National Minority Quality Forum
Adult Immunization 2017 Update: Recommendations, Practice, and Policy

2017 NMQF Leadership Summit & Spring Health Braintrust
Building Sustainable Communities: Creating Data-Powered Alliances
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Ritz-Carlton Hotel • 1150 22nd Street, NW • Washington, DC
Adult Immunization 2017 Update: 
Recommended Vaccines and Vaccine Epidemiology

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➢ Practicing General Internist, Atlanta, GA
➢ Adjunct Associate Professor of Medicine, Emory University School of Medicine (- 2016)
➢ Past President, American College of Physicians
➢ Past Chair, AMA Council on Science & Public Health
➢ Past Member ACP Immunization Technical Advisory Committee, (author, several chapters in ACP Adult Immunization Guide 2011-2014 )
➢ Liaison to ACIP ( ACIP Working Groups for HPV, Flu, Pneumococcal, & Shingles vaccines and the Adult Schedule)
➢ WebMD/Medscape: videoblog series Medicine Matters, prevention column Staying Well
Each year, thousands of adults suffer /die from vaccine-preventable diseases

Vaccine-Preventable Adult Diseases

Especially: Enfermedades en adultos que se pueden prevenir con vacunas

Vaccine-preventable diseases cause long-term illness, hospitalization, and even death.

In the United States:

- CDC estimates that since 2010, flu-related hospitalizations in the United States have ranged from 140,000 to 710,000 and flu-related deaths have ranged from 12,000 to 56,000.
- About 900,000 people get pneumococcal pneumonia every year, leading to as many as 400,000 hospitalizations and 19,000 deaths.
- 700,000 to 1.4 million people suffer from chronic hepatitis B, with complications such as liver cancer.
- HPV causes over 27,000 cancers in women and men each year. About 4,000 women die each year from cervical cancer.

Did You Know

Each year in the United States, 1 million people get shingles and some will have severe pain that can continue even long after their rash clears up (called post-herpetic neuralgia) or they may suffer from other painful complications that could persist for years.
ACIP Recommends 13 vaccines for adults!
ACIP (Advisory Committee on Immunization Practices)

- 15 voting members (appointed by HHS Secretary)
  - 8 ex officio reps; 30 non-voting liaisons
  - ACIP recs become official CDC policy-signed by the CDC director, accepted by HHS Secretary, published in *MMWR*
  - ACIP Working groups for each vaccine- meet by conference call

- October 2010, evidence-based process –GRADE
  - (Grading of Recommendations, Assessment, Development and Evaluation)

- **ACIP recs:**
  - *Category A recommendation*
    - For all persons in an age or risk factor based group
  - *Category B recommendation*
    - For individual clinical decision making
  - ACIP recs may differ from FDA licensing parameters
ACIP recs and ACA “Coverage Clout” (currently)

- Under ACA, new health plans:
  - ACA requires ACIP rec coverage --without cost sharing – one year after recommendation is made.
  - *Does not apply to Medicare*
### ACIP Adult Immunization 2017 Schedule

**Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2017**

In February 2017, the Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2017, became effective, as recommended by the Advisory Committee on Immunization Practices (ACIP) and approved by the Centers for Disease Control and Prevention (CDC). The 2017 adult immunization schedule was also reviewed and approved by the following professional medical organizations:

- Vaccines Information Statements that explain benefits and risks of vaccines are available at www.cdc.gov/vaccines/hcp/vis/vis-index.html.
- Information and resources regarding vaccination of pregnant women are available at www.cdc.gov/vaccines/hcp/vis/women-pregnant.html.
- Information on stool vaccine requirements and recommendations is available at www.cdc.gov/vaccines/hcp/vis/vis-index.html.

#### Footnotes
- Recommended for adults who have the age requirement, lack documentation of vaccination, or lack evidence of past infection.
- Recommended for adults with additional medical conditions or other indications.
- Not recommended.

