Improving Adult Immunizations and Update on Influenza Vaccination

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Outline

- Background on burden of disease in adults
- Update on the adult immunization schedule
- National coverage for routinely recommended adult vaccines
- Practice standards for adult immunizations
- Influenza vaccine recommendations
Objectives

- Review 2014 adult immunization schedule and changes
- Overview of 2012 National Health Interview Survey data on vaccine coverage among US Adults
- Describe new Adult Immunization Practice Standards
- Provide resources for implementation of adult immunization standards
Burden of Disease Among U.S. Adults for Diseases with Vaccines Available

- **Influenza disease burden varies year to year**
  - Millions of cases and average of 226,000 hospitalizations annually with >75% among adults
  - 3,000-49,000 deaths annually, >90% among adults\(^2\)

- **Invasive pneumococcal disease (IPD)\(^1\)**
  - 39,750 total cases and 4,000 total deaths in 2010
    - 86% of IPD cases and nearly all IPD deaths among adults

- **Pertussis\(^3\)**
  - 41,880 total reported cases 2012
    - ~9,000 among adults

- **Hepatitis B\(^4\)**
  - 3,350 acute cases reported 2010
    - 35,000 estimated cases

- **Zoster\(^5\)**
  - about 1 million cases of zoster annually U.S.

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ACIP Schedule Background

- Each year, Advisory Committee on Immunization Practices (ACIP) updates the adult immunization schedule
  - Reflects and summarizes existing ACIP policy

- **2014 adult schedule also approved by:**
  - American College of Physicians
  - American Academy of Family Physicians
  - American College of Obstetricians and Gynecologists
  - American College of Nurse-Midwives

ACIP Adult Immunization Schedule

- Summarizes recommendations for routinely recommended vaccines for adults based on
  - Age group
  - Immunizations received as a child or adolescent
  - Medical conditions
  - Pregnancy
  - Occupation
  - Other factors including lifestyle

- Information for vaccines related to travel found at: www.cdc.gov/travel
Changes to Adult Schedule for 2014 Figures

- Two figures included in the Adult Immunization Schedule – must be interpreted along with footnotes
  - Age group
  - Medical and other considerations

- Moved pneumococcal polysaccharide vaccine (PPSV23) bar below the bar for pneumococcal conjugate vaccine (PCV13)

- Added bar for *Haemophilus influenzae* type b (Hib) vaccine

# Recommended Adult Immunization Schedule—United States - 2014

Note: These recommendations must be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

## Figure 1. Recommended adult immunization schedule, by vaccine and age group

<table>
<thead>
<tr>
<th>VACCINE</th>
<th>AGE GROUP</th>
<th>19-21 years</th>
<th>22-26 years</th>
<th>27-49 years</th>
<th>50-59 years</th>
<th>60-64 years</th>
<th>≥ 65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose annually</td>
</tr>
<tr>
<td>Tetanus, diphtheria, pertussis (Td/Tdap)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs</td>
</tr>
<tr>
<td>Varicella</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 doses</td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 doses</td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 doses</td>
</tr>
<tr>
<td>Zoster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>Measles, mumps, rubella (MMR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 or 2 doses</td>
</tr>
<tr>
<td>Pneumococcal 13-valent conjugate (PCV13)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>Pneumococcal polysaccharide (PPSV23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>Meningococcal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 or more doses</td>
</tr>
<tr>
<td>Hepatitis A</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 doses</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 doses</td>
</tr>
<tr>
<td><em>Haemophilus influenzae</em> type b (Hib)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 or 3 doses</td>
</tr>
</tbody>
</table>

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*Covered by the Vaccine Injury Compensation Program*

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster.

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indication).

**Note:** For more information, visit the CDC's website at [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines). Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines).

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Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at [www.vaers.hhs.gov](http://www.vaers.hhs.gov) or by telephone, 800-822-7967.

Information on how to file a Vaccine Injury Compensation Program claim is available at [www.hrsa.gov/vaccinescompensation](http://www.hrsa.gov/vaccinescompensation) or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-377-6400.

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines) or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 8:00 a.m. - 8:00 p.m. Eastern Time, Monday - Friday, excluding holidays.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention’s (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the American College of Physicians (ACP), American College of Obstetricians and Gynecologists (ACOG) and American College of Nurse-Midwives (ACNM).
**Figure 2. Vaccines that might be indicated for adults based on medical and other indications**

