancy
 - Adults
- Implementation strategy



VACCINES WORK

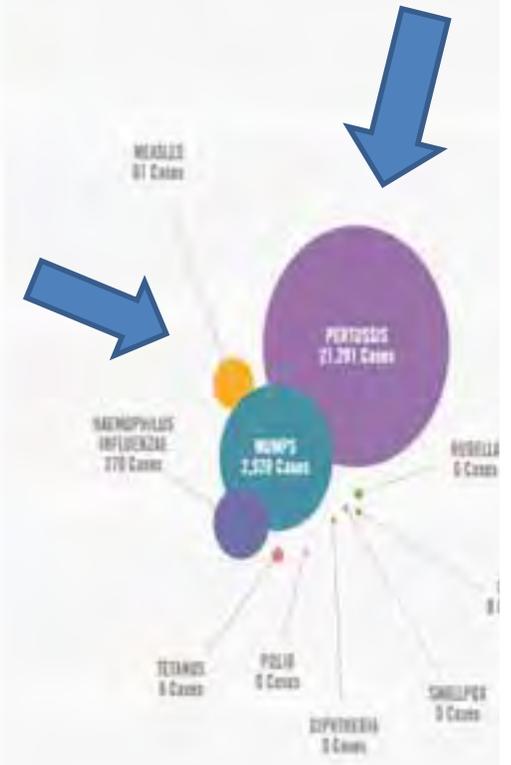
These bubbles are sized according to the annual number of disease cases in the US during the 1900s versus 2010. We've come so far. It's a reminder that while disease rates are low, most diseases haven't disappeared. This is why we continue to vaccinate.

SMALLPOX	MEASLES
THEN 29,005	THEN 530,217
NOW 0	NOW 61
DIPHTHERIA	MUMPS
THEN 21,053	THEN 362,344
NOW 0	NOW 2,528
PERTUSSIS	RUBELLA
THEN 200,752	THEN 47,745
NOW 21,291	NOW 6
TETANUS	CRS
THEN 580	THEN 152
NOW 8	NOW 0
POLIO	HAEMOPHILUS INFLUENZAE
THEN 16,316	THEN 20,000
NOW 0	NOW 270

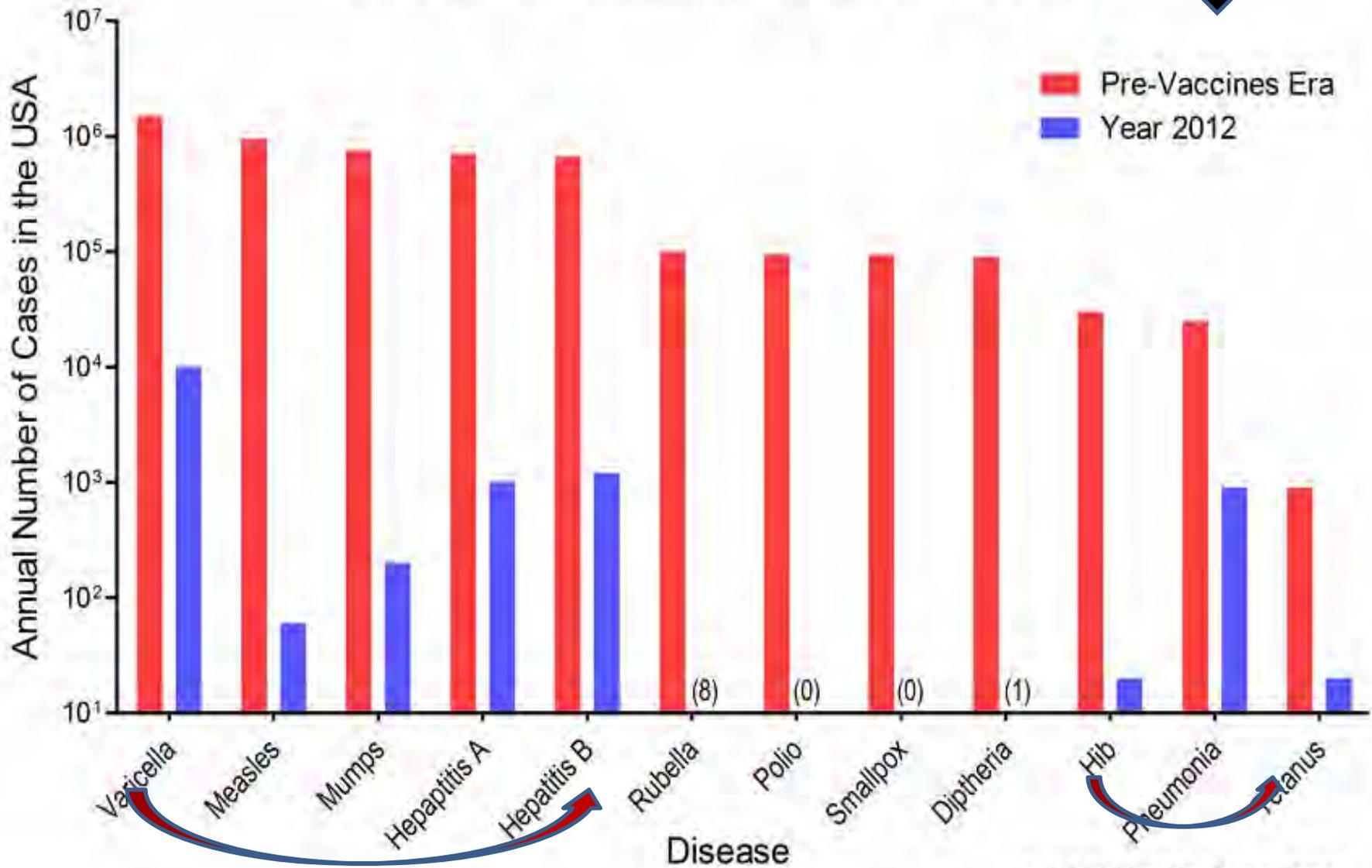
THEN
Annual US disease cases in the 1900s



NOW
US disease cases in 2010



Impact of Vaccines on Public Health



Immunization Resource



Immunization Schedules



Schedules

For Health Care Professionals

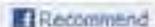
For Everyone: Easy-to-read Schedules

Display Schedules on Your Website

Web Buttons

Past Immunization Schedules

[Vaccines Home](#)



Immunization Schedules

For Health Care Professionals



NEW 2014 SCHEDULES

Schedules and Tools

Schedules to order or print, recommendations to consult, and tools to download.

- Birth-18 Years and Catch-up Versions
Find printable versions in various formats: regular paper, pocket size, MMWR, and laminated; load on your smartphone; check the binational resource...
- Adult Version
Find printable formats in various sizes, download the interactive tool, or load the schedule on your smartphone...

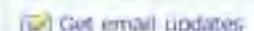
For Everyone



Easy-to-read Schedules for All Ages

Easy-to-read formats to print, tools to download, and ways to prepare for your office visit.

- Infants and Children (birth through 6 years old)
Find easy-to-read formats to print, create an instant schedule for your child, determine missed or skipped vaccines, and prepare for your office visit...
- Preteens & Teens (7 through 18 years old)
Print this friendly schedule, take a quick quiz, fill out the screening form before your child's doctor visit, or download a tool to determine vaccines needed...



Contact Us:

- Centers for Disease Control and Prevention
1600 Clifton Rd
Atlanta, GA 30333
- 800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6348
[Contact CDC-INFO](#)

Related Links

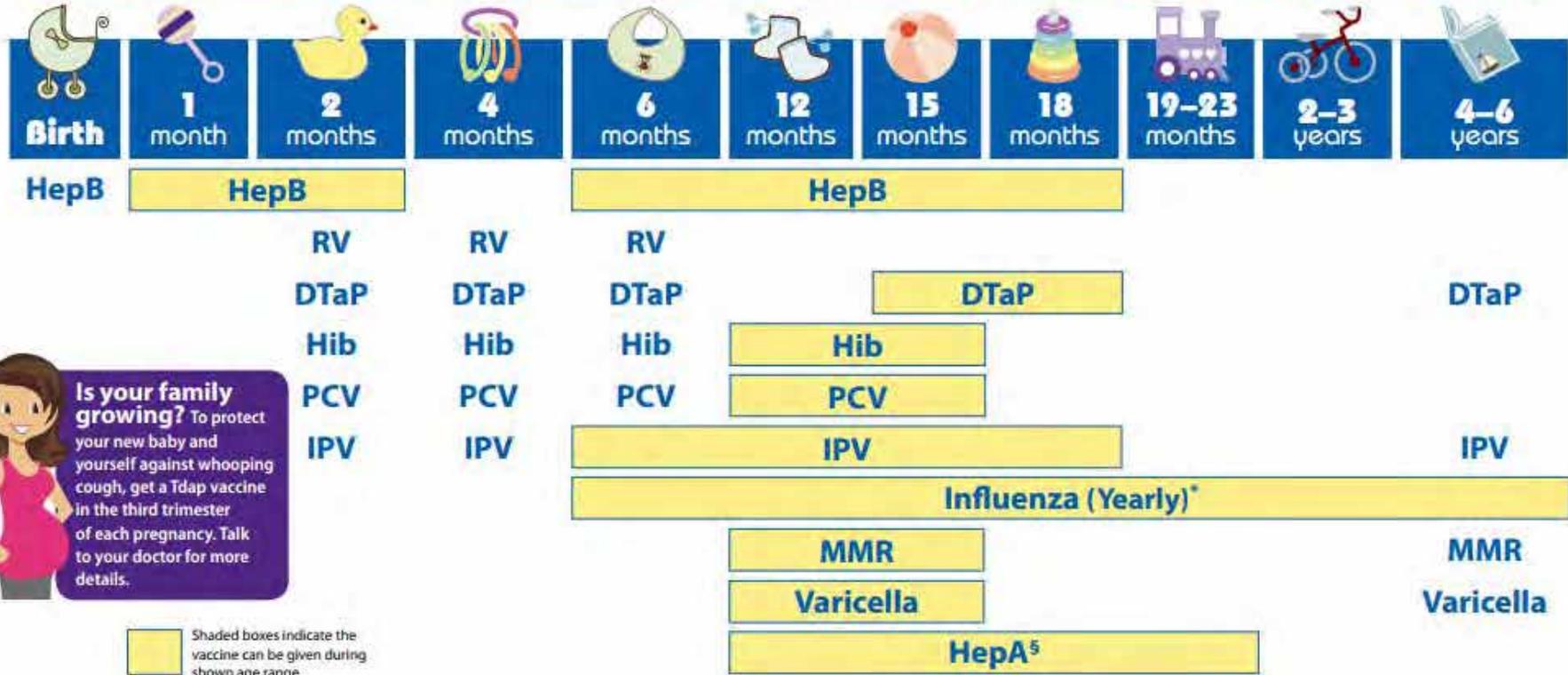
Vaccine Information Statements

ACIP Vaccination Recommendations

Why Immunize?

Vaccines: The Basics

2014 Recommended Immunizations for Children from Birth Through 6 Years Old



Is your family growing? To protect your new baby and yourself against whooping cough, get a Tdap vaccine in the third trimester of each pregnancy. Talk to your doctor for more details.

Shaded boxes indicate the vaccine can be given during shown age range.

NOTE: If your child misses a shot, you don't need to start over, just go back to your child's doctor for the next shot. Talk with your child's doctor if you have questions about vaccines.

FOOTNOTES:

- * Two doses given at least four weeks apart are recommended for children aged 6 months through 8 years of age who are getting a flu vaccine for the first time and for some other children in this age group.
- † Two doses of HepA vaccine are needed for lasting protection. The first dose of HepA vaccine should be given between 12 months and 23 months of age. The second dose should be given 6 to 18 months later. HepA vaccination may be given to any child 12 months and older to protect against HepA. Children and adolescents who did not receive the HepA vaccine and are at high-risk, should be vaccinated against HepA.

If your child has any medical conditions that put him at risk for infection or is traveling outside the United States, talk to your child's doctor about additional vaccines that he may need.



SEE BACK PAGE FOR MORE INFORMATION ON VACCINE-PREVENTABLE DISEASES AND THE VACCINES THAT PREVENT THEM.

For more information, call toll free **1-800-CDC-INFO** (1-800-232-4636) or visit <http://www.cdc.gov/vaccines>

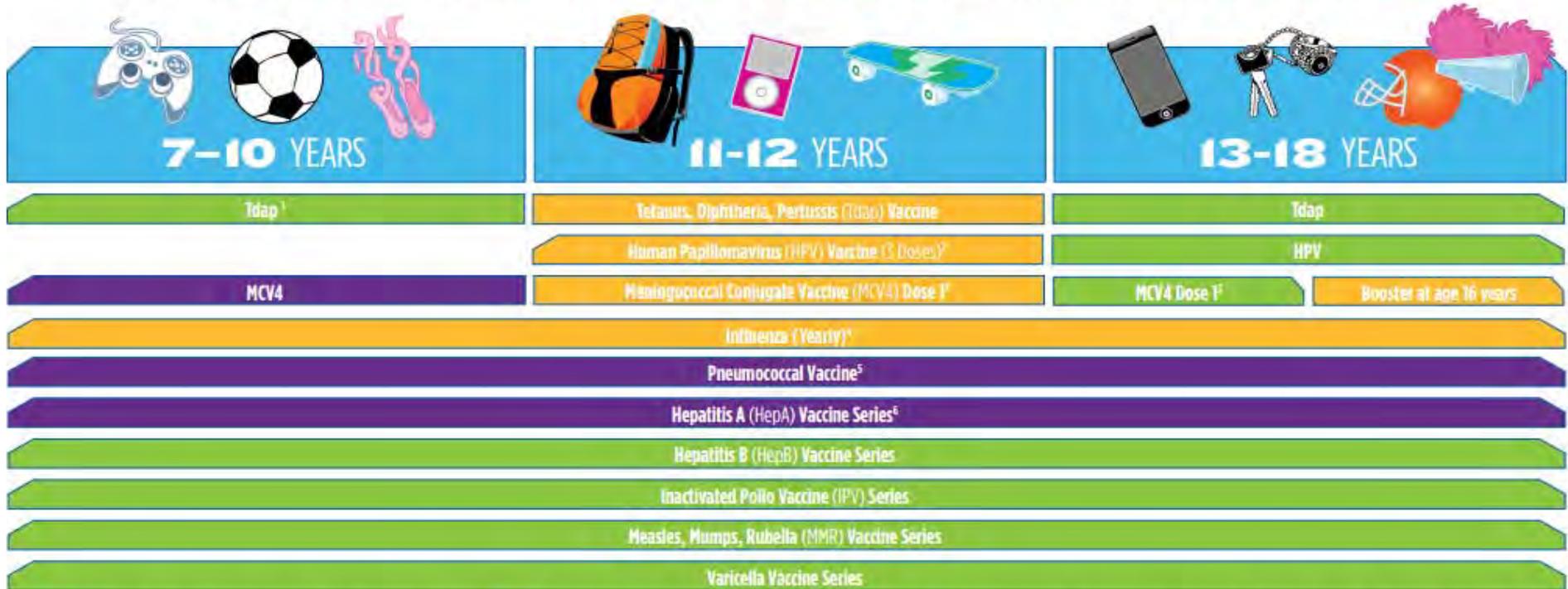


U.S. Department of Health and Human Services
Centers for Disease Control and Prevention



American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

2014 Recommended Immunizations for Children from 7 Through 18 Years Old



 These shaded boxes indicate when the vaccine is recommended for all children unless your doctor tells you that your child cannot safely receive the vaccine.
 These shaded boxes indicate the vaccine should be given if a child is catching-up on missed vaccines.
 These shaded boxes indicate the vaccine is recommended for children with certain health conditions that put them at high risk for serious diseases. Note that healthy children **can** get the HepA series⁶. See vaccine-specific recommendations at www.cdc.gov/vaccines/pubs/ACIP-list.htm.

FOOTNOTES

- ¹ Tdap vaccine is combination vaccine that is recommended at age 11 or 12 to protect against tetanus, diphtheria and pertussis. If your child has not received any or all of the DTaP vaccine series, or if you don't know if your child has received these shots, your child needs a single dose of Tdap when they are 7-10 years old. Talk to your child's health care provider to find out if they need additional catch-up vaccines.
- ² All 11 or 12 year olds – both girls *and* boys – should receive 3 doses of HPV vaccine to protect against HPV-related disease. Either HPV vaccine (Cervarix[®] or Gardasil[®]) can be given to girls and young women; only one HPV vaccine (Gardasil[®]) can be given to boys and young men.
- ³ Meningococcal conjugate vaccine (MCV) is recommended at age 11 or 12. A booster shot is recommended at age 16. Teens who received MCV for the first time at age 13 through 15 years will need a one-time booster dose between the ages of 16 and 18 years. If your teenager missed getting the vaccine altogether, ask their health care provider about getting it now, especially if your teenager is about to move into a college dorm or military barracks.
- ⁴ Everyone 6 months of age and older—including preteens and teens—should get a flu vaccine every year. Children under the age of 9 years may require more than one dose. Talk to your child's health care provider to find out if they need more than one dose.
- ⁵ Pneumococcal Conjugate Vaccine (PCV13) and Pneumococcal Polysaccharide Vaccine (PPSV23) are recommended for some children 6 through 18 years old with certain medical conditions that place them at high risk. Talk to your healthcare provider about pneumococcal vaccines and what factors may place your child at high risk for pneumococcal disease.
- ⁶ Hepatitis A vaccination is recommended for older children with certain medical conditions that place them at high risk. HepA vaccine is licensed, safe, and effective for all children of all ages. Even if your child is not at high risk, you may decide you want your child protected against HepA. Talk to your healthcare provider about HepA vaccine and what factors may place your child at high risk for HepA.

