

Vaccines for Life:
2011 Updates
for
Adult Immunizations

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Overview

- Adult Immunization Schedule
- Influenza
- PPSV vaccine
- Tdap vaccines
- Zoster vaccine
- Q and A

2011 Updates for Adult Immunizations

ADULT SCHEDULE
WHAT'S NEW?

Adult Immunization Schedules

Published annually since 2002

- Collaborative effort of the ACIP, the American Academy of Family Physicians, the American College of Obstetricians and Gynecologists, and the American College of Physicians

Officially endorsed by each organization

Changes in the 2011 Adult Immunization Schedule

- *Universal influenza vaccination*
- Re-ordered list of vaccines to keep all universally-recommended vaccines together
- Restarting vaccination series
- *Revaccination with PPSV*
- Meningococcal conjugate 2-dose series
- *Permissive use of Tdap vaccine in adults 65 years of age and older and removal of minimal interval*

Changes in the Adult Schedule Since Last Version

In October 2010, the ACIP approved the Adult Immunization Schedule for 2011, which includes several changes.

These changes were published in Morbidity and Mortality Weekly Report (*MMWR*) on February 4, 2011, as Recommended Adult Immunization Schedule -- United States, 2011.

Influenza Vaccination Footnote #1

- The influenza vaccination footnote (#1) is revised and shortened to reflect a recommendation for vaccination of all persons aged 6 months and older, including all adults.
- The high-dose influenza vaccine (Fluzone), licensed in 2010 for adults aged 65 years and older, is mentioned as an option for this age group.

Td/Tdap Vaccination Footnote #2

- The Td/Tdap vaccination footnote (#2) has language added to indicate that persons aged 65 years and older who have close contact with an infant aged less than 12 months **should** get vaccinated with Tdap; the additional language notes that all persons aged 65 years and older **may** get vaccinated with Tdap. Also added is the recommendation to administer Tdap regardless of interval since the most recent Td-containing vaccine.

HPV Vaccination Footnote #4

- The HPV vaccination footnote (#4) has language added to the introductory sentences to indicate that either quadrivalent vaccine or bivalent vaccine is recommended for females.

MMR Vaccination Footnote #6

- The MMR vaccination footnote (#6) has been revised mainly by consolidating common language that previously had been part of each of the three vaccine component sections into one introductory statement.

PPSV Revaccination Footnote #8

- The revaccination with PPSV footnote (#8) clarifies that one-time revaccination after 5 years only applies to persons with indicated chronic conditions who are aged 19 through 64 years.

Meningococcal Footnote #9

- The meningococcal vaccination footnote (#9) has language added to indicate that a 2-dose series of meningococcal conjugate vaccine is recommended for adults with anatomic or functional asplenia, or persistent complement component deficiencies, as well as adults with human immunodeficiency (HIV) virus infection who are vaccinated.
- Language has been added that a single dose of meningococcal vaccine is still recommended for those with other indications.
- Also, language has been added to clarify that quadrivalent meningococcal conjugate vaccine (MCV4) is a quadrivalent vaccine.

HIB Footnote #12

- The language for the selected conditions for the Hib footnote (#12) has been shortened to clarify which persons at high risk may receive 1 dose of Hib vaccine.

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INFLUENZA

Seasonal Influenza Impact in U.S.

- Impact varies substantially from year to year
- Difficult to predict severity or timing
- 5% - 20% of US population infected
- Highest illness rates in children
- Highest complication rates in elderly

Seasonal Influenza Impact in U.S.