### Recommendations

**1. Influenza vaccination**

**General information:**
Adults aged 19 years or older who do not have a contraindication should receive annual influenza vaccination.

**Recommended schedule:**
- Influenza vaccination is recommended annually for all adults aged 19 years or older.
- First and second doses should be given at least 4 weeks apart.

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

**2. Tetanus, diphtheria, and acellular pertussis vaccine**

**General information:**
- Adults who have received tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap) should receive a booster dose of Tdap at least 10 years after the previous dose.
- A second Tdap dose should be given at least 6 months after the first dose.

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

**3. Measles, mumps, and rubella vaccination**

**General information:**
- Adults aged 19 years or older who have not had verified immunity to measles, mumps, and rubella vaccine (MMR) should receive MMR vaccine.
- A second dose of MMR vaccine is recommended for adults who have not had verified immunity to measles, mumps, and rubella.

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

**4. Pneumococcal vaccination**

**General information:**
- Adults aged 19 years or older who do not receive pneumococcal conjugate vaccine (PCV) should receive pneumococcal polysaccharide vaccine (PPV).

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

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**Figure 1: Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2017**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Recommended dose(s)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>1 dose annually</td>
<td>1 dose every 4 years</td>
</tr>
<tr>
<td>Tetanus, diphtheria, and acellular pertussis vaccine (Tdap)</td>
<td>1 dose during adolescence or early adulthood</td>
<td>1 dose every 10 years</td>
</tr>
<tr>
<td>Measles, mumps, and rubella vaccine (MMR)</td>
<td>2 doses</td>
<td>1 dose every 10 years</td>
</tr>
<tr>
<td>Pneumococcal vaccine (PPV)</td>
<td>1 dose</td>
<td>1 dose every 10 years</td>
</tr>
</tbody>
</table>

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**Figure 2: Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2017**

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</tr>
<tr>
<td>Pneumococcal vaccine (PPV)</td>
<td>1 dose</td>
<td>1 dose every 10 years</td>
</tr>
</tbody>
</table>
### Vaccine Recs by Age Group

#### Figure 1. Recommended immunization schedule for adults aged 19 years or older by age group, United States, 2017

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19–21 years</th>
<th>22–26 years</th>
<th>27–59 years</th>
<th>60–64 years</th>
<th>≥ 65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td></td>
<td></td>
<td>1 dose annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Td/Tdap</td>
<td></td>
<td>Substitute Tdap for Td once, then Td booster every 10 yrs</td>
<td></td>
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<tr>
<td>MMR</td>
<td></td>
<td>1 or 2 doses depending on indication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR</td>
<td></td>
<td>2 doses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HZV</td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
<td></td>
</tr>
<tr>
<td>HPV–Female</td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>HPV–Male</td>
<td>3 doses</td>
<td></td>
<td></td>
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<tr>
<td>PCV13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>PPSV23</td>
<td></td>
<td>1 or 2 doses depending on indication</td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>HepA</td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
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<tr>
<td>HepB</td>
<td></td>
<td>3 doses</td>
<td></td>
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<tr>
<td>MenACWY or MPSV4</td>
<td></td>
<td>1 or more doses depending on indication</td>
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<tr>
<td>MenB</td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
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<tr>
<td>Hib</td>
<td></td>
<td>1 or 3 doses depending on indication</td>
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</tbody>
</table>

Colors represent:
- **Yellow**: Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection.
- **Purple**: Recommended for adults with additional medical conditions or other indications.
- **White**: No recommendation.
### Vaccine Recs by Medical Condition