<table>
<thead>
<tr>
<th>VACCINE ▼</th>
<th>INDICATION ▲</th>
<th>Pregnancy</th>
<th>Immuno-compromising conditions (excluding human immunodeficiency virus [HIV])</th>
<th>HIV Infection (CD4+ T lymphocyte count)</th>
<th>Men who have sex with men (MSM)</th>
<th>Kidney failure, end-stage renal disease, receipt of hemodialysis</th>
<th>Heart disease, chronic lung disease, chronic alcoholism</th>
<th>Asplenia (including elective splenectomy and persistent complement component deficiencies)</th>
<th>Chronic liver disease</th>
<th>Diabetes</th>
<th>Healthcare personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza*</td>
<td></td>
<td></td>
<td>1 dose IIV annually</td>
<td>1 dose IIV or LAIV annually</td>
<td>1 dose IIV annually</td>
<td>Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, pertussis (Td/Tdap) *</td>
<td></td>
<td></td>
<td>1 dose Tdap and pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella*</td>
<td></td>
<td></td>
<td>Contraindicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Female*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Male*</td>
<td></td>
<td></td>
<td></td>
<td>3 doses through age 26 yrs</td>
<td>3 doses through age 26 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoster*</td>
<td></td>
<td></td>
<td>Contraindicated</td>
<td></td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella (MMR)*</td>
<td></td>
<td></td>
<td>Contraindicated</td>
<td></td>
<td>1 or 2 doses</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal 13-valent conjugate (PCV13)*</td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pneumococcal polysaccharide (PPSV23)*</td>
<td></td>
<td></td>
<td></td>
<td>1 or 2 doses</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Meningococcal*</td>
<td></td>
<td></td>
<td></td>
<td>1 or more doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A*</td>
<td></td>
<td></td>
<td></td>
<td>2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B*</td>
<td></td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b (Hib)*</td>
<td></td>
<td></td>
<td></td>
<td>1 or 3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*Covered by the Vaccine Injury Compensation Program

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection: zoster vaccine recommended regardless of prior episode of zoster.

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications).

No recommendation.

These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly indicated for adults ages 19 years and older, as of February 1, 2014. For all vaccines being recommended on the Adult Immunization Schedule: a vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/pubs/acip-list.htm). Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.
Updates to Footnotes

- **Influenza vaccine**
  - Information on the recombinant influenza vaccine (RIV) and the use of RIV and inactivated influenza vaccine (IIV) among egg allergic patients was added
    - RIV approved by US FDA for adults 18-49 years and does not have eggs in any step of manufacturing process
  - List of all influenza vaccines, their age indications, precautions and contraindications and information can be found at: [http://www.cdc.gov/flu/professionals/acip/index.htm](http://www.cdc.gov/flu/professionals/acip/index.htm).

<table>
<thead>
<tr>
<th>Vaccine Type</th>
<th>Approved Age Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactivated standard dose</td>
<td>6 months and older</td>
</tr>
<tr>
<td>Inactivated intradermal</td>
<td>18-64 years</td>
</tr>
<tr>
<td>Inactivated high dose</td>
<td>65 years and older</td>
</tr>
<tr>
<td>Recombinant influenza vaccine</td>
<td>18-49 years</td>
</tr>
<tr>
<td>Live attenuated vaccine</td>
<td>2-49 years, healthy</td>
</tr>
</tbody>
</table>
Updates to Footnotes

- **Td/Tdap footnote updates**
  - Harmonizes language with pediatric schedule – no change in recommendations
    - Adults vaccinated with one dose Tdap (received any time since age 11 years) do not need another dose unless pregnant
    - **Pregnant women recommended to have one dose Tdap vaccine each pregnancy**
      - Infants <3 months most vulnerable to severe illness and death from pertussis
  - **Td vaccine**
    - Continues to be recommended every 10 years after Tdap
    - Do not need to wait until 10 years after Td to get Tdap vaccine

Updates to Footnotes

- **HPV – no change in recommendation**
  - Language harmonized with pediatric schedule regarding intervals between 1\textsuperscript{st} and 2\textsuperscript{nd}, 2\textsuperscript{nd} and 3\textsuperscript{rd} and 1\textsuperscript{st} and 3\textsuperscript{rd} doses
    - Second dose administered 4-8 weeks after first dose
    - Third dose administered
      - 16 weeks after second dose (minimum of at least 12 weeks) and
      - 24 weeks after the first dose
  - Removed bullet on HCP and vaccination, similar to Zoster footnote
  - Recommended for adolescent boys and girls, ideally at age 11 or 12 years

- **Zoster vaccine – no change in recommendation**
  - Simplified by removing statement about healthcare personnel not a specific indication for vaccination

Updates to Footnotes

- **Meningococcal vaccine – no changes in recommendations**
  - Clarified which persons needed 1 versus more than one dose of *MenACWY* (meningococcal conjugate vaccine – trade names Menactra or Menveo) or *MPSV4* (meningococcal polysaccharide vaccine – trade names Menomune) and
  - Clarified that persons with HIV are not routinely recommended for MenACWY, but that 2 doses of MenACWY should be given among HIV-infected persons who are vaccinated
  - ERROR in ANNALS print version; on-line versions corrected…
    - Abbreviations for polysaccharide and conjugate vaccines.

