Adult Immunization and Standards for Immunization Practice

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Disclosures

- JoEllen Wolicki is a federal government employee with no financial interest in or conflict with the manufacturer of any product named in this presentation.

- The speaker will not discuss the off-label use of any vaccine.

- The speaker will not discuss a vaccine not currently licensed by the FDA.
Overview

- Disease burden
- Standards for adult immunization practice
- Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2018
- Strategies to improve vaccination coverage
Adults and Vaccine-Preventable Diseases
Adults are Vulnerable, Too!

- **Invasive pneumococcal disease:**
  - About 900,000 adults get pneumococcal pneumonia every year, leading to as many as 400,000 hospitalizations and 19,000 deaths

- **Hepatitis B disease:**
  - 700,000 to 1.4 million people suffer from chronic hepatitis B, with complications such as liver cancer

- **Human papillomavirus disease:**
  - HPV causes over 27,000 cancers in women and men each year
  - About 4,000 women die each year from cervical cancer

CDC website: Vaccine-Preventable Adult Diseases [www.cdc.gov/vaccines/adults/vpd.html](http://www.cdc.gov/vaccines/adults/vpd.html)
Human Papillomavirus

- HPV is a common virus, especially among young adults in their teens and early 20s.
- Human papillomavirus is the major cause of cervical cancer in women, as well as anal cancer and genital warts in both women and men. Some types of HPV can cause cancers of the penis, anus, or oropharynx (back of the throat, including base of the tongue and tonsils).
- Often people don’t know they have this for years until cancer appears.
Adults and Vaccine-Preventable Diseases

- **Pertussis (whooping cough):**
  - ~21,000 cases reported in 2015, 22% in adults
  - Complications include pneumonia (2%), weight loss (33%), urinary incontinence (28%), syncope (6%), and rib fractures from severe coughing (4%)

- **Zoster (shingles):**
  - About 1 million cases of zoster annually U.S.; 10-11/1000 per year in persons 60 years of age and older\(^1\)
  - Lifetime risk 32%\(^1\)

- **Influenza:**
  - Disease burden varies year to year but averages millions of cases and 226,000 hospitalizations annually with >75% among adults\(^2\)
  - 3,000-56,000 deaths annually, >90% among adults\(^3,4\)

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\(^1\)Prevention of Herpes Zoster. *MMWR* 2008;57(RR-5): 1-3


\(^4\)CDC influenza website [www.cdc.gov/flu](http://www.cdc.gov/flu)

<table>
<thead>
<tr>
<th>Age</th>
<th>Averted Illnesses</th>
<th>Averted Medical Visits</th>
<th>Averted Hospitalizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>18–49 years</td>
<td>1,591,114</td>
<td>588,712</td>
<td>8,931</td>
</tr>
<tr>
<td>50–64 years</td>
<td>743,725</td>
<td>319,802</td>
<td>7,887</td>
</tr>
<tr>
<td>65 years and older</td>
<td>487,473</td>
<td>272,985</td>
<td>44,316</td>
</tr>
</tbody>
</table>

CDC website: Estimated Influenza Illnesses, Medical Visits, Hospitalizations, and Deaths Averted by Vaccination in the United States
www.cdc.gov/flu/about/disease/2015-16.htm
Flu Vaccine and Chronic Conditions

- **High-risk medical conditions**\(^1\)
  - 78% reduction in deaths attributable to any cause
  - 87% reduction in hospitalization attributable to acute respiratory or cardiovascular disease

- **Diabetes**\(^2\)
  - 56% reduction in any complication, 54% reduction in hospitalizations, 58% reduction in deaths

- **Chronic obstructive lung disease (COPD)**\(^3\)\(^–\)\(^4\)
  - Reduced COPD exacerbation

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4. Poole PJ. *Cochrane Database SystRev* 2006;(1):CD002733
Flu Vaccine is Good for the Heart

- Acute respiratory illness or influenza-like illness increases acute MI risk 2x

- Influenza vaccine decreased cardiac events
  - 29% (95% CI 9,44) against acute MI in persons with existing CVD
  - 36% (95% CI 14,53) against major cardiac events with existing CVD

- Recommended by American College of Cardiology and American Heart Association
  - “On par or better than accepted preventive measures [as] statins (36%), anti-hypertensives (15–18%), and smoking cessation (26%)”

Real People, Real Stories—Jacob Ryan Schmidt
A Son’s Life Cut Short by Influenza

- “Jacob was strong as a bull and enjoying life”
- “In 2010, at the age of 27, he succumbed to complications from H1N1 influenza”
- “His lungs collapsed... he developed an infection... his organs were shutting down”
- “After about five weeks of influenza ravaging his body, Jacob died”

For Jacob’s full story, visit: http://www.nfid.org/real-stories-real-people/jacob-influenza.html#sthash.qbrBJ6AE.dpuf

“Jacob was not someone you’d expect to fall ill to influenza. He was healthy and athletic, and built like a freight train.”
Recommended Immunization Schedule for Adults Aged 19 Years or Older, 2018
**Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2018**

In February 2018, the Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States 2018 was revised to be consistent with the Advisory Committee on Immunization Practices (ACIP) and approved by the Centers for Disease Control and Prevention (CDC). The adult immunization schedule was also approved by the American Academy of Family Physicians, the American Academy of Ophthalmologists and Osteopaths, and the American College of Nurse-Midwives.