**Figure 2. Recommended immunization schedule for adults aged 19 years or older by medical condition and other indications, United States, 2017**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Pregnancy</th>
<th>Immuno-compromised (excluding HIV infection)</th>
<th>HIV infection CD4+ count (cells/µL)</th>
<th>Asplenia, persistent complement deficiencies</th>
<th>Kidney failure, end-stage renal disease, on hemodialysis</th>
<th>Heart or lung disease, chronic alcoholism</th>
<th>Chronic liver disease</th>
<th>Diabetes</th>
<th>Healthcare persons</th>
<th>Men who have sex with men</th>
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</thead>
<tbody>
<tr>
<td>Influenza¹</td>
<td></td>
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<tr>
<td>Td/Tdap²</td>
<td>1 dose Tdap each pregnancy</td>
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<tr>
<td>MMR³</td>
<td>contraindicated</td>
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<tr>
<td>VAR⁴</td>
<td>contraindicated</td>
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<tr>
<td>HZV⁵</td>
<td>contraindicated</td>
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<tr>
<td>HPV–Female⁶</td>
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<tr>
<td>HPV–Male⁶</td>
<td>3 doses through age 26 yrs</td>
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<td>PCV13⁷</td>
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<td>PPSV23⁷</td>
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<td>HepA⁸</td>
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<td>HepB⁹</td>
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<tr>
<td>MenACWY or MPSV4¹⁰</td>
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<tr>
<td>MenB¹⁰</td>
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<tr>
<td>Hib¹¹</td>
<td>3 doses post-HSCT recipients only</td>
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</tbody>
</table>

- **Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection**
- **Recommended for adults with additional medical conditions or other indications**
- **Contraindicated**
- **No recommendation**

1. Influenza: 1 dose annually.
2. Tdap: Substitute Tdap for Td once, then Td booster every 10 yrs.
3. MMR: Contraindicated.
4. VAR: 2 doses.
5. HZV: 1 dose.
6. HPV–Female: 3 doses through age 26 yrs.
7. HPV–Male: 3 doses through age 26 yrs, 3 doses through age 21 yrs, 3 doses through age 20 yrs.
8. PCV13: 1 dose.
9. PPSV23: 1, 2, or 3 doses depending on indication.
10. HepA: 2 or 3 doses depending on vaccine.
11. HepB: 3 doses.
12. MenACWY or MPSV4: 1 or more doses depending on indication.
13. MenB: 2 or 3 doses depending on vaccine.
Read the Footnotes!
Vaccine Information Statements (VIS)
https://www.cdc.gov/vaccines/hcp/vis/current-vis.html

Hepatitis B Vaccine

What You Need to Know

1. What is hepatitis B?
   Hepatitis B is a serious infection that affects the liver. It is caused by the hepatitis B virus.
   - In 2002, about 54,000 people became infected with hepatitis B.
   - Each year, about 2,000 to 4,000 people die in the United States from cirrhosis or liver cancer caused by hepatitis B.
   - Hepatitis B can cause:
     - Acute (short-term) illness. This can lead to:
       - loss of appetite
       - fatigue
       - jaundice (yellow skin or eyes)
       - fever
     - Chronic (long-term) infection. Some people go on to develop chronic hepatitis B infection. Most of those who do not have symptoms remain healthy.

2. Hepatitis B vaccine: Why get vaccinated?
   Hepatitis B vaccine can prevent hepatitis B, and the serious consequences of hepatitis B infection, including liver cancer and cirrhosis.
   Hepatitis B vaccine may be given by itself or in the same shot with other vaccines.
   Recombinant hepatitis B vaccine was first licensed in 1982 and is approved for children and adults. Since 1986, recombinant hepatitis B vaccine is recommended for all children in the United States.
   Hepatitis B vaccines are widely spread through contact with the blood or other body fluids of an infected person.
   Hepatitis B virus can be spread through contact with the blood or other body fluids of an infected person.

3. Who should get hepatitis B vaccine?
   - Children and Adolescents:
     - Before annually for 2 doses of hepatitis B vaccine:
       - 1st Dose: Birth
       - 2nd Dose: 6 months of age
     - Some might get the 3rd dose of vaccine before 16 months of age.
   - Anyone through 11 years of age who did not get the vaccine when they were younger should be vaccinated.
   - Adults:
     - All unvaccinated adults at risk for hepatitis B infection should be vaccinated.