Updates to Footnotes

- **Hib vaccine**
  - Updated language per recently ACIP approved updated recommendations
    - 1 dose of Hib vaccine should be administered to persons who have functional or anatomic asplenia, sickle cell disease, or are undergoing elective splenectomy, if they have not previously received Hib vaccine. Hib vaccination 14 or more days before splenectomy is suggested.
    - Adults who have had a successful hematopoietic stem cell transplant are recommended to receive a 3-dose series of Hib vaccine 6–12 months after transplant regardless of prior Hib vaccination.
    - Prior Hib vaccine guidance recommended that Hib vaccination of adults infected with human immunodeficiency (HIV) be considered, but updated guidance no longer recommends Hib vaccination of previously unvaccinated adults with HIV infection because their risk for Hib infection is low.

Precautions and Contraindications Table

- **Adult schedule includes table of primary precautions and contraindications**
  - See package inserts and full ACIP recommendations for additional details
- **Added recombinant influenza vaccine (RIV) information**
- **Updated information on influenza vaccine use among persons with egg allergy**
  - RIV does not include any eggs in the manufacturing process so can be given to persons with any severity of egg allergy (FDA approved for ages 18-49 years)
- **Added Hib vaccine to table**

[http://www.cdc.gov/vaccines/schedules/hcp/adult.html](http://www.cdc.gov/vaccines/schedules/hcp/adult.html).
VACCINE COVERAGE AMONG ADULTS
Vaccination Coverage For Age Based Vaccines, 
NHIS 2012 – United States

* +4.4% difference from 2011-2012, p<0.05 by T test for comparisons
** +5.0% difference from 2011-2012, p<0.05 by T test for comparisons

CDC, MMWR 2014: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a4.htm.
Vaccination Coverage Among High Risk Groups, NHIS 2012 – United States

§ High Risk (HR) – Individuals] ever been told by a health professional they had diabetes, emphysema, chronic obstructive pulmonary disease, coronary heart disease, angina, heart attack, or other heart condition; had a diagnosis of cancer during the previous 12 months (excluding nonmelanoma skin cancer); had ever been told by a doctor or other health professional that they had lymphoma, leukemia, or blood cancer; had been told by a doctor or other health professional that they had chronic bronchitis or weak or failing kidneys during the preceding 12 months; had an asthma episode or attack during the preceding 12 months; or were current smokers.

† Estimate is not reliable due to relative standard error (standard error/estimates) >0.3

From 2014 MMWR at: [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a4.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a4.htm)
Tetanus toxoid-containing vaccines coverage, NHIS 2010-2012

* +3.2% difference from 2011-2012, p<0.05 by T test for comparisons
† Tdap vaccination of adults aged ≥65 years was collected in the NHIS for the first time starting in 2012

MARYLAND 2013 BRFSS Tdap coverage: 26.2% among 19-64 yo

CDC, MMWR 2014: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a4.htm.
<table>
<thead>
<tr>
<th>Vaccination Group</th>
<th>% Vaccinated Whites</th>
<th>Disparity, Blacks</th>
<th>Disparity, Hispanics</th>
<th>Disparity, Asians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumo., HR 19-64 yrs</td>
<td>21</td>
<td>-2</td>
<td>-8</td>
<td>-8</td>
</tr>
<tr>
<td>Pneumo., ≥65 yrs</td>
<td>64</td>
<td>-18</td>
<td>-21</td>
<td>-23</td>
</tr>
<tr>
<td>Tetanus, 19-49 yrs</td>
<td>70</td>
<td>-14</td>
<td>-16</td>
<td>-15</td>
</tr>
<tr>
<td>Tetanus, 50-64 yrs</td>
<td>68</td>
<td>-15</td>
<td>-15</td>
<td>-19</td>
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<tr>
<td>Tetanus, ≥65 yrs</td>
<td>58</td>
<td>-13</td>
<td>-13</td>
<td>-12</td>
</tr>
<tr>
<td>Tdap, ≥19 yrs</td>
<td>16</td>
<td>-6</td>
<td>-7</td>
<td>-1</td>
</tr>
<tr>
<td>Tdap, 19-64 yrs</td>
<td>18</td>
<td>-8</td>
<td>-9</td>
<td>-2</td>
</tr>
<tr>
<td>Tdap, ≥65 yrs</td>
<td>9</td>
<td>-3</td>
<td>-6</td>
<td>-5</td>
</tr>
<tr>
<td>HepA, 19-49 yrs</td>
<td>12</td>
<td>-1</td>
<td>-2</td>
<td>+7</td>
</tr>
<tr>
<td>HepB, 19-49 yrs</td>
<td>38</td>
<td>-3</td>
<td>-10</td>
<td>+2</td>
</tr>
<tr>
<td>Herpes Zoster, ≥60 yrs</td>
<td>23</td>
<td>-14</td>
<td>-14</td>
<td>-6</td>
</tr>
<tr>
<td><strong>HPV, Females 19-26 yrs</strong></td>
<td>42</td>
<td>-13</td>
<td>-24</td>
<td>-27</td>
</tr>
<tr>
<td>Tdap, HCP ≥19 yrs</td>
<td>33</td>
<td>-11</td>
<td>-8</td>
<td>+6</td>
</tr>
<tr>
<td>HepB, HCP ≥19 yrs</td>
<td>66</td>
<td>-4</td>
<td>-5</td>
<td>+7</td>
</tr>
</tbody>
</table>
Pneumococcal vaccination trends among persons 18-64 years old with high risk conditions and persons 65 years old and older, 2008-2012 BRFSS