- Range of 3,349-48,614 (average 23,607) influenza-related deaths
 - 2.7 times higher when H3N2 prominent
 - ~90% among 65 and older
 - ~2,400 deaths annually among 19-64 year olds
- Annual average of 220,000 hospitalizations
 - ~50% in 65 and older

Groups at Increased Risk for Complications of Influenza

- Adults 50 years of age or older
- Children/adolescents 6 months-4 years of age
- Residents of long-term care facilities
- Pregnant women
- Persons 6 months to 18 years receiving chronic aspirin therapy
- Persons with chronic illness

Conditions with Increased Risk for Complications of Influenza

- pulmonary (e.g., asthma, COPD)
- cardiovascular (e.g., CHF)
- metabolic (e.g., diabetes)
- renal dysfunction
- hepatic disease
- neurologic/neuromuscular disease
- hemoglobinopathy
- immunosuppression, including HIV infection

Persons with Increased Risk for Complications of Influenza

- American Indians, Alaska Natives
- Persons who are morbidly obese (BMI of 40 or higher)

Obesity : A New Risk Factor for Severe Illness Due to 2009 H1N1

- Disproportionate number of obese, particularly morbidly obese, among severely ill during 2009 H1N1 pandemic
- Morbid obesity (BMI \geq 40) was associated with hospitalization, and possibly death, due to 2009 H1N1 infection among adults without chronic medical conditions
- Additional studies with larger samples of patients and appropriate comparison groups are needed

Groups at Increased Risk for Influenza Infection and Transmission

- Healthcare providers, including home care *
- Employees of long-term care facilities
- Household contacts of high-risk persons

* Healthy persons 2-49 years of age in these groups may receive LAIV except healthcare workers who have contact with severely immunosuppressed persons who require hospitalization and care in a protective environment

Why a Yearly Influenza Vaccination?

- Surface antigens change
- Antibody wanes during the year
However...
- No evidence that protection wanes DURING the influenza season that the vaccine was received
- One dose recommended per season - except some children

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INFLUENZA VACCINE – THIS YEAR'S MODELS

Influenza Vaccine Components 2011-2012

- Same 3 influenza strains as the 2010-2011 seasonal vaccine
 - A/California/7/2009 (H1N1)-like
 - A/Perth/16/2009 (H3N2)-like
 - B/Brisbane/60/2008-like
- A dose of 2011-2012 vaccine is recommended regardless of whether the person received 2010-2011 vaccine

Influenza Vaccine Preparations 2011-2012

Vaccine	Dose form	Age
Fluzone TIV (sanofi pasteur)	SDS, SDV, MDV	6 months and older
Fluarix TIV FluLaval TIV (GSK)	SDS MDV	3 years and older 18 years and older
Fluvirin TIV (Novartis)	SDS, MDV	4 years and older
Afluria TIV (CSL)	SDS	9 years and older
Flumist LAIV (MedImmune)	Nasal spray	2-49 years (healthy, nonpregnant)

SDS=single dose syringe; SDV=single dose vial; MDV=multidose vial

Inactivated Influenza Vaccine Schedule

Age Group	Dose	No. Doses
6-35 mos	0.25 mL	1 or 2
3-8 yrs	0.50 mL	1 or 2
9 yrs and older	0.50 mL	1

Fluzone TIV Formulations

Formulation (age)	HA per dose
• Adult (≥ 36 mos)	45 mcg/0.5 mL
• Pediatric (6-35 mos)	22.5 mcg/0.25 mL
• High dose (≥ 65 yrs)	180 mcg/0.5 mL
• Intradermal (18-64 yrs)	27 mcg/0.1 mL

Fluzone High-Dose

- Contains 4 X amount of influenza antigen than regular Fluzone
- Approved only for persons 65 years and older
- Produced higher antibody levels; slightly higher local reactions
- Studies underway to assess clinical effectiveness
- No preference stated by ACIP for HD or regular influenza vaccination

Fluzone Intradermal

- Licensed by FDA in May 2011
- Approved only for persons 18 through 64 years of age
- Dose is 0.1 mL administered in the deltoid area by a specially designed microneedle and injector system
- Formulated to contain more HA (27 mcg) than a 0.1 mL dose of regular Fluzone formulation (9 mcg)

LAIV Indications

- Healthy* persons 2 – 49 years of age
 - Close contacts of persons at high risk for complications of influenza (except severely immunosuppressed)
 - Persons who wish to reduce their own risk of influenza
 - Healthcare personnel

*Persons who do not have medical conditions that increase their risk for complications of influenza