4. Who should not get hepatitis B vaccine?
   - Anyone with a life-threatening allergy to any of the components of the vaccine should not get hepatitis B vaccine.
   - Anyone who has had a life-threatening allergic reaction to a previous dose of hepatitis B vaccine should not get another dose.
   - Anyone who is severely allergic to eggs contains vaccines containing hepatitis B vaccine.
   - Anyone who is severely allergic to certain types of vaccines should not get hepatitis B vaccine.
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   - Anyone who is severely allergic to certain types of vaccines should not get hepatitis B vaccine.

5. What are the risks from hepatitis B vaccine?
   - Hepatitis B is a safe vaccine. Most people do not have any problems with it.
   - The vaccine may occasionally cause some minor reactions, such as:
     - Local reactions at the injection site:
       - redness
       - swelling
     - Systemic reactions:
       - headache
     - fever
     - flu-like symptoms

6. What if there is a moderate or severe reaction?
   - Any unusual condition, such as a high fever or severe illness. Signs of a serious allergic reaction can include difficulty breathing, hives or other skin rash, wheezing, or swelling of the face, lips, tongue, or throat.
   - Call a doctor, or get the person to a doctor right away.

7. What should I do?
   - Call a doctor, or get the person to a doctor right away.
   - Tell your doctor what happened, the date and time it happened, and when the injection was given.
   - Ask your doctor or pharmacist to report the reaction by filling out a Vaccine Adverse Event Reporting System (VAERS) form. You can also report the reaction by filling out the VAERS form on any of the following websites:
     - www.vaers.hhs.gov
     - www.vaes.org

8. How can I learn more?
   - Ask your doctor or pharmacist to provide information about hepatitis B vaccine.
   - Contact your local health department.
   - Contact the Vaccine Information Service (VIS):
     - 1-800-232-0233 (Monday-Friday, 8:30 AM - 8:00 PM, ET)
     - Email: vis@cdc.gov

9. Where can I get this vaccine?
   - Ask your doctor or pharmacist.

10. Source:
    42 U.S.C. § 300a-29

11. Date of Venue:
    2012
ACIP Recommends 13 vaccines for adults!

<table>
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<td>MenACWY or MPSV4¹⁰</td>
</tr>
<tr>
<td>MenB¹⁰</td>
</tr>
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<td>Hlb¹¹</td>
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</table>
FLU: Everyone 6 months & older needs flu vax every year

Reason enough to get VACCINATED!

Even healthy people can get the flu, and it can be serious. Everyone 6 months and older should get a flu vaccine. This means you. This season, protect yourself—and those around you—by getting a flu vaccine.

http://www.flu.gov • 1-800-CDC-INFO
Flu Vaccination 2016-2017
The “What’s” the same - the “How” has changed.

Nasal flu vaccine - LAIV 4
(not recommended)
for 2016-2017 season
Flu Vaccination 2016-2017

The “What’s” the same- the “How” has changed.

- Nasal flu vaccine – LAIV4 – (not recommended for 2016-2017 season)
- Inactivated flu shot (IIV)
- Cell cultured inactivated (ccIIV)
  - “almost egg-free”
- Recombinant Influenza vaccine (RIV)
  - “totally egg-free”
- Age $\geq 65$ (only):
  - High dose IIV
  - Adjuvanted IIV (aIIV)
Who needs Tdap?

➢ Adolescents need Tdap

➢ Unvaccinated dads need one time Tdap booster

➢ Grandparents need one time Tdap booster

➢ Pregnant women need Tdap in each pregnancy (in late 3rd trimester between 27-36 weeks)

*Multiple Tdap boosters is off label use*
HPV related cancers

➢ Genitourinary cancers
  - Females:
    - cervical, vulvar, and vaginal cancer
  - Males:
    - penile cancer

➢ Anal cancer & oropharyngeal cancer
  - Both males and females:
HPV Vaccination: What’s New?