**CDC announced the availability of the 2018 adult immunization schedule in the Morbidity and Mortality Weekly Report (MMWR).** The schedule is published in its entirety in the Annals of Internal Medicine.

The adult immunization schedule consists of figures that summarize routinely recommended vaccines for adults by age group and medical conditions and other indications, footnotes for the figures, and a table of vaccine contraindications and precautions. Note the following when reviewing the adult immunization schedule:

- The figures in the adult immunization schedule should be reviewed with the accompanying footnotes.
- The figures and footnotes display indications for which vaccines, if not previously administered, should be administered unless noted otherwise.
- The table of contraindications and precautions identifies populations and situations for which vaccines should not be used or should be used with caution.
- When indicated, administer recommended vaccines to adults whose vaccination history is incomplete or unknown.
- Increased interval between doses of a multidose vaccine series does not diminish vaccine effectiveness; it is not necessary to restart the vaccine series or add doses to the series because of an extended interval between doses.
- Combination vaccines may be used when any component of the combination is indicated and when the other components of the combination are not contraindicated.
- The use of trade names in the adult immunization schedule is for identification purposes only and does not imply endorsement by the CDC.

Special populations that need additional considerations include:

- Pregnant women: Pregnant women should receive the tetanus, diptheria, and acellular pertussis vaccine (Tdap) during pregnancy and the influenza vaccine during or before pregnancy. Live vaccines (e.g., measles, mumps, and rubella vaccine [MMR]) are generally acceptable.
- Asplenia: Adults with asplenia have specific vaccination recommendations because of their increased risk for infection by encapsulated bacteria. Antituberculous or functional asplenia includes congenital or acquired asplenia, splenic dysfunction, sickle cell disease, and other hemoglobinopathies, and splenectomy.
- Immunocompromising conditions: Adults with immunosuppression should generally avoid all vaccines with live attenuated vaccines (e.g., poliovaccine) generally acceptable. High-level immunosuppression includes HIV infection with a CD4 count <200 cells/µL, receipt of daily corticosteroid therapy with >20 mg or prednisone or equivalent for >14 days, primary immunodeficiency disorder (e.g., severe combined immunodeficiency or complement component deficiency), and receipt of cancer chemotherapy. Other immunocompromising conditions and immunosuppressive medications to consider when vaccinating adults can be found in IDSA Clinical Practice Guidelines for Vaccination of the Immunocompromised Host.

**Additional resources for health care providers include:**

- Details on vaccines recommended for adults and complete ACIP statements at www.cdc.gov/vaccines/hcp/acf/vaccine.shtml
- Vaccine information and travel requirements and recommendations at www.cdc.gov/vaccines/schedules/hcp/travel-destinations/list
- CDC Vaccine Schedules App for vaccination service providers to download at www.cdc.gov/vaccines/schedules/hcp/ schedule-app.html
- Adult Vaccination Quiz for self-assessment of vaccination needs based on age, health conditions, and other indications at www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html

CDC website: Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States 2018 www.cdc.gov/vaccines/schedules/hcp/adult.html
<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19–21 years</th>
<th>22–26 years</th>
<th>27–49 years</th>
<th>50–64 years</th>
<th>≥65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza(^1)</td>
<td>1 dose annually</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tdap(^3) or Td(^2)</td>
<td></td>
<td>1 dose Tdap, then Td booster every 10 yrs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR(^3)</td>
<td></td>
<td></td>
<td>1 or 2 doses depending on indication (if born in 1957 or later)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR(^4)</td>
<td></td>
<td></td>
<td></td>
<td>2 doses</td>
<td></td>
</tr>
<tr>
<td>RZV(^5) (preferred) or ZVL(^5)</td>
<td></td>
<td></td>
<td></td>
<td>2 doses RZV (preferred) or 1 dose ZVL</td>
<td></td>
</tr>
<tr>
<td>HPV–Female(^6)</td>
<td>2 or 3 doses depending on age at series initiation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV–Male(^6)</td>
<td>2 or 3 doses depending on age at series initiation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCV13(^7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>PPSV23(^7)</td>
<td></td>
<td></td>
<td>1 or 2 doses depending on indication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepA(^8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepB(^9)</td>
<td></td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
</tr>
<tr>
<td>MenACWY(^10)</td>
<td></td>
<td></td>
<td>1 or 2 doses depending on indication, then booster every 5 yrs if risk remains</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenB(^11)</td>
<td></td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
</tr>
<tr>
<td>Hib(^11)</td>
<td></td>
<td></td>
<td></td>
<td>1 or 3 doses depending on indication</td>
<td></td>
</tr>
</tbody>
</table>