For more information, call toll free 1-800-CDC-INFO (1-800-232-4636) or visit <http://www.cdc.gov/vaccines/teens>



2014 Recommended Immunizations for Adults: By Age

If you are this age, talk to your healthcare professional about these vaccines →

If you are this age	Flu Influenza	Td/Tdap Tetanus, diphtheria, pertussis	Shingles Zoster	Pneumococcal		Meningococcal	MMR Measles, mumps, rubella	HPV Human papillomavirus		Chickenpox Varicella	Hepatitis A	Hepatitis B	Hib Haemophilus influenzae type b
				PCV13	PPSV23			for women	for men				
19 - 21 years									3 doses				
22 - 26 years							1 or 2 doses	3 doses	1 dose				
27 - 49 years		1 dose of Tdap*		1 dose	1 or 2 doses	1 or more doses							
50 - 59 years	Flu vaccine every year	Td booster every 10 years								2 doses	1 dose	3 doses	1 or 3 doses
60 - 64 years			1 dose										
65+ year				1 dose	1 dose								

More Information:

There are several flu vaccines available. Talk to your healthcare professional about which flu vaccine is right for you.

* If you are pregnant, you should get a Tdap vaccine during the 3rd trimester of every pregnancy to help protect your babies from pertussis (whooping cough).

You should get zoster vaccine even if you've had shingles before.

There are two different types of pneumococcal vaccines: PCV13 (conjugate) and PPSV23 (polysaccharide). Talk with your healthcare professional to find out if one or both pneumococcal vaccines are recommended for you.

Your healthcare professional will let you know how many doses you need.

Recommended for you if you did not get it when you were a child. If you were born in 1957 or after, and don't have a record of being vaccinated or having had measles, mumps and rubella, talk to your healthcare professional about how many doses you may need.

Recommended for you if you did not get it when you were a child.

There are two HPV vaccines but only one HPV vaccine (Gardasil[®]) should be given to men.

If you are a male 22 through 26 years old and have sex with men you should complete the HPV vaccine series if you have not already done so.

Your healthcare professional will let you know how many doses you need.

Recommended For You: This vaccine is recommended for you unless your healthcare professional tells you that you cannot safely receive it or that you do not need it.

May Be Recommended For You: This vaccine is recommended for you if you have certain risk factors due to your health, job, or lifestyle that are not listed here. Talk to your healthcare professional to see if you need this vaccine.

if you are traveling outside the United States, you may need additional vaccines.
Ask your healthcare professional about which vaccines you may need at least 6 weeks prior to your travel.

For more information, call 1-800-CDC-INFO (1-800-232-4636) or visit www.cdc.gov/vaccines



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

This recommended schedule was updated September 18, 2014 to reflect the latest pneumococcal vaccination recommendations from the Advisory Committee on Immunization Practices. www.cdc.gov/vaccines/acip/wa/vaczntrms

2014 Recommended Immunizations for Adults: By Health Condition

If you have this health condition, talk to your healthcare professional about these vaccines →

If you have this health condition, talk to your healthcare professional about these vaccines →	Flu Influenza	Td/Tdap Tetanus, diphtheria, pertussis	Shingles Zoster	Pneumococcal		Meningococcal	MMR Measles, mumps, rubella	HPV Human papillomavirus		Chickenpox Varicella	Hepatitis A	Hepatitis B	Hib Haemophilus influenzae type b
				PCV13	PPSV23			for women	for men				
Pregnancy		*see below			1 - 2 doses								
Weakened Immune System			SHOULD NOT GET VACCINE				SHOULD NOT GET VACCINE			SHOULD NOT GET VACCINE		3 doses	post-HSCT* recipients only
HIV: CD4 count less than 200						1 or more doses							
HIV: CD4 count 200 or greater		1 dose of Tdap			1 dose						2 doses	3 doses	1 or 3 doses
Kidney disease or poor kidney function	Flu vaccine every year	followed by Td booster every 10 years			1 - 2 doses			3 doses before age 26 years	3 doses before age 21 years	2 doses			
Asplenia (if you do not have a spleen or if it does not work well)			1 dose for those 60 years or older			1 or more doses	1 or 2 doses					3 doses	1 or 3 doses
Heart disease Chronic lung disease Chronic alcoholism													1 or 3 doses
Diabetes (Type 1 or Type 2)					1 dose	1 or more doses						3 doses	
Chronic Liver Disease											2 doses		

More Information:

There are several flu vaccines available. Talk to your healthcare professional about which flu vaccines is right for you.

* If you are pregnant, you should get a Tdap vaccine during the 3rd trimester of every pregnancy to help protect your babies from pertussis (whooping cough).

You should get zoster vaccine even if you've had shingles before.

There are two different types of pneumococcal vaccine: PCV13 (conjugate) and PPSV23 (polysaccharide). Talk with your healthcare professional to find out if one or both pneumococcal vaccines are recommended for you.

Your healthcare professional will let you know how many doses you need.

If you were born in 1957 or after, and don't have a record of being vaccinated or having had measles, mumps and rubella, talk to your healthcare professional about how many doses you may need.

Recommended for you if you did not get it when you were a child.

There are two HPV vaccines but only one HPV vaccine (Gardasil®) should be given to men. If you are a male 22 through 26 years old and have sex with men you should complete the HPV vaccine series if you have not already done so.

Your healthcare professional will let you know how many doses you need.

*Hematopoietic stem cell transplant



Recommended For You: This vaccine is recommended for you **unless** your healthcare professional tells you that you cannot safely receive it or that you do not need it.



May Be Recommended For You: This vaccine is recommended for you if you have certain other risk factors due to your age, health, job, or lifestyle that are not listed here. Talk to your healthcare professional to see if you need this vaccine.



YOU SHOULD NOT GET THIS VACCINE

If you are traveling outside the United States, you may need additional vaccines.

Ask your healthcare professional about which vaccines you may need at least 6 weeks prior to your travel.

For more information, call 1-800-CDC-INFO (1-800-232-4636) or visit www.cdc.gov/vaccines



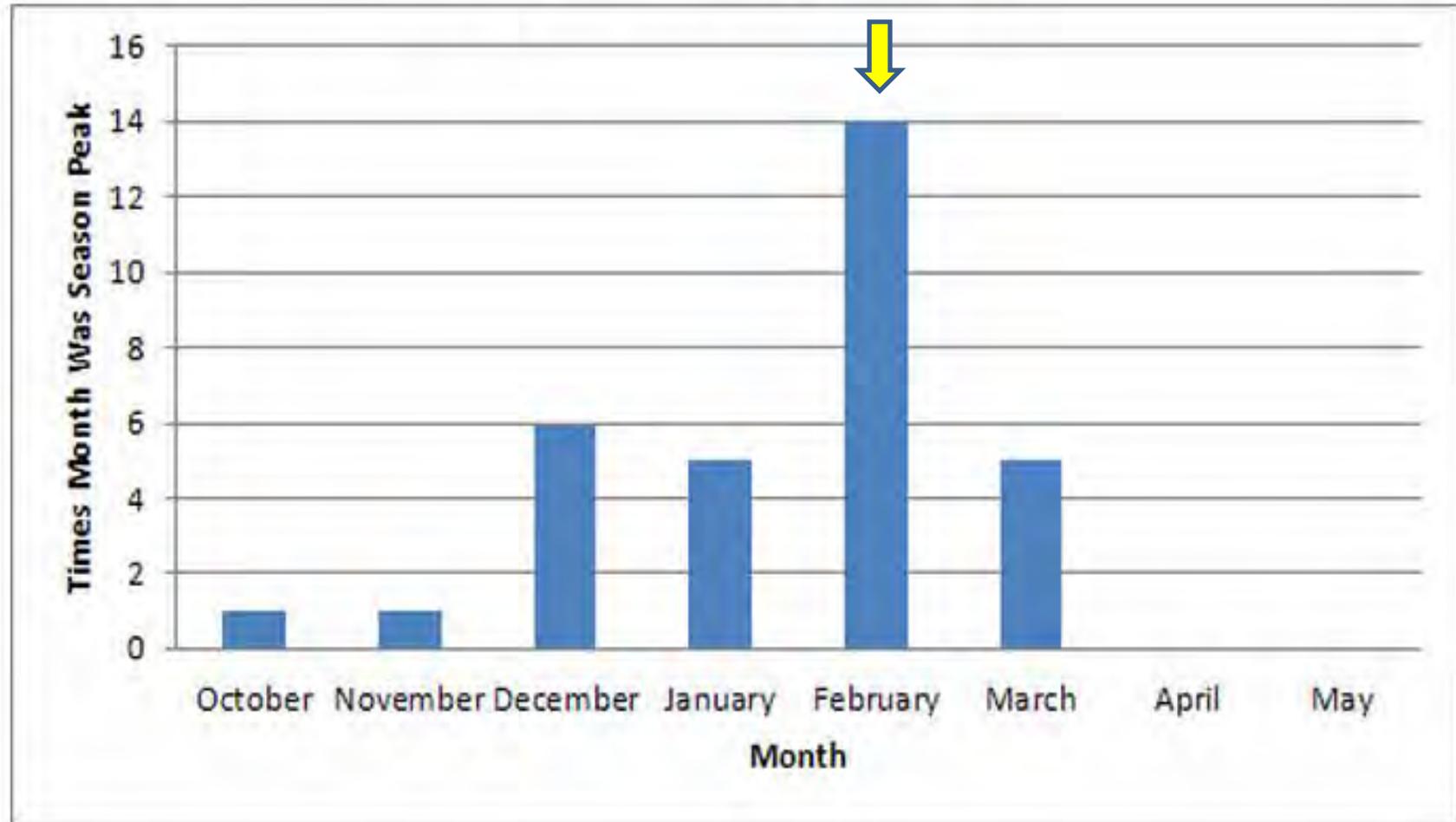
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

INFLUENZA

Influenza

- Influenza spreads to other people beginning 1 day **before** symptoms and **up to 5 to 7** days **after** becoming sick.
- Children may shed the virus for longer than 7 days.
- Incubation period is 1 to 4 days
- Some can be asymptomatic and still spread the virus

Peak Month of Flu Activity 1982-83 through 2013-14



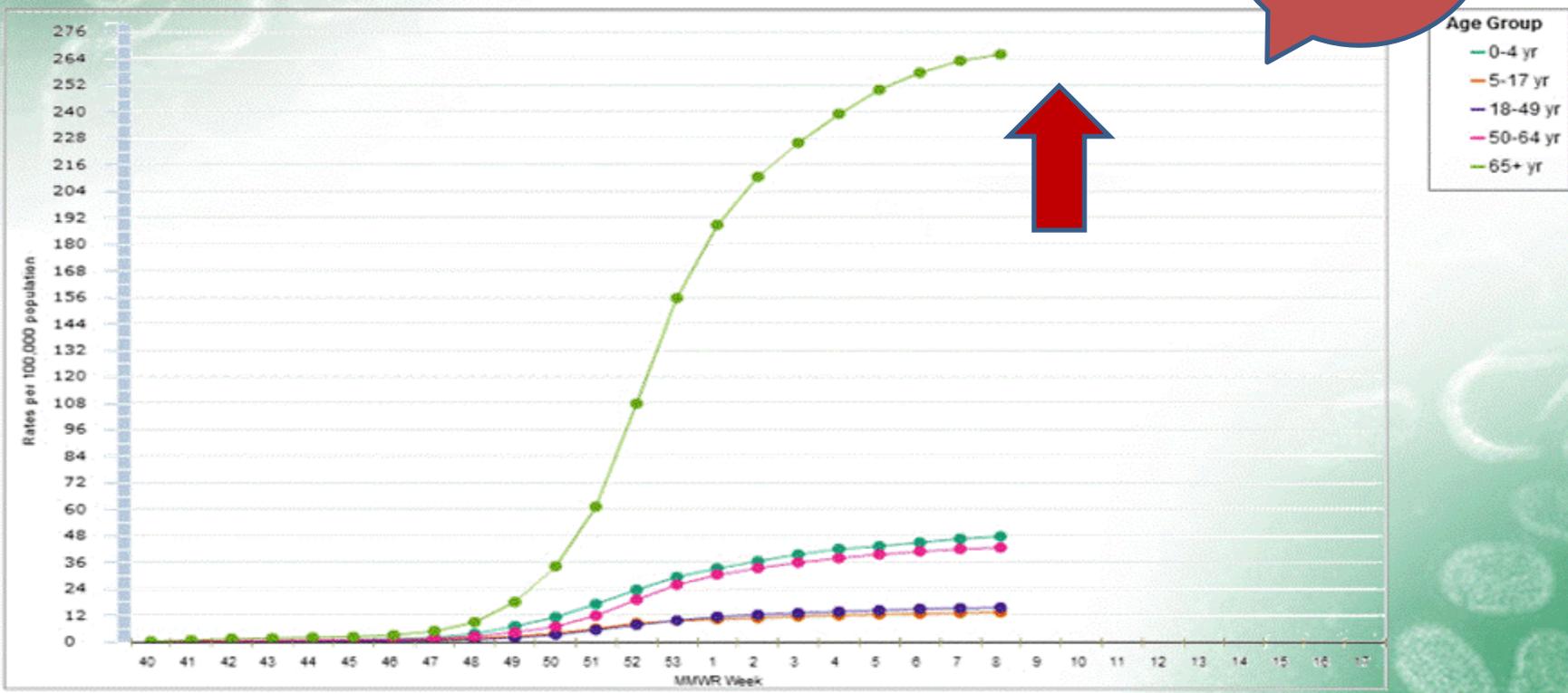
FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division



Laboratory-Confirmed Influenza Hospitalizations
Preliminary rates as of Feb 28, 2015

Elderly
>65
years



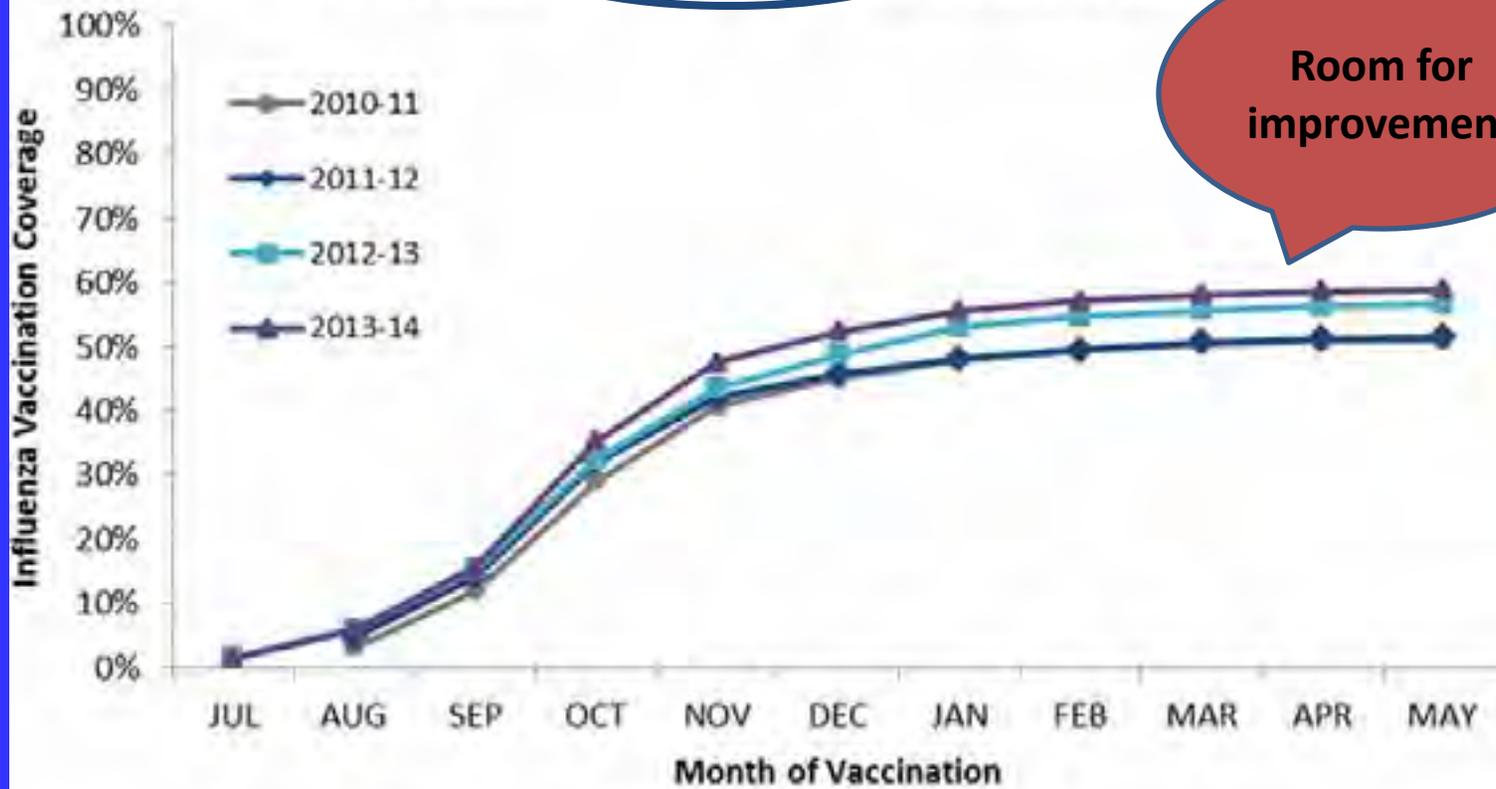
Flu hospitalization

- Highest among people 65 and older (50.9 per 100,000), people 50 to 64 years now have the second-highest hospitalization rate (38.7 per 100,000)
- Children 0-4 years old (35.9 per 100,000).