As of late 2016: only 9v HPV vaccine - in US

Fewer doses for some

Depends on age at starting vaccination

- If start series < 15: 2 doses -
  - at least 5 months - preferably 6 months apart
- If start at ≥ 15: 3 doses (no change)
  - (0, 1-2 months, 6 months)

- Routinely start at age 11 or 12 (can begin as early as age 9)
  - All females: through age 26
  - All males: through age 21
    - (through age 26: immunocompromised males, HIV, MSM)
Hepatitis B

Hep B FACTS

➢ Chronic Infection
  - 800,000 to 1.4 million people suffer from it
  - 3000 cases of acute Hepatitis B each year

➢ Can lead to liver cancer

➢ Transmitted by exposure to infected blood or body fluid
Hepatitis B vaccination

➢ **Who needs Hep B vax ?**

3 dose series:

- All health care & public safety workers;
- All diabetics < 60;
  - > 60: @ physician discretion
- > 1 sex partner over last 6 months
- MSM
- IV drug users
- Chronic liver conditions

**Specified in 2017 schedule:**

**Chronic liver conditions**

- Hepatitis C
- Cirrhosis
- Alcoholic liver disease
- Autoimmune hepatitis
- FATTY LIVER DISEASE
- ALT OR AST > 2X NORMAL
Hepatitis A vaccine series

*single antigen Hep A or Hep A/B combo*

- TRAVEL
- Chronic liver disease
- Recipients of clotting factor concentrates
- MSM
- IV and non-IV drug users
- Lab exposure
- Close contacts of international adoptees from countries with endemic hep A
Shingles FACTS

➢ If had chickenpox...... at risk for shingles
➢ More that 90% of all adults in the United States infected with varicella zoster virus
➢ one million cases / yr
➢ Lifetime risk: 30%
➢ Risk increases with age (starting at age 50)

➢ Key HZ symptom: Pain
  Post herpetic neuralgia (PHN)
  May persist months / years
Shingles vaccine
(varicella zoster vaccine)

(brand name Zostavax, by Merck)

Live attenuated virus vaccine

➢ The Shingles Prevention Study
  NEJM June 2, 2005
  38,500+ patients 60 and older

➢ Vaccine Effectiveness:

  • reduced incidence shingles by 51%
  • reduced incidence of PHN by 66.5%
    • risk of PHN (post herpetic neuralgia) increases after age 50.

➢ ACIP says:
  Start vaccinating at age 60+
Who should NOT get it?
(Shingles vaccine)

- live attenuated virus vaccine

- It should NOT be given to
  - people with immune system problems
  - Women who are or may be pregnant
  - Anyone allergic to vaccine components including gelatin, neomycin

- Contraindicated in those with immune system problems including patients on high dose steroids (20 mg or higher daily)
**HEADS UP:** *Investigational* Subunit Adjuvanted Shingles Vaccine (HZ/su)  
*NEJM* 2015; 372:2149-50

- Randomized, placebo-controlled phase 3 study
  - More than 15,000 patients, age 50 and older
  - Conducted in 18 countries
- Study indicated vaccine efficacy of 97.2%
  - More injection site & systemic reactions as compared to placebo
FACTS about *Streptococcus pneumonia* (aka the pneumococcus)

- Kills 4000 in US each year (mostly adults)
- Leading cause of serious illness: bacteremia, meningitis, pneumonia

*Source: MMWR Oct 12, 2012, 816-819*
Two Pneumococcal vaccines - FDA approved for adults

- **Pneumococcal Polysaccharide vaccine**
  (PPSV 23- Pneumovax 23 by Merck)

- **Pneumococcal Conjugate vaccine**
  (PCV 13- Prevnar by Pfizer)
Invasive Pneumococcal Disease:

**Risk in immunocompromised -20 x than for those without high risk conditions**

- ACIP recommends routine PCV 13
- for immunocompromised adults:
  - This recommendation applies to
    - immunocompromised, asplenic
    - “high risk” immunocompetent (CSF leaks / cochlear implants)