- 18-64 HR: 65.4%
- 65+: 31.4%
- 2008: 75.0%
- 2012: 31.4%
### Influenza Vaccination Coverage Among US Adults: 2011-12 and 2012-13 Seasons

<table>
<thead>
<tr>
<th>Group</th>
<th>2011-12 (%)</th>
<th>2012-13 (%)</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons ≥ 18 yrs</td>
<td>38.8</td>
<td>41.5</td>
<td>+2.7</td>
</tr>
<tr>
<td>Persons 18-49 yrs, all</td>
<td>28.6</td>
<td>31.1</td>
<td>+2.5</td>
</tr>
<tr>
<td>Persons 18-49 yrs, high risk</td>
<td>36.8</td>
<td>39.8</td>
<td>+3.0</td>
</tr>
<tr>
<td>Persons 50-64 yrs</td>
<td>42.7</td>
<td>45.1</td>
<td>+2.4</td>
</tr>
<tr>
<td>Persons ≥ 65 yrs</td>
<td>64.9</td>
<td>66.2</td>
<td>+1.3</td>
</tr>
<tr>
<td>Persons ≥ 18 yrs – Maryland</td>
<td>42.4</td>
<td>48.9</td>
<td>+6.5</td>
</tr>
</tbody>
</table>

Percentage of health-care personnel (HCP) who received influenza vaccination, by occupation type — Internet panel survey, United States, 2010–11, 2011–12, and 2012–13 influenza seasons
Conclusions on Adult ACIP Schedule and Coverage

- Relatively few changes in the 2014 adult immunization schedule compared to 2013

- Vaccination coverage rates among adults very low, leaving many adults vulnerable to illnesses, hospitalizations and deaths that could be prevented through vaccination
  - Improvements in influenza vaccination coverage, including in health care personnel

- Racial and ethnic disparities in coverage
ADULT IMMUNIZATION PRACTICE STANDARDS
Key Adult Immunization Facts

- Vaccine coverage among adults is unacceptably low
- Limited patient awareness about need for vaccines among adults
- Patients willing, for the most part, to get vaccinated when recommended by medical providers
- Adult vaccinations less integrated into clinical practice
  - Primary care providers believe that immunizations are an important part of the services they provide to patients
- Systemic offering and recommendations from clinicians result in higher uptake

3. Adult non-influenza vaccine coverage: www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a4.htm.
Vaccination coverage by provider recommendation and/or offer

Influenza vaccination before and during pregnancy overall and by provider recommendation and offer* for influenza vaccination among women pregnant anytime between October 2012 - January 2013, Internet Panel Survey, 2012-13 Influenza Season

*Women who didn't visit a provider since August 2012 (n=27) or women who didn't know whether they received provider recommendation or offer (n=55) were excluded from this analysis.
NEW Adult Immunization Practice Standards

- Stress that all providers, including those that don’t provide vaccine services, have a role in ensuring patients up to date on vaccines

- Acknowledges that
  - Adult patients may see many different providers some of whom do not stock some or all vaccines
  - Adults may get vaccinated in medical home, at work or retail setting

- Aim is to avoid missed opportunities
Calls to action for healthcare professionals

- **Assess** immunization status of all patients in every clinical encounter.
- Strongly **recommend** vaccines that patients need.
- **Administer** needed vaccines or **Refer** to a provider who can immunize.
- **Document** vaccines received by patients, including entering immunizations into immunization registries.

http://www.publichealthreports.org
<table>
<thead>
<tr>
<th>All Providers</th>
<th>Non-immunizing Providers</th>
<th>Immunization Providers</th>
</tr>
</thead>
</table>
| \* Incorporate IZ needs assessment into every clinical encounter.  
\* Recommend, administer needed vaccine or refer to a provider who can immunize.  
\* Stay up-to-date on immunization recommendations and educate patients.  
\* Ensure providers and their staff are up to date on their own vaccines  
\* Understand how to access registries. | \* Routinely assess immunization status of patients, recommend needed vaccines and refer patient to an immunizing provider.  
\* Establish referral relationships with immunizing providers.  
\* Follow up to confirm patient receipt of recommended vaccine(s). | \* Observe and adhere to professional competencies regarding immunizations.  
\* Assess immunization status in every patient care and counseling encounter and strongly recommend needed vaccines.  
\* Ensure receipt of vaccination is documented. |
Framework
Adult Immunization Practice Standards