Influenza vaccine recommendations

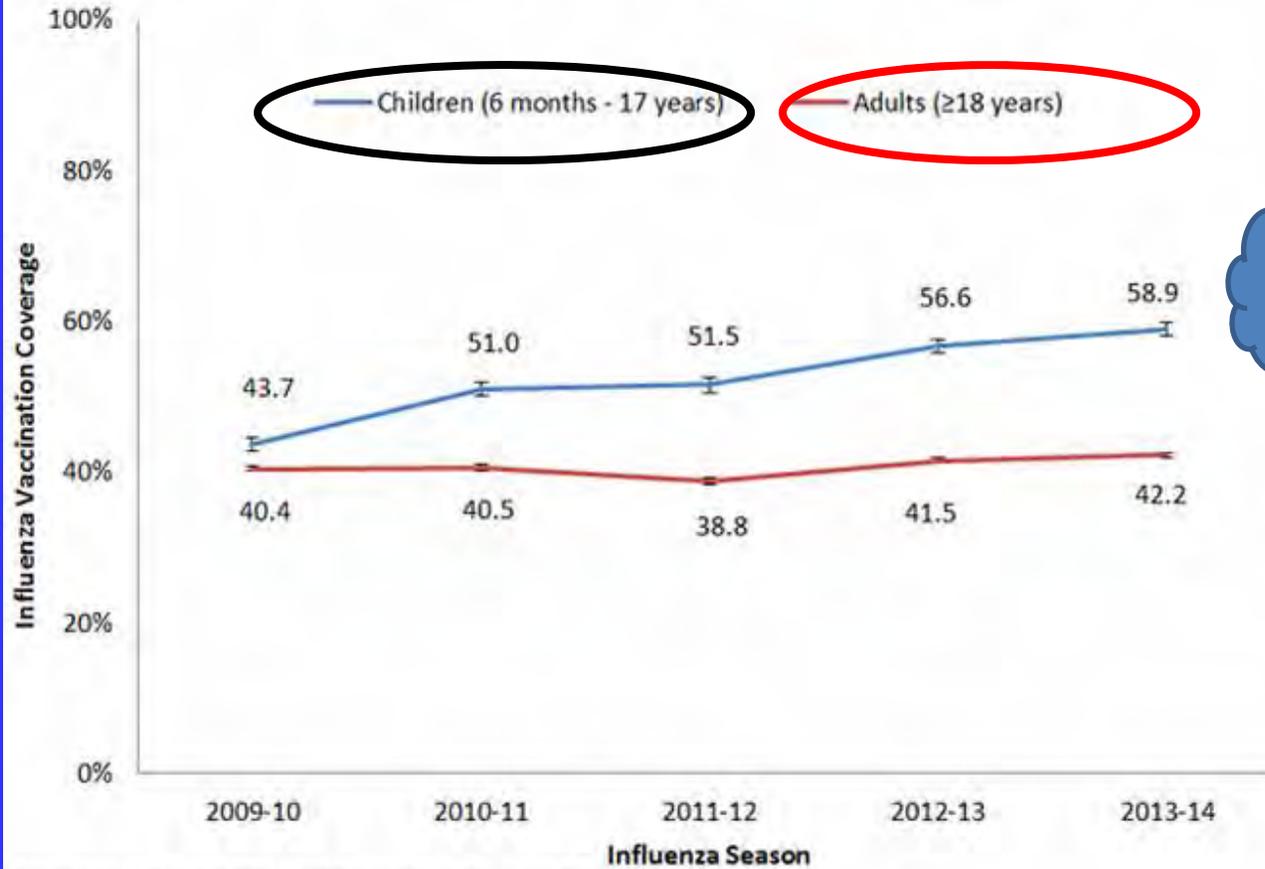
- Routinely for **all** persons ≥ 6 months of age (**without contraindication**)
- 6 months -8 years **2 doses** ≥ 4 weeks apart in their **first season**
- Vaccine content
 - Trivalent –A (H1N1)+A (H3 N2) + B (Yamagata)
 - Quadrivalent has same as above +B (Victoria lineage)

Figure 2. Influenza Vaccination Coverage Estimates by Influenza Season, Children 6 months-17 years, United States



Room for improvement

Figure 1. Seasonal Flu Vaccination Coverage, by Age Group and Season, United States, 2009-2014



Error bars represent 95% confidence intervals around the estimates.

The 2009-10 estimates do not include the influenza A (H1N1) pdm09 monovalent vaccine.

Starting with the 2011-12 season, adult estimates reflect changes in BRFSS survey methods: the addition of cellular telephone samples and a new weighting method.



Flu deaths

- Influenza deaths this season are following a pattern a similar to the pandemic.
- **2009-2010**
 - People 25 years to 64 years of age
- 18 %, 30 %, and 47 % for the three previous seasons, respectively.



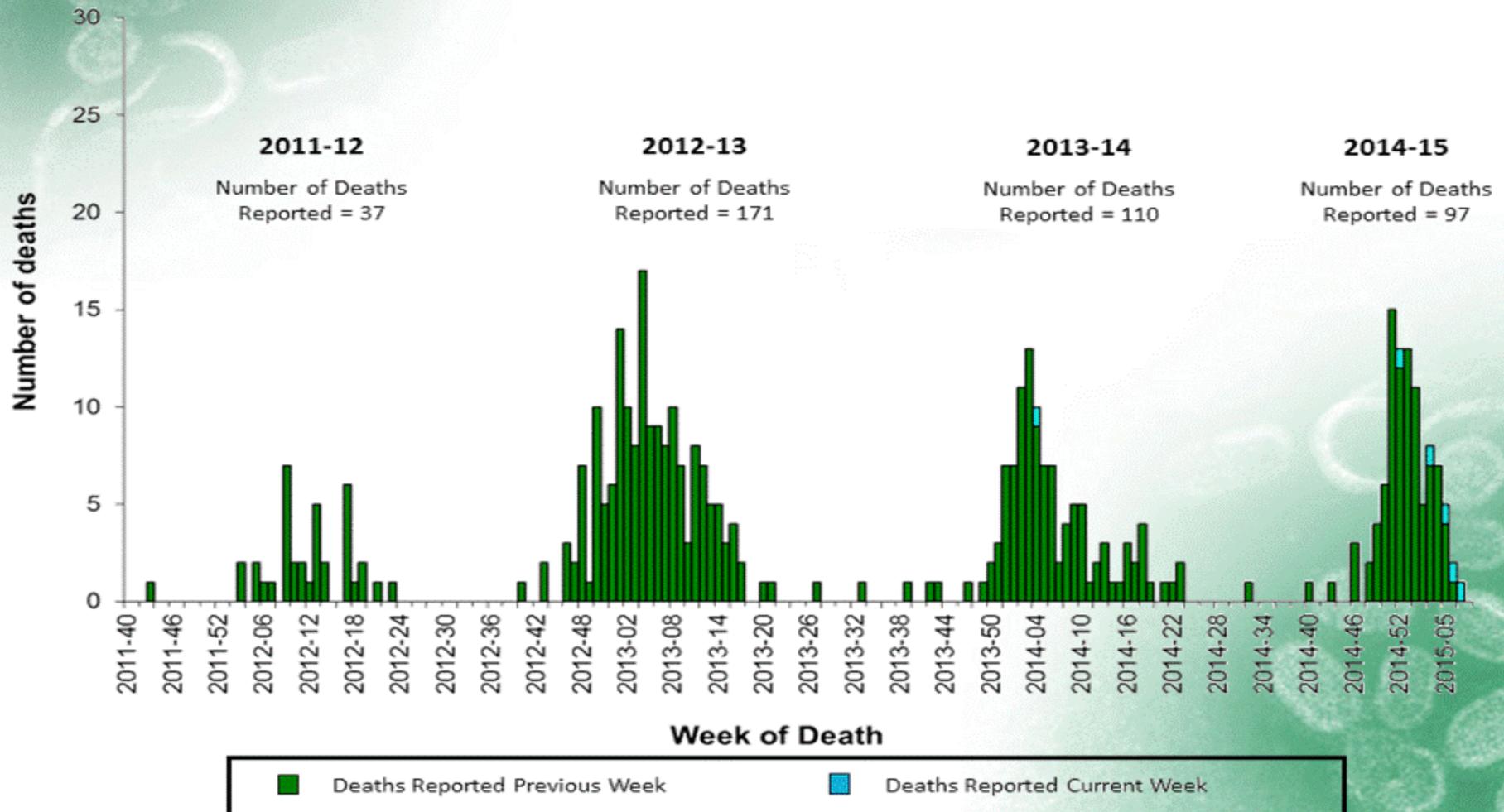
60 % of flu deaths

FLUVIEW



A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2011-12 season to present

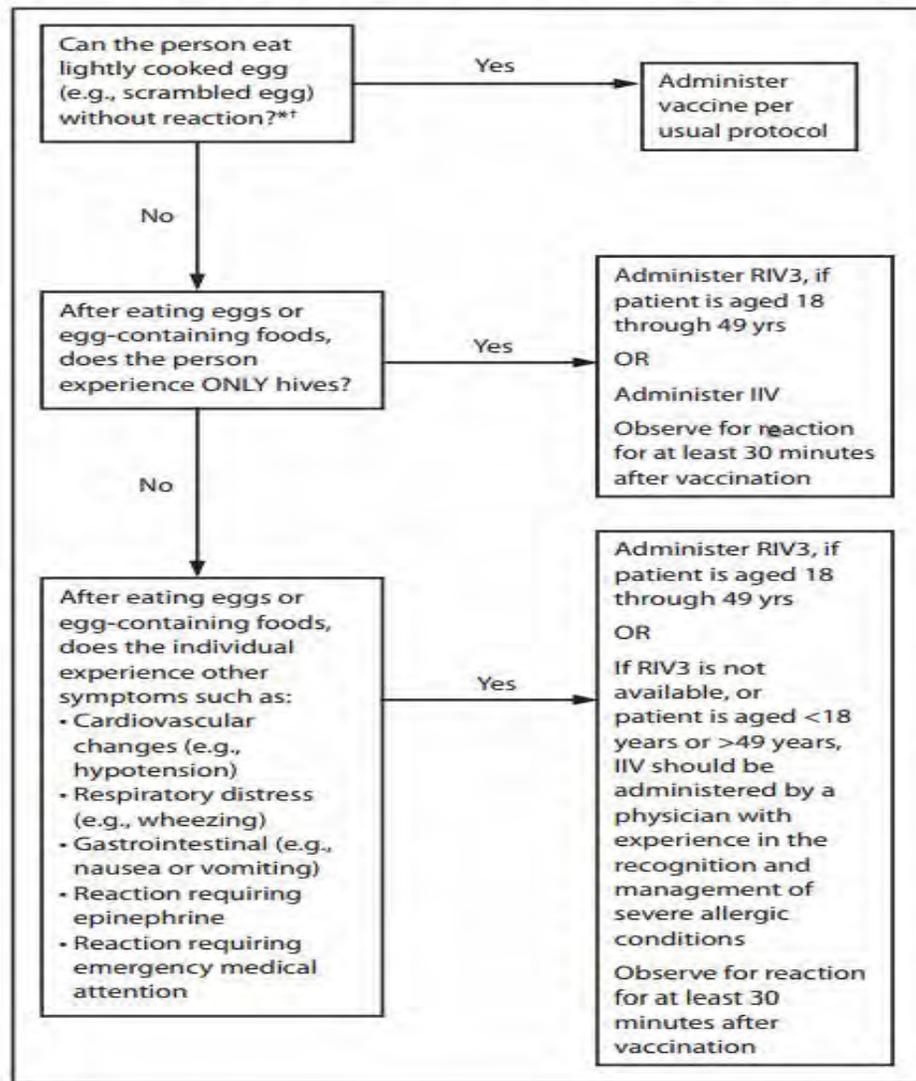


Wondering about egg allergy???



Influenza vaccine and egg allergy

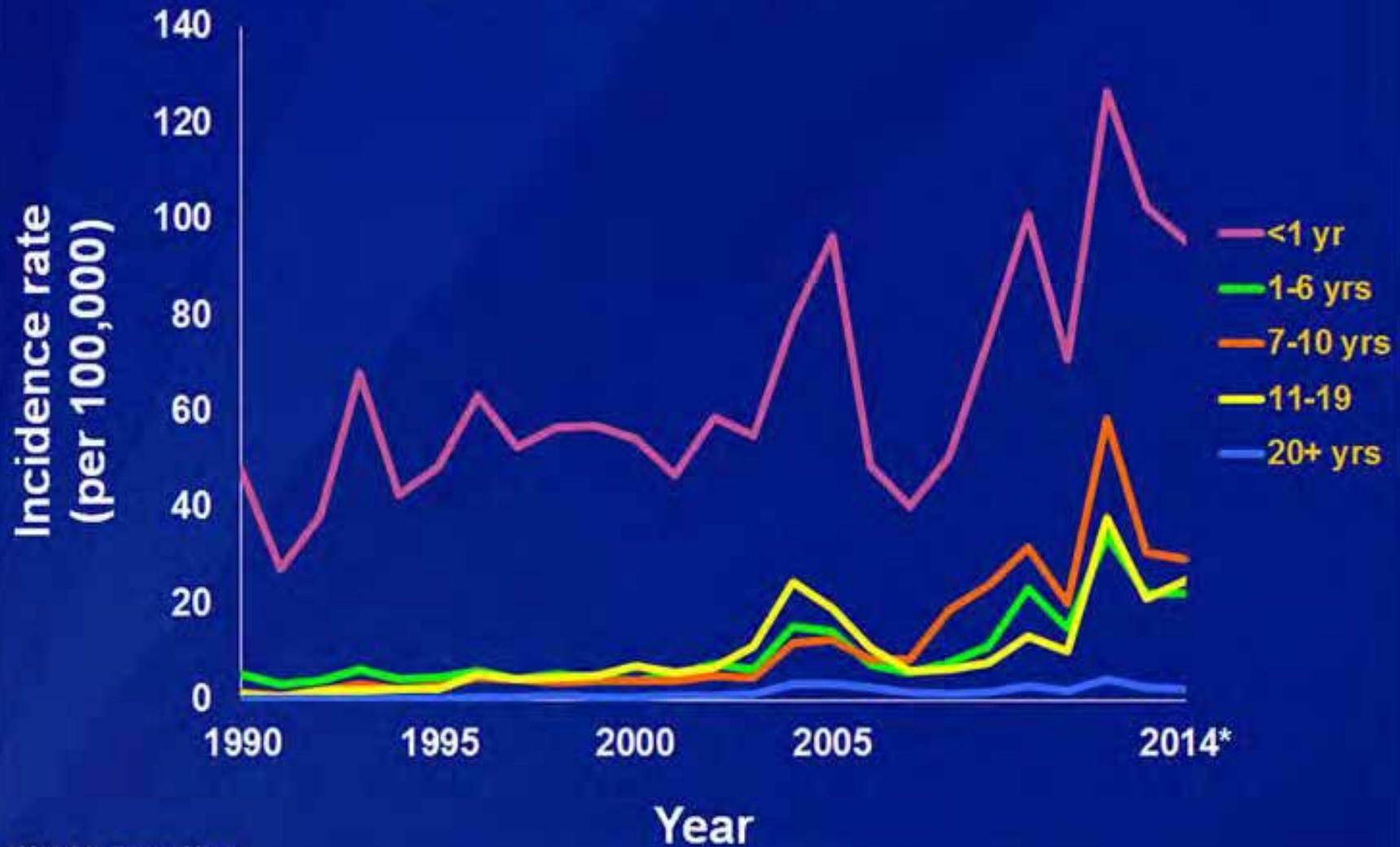
FIGURE 2. Recommendations regarding influenza vaccination of persons who report allergy to eggs — Advisory Committee on Immunization Practices, United States, 2014–15 influenza season



**Observe
for 30
min**

Pertussis

Reported pertussis incidence by age group: 1990-2014*



*2014 data are provisional.