**Risk of invasive disease in older adults is 10 times higher than in younger adults**

- ACIP recommends PCV 13 for all age ≥ 65
  - (in addition to PPSV 23) Based on strong quality evidence: CAPITA
CAPiTA
Community Acquired Pneumonia Immunization Trial in Adults

- Randomized controlled trial of PCV 13
- 85,000 seniors: PCV 13 or placebo
- **PCV 13 was effective!**
  - 75% effective in preventing vaccine type invasive pneumococcal disease (IPD)
  - 45% effective in preventing vaccine type non bacteremic pneumonia (NBP)
Adult Immunization: Lucky 13

Pneumococcal vaccination(s) is the most complicated ACIP recommendation
Pneumococcal Vaccination: “Ground” RULES

➢ PCV13 & PPSV23 should not be given at same visit.
  • The interval between vaccinations “matters”

➢ If need both, best to give PCV 13 first.
  • Only single dose PCV13 is recommended for adults.

➢ Only one PPSV 23 dose at / after age 65
Pneumococcal Vaccination Summary based on Age & Medical Condition

19-64

- Immunocompetent yet certain medical conditions:
  - PPSV 23

- High Risk Immunocompetent:
  - PCV 13 -- 8wks -- PPSV23

- Immunocompromised:
  - PCV 13--8 wks -- PPSV 23,
  - revax PPSV 23 (5 yrs after 1st PPSV 23)

65 & older

- “Healthy”: PCV 13-- 1 year --PPSV 23

- High Risk Immunocompetent : PCV13—8 wks--PPSV 23

- Immunocompromised: PCV 13—8 wks-- PPSV 23
Medicare Coverage Donut Hole for 2nd Pneumococcal Vaccine for Immunocompromised & High Risk Immunocompetent (ACIP rec interval = 8 weeks) Medicare will only cover if 11 months apart
Meningococcal Disease FACTS

➢ Each year: estimated 1,400-2,800 cases occur in the United States…10%-14% of cases are fatal.

➢ Of patients who recover:
  • 11%-19% have permanent hearing loss, mental retardation, loss of limbs, or other serious sequelae.

➢ Five main serogroups of Neisseria meningitidis: A, B, C, W, and Y

➢ Types B, C, Y are major causes of disease in US.
Meningococcal vaccination: Young Adults

- **Men ACWY:**
  - “First-year college students age 21 and younger who live in residence halls should receive one dose of Men ACWY if they have not received a dose at age 16 or older”

- **Men B series:**
  - “May” be administered to age 16-23
  - Preferred vaccination age range: 16-18

- **Men ACWY & Men B may be given at same time / different anatomic sites**
Meningococcal Vaccines

Meningococcal Vaccines covering A,C,W-135, Y:

- **2 types**

*Polysaccharide vaccine:*
- MPSV4: (Menomune)
  - (the only FDA licensed meningococcal vaccine for those ≥56)

*Conjugate vaccines:*
- MenACWY-D: (Menactra)
- MenACWY-CRM: (Menveo)
  - (ACIP recommends off label use in ≥56 if need revaccination)

Meningococcal Vaccines covering Men B

Dosing schedules when initially FDA approved in 2014:

- **MenB-FHbp:** (Trumenba)
  - three-dose series
  - (0, 2, 6 months)

- **MenB-4C:** (Bexsero)
  - two-dose series
  - (0, 1 months)

- **Both are FDA approved for 10-25**
Men B vaccination

(June 12, 2015 MMWR)

ACIP expanded age indication to anyone age 10 & older at increased risk of Men B disease:

Category A recommendation

- Patients with complement deficiencies
- Patients with anatomic or functional asplenia
- Microbiologists at risk through work exposure
- Those exposed during outbreaks.