Simultaneous Administration of LAIV and Other Vaccines

- Inactivated vaccines can be administered either simultaneously or at any time before or after LAIV
- Live vaccines not administered on the same day should be administered at least 4 weeks apart

Live Attenuated Influenza Vaccine Adverse Reactions

- Children – rhinitis, congestion, fever, headache, wheezing, abdominal pain or vomiting
- Adults – rhinitis, sore throat, cough, chills, headache

Live Attenuated Influenza Vaccine Contraindications and Precautions

- Children younger than 2 years of age*
- Persons 50 years of age or older*
- Persons with chronic medical conditions*
- Children and adolescents receiving long-term aspirin therapy*

*These persons should receive inactivated influenza vaccine

Live Attenuated Influenza Vaccine Contraindications and Precautions

- Immunosuppression from any cause*
- Pregnant women*
- Asthmatics*
- Severe (anaphylactic) allergy to egg or other vaccine components
- History of Guillain-Barre' syndrome within 6 weeks following a previous dose of TIV or LAIV (precaution)
- Moderate or severe acute illness

*These persons should receive inactivated influenza vaccine

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INFLUENZA AND PATIENTS... EH, I MEAN, HEALTH CARE PERSONNEL

Why Should Healthcare Personnel Be Vaccinated for Influenza

- Reduces Transmission of Influenza to...
 - Other Health Care Personnel
 - Their/Your/Our Families
 - Their/Your/Our Patients...Patients...Patients
- Reduces Absenteeism
 - A Type of Preparedness

Influenza Vaccination Coverage Among Healthcare Personnel

- 2006-2007 season: 44%
 - 2009-2010 season: 61.9%
 - 2010-2011 season* 63.5%
- Improved by
- Personal reminder: 69.9%
 - No Cost: 67.9%
 - >1day Availability: 68.8%
 - If required by employer: 98.1%
- **If NOT required by employer: 58.3%!**

*. *MMWR* 2011;60(32):1073-1077 August 19, 2011

Influenza Vaccination Coverage Among Healthcare Personnel

- By Work Setting
 - Hospital: 71.1%
 - Dentist Office: 54.6%
 - Home Health Care: 53.6%
- By Occupation
 - Physician or Dentist: 84.2%
 - NP or PA: 82.6%
 - Nurse: 68.8%
 - Assistant/Aide: 55.9%

*. *MMWR* 2011;60(32):1073-1077 August 19, 2011

Influenza Vaccination Coverage Among Healthcare Personnel – Why Not?

- Is Influenza a Serious Threat to Your Health?
 - Of those who say no, 34.2% were vaccinated (70.1%)
- Will Vaccine Protect You?
 - Of those who say no, 54.2% were vaccinated (92.7%)
- Will Vaccine Protect Those Around You?
 - Of those who say no, 44.6% were vaccinated (89.1%)
- Is Vaccine Worth the Time or Expense?
 - Of those who say no, 45.8% were vaccinated (94.7%)

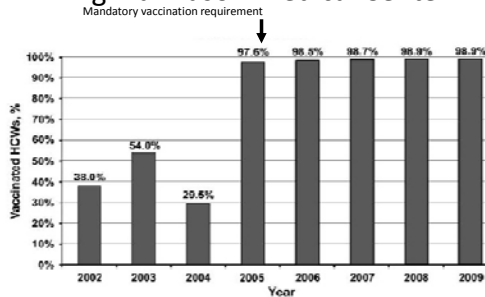
*. *MMWR* 2011;60(32):1073-1077 August 19, 2011

Strategies to Improve HCP Influenza Vaccination Levels

- Education
- Role models
- Reduction of financial and time barriers
- Monitor and report influenza vaccination levels in the facility
- Signed vaccination declination*
- Legislation and regulation

*available from the Immunization Action Coalition
www.immunize.org

Impact of Mandatory HCP Vaccination – Virginia Mason Medical Center



Rakiita RM et al. *Infect Cont Hosp Epi* 2010;31:881-9

Mandatory HCP Influenza Vaccination Who Says?