SOURCE: CDC, National Notifiable Diseases Surveillance System and Supplemental Pertussis Surveillance System

Changes in Pertussis Reporting by State from 2013 to 2014* †



*Data for 2014 are provisional and subject to change. †Cases reported through Week 33 in 2013 were compared with cases reported through Week 23 in 2014.



CDC Pertussis 2014 report

Reported Case Profiles, By Age

Age	No. of Cases	%	Age Inc /100,000
< 6 mos	2,974	(10.4)	150.9
6-11 mos	797	(2.8)	40.4
1-6 yrs	5,365	(18.7)	22.2
7-10 yrs	4,834	(16.9)	29.5
11-19 yrs	9,455	(33.0)	25.1
20+ yrs	5,119	(17.8)	2.2
Unknown	116	(0.4)	N/A
Total	28,660	(100.0)	9.0*

*Total age incidence per 100,000 calculated from 28,544 cases with age reported.

Bordetella pertussis



Clinical stages

Stages	Length	Clinical feature
Catarrhal	7-10 days (4-21 days)	Coryza, mild cough
Paroxysmal	6 weeks (10 weeks)	Paroxysmal cough, vomit, exhaustion
Convalescent	7-10 days (4-21 days)	Slowly reduced cough

**WHY THE SOUNDS OF PERTUSSIS
MUST BE SILENCED??**

B.pertussis

- <6 months age hospitalization is common
- The most common complication is bacterial pneumonia.
 - 50% will have apnea
 - 20% get pneumonia
- Pertussis causes about 10-20 deaths annually in US

Adolescent B.pertussis

- Can last for 10 weeks/100 days
 - Weight loss (33%)
 - Urinary incontinence (28%)
 - Syncope (6%)
 - Rib fractures from severe coughing (4%)
 - PCR can be negative after 3 weeks

Pertussis vaccine

- Routine childhood -**DTaP**
 - **Tdap**
 - 11- 18 years
 - All adults
 - Every pregnancy
 - Interval between Td and Tdap can be <5 years
 - Then every 10 years Td
- 

Summary of ACIP Deliberations and Rationale

A dose of Tdap during each pregnancy

Very young infants are dependent solely on maternal antibodies and lack the ability to mount a cell-mediated response (4). The effectiveness and optimal concentration of maternal antipertussis antibodies in newborns are not yet known, but high levels of antibodies in the first weeks after birth likely confer protection and might prevent pertussis or modify disease severity (5–7). Studies on the persistence of antipertussis antibodies following a dose of Tdap show antibody levels in healthy, nonpregnant adults peak during the first month after vaccination, with substantial antibody decay

Pertussis & pregnancy

- Pregnancy

- Tdap

- 27-36 weeks gestation

- Every pregnancy

- All care givers – **cocoon**

- 2 weeks prior to arrival of neonate

- Influenza vaccine



Cocooning

2008-2010

8334/11174 postpartum (75%) had Tdap

Median 2-3 contacts /infant

90% Latino

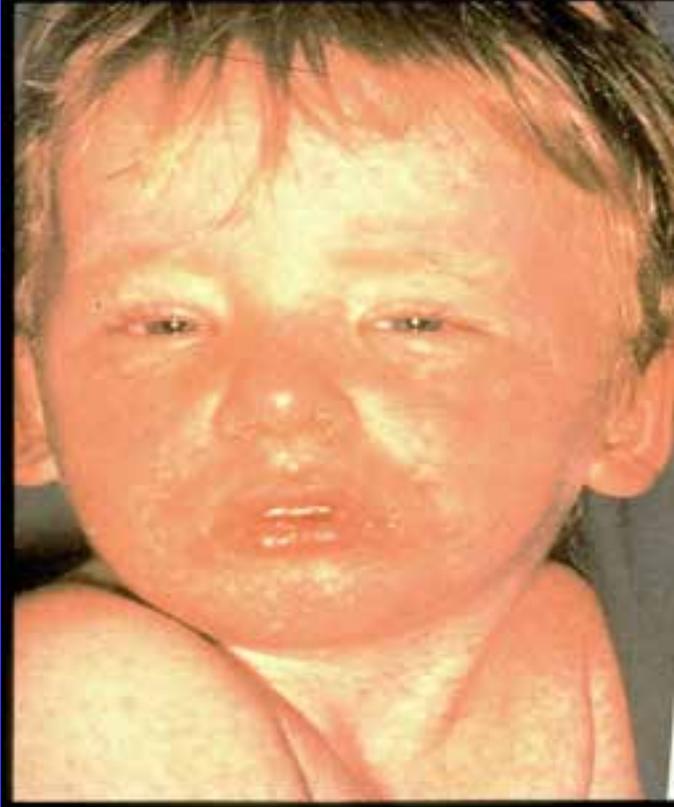
Barriers to full cocooning included

- ❖ **Need for extended vaccination hours**
- ❖ **Inaccurate recall of vaccination history**
- ❖ **Sustainability, funding**

Silence the Whoop



Measles



Global measles

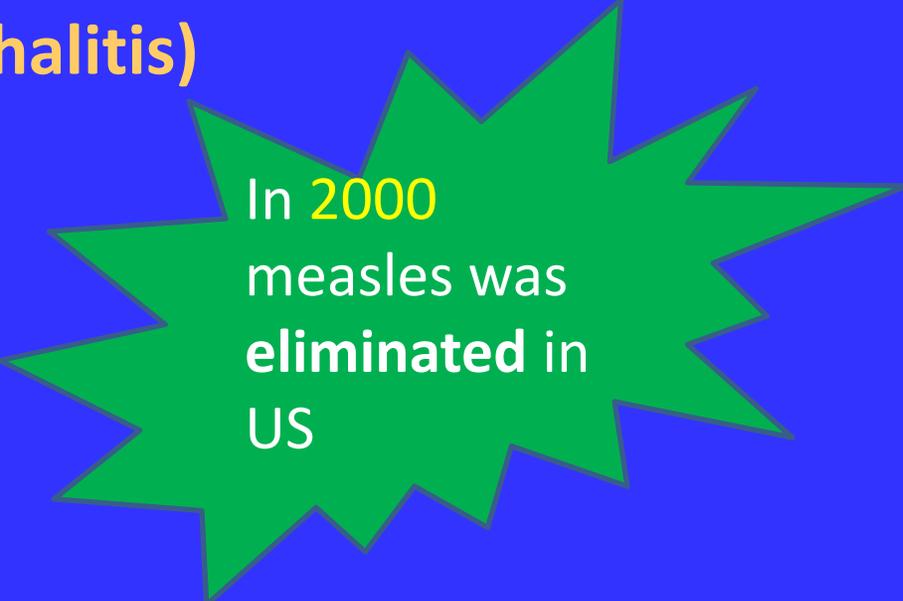
- In 1980 2.6 million deaths
- 2013 measles vaccine coverage 84% 1 dose
- In 2013 145,000 deaths
 - 400/day, 16/hr



**75%
reduction**

Measles in USA

- **1963**
 - 549,000 cases in US
 - 48,000 hospitalized
 - 495 deaths in US
 - 1000 disability (encephalitis)



In 2000
measles was
eliminated in
US

Measles

- Three C's
- Cough, Coryza, Conjunctivitis
- Fever upto 105 F
- Incubation 7-21 days
- Rash 14 days after exposure
- Contagious 4 days before to 4 days after the rash
- No rash in Immunocompromised

Measles Cases and Outbreaks

During 2014*

644

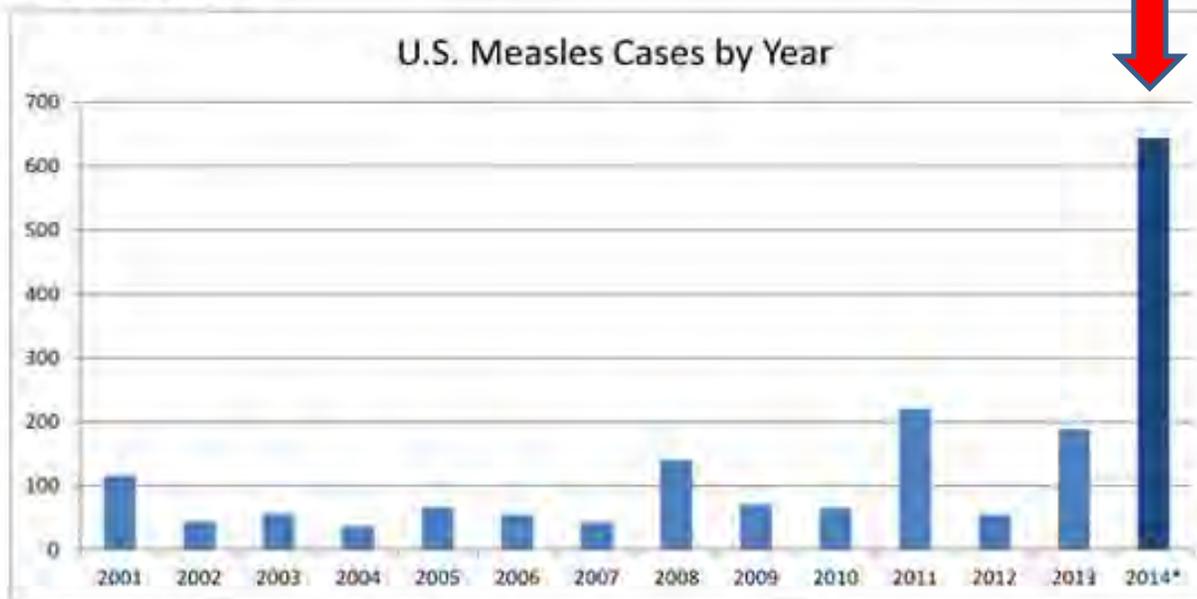
Cases

23

Outbreaks

reported in 27 states: Alabama, California, Colorado, Connecticut, Hawaii, Illinois, Indiana, Kansas, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, Wisconsin

representing 89% of reported cases this year



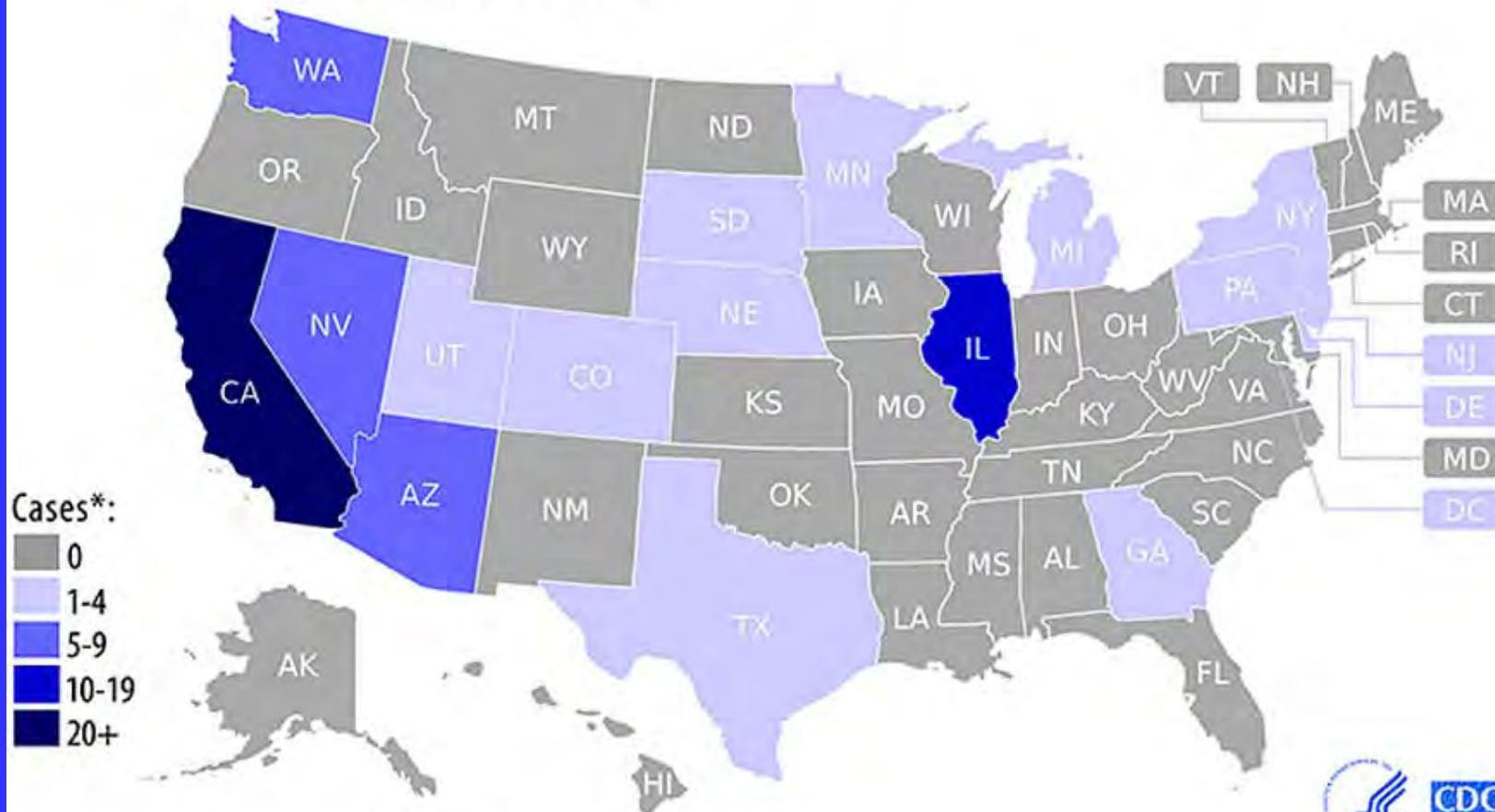
*Provisional data reported to CDC's National Center for Immunization and Respiratory Diseases



Jan 1 to Mar
20th 2015
178 cases
4 outbreaks
In 17 states

2015 Measles Cases in the U.S.

January 1 to March 13, 2015



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

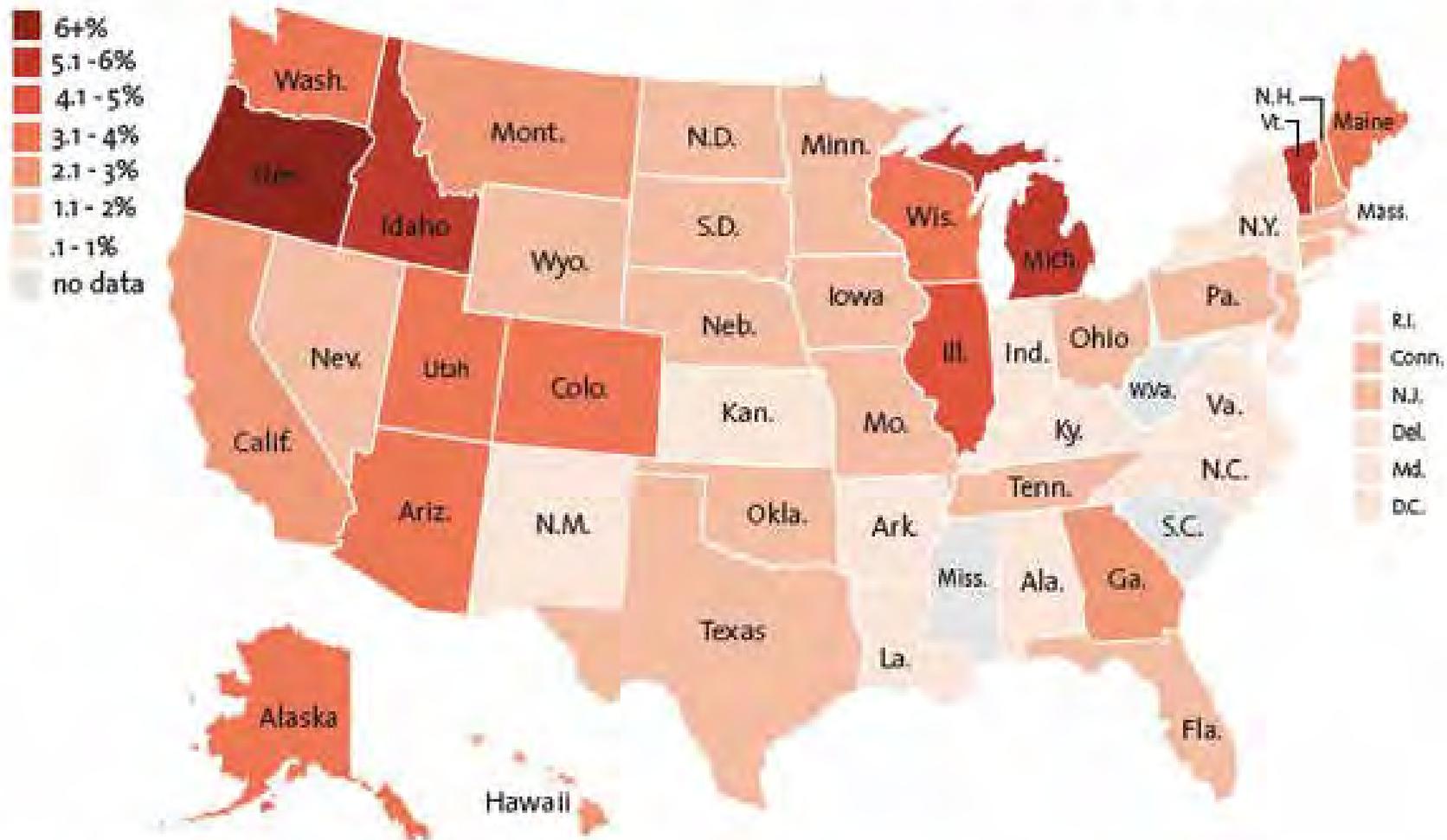


† CDC will update these data weekly on Mondays.