(Expanded age indication is off-label use)
**HIV--New Indication: MenACWY meningococcal conjugate vaccine**

- A growing body of evidence supports increased risk for meningococcal disease in HIV infected persons

- **NEW** HIV infected patients:
  - 2 dose primary series of Men ACWY
    - then re-vaccination every 5 years
  - Men B vaccination for those with HIV is **not** currently recommended
Meningococcal vaccination
Indications Summary
(Men ACWY & Men B may be given at same time / different anatomic sites)

- **Asplenia:**
  - 2- dose series MenACWY / re-vax q 5 yrs
  - Men B series

- **HIV:** 2- dose series MenACWY / re-vax q 5 yrs ----- (NO Men B rec)

- **Microbiologists (exposed):**
  - 1- dose MenACWY and re-vax q 5 years
  - Men B series

- **Outbreak:** depends on type of outbreak
  - Either 1- dose MenACWY or “full” Men B series

- **International travel (endemic or epidemic):**
  - 1- dose MenACWY and revax q 5 yrs - if increased risk remains
  - Men B not routinely recommended (outbreaks not generally Men B)

- **Military recruits**
  - 1- dose MenACWY and re-vax q 5 years
12/2014...
Measles at Disneyland!
Measles is very contagious!

- If one person has it, 90% of the people close to that person - who are not immune - will also become infected.

Measles Death:
July 2, 2015
12/2014: Mumps outbreak - National Hockey League
MMR Vaccine
(Measles Mumps Rubella)

➢ Adults born < 1957: generally considered immune
  • Unless you are pregnant or a health care worker

➢ Born ≥ 1957: need MMR vaccination or lab evidence of immunity

➢ Live Virus vaccine:
  • Should **NOT** be given to immunodeficient
  • Should **NOT** be given to HIV w/ CD4 < 200
  • Should **NOT** be given to pregnant women

➢ Check the footnotes for who needs one and who needs two doses
Hib vaccine
(Haemophilus influenzae type b)

➢ Asplenia: 1 dose

➢ Elective splenectomy:
  • 1 dose at least 14 days before surgery

➢ Hematopoietic stem cell transplant:
  • 3 doses (give doses 1 month apart;
    • begin series 6 - 12 months after transplant

➢ Hib is NOT routinely recommended for adults with HIV because their risk of Hib infection is low
### Vaccination Coverage: NHIS data 2014

**MMWR** Feb 5, 2016 65(1); 1-36 and 2015 (not yet published)

<table>
<thead>
<tr>
<th>NHIS data 2014--2015</th>
<th>Healthy People 2020 targets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flu (≥ 19)</strong> 43.2%--41.7%</td>
<td><strong>Flu 2020 target (≥ 19):</strong> 70%</td>
</tr>
<tr>
<td><strong>Tdap (≥ 19)</strong> 20.1%--23.1%</td>
<td><strong>Zoster 2020 target (≥ 60):</strong> 30%--<strong>EXCEEDS TARGET!</strong></td>
</tr>
<tr>
<td><strong>Zoster (≥ 60)</strong> 27.9%--30.6%</td>
<td><strong>Pneumococcal 2020 target</strong></td>
</tr>
<tr>
<td><strong>Pneumococcal</strong> (19-64, high risk) 20.1%--23%</td>
<td>* (19-64, high risk) 60%</td>
</tr>
<tr>
<td>≥65: 61.3%--63%</td>
<td>≥65: 90%</td>
</tr>
</tbody>
</table>

**Other NHIS findings** -- Racial/ethnic differences:

Higher coverage for whites than most other groups.
Vaccination rates for adults are abysmal!

Vaccination Coverage: NHIS data 2014
MMWR Feb 5, 2016 65(1); 1-36 and 2015 (not yet published)

Other NHIS findings—
Racial /ethnic differences: Dparities

- Higher coverage for whites than most other groups
- African Americans and Hispanics were at the lower end of coverage as compared to whites
2015 Adult Vaccination Coverage Rates

➢ https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/coverage-estimates/2015.html

➢ https://www.cdc.gov/flu/fluuvaxview/coverage-1516estimates.htm
Role of Insurance Coverage in Adult Vaccination

Adults with Health Insurance are 2-5 times more likely to be appropriately vaccinated.
Adults who have Health Insurance are 2-5 times more likely to be appropriately vaccinated.