Professional healthcare related organizations / associations/healthcare systems

- Education and training of members, including trainees
- Resources and assistance to implement protocols, immunization practices, immunization assessment, etc
- Encourage members to be up-to-date on own immunizations
- Assist members in staying up-to-date on IZ info & recommendations
- Partner with others immunization stakeholders to educate the public
- Seek out collaboration opportunities with other immunization stakeholders
- Collect and share best practices
- Advocate policies that support adult immunization standards

Public Health Departments

- Determine community needs and capacity and community barriers to adult IZ
- Support activities and policies to increase vaccination rates and reduce barriers
- Ensure professional competency
- Collect, analyze and disseminate data
- Outreach and education to public and providers
- Work to decrease disparities
- Increase registry access and use
- Develop billing capacities
- Ensure preparedness, communicate vaccine information to providers and to the public
- Promote adherence to laws and regulations pertaining to immunizations
Adult Immunization Practice Standards

- Formally supported by Summit Organizing Committee Members
  - American Academy of Pediatrics (AAP)
  - American Academy of Physician Assistants (AAPA)
  - American Academy of Family Physicians (AAFP)
  - American College of Obstetricians and Gynecologists (ACOG)
  - American College of Physicians (ACP)
  - American Pharmacists Association (APhA)
  - Association of Immunization Managers (AIM)
  - Association of State & Territorial Health Officials (ASTHO)
  - Centers for Disease Control and Prevention (CDC)
  - Immunization Action Coalition (IAC)
  - Infectious Diseases Society of America (IDSA)
  - National Association of County & City Health Officials (NACCHO)
  - National Foundation for Infectious Diseases (NFID)
Example of Results with Implementation of Standards - Indian Health Service

- I.H.S. is federal agency charged with providing healthcare to eligible American Indian/Alaska Native people
  - member of one of the 566 federally recognized tribes
  - residence in the IHS catchment Area

- I.H.S. provides services to approximately 2 million patients each year through a network of I.H.S., Tribal, and Urban Indian health care facilities in 35 states
Indian Health Service - Leveraging Technology

• Use of EHR and provider reminder prompts focusing on the following adult vaccinations:
  – Influenza for all ages
  – PPSV23 for 65 years+
  – PPSV23 for adults with high risk conditions
  – Tdap for everyone 19 yrs+
  – Td every 10 years
  – HPV
    • Females 19 – 26 years
    • Males 19 – 21 years
  – Zoster for 60 yrs +
  – Hepatitis A and B for patients who receive first dose
Indian Health Service - Leveraging Technology

IHS Adult Vaccination Coverage*
FY 2014 Q1 Reports

- Top Bar Graph showing:
  - 81.5% for 'Isho Tdap in last 10 years (19 yrs+)
  - 74.1% for 'Tdap Ever (19 yrs+)
  - 49.5% for 'HPV1 Female (19-26 yrs)
  - 31.8% for 'HPV1 Female (19-26 yrs)
  - 27.4% for 'HPV1 Male (19-21 yrs)
  - 8.6% for 'HPV3 Male (19-21 yrs)
  - 38.8% for 'Zoster (60 yrs+)
  - 74.9% for 'Pneumo al/after 65 yrs+
  - 87.1% for 'Pneumo ever (65 Years+)

* Based on Active Clinical Users (2 visits in 3 years), N = 558,566
Resources For Implementing New Standards

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

- **National Adult and Influenza Immunization Summit and Immunization Action Coalition (IAC)**
  www.izsummitpartners.org

- **National Foundation for Infectious Diseases** -
  www.adultvaccination.org

- **American College of Obstetricians and Gynecologists** -
  www.immunizationforwomen.org
Media and Outreach Products

“I want to protect my health, so I'm getting the vaccines I need.”

“My dad got shingles, my wife got whooping cough, that's why I'm getting the vaccines I need.”

“I do a lot to stay healthy, including getting vaccinated.”

Do you know which adult vaccines you need?

Every year, thousands of adults in America suffer serious health problems from diseases they could be vaccinated against like shingles, whooping cough, hepatitis A and B, tetanus, and pneumococcal disease. Some even die.

Talk with your healthcare professional about which vaccines are recommended to protect you and your loved ones.

Learn more at cdc.gov/vaccines/adults or call 1-800-CDC-INFO (1-800-232-4636).

www.cdc.gov/vaccines/AdultPatientEd
Patient Education Materials

INFORMATION SERIES FOR ADULTS

3 Important Reasons for Adults to Get Vaccinated

You may not realize that as an adult, you still need vaccines, or why they are so important to your health. There are many reasons to get vaccinated; here are just three.