The United States experienced a record number of measles cases during 2014, with 644 cases from 27 states reported to CDC's National Center for Immunization and Respiratory Diseases (NCIRD). This is the greatest number of cases since [measles elimination](#) was documented in the U.S. in 2000.

Rate of Nonmedical Vaccine Exemptions By State

Percentage of kindergartners with nonmedical exemptions, 2012-13 school year



Note: Children with exemptions may still be vaccinated.

Source: Centers for Disease Control

Measles vaccination

- 2 doses
 - 12-15 months
 - 4-5 years
 - **28** days interval
- HCP documented immunity
- **Contraindication**
 - Pregnant, severe reaction, blood transfusion, low immunity (low platelets, HIV, cancer, immuno suppressants)



Vaccination Rates And The Spread Of Measles

If the local
vaccination rate is
75-86%

One Sick Child



--- INFECTS --->

3 Others



66-81%



--- INFECTS --->



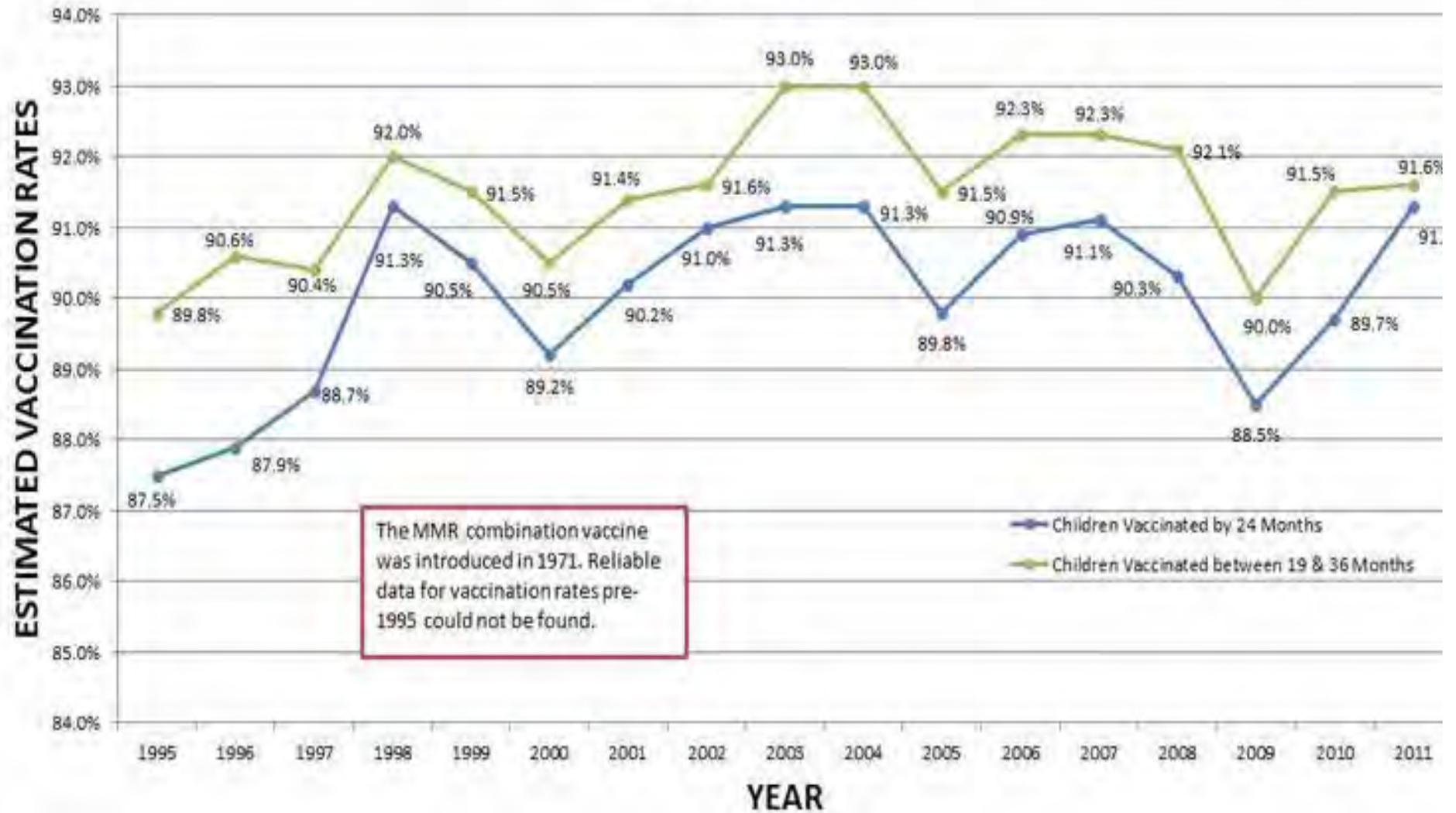
50-71%



--- INFECTS --->



MMR Combination Vaccine: Estimated Vaccination Rates for Children under 3 Years Old 1995-2011



CDC data

Standing orders for measles

Standing Orders for Administering Measles, Mumps & Rubella Vaccine to Children & Teens

Purpose: To reduce morbidity and mortality from measles, mumps, and rubella by vaccinating all children and teens who meet the criteria established by the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices.

Policy: Under these standing orders, eligible nurses and other healthcare professionals (e.g., pharmacists) where allowed by state law, may vaccinate children and teens who meet any of the criteria below.

Procedure

1. Identify children and teens ages 12 months and older in need of vaccination against measles, mumps, and rubella.
2. Screen all patients for contraindications and precautions to measles, mumps, and rubella (MMR) vaccine:
 - a. **Contraindications:**
 - a history of a serious reaction (e.g., anaphylaxis) after a previous dose of MMR vaccine or to an MMR vaccine component. For information on vaccine components, refer to the manufacturer's package insert (www.immunize.org/package-inserts) or go to www.cdc.gov/vaccines/pubs/qa/book/downloads/appendices/B/exceptions-table-2.pdf.
 - pregnant now or may become pregnant within 1 month
 - known severe immunodeficiency (e.g., hematologic and solid tumor congenital immunodeficiency; prolonged [14 days or longer] high-dose steroid therapy; severely immunocompromised from HIV infection)
 - b. **Precautions:**
 - recent receipt (within the previous 11 months) of antibody-containing blood product (specific interval depends on product)
 - history of thrombocytopenia or thrombocytopenic purpura
 - moderate or severe acute illness with or without fever
3. Provide all patients (or, in the case of a minor, their parent/legal representative) with a copy of the most current federal Vaccine Information Statement (VIS). You must document, in the patient's medical record or office log, the publication date of the VIS and the date it was given to the patient (parent/legal representative). Provide non-English speaking patients with a copy of the VIS in their native language; if available and preferred, these can be found at www.immunize.org/vis.
4. Provide routine vaccination with MMR vaccine at age 12-15 months and at 4-6 years. Administer 0.5 mL MMR vaccine subcutaneously (25-25g, ½" needle) in the posterolateral fat of the upper arm.
5. For children and teens who have not received MMR vaccine at the ages specified above in #4, give one dose at the earliest opportunity and then schedule a second dose, if needed, by observing a minimum interval of 4 weeks between doses.
6. Document each patient's vaccine administration information and follow up in the following places:
 - a. **Medical chart:** Record the date the vaccine was administered, the manufacturer and lot number, the vaccination site and route, and the name and title of the person administering the vaccine. If vaccine was not given, record the reason(s) for non-receipt of the vaccine (e.g., medical contraindication, patient refusal).
 - b. **Personal immunization record card:** Record the date of vaccination and the name/location of the administering clinic.
7. Be prepared for management of a medical emergency related to the administration of vaccine by having a written emergency medical protocol available, as well as equipment and medications. To prevent syncope in older children, vaccinate patients while they are seated or lying down and consider observing them for 15 minutes after receipt of the vaccine.
8. Report all adverse reactions to MMR vaccine to the Federal Vaccine Adverse Event Reporting System (VAERS) at www.vaers.hhs.gov or by calling (800) 822-7967. VAERS report forms are available at www.vaers.hhs.gov.

This policy and procedure shall remain in effect for all patients of the _____ until rescinded or until _____ (date).

Medical Director's signature: _____ Effective date: _____

For standing orders for other vaccines, go to www.immunize.org/standing-orders

Technical assistance provided by the Centers for Disease Control and Prevention

IMMUNIZATION ACTION COALITION • 1573 Solby Avenue • St. Paul, MN 55104 • 651-647-9000 • www.immunize.org • www.vaccineinformation.org

TEEN VACCINES

- 1 Tdap
- 2 Meningococcal
- 3 HPV

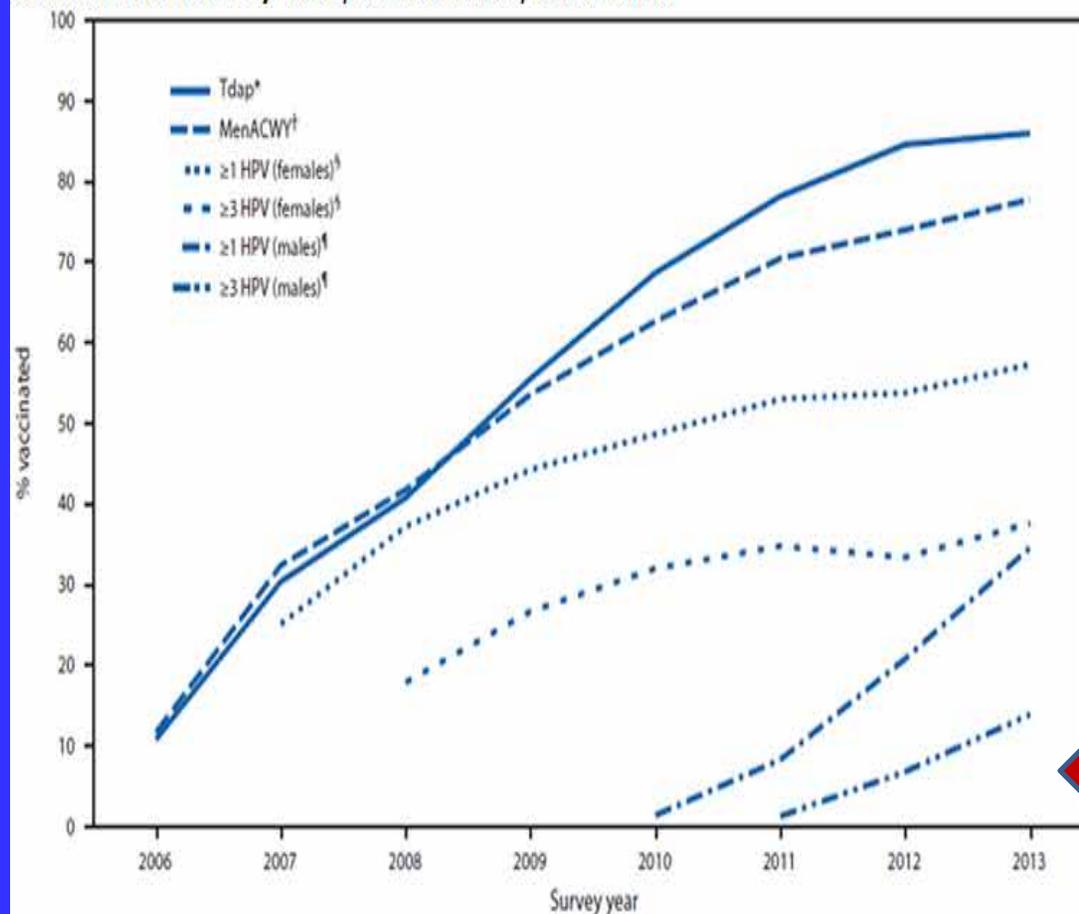
Teen vaccine

Vaccine	Do you need it?
Chickenpox (varicella; Var)	If you haven't been vaccinated and haven't had chickenpox, you need 2 doses of this vaccine. Anybody who was vaccinated with only 1 dose should get a second dose.
Hepatitis A (HepA)	You need 2 doses of hepatitis A vaccine if you would like to be protected from this disease or if you have a risk factor for hepatitis A. Check with your healthcare provider to find out if you need this vaccine.
Hepatitis B (HepB)	This vaccine is recommended for all people age 0–18 years. You need a series of doses of hepatitis B vaccine if you have not already received them.
Human papillomavirus (HPV)	All preteens and teens age 11 and older need 3 doses of HPV vaccine. The vaccine protects against HPV, the most common cause of cervical cancer. It also protects against some other types of cancers, such as cancer of the anus and penis.
Influenza (Flu)	Everyone age 6 months and older needs influenza vaccination every fall or winter and for the rest of their lives.
Measles, mumps, rubella (MMR)	You need 2 doses of MMR vaccine if you have not already received them. MMR vaccine is usually given in childhood.
Meningococcal (MCV4)	All preteens and teens age 11–18 years need 2 doses of MCV4. If you are a first-year college student living in a residence hall, you need a dose of MCV4 if you have never received it or received it when you were younger than 16. Check with your healthcare provider.
Pneumococcal (PCV13, PPSV23)	Do you have a chronic health problem? If so, check with your healthcare provider to find out if you need the pneumococcal vaccine.
Polio (IPV)	You need a series of at least 3 doses of polio vaccine if you have not already received them. Polio vaccine is usually given in childhood.
Tetanus, diphtheria, and whooping cough (pertussis; Tdap)	All preteens and teens (and adults!) need a dose of Tdap vaccine, a vaccine that protects you from tetanus, diphtheria, and whooping cough (pertussis). After getting a dose of Tdap, you will need a tetanus-diphtheria (Td) shot every ten years. If you become pregnant, however, you will need another dose of Tdap during the pregnancy, preferably during the third trimester.

If you will be traveling outside the United States, additional vaccines may be needed. For information, consult your healthcare provider, a travel clinic, or the Centers for Disease Control and Prevention at www.cdc.gov/travel.