<table>
<thead>
<tr>
<th></th>
<th>With Insurance</th>
<th>No Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flu ≥ 19</strong></td>
<td>48%</td>
<td>15.9%</td>
</tr>
<tr>
<td><strong>Pneumococcal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19-64 at high risk</td>
<td>22.5%</td>
<td>11%</td>
</tr>
<tr>
<td>65 &amp; older</td>
<td>61.7%</td>
<td>24.3%</td>
</tr>
<tr>
<td><strong>Tdap</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults ≥ 19</td>
<td>21.5%</td>
<td>11.5%</td>
</tr>
<tr>
<td><strong>Zoster</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults ≥ 60</td>
<td>28.7%</td>
<td>5.6%</td>
</tr>
</tbody>
</table>
# ACIP Adult Immunization Schedule

## Figure 1: Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2017

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age Groups</th>
<th>Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>18-64 years, 65 years and older</td>
<td>1 dose annually</td>
</tr>
<tr>
<td>Tetanus/Toxoid</td>
<td>1 dose every 10 years</td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td>1 dose</td>
<td></td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>2 doses</td>
<td></td>
</tr>
<tr>
<td>HPV Female</td>
<td>2 doses</td>
<td></td>
</tr>
<tr>
<td>HPV Male</td>
<td>2 doses</td>
<td></td>
</tr>
<tr>
<td>PPSV23</td>
<td>1 dose, unless recommended for special population</td>
<td></td>
</tr>
<tr>
<td>Hemophilus influenzae type b (Hib)</td>
<td>2 doses</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>1 dose</td>
<td></td>
</tr>
<tr>
<td>MenACWY or MenPSD®</td>
<td>1 dose, unless recommended for special population</td>
<td></td>
</tr>
<tr>
<td>Rabies</td>
<td>2 or 3 doses depending on reaction</td>
<td></td>
</tr>
<tr>
<td>Yellow Fever</td>
<td>1 dose</td>
<td></td>
</tr>
</tbody>
</table>

Special considerations:
- Recommended for adults who missed the recommended doses of pediatric vaccines or who have evidence of past infection.
- Recommended for adults with additional medical conditions or other indications.
- No recommendation.

## Figure 2: Recommended Immunization Schedule for Adults Aged 19 Years or Older by Medical Condition and Other Indications, United States, 2017

### Influenza
- Adult immunization for health care personnel and other individuals 50 years of age or older who have not been fully vaccinated against influenza in the past.
- 1 dose annually for adults 18 years of age and older, unless contraindicated.

### Tetanus, diphtheria, and acellular pertussis vaccines
- Acellular pertussis vaccine (Tdap) is recommended for pregnant women in the third trimester of pregnancy.
- 1 dose of Tdap vaccine in adulthood is recommended for adults 19 years of age or older who have not received the adolescent series and who have not received Tdap vaccine in adulthood.

### Measles, mumps, and rubella vaccines
- For adults without a history of varicella disease or varicella vaccine.
- Varicella vaccine is recommended for adults with a history of varicella disease or varicella vaccine.

## Footnotes

- Recommended for adults who received the study vaccine and who have documented susceptibility to varicella or who have documented evidence of past infection.
- Recommended for adults with additional medical conditions or other indications.
- Not recommended.

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## Additional Information

- **Vaccine Information**: Statements that explain benefits and risks of vaccines are available at [cdc.gov](https://www.cdc.gov).
- Information on herd immunity and recommendations is available at [cdc.gov](https://www.cdc.gov).
Adult Vaccination: Make it happen!

“Vaccination in real time: one patient at a time at a time”

Get Motivated: DO IT!
Special Video Presentation

MOVE THE NEEDLE

RAISE ADULT IMMUNIZATION RATES