1. You may be at risk for serious diseases.
   - Each year, thousands of adults in the United States suffer severe health problems from diseases that could be prevented by vaccines. Some people are vaccinated, and some are not. Even if you were fully vaccinated as a child, the protection from some vaccines you received can wear off over time due to age or illness.
   - Vaccines are safe.
     - Vaccines are tested and monitored. Vaccines are tested before being licensed by the Food and Drug Administration (FDA). Both the CDC and FDA continue to monitor vaccines after they are licensed.
     - Vaccine side effects are usually mild and temporary. The most common side effects include soreness, redness, or swelling at the injection site. Severe side effects are very rare.
     - Vaccines are one of the safest ways to protect your health. Even people taking prescription medications can be vaccinated. However, if you are pregnant or have a weakened immune system talk with your doctor before being vaccinated, as some vaccines may not be recommended for you.

2. Vaccines work.
   - Vaccines work to prevent serious illnesses.
   - You can protect yourself.
     - Vaccines work by teaching your immune system to fight a disease.
     - Vaccines are not just for children.
   - Vaccines are important for all ages.

3. You can’t afford it.
   - Getting vaccined:
     - Adults can get a community benefit even if they are not vaccinated.
     - Most health plans provide vaccinations for free.
   - If you are not sure, call your doctor.

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INFORMATION SERIES FOR ADULTS

Vaccines: Know What You Need

All adults should get vaccines to protect their health and the health of those they care about. Talk to your healthcare professional about the vaccines that are right for you.

To get the conversation started, here's a list of some of the vaccines you might need:

Every adult needs:

- Influenza (flu) vaccine
  - All adults should get the flu vaccine every year. It is free for everyone.
  - It is especially important that pregnant women, health care workers, and those with chronic health conditions get vaccinated.

- Tetanus, diph" (whooping cough) vaccine
  - All adults should get a tetanus and diph" booster every 10 years. It is especially important for pregnant women.

Your health care provider will tell you which vaccines you need based on your age, health, and other factors.

See the chart below to determine if you need any of these vaccines:

- Visit the CDC's website to get recommendations for your travel destination.

Your Vaccines, Personalized

Get a list of vaccines you might need customized for you. Go to www.cdc.gov/vaccines/adults and review a few quick questions about you and your life.

Learn more about vaccines for adults at www.cdc.gov/vaccines/adults or call 1-800-CDC-INFO (1-800-232-4636).

Coming soon to... www.cdc.gov/vaccines/AdultStandards
Health Care Provider Resources

Standards for Adult Immunization Practice:

1. Standards for Adult Immunization Practice: Vaccine Needs Assessment

- Assessment is the critical first step in ensuring that a patient's vaccines are up-to-date.
- It is important to assess patients' immunization status at every clinical encounter.

2. Standards for Adult Immunization Practice: Vaccine Administration

- U.S. vaccination: For example, rates for Tdap and zoster vaccine are recommended for all adults.
- Vaccine administration: It is important to ensure that patients receive their vaccines.

3. Standards for Adult Immunization Practice: Vaccine Recommendations

- Recommendations for immunizations are provided to help improve vaccine delivery.
- It is important to ensure that patients receive their vaccines.

4. Standards for Adult Immunization Practice: Vaccine Safety

- Safety is a critical concern when administering vaccines.
- It is important to monitor patients for signs of adverse reactions.

5. Standards for Adult Immunization Practice: Vaccine Resources

- Resources are available to help providers make informed decisions.
- It is important to stay up-to-date with the latest recommendations.

Standards for Adult Immunization Practice:
What All Healthcare Professionals Need To Know

In 2013, the National Vaccine Advisory Committee updated the Standards for Adult Immunization Practice to reflect the critical need for all healthcare professionals—whether they provide immunization services on site—to take steps to ensure that adult patients get the vaccines they need.

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.
- Assess at every encounter, recommend needed vaccines, then administer or refer, and document any vaccines a patient receives.

Adult immunization rates are unacceptably low.

- For example, rates for Tdap and zoster vaccine are recommended for all adults.
- Vaccine rates are still low for adults younger than 65 years at high risk for complications from pneumococcal disease are vaccinated.

The best way to ensure that your patients are fully vaccinated is to routinely assess their immunization status.

- Your patients' vaccination needs may change over time based on factors such as age, health conditions, lifestyle, travel, and occupation.
- Adults may change immunization status, but we are not aware that they need immunizations other than the influenza vaccine. Trust them on this.

Assessing your patients' vaccination status at every clinical encounter will decrease missed opportunities to vaccinate.

- Many adults do not receive vaccine recommendations from healthcare professionals, and studies indicate that vaccine assessments as routine in most provider offices. Year after year, thousands of adults in the U.S. who could benefit from vaccines are not vaccinated.

Assessment at every encounter can make a difference.

- Research indicates that your recommendations are the strongest predictor of uptake.

For more information on insurance coverage for vaccines, visit www.cdc.gov/vaccines/coverage/adults.