- American Public Health Association
- Department of Defense
- Infectious Diseases Society of America
- Association of Professionals in Infection Control and Epidemiology
- National Patient Safety Foundation
- Society for Healthcare Epidemiology of America (SHEA)
- American Academy of Pediatrics
- American College of Physicians

*as of April 2011

Which Vaccine for HCP? Using LAIV for Healthcare Personnel

- No instances of transmission of LAIV have been reported in the U.S.
- ACIP recommends that LAIV can be given to eligible HCWs except those that care for severely immunosuppressed persons (hospitalized and in isolation)
- No special precautions are required for HCWs who receive LAIV

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INFLUENZA – THE RECOMMENDATIONS

Influenza Vaccination Recommendation

- Everyone 6 months of age or older should be vaccinated as soon as the 2011-2012 vaccine is available, even if they got vaccinated last season
 - protection declines over the course of a year after vaccination
 - a flu shot last year may not protect this season

Timing of Influenza Vaccination

- Immunization providers should begin offering vaccine as soon as it becomes available
- Providers should offer vaccine during routine healthcare visits or during hospitalizations whenever vaccine is available

MMWR 2010;59(RR-8)

Timing of Influenza Vaccination

- Continue to offer influenza vaccine in December, especially to healthcare personnel and those at high risk of complications
- Continue to vaccinate throughout influenza season (October-March)

What if?

Influenza Vaccine Administration Errors

- Clinicians should not administer Influenza vaccine (TIV and LAIV) to persons outside the licensed age range for the vaccine they are using
- If this error occurs it is not necessary to repeat the dose unless a 0.25 mL dose was administered to a person 3 years or older

“Double Dose?” NO!

- ACIP does not recommend administration of more than one dose of seasonal influenza vaccine per season for any group*
 - except children 6 months through 8 years of age who did not receive 2010-2011 vaccine

“Double Dose?” Why Not?

- Protection against viruses that are similar antigenically to those contained in the vaccine extends for **at least 6-8 months**
- ***There is no clear evidence that immunity declines more rapidly in the elderly***
- Additional vaccine doses during the same season *do not* increase the antibody response
- ***Breakthrough infections have not been shown to be higher among persons vaccinated early in the season*** Skowronski et al. *J Infect Dis* 2008;197:490-502

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INFLUENZA VACCINE – WHAT ABOUT THOSE EGGS?

Severe Allergic Reaction to Egg and Influenza Vaccine

- Influenza vaccine with ovalbumin concentrations 1.4 micrograms per milliliter
- Tolerated without serious reactions
- Manufacturers will provide this information upon request

A Precaution, Not A Contraindication

- Severe egg allergy is a precaution for influenza vaccine, not a contraindication
- Idea: The benefit of the vaccination WHEN USED WITH PROPER PRECAUTIONS is greater than the danger

Influenza Vaccine and Egg Sensitivity

- All vaccines should be administered in settings where personnel and equipment are available for rapid recognition and treatment of anaphylaxis
- All vaccination providers should be familiar with office emergency plan
- Staff should be prepared with:
 - CPR certification
 - epinephrine, and
 - equipment for maintaining an airway

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PNEUMOCOCCAL POLYSACCHARIDE VACCINE

New Recommendations

MMWR 2010;59(No. 34):1102-6

- Routine pneumococcal polysaccharide vaccination is recommended for adults 19 through 64 years of age:
 - with asthma
 - who smoke cigarettes

Pneumococcal Polysaccharide Vaccine Revaccination

- Routine revaccination of immuno-competent persons is not recommended (including persons with asthma and cigarette smokers)
- Revaccination recommended for persons 7 through 64 years of age who are at highest risk of serious pneumococcal infection
- Single revaccination dose at least 5 years after the first dose

Pneumococcal Polysaccharide Vaccine Candidates for Revaccination

- Persons 2 years or older with:
 - functional or anatomic asplenia
 - immunosuppression
 - transplant
 - chronic renal failure
 - nephrotic syndrome
- Persons vaccinated at younger than 65 years of age

Pneumococcal Polysaccharide Vaccine Revaccination

- No more than 2 lifetime doses
 - *even if both are administered prior to 65 years of age*
- Revaccination of persons 65 years or older is *not recommended*

Pneumococcal Polysaccharide Vaccine Revaccination

- If vaccinated once at younger than 65 yrs old and its been at least 5 years, give second and final dose at age 65 or older
- If vaccinated twice at younger than 65 yrs old, no more vaccinations needed even after turning 65
- If vaccinated at 65 years or older, no revaccination recommended
- **REMEMBER: 2 DOSES MAXIMUM PER LIFETIME**

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PERTUSSIS CONTAINING VACCINES

Why Tdap in Adults?