Teen rate of vaccination

FIGURE. Estimated vaccination coverage with selected vaccines and doses among adolescents aged 13-17 years, by survey year – National Immunization Survey-Teen, United States, 2006-2013



Low for series completion

Nebraska Teen meningococcal Vaccination rate

Urban	80-81%
Rural	71%
White	79%
Latino	64%

Global Serogroup Distribution



Meningococcal disease in USA by Serogroups 2002-2011

B	402
C	305
Y	365
Others	76
Total	1146

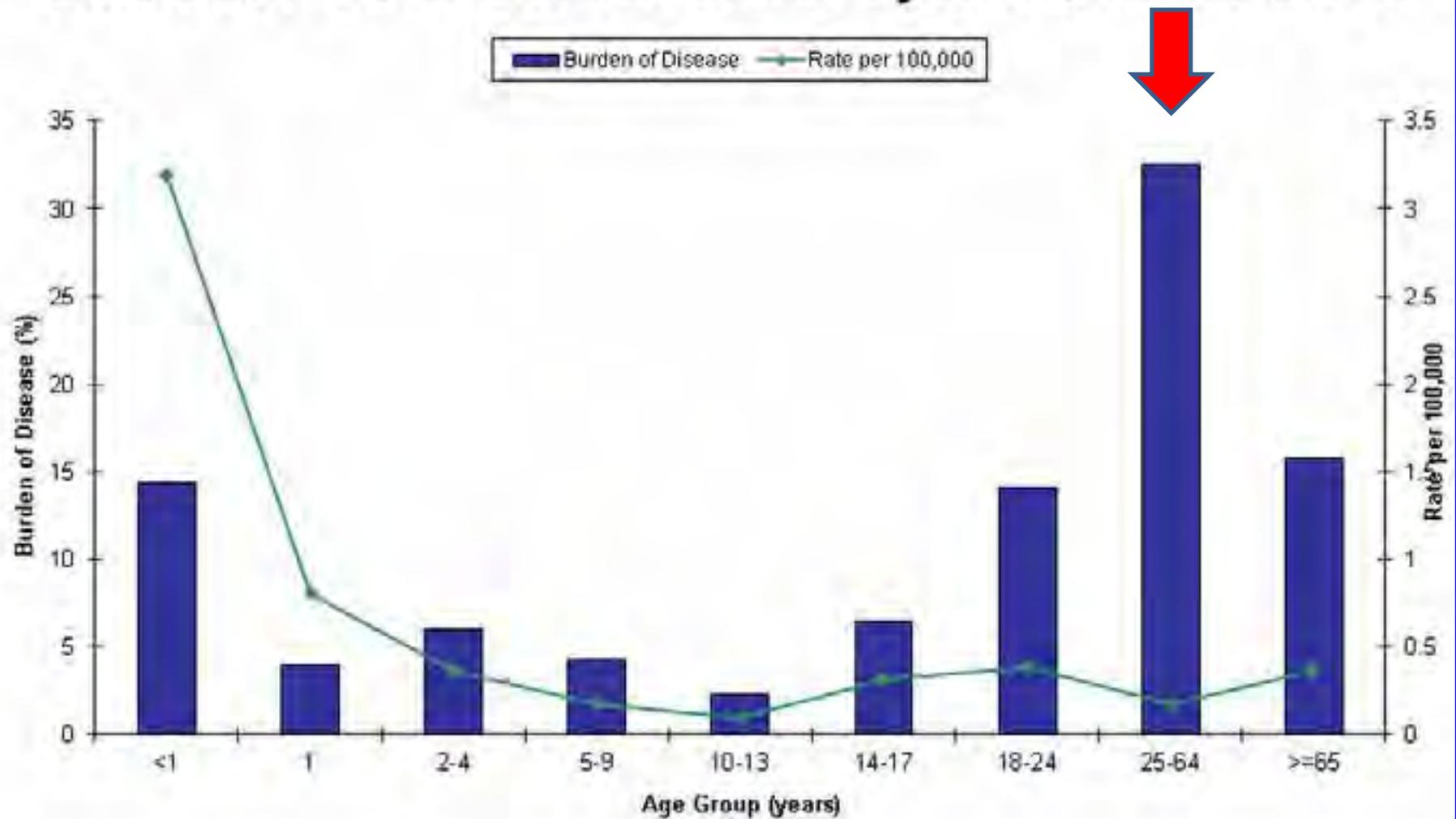
Meningococcal

- *N.meningitidis*
 - 50% meningitis
 - 37.5% bacteremia
- → fatality 10-15%
 - → 11-19% sequel loss of limbs, hearing loss etc
- Serogroups C,Y,W cause 70% of the disease
 - ACIP recommended vaccine available
- Serogroup B vaccine new and FDA approved
 - awaiting ACIP recommendation
 - 10-25 years

Meningococcal vaccine

- Vaccine immunity wanes after 1 dose
- Booster dose 16- 18 years
- 850,000 doses no Guillain-Barre syndrome
- H/O of GBS is contraindication for vaccine
- Vaccine mandated in schools in 22 states
- MenB vaccines FDA approved 10-25 years
 - 3 dose series Trumenba
 - 2 dose Bexsero

Rates of Meningococcal Disease by Age Group and Burden of Disease, United States, Active Bacterial Core Surveillance System, 2003-2012



For more information visit: <http://www.cdc.gov/abcs/index.html>

BOX 2. Meningococcal vaccination recommendations – Advisory Committee on Immunization Practices, 2013

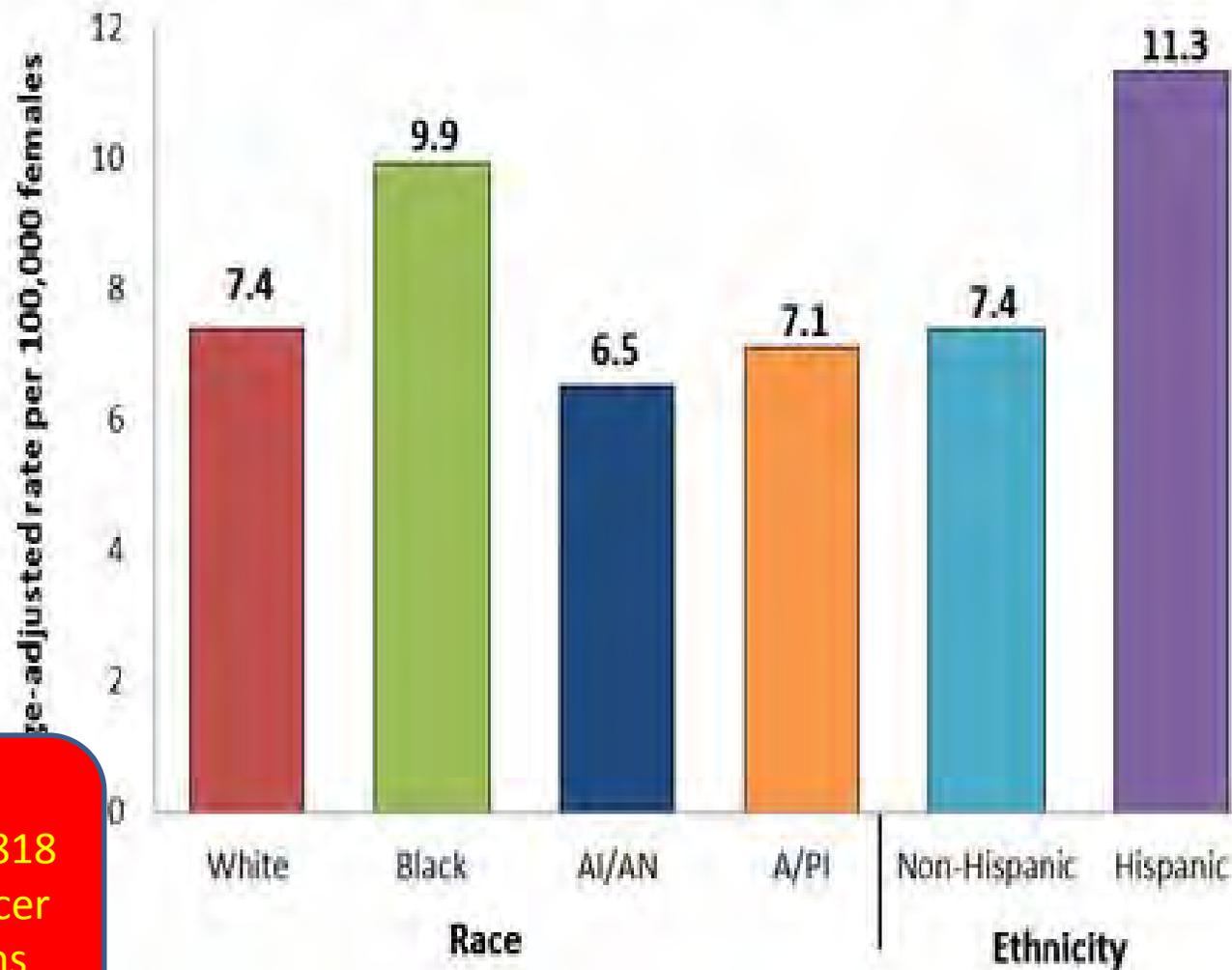
ACIP recommends meningococcal vaccination for the following groups:

- Routine vaccination of adolescents aged 11 through 18 years (a single dose of vaccine should be administered at age 11 or 12 years, with a booster dose at age 16 years for persons who receive the first dose before age 16 years)
- Routine vaccination of persons aged ≥ 2 months at increased risk for meningococcal disease, including:
 - Persons aged ≥ 2 months with certain medical conditions such as anatomical or functional asplenia or complement component deficiency (dosing schedule and interval for booster dose varies by age at time of previous vaccination).
 - Special populations such as unvaccinated or incompletely vaccinated first-year college students living in residence halls, military recruits, or microbiologists with occupational exposure (indication for booster dose 5 years after prior dose if at continued risk).
 - Persons aged ≥ 9 months who travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic, particularly if contact with the local population will be prolonged.
- Vaccination of persons in at-risk groups (see Appendix B) to control outbreaks.

Human Papilloma Virus Vaccine-HPV

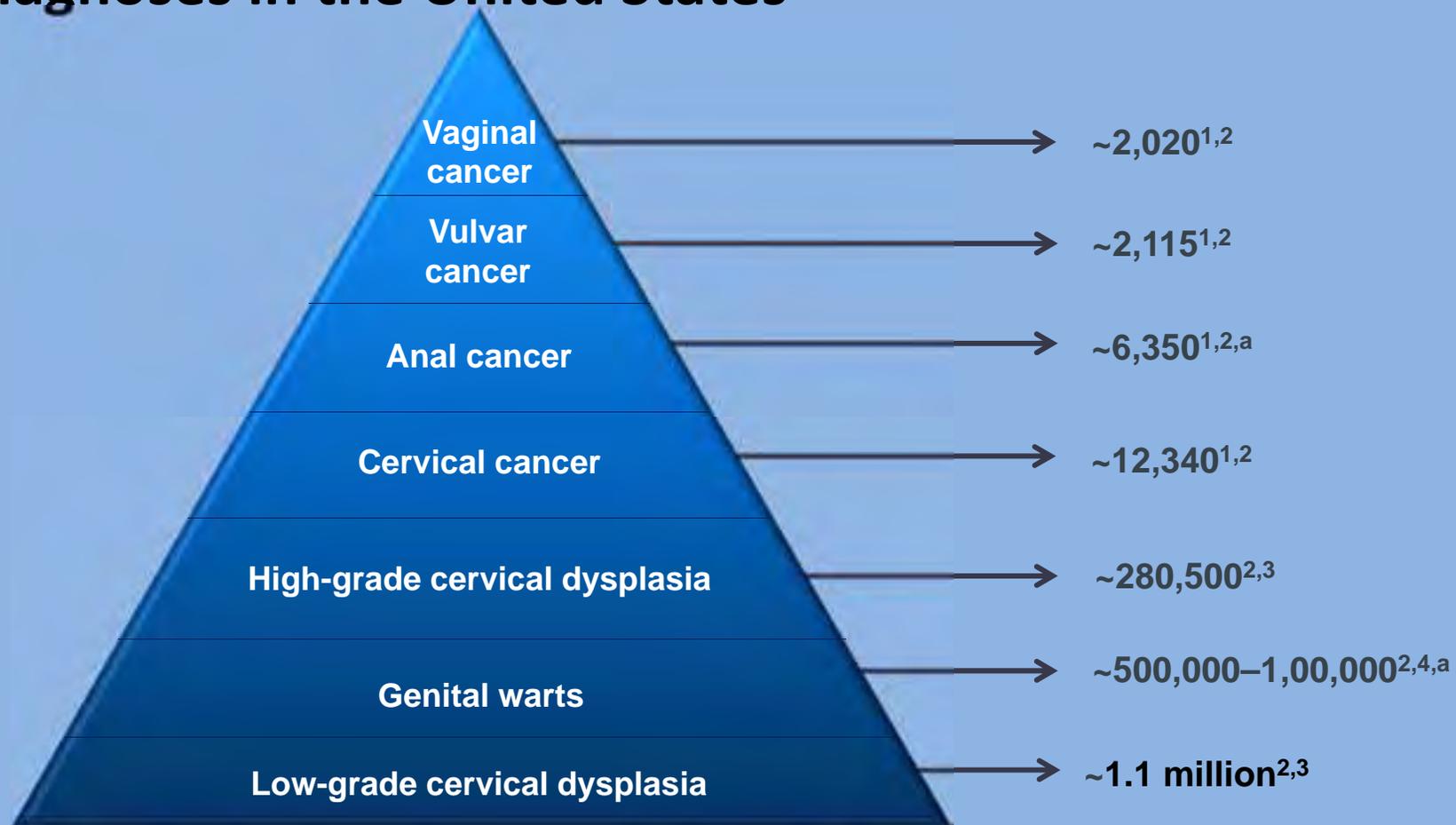
- Cervical cancer is the second most common cancer in women
- HPV 16 and 18 cause
 - 70% of cervical cancer
 - 62% of oropharyngeal cancer
- HPV 6 and 11 cause 85-90% of genital warts.

HPV-Associated Cervical Cancer Rates by Race and Ethnicity, United States, 2004–2008



Us 2010 11,818 cervical cancer 3939 deaths

Estimated Annual Burden of HPV-Related Diagnoses in the United States

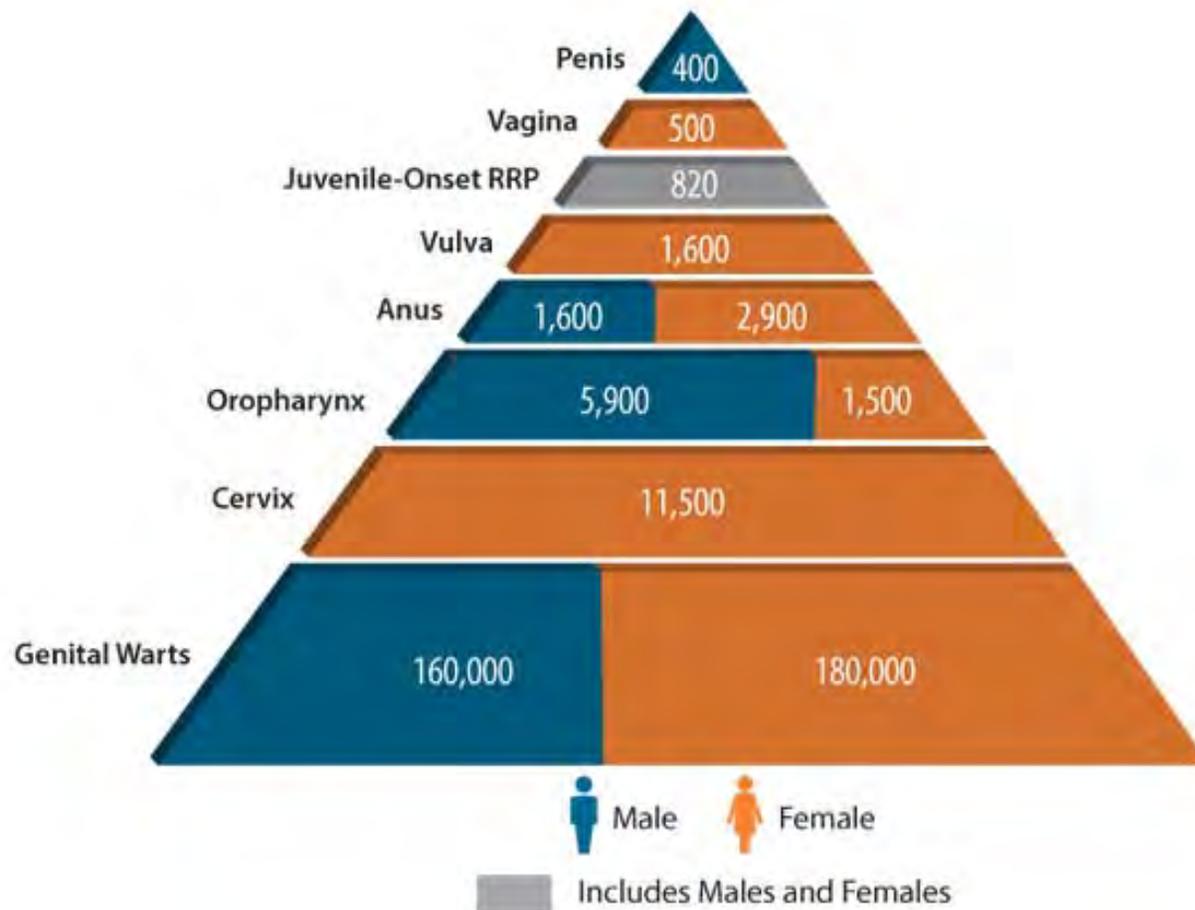


Case counts for HPV-related diagnoses relate to approximately 40 HPV types, not just HPV 6, 11, 16, and 18.

^aIncludes cases in both men and women.

HPV=human papillomavirus.

1. American Cancer Society (ACS) Cancer Facts & Figures 2013. cancer.org/acs/groups/content/@epidemiologysurveillance/documents/document/acspc-036845.pdf. Accessed September 18, 2013. 2. Forman D et al. *Vaccine*. 2012;30S:F12–F23. 3. Schiffman M et al. *Arch Pathol Lab Med*. 2003;127:946–949. 4. Fleischer AB et al. *Sex Transm Dis*. 2001;28:643–647.