Standards for Adult Immunization Practice:

- In 2012, the U.S. Adult Vaccination Rates
- Only 14% of adults aged 19 and older received Tdap vaccination.
- Only 10% of adults aged 60 and older received zoster vaccination.
- Nearly 1 million Americans experienced the condition each year, and about half of all cases occur in men and women age 60 years or older.

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 vaccines, adult vaccination rates in the U.S. are unacceptably low. Each year, tens of thousands of adults needlessly suffer, are hospitalized, and even die as a result of diseases that could be prevented by vaccines.

2. Your patients are likely not aware that they need vaccines. Although adult body immunization is important, a recent national survey showed that more adults are not aware that they need vaccines throughout their lives to protect against diseases like shingles, pertussis, and hepatitis. Many also report not receiving vaccination recommendations from their healthcare professionals.

3. You play a critical role in ensuring your patients are fully immunized. Healthcare professionals are the most valued and trusted 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.

INFOGRAPHIR SERIES FOR HEALTHCARE PROFESSIONALS
www.cdc.gov/vaccines/adults

By Robert G. Muehlenkamp, 2012
Conclusions

- Relatively few changes to the 2014 adult immunization schedule relative to 2013
- Coverage rates among adults very low, leaving many adults vulnerable to illnesses, hospitalizations and deaths that could be prevented through vaccination
- Adult Immunization Practice Standards updated
  - Implementation key to increasing awareness of adult immunization and improving vaccine coverage
  - Many tools and resources available to
    - Help providers with implementation of immunization practice standards
    - Educate patients on the importance of vaccination
INFLUENZA VACCINE RECOMMENDATIONS UPDATE
Background

- Annual impact of influenza affects all age groups, but severity can vary substantially from year to year
  - Millions of illnesses among persons of all ages
  - 55,000 - 431,000 influenza-related hospitalizations
  - 3,000-49,000 influenza-related deaths

- Vaccination is best way to prevent influenza and its complications, e.g.
  - Hospitalization of children and decreased risk of ICU admission
  - Prevention of secondary major cardiac events

- Although public awareness of influenza vaccination is high, less than half of people get a influenza vaccine

- No changes in overall recommendations – annual influenza vaccination for everyone ≥6 months old, including pregnant women

## Influenza vaccines approved for use in the U.S., 2013–14

<table>
<thead>
<tr>
<th>Vaccine Type</th>
<th>Trade name</th>
<th>Age Indications</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactivated influenza vaccine, trivalent (IIV3), standard dose</td>
<td>Afluria</td>
<td>≥9 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>Fluarix</td>
<td>≥3 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>Flucelvax</td>
<td>≥18 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>FluLaval</td>
<td>≥3 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>Fluvirin</td>
<td>≥4 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>Fluzone</td>
<td>6 mos-64 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>Fluzone Intradermal</td>
<td>18–64 yrs.</td>
<td>Intradermal</td>
</tr>
<tr>
<td>Inactivated influenza vaccine, trivalent (IIV3), high dose</td>
<td>Fluzone High-Dose</td>
<td>≥65 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td>Inactivated influenza vaccine, quadrivalent (IIV4), standard dose</td>
<td>Fluarix Quadrivalent</td>
<td>≥3 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>Flulaval Quadrivalent</td>
<td>≥3 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>Fluzone Quadrivalent</td>
<td>6-36 mos</td>
<td>IM</td>
</tr>
<tr>
<td>Recombinant influenza vaccine, trivalent (RIV3)</td>
<td>FluBlok</td>
<td>18–49 yrs.</td>
<td>IM</td>
</tr>
<tr>
<td>Live attenuated influenza vaccine, quadrivalent (LAIV4)</td>
<td>FluMist Quadrivalent</td>
<td>2–49 yrs.</td>
<td>Intranasal</td>
</tr>
</tbody>
</table>

[www.cdc.gov/mmwr/preview/mmwrhtml/rr6207a1.htm?s_cid=rr6207a1_w#Tab1](www.cdc.gov/mmwr/preview/mmwrhtml/rr6207a1.htm?s_cid=rr6207a1_w#Tab1)
Recently-approved Influenza Vaccines

Quadrivalent influenza vaccine, live attenuated (LAIV4):
• Flumist® Quadrivalent (MedImmune)

Quadrivalent influenza vaccines, inactivated (IIV4):
• Fluarix® Quadrivalent (GSK)
• Fluzone® Quadrivalent (Sanofi Pasteur)

Cell culture-based influenza vaccine (cclIV3):
• Flucelvax® (Novartis)

Recombinant hemagglutinin (HA) vaccine (RIV3):
• FluBlok® (Protein Sciences)
Quadrivalent Influenza Vaccines—Rationale

- **Two lineages of influenza B viruses: Victoria and Yamagata**
  - Immunization against virus from one lineage provides only limited cross-protection against viruses in the other

- **Trivalent vaccines contain only one B vaccine virus**
  - Only one B lineage is represented