- Tdap reduces the risk of pertussis by 60% - 80%
- Tdap approved ages
 - 10 years and older for Boostrix
 - 11 through 64 years for Adacel
- Schedule: One time only dose (IM)

New Tdap Recommendations for Adults : ACIP meeting June 2011

**Adacel off-label recommendation.*

- Adolescents and adults who have or who anticipate having close contact with an infant younger than 12 months of age and who have not previously received Tdap should receive a single dose of Tdap
 - *Preferably 2 weeks prior to contact
- Other adults 65 and older may also receive the vaccine*

Morbidity and Mortality Weekly Report

Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis (Tdap) Vaccine from the Advisory Committee on Immunization Practices, 2010

Despite sustained high coverage for childhood pertussis vaccination, pertussis remains poorly controlled in the United States. A total of 16,858 pertussis cases and 12 infant deaths were reported in 2009 (1; CDC, unpublished data, 2009). Although 2005 recommendations by the Advisory Committee on Immunization Practices (ACIP) called for vaccination with tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap) for adolescents and adults to improve immunity against pertussis, Tdap coverage is 56% among adolescents and <6% among adults (2,3). In October 2010, ACIP recommended expanded use of Tdap. This report provides the updated recommendations, summarizes the safety and effectiveness data considered by ACIP, and provides guidance for implementing the recommendations.

ACIP recommendations a single Tdap dose for persons aged 11

the United States, the additional recommendations are made to facilitate use of Tdap to reduce the burden of disease and risk for transmission to infants (Box).

Timing of Tdap Following Td

Safety. When Tdap was licensed in 2005, the safety of administering a booster dose of Tdap at intervals <5 years after Td or pediatric DTP/DTPa had not been studied in adults. However, evaluations in children and adolescents suggested that the safety of intervals as short as 18 months was acceptable (6). Rates of local and systemic reactions after Tdap vaccination in adults were lower than or comparable to rates in adolescents during U.S. prelicensure trials; therefore, the safety of using intervals as short as 2 years between Td and Tdap in adults was inferred (4).

MMWR 2011; 60 (No. 1):13-5

Tdap and Healthcare Personnel (HCP)

- NEW- 2/23/2011
Unvaccinated HCP, regardless of age*, should receive a single dose of Tdap as soon as feasible regardless of the time since last Td dose
- *off-label recommendation. Approved by ACIP on Feb 23, 2011

Tdap and Healthcare Personnel (HCP)

- Tdap is not currently licensed or recommended for more than one dose
- Thus, *after receipt of Tdap*, HCP should receive routine booster immunization against tetanus and diphtheria *according to previously published guidelines*

New Tdap Interval Recommendation

*off-label recommendation.
MMWR 2011; 60 (No. 1):13-5

- Tdap can be administered regardless of the interval since the last tetanus and diphtheria containing vaccine*
- ACIP concluded that while longer intervals between Td and Tdap vaccination could decrease the occurrence of local reactions, the benefits of protection against pertussis outweigh the potential risk for adverse events

Tdap and Healthcare Personnel (HCP)

- Hospitals and ambulatory-care facilities should provide Tdap for HCP and use approaches that maximize vaccination rates (e.g., education about benefits of vaccination, convenient access, and at no charge)

Use of Tdap Among Pregnant Women*

- At its June 2011 meeting ACIP voted to recommend Tdap vaccination for pregnant women who have not previously received a dose
- Administer at 20 weeks gestation or later (preferably during the third or late second trimester)
- If not administered during pregnancy Tdap should be given prior to discharge from the hospital or birthing center