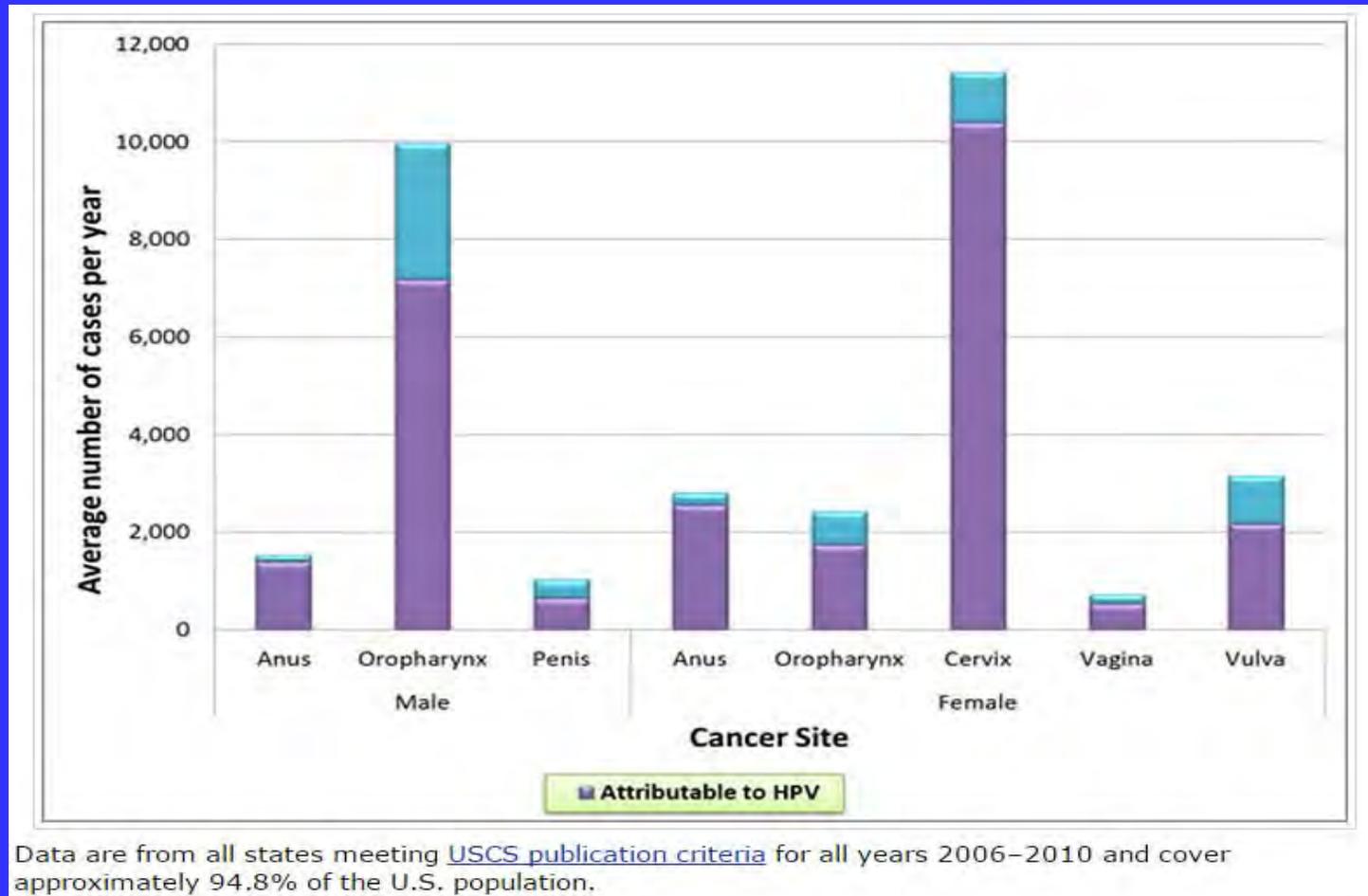


Average number of cancers and genital warts per year attributed to HPV infections, United States.

CDC. Human papillomavirus (HPV)-associated cancers. CDC Web site.

<http://www.cdc.gov/cancer/hpv/statistics/cases.htm>. Published 2014. Accessed June 22, 2014

HPV attributable cancer cases



ACIP Recommendations for HPV Vaccination:

ACIP outlines an age-based (vs. risk-based) vaccination policy^{1,2}

Males: qHPV Vaccination¹

Routine: 11 or 12 year olds

Catch up: 13–21 year olds

Special populations:

22–26 year olds^a

Females: HPV Vaccination²

Routine: 11 or 12 year olds

Catch up: 13–26 year olds

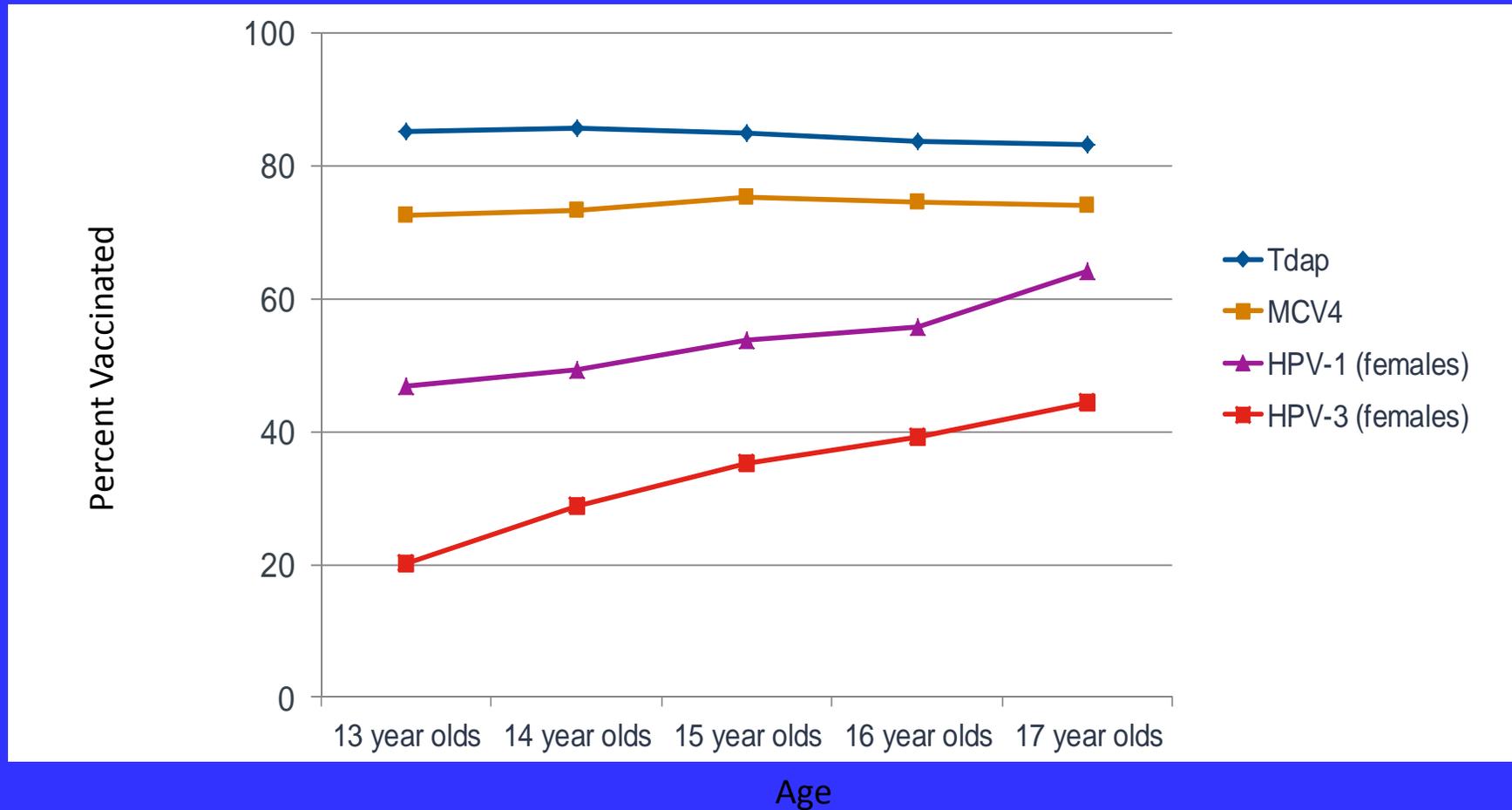
- Males and females: 9- and 10-year-olds can be vaccinated^{1,2}

ACIP = Advisory Committee on Immunization Practices; qHPV = quadrivalent HPV

^aSee the ACIP Recommendations for further information about Special Populations

¹ Centers for Disease Control and Prevention (CDC). *Morb Mortal Wkly Rep.* 2011;60(S0):1705–1708. ² Centers for Disease Control and Prevention (CDC). *Morb Mortal Wkly Rep.* 2007;56(RR-2):1–24.

Estimated Vaccine Coverage for Adolescent by Age (NIS-Teen 2012)¹

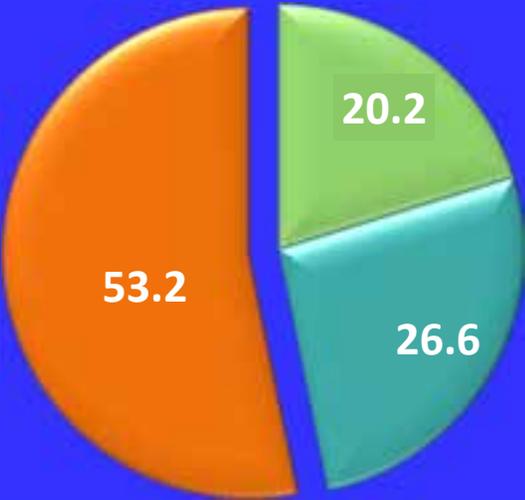


HPV=human papillomavirus; NIS=National Immunization Survey; HPV-1=1 or more doses of HPV vaccine; HPV-3=3 doses of HPV vaccine; MCV4=meningococcal conjugate vaccine (1 dose); Tdap=tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (1 or more doses).

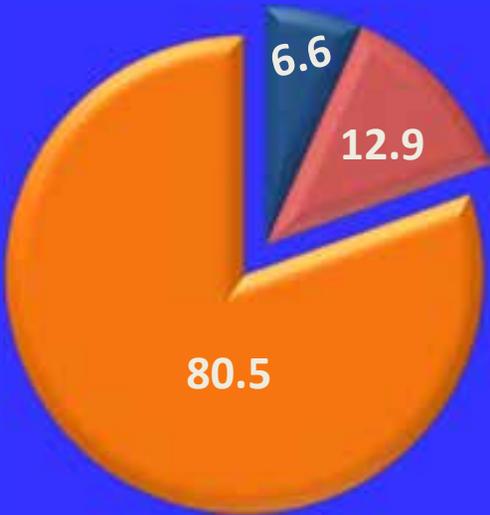
1. Centers for Disease Control and Prevention (CDC). *MMWR Morb Mortal Wkly Rep.* 2013;62(34): 686–693. 67

Based on NIS Survey, the majority of 13 year olds have not been vaccinated with HPV Vaccine

**Age 13 HPV Vaccination Status
2012 (Females) ^{2a}
(N=9058)**



**Age 13 HPV Vaccination Status
2012 (Males) ^{2a}
(N=10,141)**



- % Fully Vaccinated (3 doses)
- % Partially Vaccinated (1 or 2 doses)
- % Unvaccinated

- % Fully Vaccinated (3 doses)
- % Partially Vaccinated (1 or 2 doses)
- % Unvaccinated

^aPercent Estimates Based on National Immunization Survey (NIS) data. Teen NIS identifies individuals 13-17 years of age in the 50 states and District of Columbia using a random-digit-dialed sample.

1. Level, A. *JNCJ* 2013;105:469-474. 2. Centers for Disease Control and Prevention (CDC). *MMWR Morb Mortal Wkly Rep*. 2013;62(34): 685-693.

Estimated vaccination coverage with selected vaccines and doses* among adolescents aged 13–17 years,† by state/area — National Immunization

Survey–Teen (NIS-Teen), United States, 2012

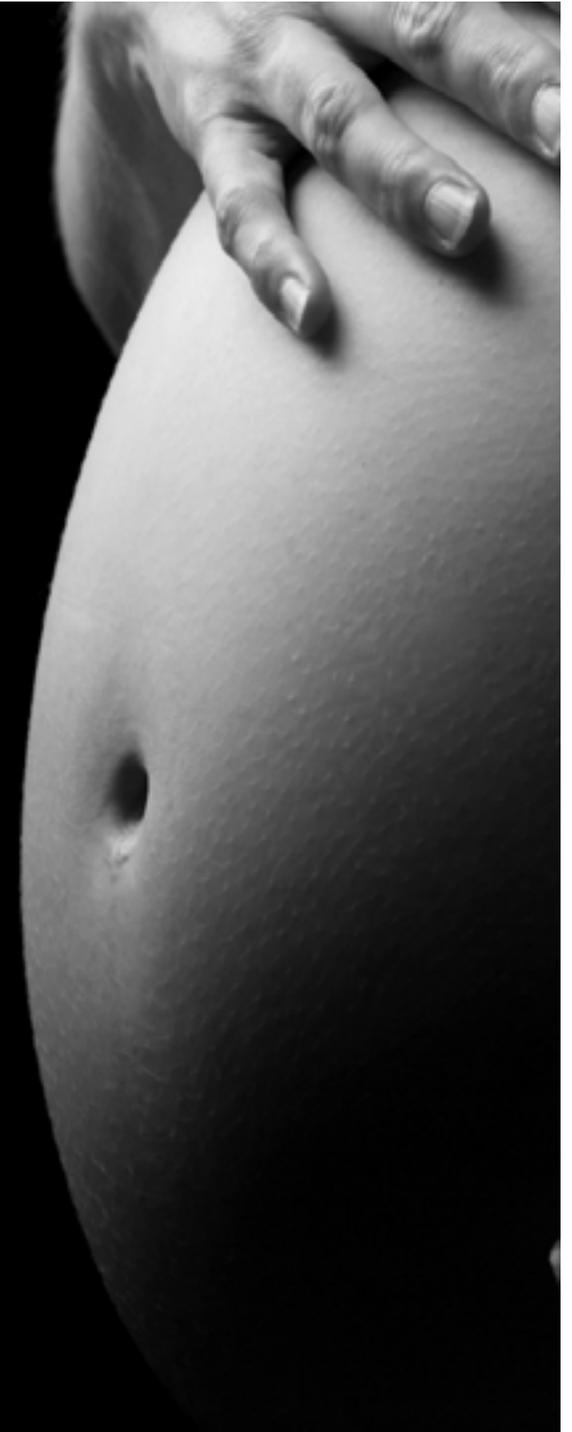
Nebraska

			Female			Male		
VAR	Tdap	MenA CWY	HPV	HPV	HPV	HPV	HPV	HPV
≥ 2	≥ 1	≥1	≥1	≥2	≥3	≥1	≥2	≥3
82.2	81.4	75.5	67.5	58.3	37.3	19.6	11.6	7.0

HPV vaccine

- Quadrivalent and bivalent cover types 16 & 18 cancer causing types (70 % of cervical cancer)
- HPV 4 covers 90% of wart types
- HPV 9 added 5 more (31,33,45,52 and 58)
 - Covers additional 15-20% cervical cancers and additional 5-20% other cancers
 - Efficacy 96.7%
 - FDA approved 2015
 - 3 dose 11-13 years

Pregnancy



Pregnancy

Routine	Tdap, Influenza
No	MMR, Varicella, Zostavax
High risk asplenia etc	Pneumococcal meningococcal
Other	Hep A, Hep B
Travel vaccines	Check travel advice

Pregnancy

- The flu shot is recommended during pregnancy by
 - Advisory Committee on Immunization Practices
 - American College of Obstetricians and Gynecologists.
- Over the years, millions of pregnant women have received a influenza vaccines
 - Safe for pregnant women and their babies.

Pregnancy

- Influenza vaccination rate improves if offered by the clinician
- It is safe and protects mother and infant
- Influenza vaccine coverage

Year	Coverage %
2010-11	44.0
2011-12	46.4
2012-13	50.5
2013-14	52.2

Pregnancy and pertussis

The best time to get the shot is your 27th through 36th week of pregnancy.