- Predominant lineage is difficult to predict in advance of the season

- **Quadrivalent vaccines contain one virus from each B lineage**
Month of Peak Influenza Activity, United States, 1976-2008

From Prevention & Control of Influenza – Recommendations of the Advisory Committee on Immunization Practices (ACIP) 2008. MMWR 2008 Aug 8; 57(RR07);1-60.
Cumulative Doses of Influenza Vaccines Distributed by Month, By Season, 2004-05 Through 2013-14 Seasons

http://www.cdc.gov/flu/professionals/vaccination/vaccinesupply.htm
Influenza Vaccine Virus Strains for 2014-15

- Both trivalent and quadrivalent vaccines will be available

- Trivalent vaccines will contain:
  - An A/California/7/2009 (H1N1)-like virus,
  - An H3N2 virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011, and
  - A B/Massachusetts/2/2012-like virus (Yamagata lineage).

- Quadrivalent vaccines, will contain, in addition:
  - A B/Brisbane/60/2008-like virus (Victoria lineage)
**Influenza Vaccination for Persons with Egg Allergies**

- **Can the individual eat lightly cooked egg (e.g., scrambled egg) without reaction?**
  - Yes: Administer vaccine per usual protocol
  - No:
    - **After eating eggs or egg-containing foods, does the individual experience ONLY hives?**
      - Yes: Administer RIV3, if patient aged 18 through 49 yrs.; OR Administer IIV
        - Observe for reaction for at least 30 minutes following vaccination
      - No:
        - **After eating eggs or egg-containing foods, does the individual experience other symptoms such as:**
          - Cardiovascular changes (e.g., hypotension)
          - Respiratory distress (e.g., wheezing)
          - Gastrointestinal (e.g., nausea/vomiting)
          - Reaction requiring epinephrine
          - Reaction requiring emergency medical attention
            - Yes: Refer to a physician with expertise in management of allergic conditions for further evaluation
            - No: Administer RIV3, if patient aged 18 through 49 yrs.; OR Refer to a physician with expertise in management of allergic conditions for further evaluation

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*†* Indicates additional considerations for individuals with egg allergies.
Influenza Vaccination for Persons with Egg Allergies

- For individuals with no known history of exposure to egg, but who are suspected of being egg-allergic on the basis of previously performed allergy testing:
  - Consultation with a physician with expertise in the management of allergic conditions should be obtained prior to vaccination
  - Alternatively, RIV3 may be administered if the recipient is aged 18 through 49 years
One Dose or Two?
Vaccine for Children 6 Months Through 8 Years

- Children aged 6 months through 8 years require 2 doses in first season they are vaccinated

- If previously vaccinated, need to have received 2009(H1N1)-containing vaccine (2009 monovalent, or 2010-14 seasonal vaccines)

- There are two acceptable approaches for determining the number of doses

- These differ in whether or not vaccination history prior to the 2010-2011 season is considered

Dose algorithm for 6 months through 8 years olds

Has the child ever received influenza vaccine?

- No/Don’t know → 2 doses*
- Yes

Did the child receive a total of 2 or more doses of seasonal influenza vaccine since July 1, 2010?

- No/Don’t know → 2 doses**
- Yes → 1 dose

* Doses should be administered a minimum of 4 weeks apart.

Dose algorithm for 6 months through 8 year olds—Alternative approach

- If vaccination history before 2010–11 is available

- If child received
  - ≥2 seasonal influenza vaccines during any previous season,
  - And ≥1 dose of a 2009(H1N1)-containing vaccine (monovalent 2009(H1N1) or any 2010-14 seasonal vaccines),
  - Then the child needs only 1 dose in 2014–15.
  - Children 6mos—8yrs for whom this is not the case need 2 doses

- Need only 1 dose of vaccine in 2014–15 if:
  - ≥2 doses of seasonal influenza vaccine since July 1, 2010; or
  - ≥2 of seasonal influenza vaccine before July 1, 2010, and ≥1 dose of monovalent 2009(H1N1) vaccine; or
  - ≥1 dose of seasonal influenza vaccine before July 1, 2010, and ≥1 dose of seasonal influenza vaccine since July 1, 2010

Conclusions

- Influenza vaccination clinics that include adults (e.g. healthcare personnel) provide great opportunity to assess their need for other vaccines, e.g. Tdap, zoster, pneumococcal PPSV23 and PCV13, etc.

- Resources for adult patients in addition to their primary care providers can be found at www.cdc.gov/vaccines/adults.
  - Adult immunization schedule
  - Adult vaccine quiz
  - Vaccine provider locator
  - Education/communications resources

- Influenza vaccine and disease surveillance information at www.cdc.gov/flu.
Thank You!

And special thanks to Dr. Lisa Grohskopf, CDC, for sharing her slides, and to CDC teams responsible for analyses of vaccine coverage and communications

Questions?

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