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HERPES ZOSTER VACCINE (ZOSTAVAX)

Herpes Zoster Vaccine (Zostavax)

- Administered to persons who had chickenpox to reduce the risk of subsequent development of zoster and postherpetic neuralgia
- Contains live varicella vaccine virus in much larger amount (14x) than standard varicella vaccine (Varivax)
- Reduces the risk of zoster ~50% in persons 60 years and older

Zoster Vaccine

- On March 24, 2011 the Food and Drug Administration approved a label change for zoster vaccine to include persons 50 through 59 years of age
- ACIP has not yet recommended vaccination of persons younger than 60 years
- An ACIP recommendation is not necessary for clinicians to use a vaccine according to license

ACIP Recommendations for Zoster Vaccine

- Adults 60 years and older should receive a single dose of zoster vaccine
- Need for booster dose or doses not known at this time
- A history of herpes zoster should not influence the decision to vaccinate

ACIP Recommendations for Zoster Vaccine

- Persons with a chronic medical condition may be vaccinated unless a contraindication or precaution exists for their condition
- Persons with a history of shingles may be vaccinated

Zoster Vaccination After Shingles

- ACIP did not define an interval between recovery from shingles and administration of zoster vaccine
- It seems prudent to defer zoster vaccination for a few months to allow the shingles-induced immune response to wane

Zoster Vaccine

- It is not necessary to inquire about chickenpox or test for varicella immunity before administering zoster vaccine
- Persons 60 years of age and older can be assumed to be immune - *for the purpose of establishing eligibility for zoster vaccine* - regardless of their recollection of chickenpox

Serologic Testing for Varicella Immunity

- Do not test for varicella antibody
- Negative test more likely to be result of waning antibody vs. true susceptibility
- If a person 60 years or older is tested for varicella antibody and found to be negative
 - administer 2 doses of regular varicella vaccine (not zoster vaccine)
 - zoster vaccine is not indicated for persons whose immunity is based upon varicella vaccination

Zoster and Pneumococcal Polysaccharide (PPSV) Vaccines

- Zoster package insert advises that zoster and PPSV should not be administered concurrently
- Based on a study that showed the titer against VZV was lower in persons who received zoster and PPSV at the same visit compared to persons who received these vaccines 4 weeks apart

Zoster and Pneumococcal Polysaccharide (PPSV) Vaccines

- CDC has not changed its recommendation for either vaccine
- Zoster and PPSV should be administered at the same visit if the person is eligible for both vaccines

Zoster Vaccine Transport

- Frozen Gel packs – Merck began shipping with these in June 2011 (NO more dry ice for transport/storage of varicella – containing vaccines)
- Good for 3 days
- Immediately store
 - vaccine in freezer upon arrival and
 - diluent either in refrigerator or at room temperature.

Questions? Answers?
Phone Numbers!

- NJDHSS for Providers 609-826-4860
- NJDHSS Vaccine Preventable Disease Program
<http://www.state.nj.us/health/cd/vpdp/index.shtml>
- CDC For patients/parents 800.CDC.INFO
- CDC For providers nipinfo@cdc.gov
- CDC General Website www.cdc.gov/vaccines
- CDC Vaccine Safety www.cdc.gov/vaccinesafety/

Questions? Answers?
Web links!

- CDC: For Health Care Providers
<http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm#hcp>
- CDC: Adult schedule Overall
<http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm>
- CDC: Web tool *What Vaccines Do YOU Need?*
<http://www2a.cdc.gov/nip/adultImmSched>
- AAFP: *Shots for Smart phones from STFM Group for Immunization Education*
<http://www.immunizationed.org/default.aspx>

Questions? Answers?
Web links!

- ACP Adult Immunization Initiative
 - Immunization Webinar Series
http://www.acponline.org/clinical_information/resources/adult_immunization/webinars.htm
 - Immunization Portal - systematic processes for incorporating immunization in your day-to-day practice
<http://immunization.acponline.org/>