- 40% of infants get it from mothers
- Vaccinate 2 weeks before the arrival of infant
- “Cocoon” by vaccinating all care givers



Adult vaccination

Adult pneumococcal vaccine

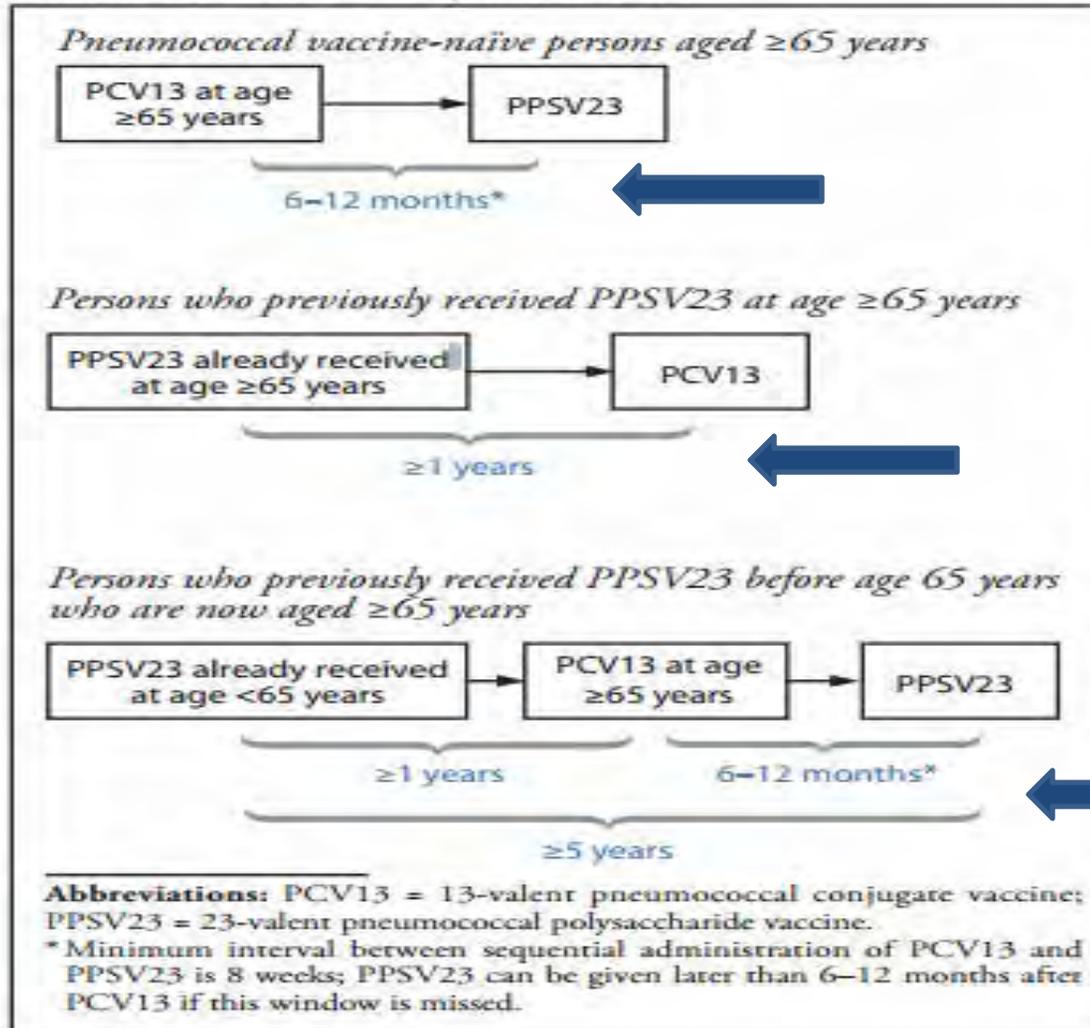
- In 2013 **13,500 cases of invasive pneumococcal dz > 65 years of age**
- 20-25% of IPD and 10% of Community acquired pneumonia due to PCV 13 serotypes

Pneumococcal vaccines

- 6-18 years with immune deficiency and high risk factors
- **Single dose of Prevnar 13**
- **PPS 23 -----5 years after first dose**

ACIP recommendation 2014

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



or by mail. Additional information about VAERS is available by telephone (1-800-822-7967) or online (<http://vaers.hhs.gov>).

Table 1. Adults Who Need PPSV23 Vaccination^[6]

- All adults aged 65 years or older
 - Adults younger than 65 years with:
 - Chronic lung disease (including chronic obstructive pulmonary disease, emphysema, and asthma)
 - Chronic cardiovascular diseases
 - Diabetes mellitus
 - Chronic renal failure, the nephrotic syndrome
 - Chronic liver disease (including cirrhosis), alcoholism
 - Cochlear implants, cerebrospinal fluid leaks
 - Immunocompromising conditions (including HIV)
 - Functional/anatomical asplenia (including sickle cell disease and other hemoglobinopathies)
 - Residents of nursing homes or long-term care facilities
 - Smokers
- When indicated, if uncertain of vaccination status, vaccinate

Table 2. Adults Who Need PPSV23 Revaccination^[6]

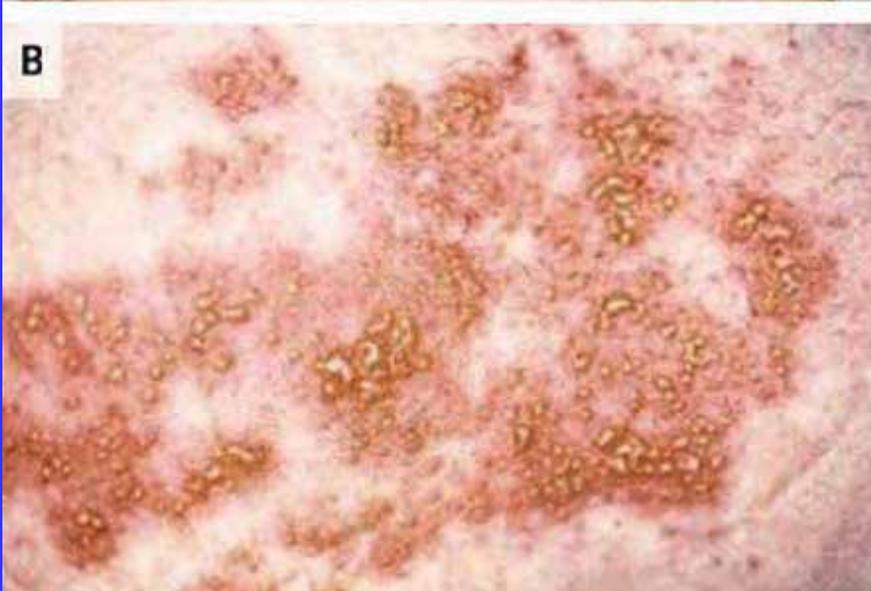


All immunocompromised adults need one-time PPSV23 revaccination.

- For patients younger than 65 years:
 - One-time PPSV23 revaccination after 5 years for high risk:
 - Chronic renal failure, the nephrotic syndrome
 - Sickle cell disease
 - Splenectomy
 - Immunocompromised patients
- When previously vaccinated patients reach 65 years of age:
 - One-time PPSV23 revaccination, if more than 5 years have passed since the last vaccination and the patient was younger than 65 years at time of primary vaccination.



Herpes zoster



Zostavax

- Zoster can cause
 - Post herpetic neuralgia
 - Hospitalization
 - Non-pain related complications
- FDA approved Herpes zoster vaccines for 50 years and above
- ACIP recommendation ≥ 60 years
- 70% efficacy in prevention
- Immunity may last 5 years

Health care provider

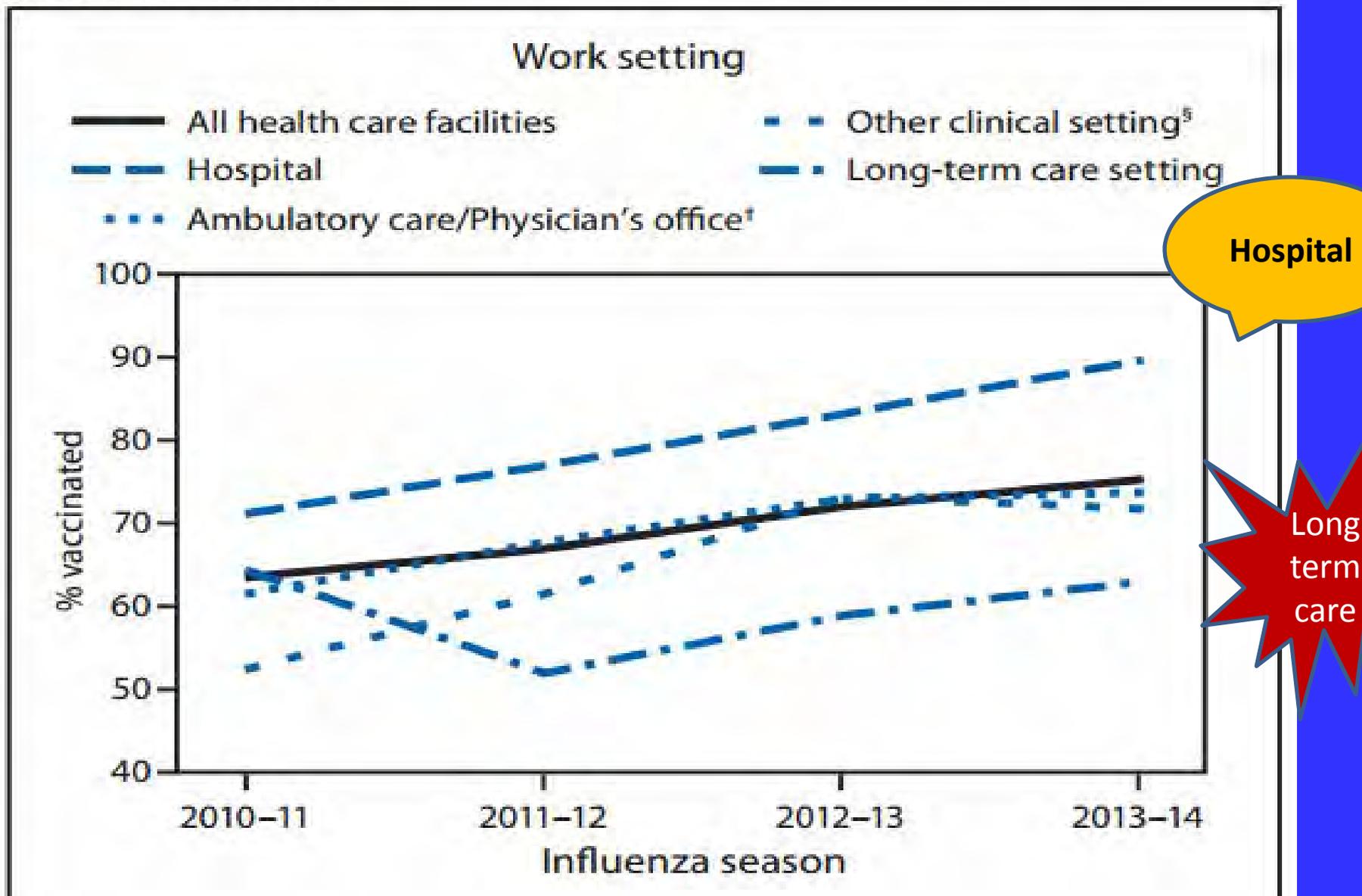
How are we doing
with HCP
vaccination?????



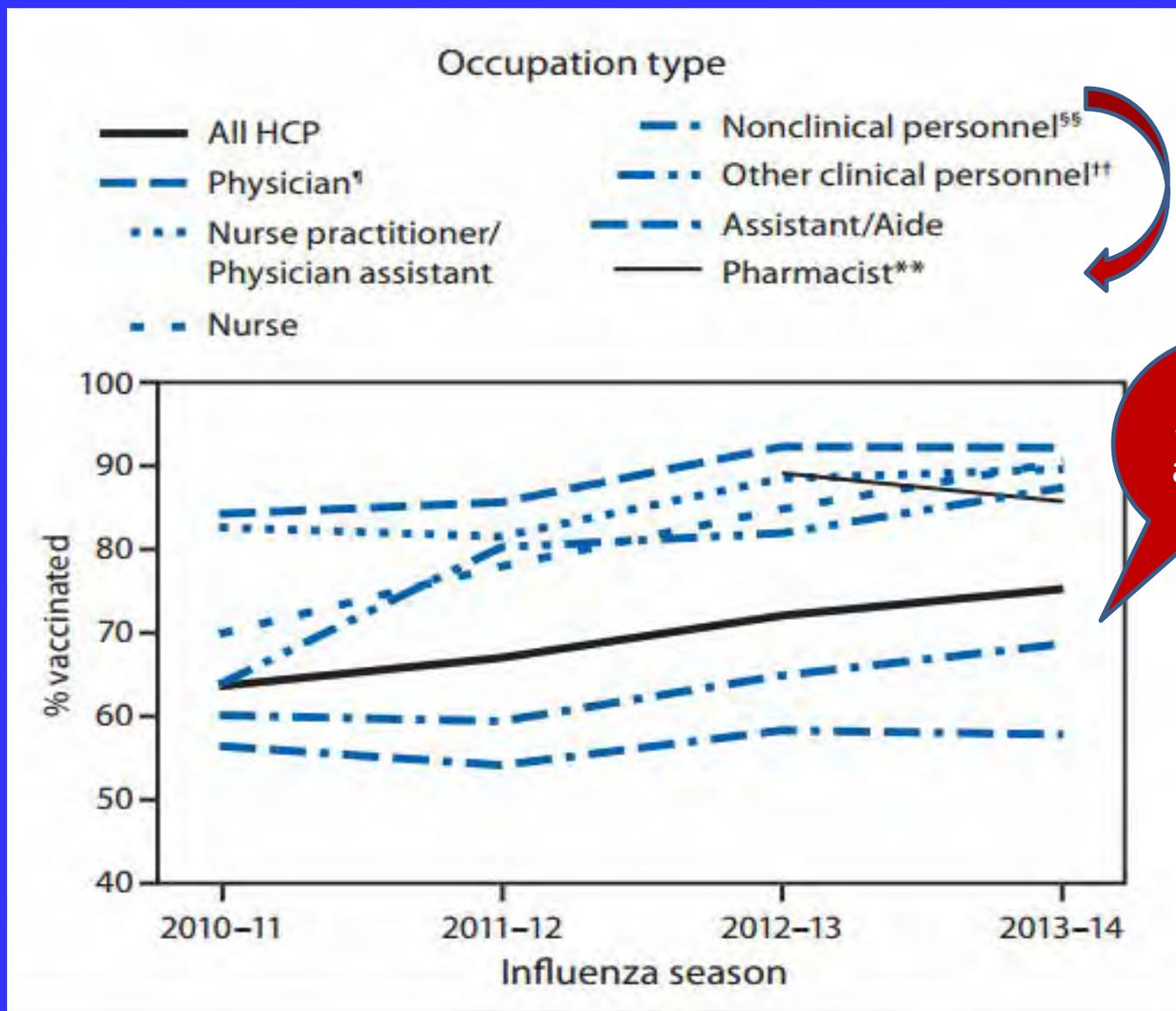
HCP Recommendations

Vaccines	Comments
HBV	3 doses, Ab test 1-2 months later if exposure risk. If titer <10 redose x 3
Influenza	If not pregnant LAIV (if <49 years) , annual, IIV if caring for IC pts.
MMR	Documented immunity or 2 doses 28 days apart Born before 1957- 2 doses (measles, mumps out break)vs 1 dose (rubella outbreak)
Varicella	Documented dz or 2 doses 28 days apart
Tdap	1 dose Tdap to all, with each pregnancy. Td thereafter q 10 years
Meningococcal	Microbiologist MCV 4 and q 5 years if risk+

FIGURE. Percentage of health-care personnel (HCP)* who received influenza vaccination, by work setting and occupation type — Internet panel survey, United States, 2010–11 through 2013–14 influenza seasons



HCP



Area to
address



How to
Increase
immunization
rate!!

The starting point for improvement is to recognize the need. — *Masaaki Imai*

MISSED OPPORTUNITIES TO VACCINATE



What are “Missed Opportunities”

- A *missed opportunity* is a health care encounter in which a child is eligible to receive a vaccination but is not vaccinated.¹

- 
1. Lower rate
 2. Vulnerable
 3. Spread the dz

¹Szilagyi, PG & Rodewald, LE. 1996. Missed Opportunities for Immunizations: A Review of the Evidence. *Journal of Health Management Practice*.

Why do Missed Opportunities Occur?

- Provider does not know the patient is **due/eligible** for an immunization
- Provider's or practice's **policy** does not lead to vaccination
- Provider does not follow only **true** contraindications
- Vaccination records for patients should be recorded on a standard form in an easily **accessible** location in the medical record to facilitate rapid review of vaccination status.

Review every chart at every visit

- **Assign** someone to screen the vaccine record
- **Flag** the chart for immunization
- Vaccine **champion** in clinic



Provider to follow only true contraindications

- CDC pink book or the AAP red Book.
- For an example of a screening questionnaire for contraindications –

www.immunize.org/handouts/screening-vaccines.asp

Suggested ways to help improve

- Maximize **opportunities** to immunize
- Provide **convenient** office hours
- Revise office **scheduling**
- Use **standing** orders
- Educate office staff regarding **contraindications**
- Review office policy on parental **consent**
- Use an **IIS**
- Develop and maintain appropriate **medical record** keeping practices

Take home message

- Increase immunization rate
- Avoid missed opportunities
- Vaccinate
 - Kids
 - Teens
 - Pregnant
 - Adults
 - Travelers
- Complete the series
- Reminder recall



For More Information

- AAP
www.aap.org/immunization
- CDC
www.cdc.gov/vaccines
- National Network for Immunization Information
www.nnii.org
- Vaccinate Your Baby
www.vaccinateyourbaby.org
- Parents of Kids with Infectious Diseases
www.pkids.org

- Do you have any questions about any vaccines?



Immunization Action Coalition

Google Site Search Search

Handouts for Patients & Staff

Clinic Resources

Vaccine Information Statements

Diseases & Vaccines

Talking about Vaccines

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Experts from the CDC Answer Questions About Vaccines

VACCINE INDEX

TOPIC INDEX

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Find answers to hundreds of challenging and timely questions about vaccines and their administration.

- | | | |
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“

The greatest glory in living
lies not in never falling,
but in rising every time we fall.

”

~ Nelson Rolihlahla Mandela