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

Purple: Recommended for adults with other indications

No recommendation

CDC website: Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States 2018 [www.cdc.gov/vaccines/schedules/hcp/adult.html](http://www.cdc.gov/vaccines/schedules/hcp/adult.html)
### Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States 2018

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

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Pregnancy</th>
<th>Immunocompromised (excluding HIV infection)</th>
<th>HIV Infection CD4+ count (cells/mm³)</th>
<th>Asplenia, complement deficiencies</th>
<th>End-stage renal disease, on hemodialysis</th>
<th>Heart or lung disease, alcoholism</th>
<th>Chronic Liver disease</th>
<th>Diabetes</th>
<th>Health care personnel</th>
<th>Men who have sex with men</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>1 dose annually</td>
<td></td>
<td></td>
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<tr>
<td>Tdap or Td</td>
<td>1 dose Tdap each pregnancy</td>
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<td></td>
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</tr>
<tr>
<td>MMR</td>
<td>contraindicated</td>
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<tr>
<td>VAR</td>
<td>contraindicated</td>
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</tr>
<tr>
<td>RZV (preferred) or ZVL</td>
<td>2 doses RZV at age ≥50 yrs (preferred) or 1 dose ZVL at age ≥60 yrs</td>
<td></td>
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</tr>
<tr>
<td>HPV-Female</td>
<td>3 doses through age 26 yrs</td>
<td></td>
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<td></td>
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<tr>
<td>HPV-Male</td>
<td>3 doses through age 26 yrs</td>
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<td></td>
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</tr>
<tr>
<td>PCV13</td>
<td>1 dose</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>PPSV23</td>
<td>1, 2, or 3 doses depending on indication</td>
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<td></td>
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<tr>
<td>HepA</td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
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</tr>
<tr>
<td>HepB</td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenACWY</td>
<td>1 or 2 doses depending on indication, then booster every 5 yrs if risk remains</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MenB</td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Hib</td>
<td>3 doses HSCT recipients only</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

**Footnotes:**
- CDC website: Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States 2018 [www.cdc.gov/vaccines/schedules/hcp/adult.html](http://www.cdc.gov/vaccines/schedules/hcp/adult.html)
Influenza vaccination
www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/flu.html

General information:
- Administer 1 dose of age-appropriate inactivated influenza vaccine (IIV) or recombinant influenza vaccine (RIV) annually.
- Live attenuated influenza vaccine (LAIV) is not recommended for the 2017-2018 season.
- A list of currently available influenza vaccines is available at www.cdc.gov/vaccines/practiti/vaccine-vaccines.htm

Special populations:
- Adults with HIV/AIDS only egg allergy
- Adults with egg allergies other than eggs (e.g., anaphylaxis or egg allergy history)
  - Adult IIV or RIV in a medical setting under supervision of a healthcare provider who can recognize and manage severe allergic reactions

Tetanus, diphtheria, and pertussis vaccination
www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/tdap-td.html

General information:
- Administer to adults who previously did not receive a dose of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) as an adult or child (routine recommended at age 11–12 years) 1 dose of Tdap, followed by a dose of tetanus and diphtheria toxoids (Td) booster every 10 years.

Valle vai cancer vaccination
www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/varriac.html

General information:
- Administer to adults without evidence of immunity to varicella 2 doses of varicella vaccine (VAR) 4-8 weeks apart if previously received no varicella-containing vaccine (if previously received 1 dose of varicella-containing vaccine, administer 1 dose of VAR at least 4 weeks after the first dose).
- Evidence of immunity:
  - U.S. before 1980 (except for pregnant women and health care personnel, see below)
  - Documentation of receipt of 2 doses of varicella or varicella-containing vaccine at least 4 weeks apart
  - Diagnosis or verification of history of varicella or herpes zoster by a healthcare provider

Special populations:
- Pregnant women: Administer 1 dose of VAR during each pregnancy, preferably in the early part of gestation weekly 27-29 weeks
- Men who have sex with men through age 26 years

Measles, mumps, and rubella vaccination
www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/rmrv.html

General information:
- Administer 1 dose of measles, mumps, and rubella vaccine (MMR) to adults with no evidence of immunity to measles, mumps, or rubella.
- Evidence of immunity:
  - Born before 1957 (except for health care personnel, see below)
  - Documentation of receipt of MMR

Special populations:
- Pregnant women and nonpregnant women of childbearing age with no evidence of immunity to rubella: Administer 1 dose of MMR (if pregnant, administer MMR after pregnancy and before discharge from health care facility)
- Adults 2 doses of RZV: 2-6 months apart to adults aged 50 years or older regardless of prior exposure to herpes zoster or receipt of varicella vaccine

Human papillomavirus vaccination
www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hpv.html

General information:
- Administer human papillomavirus (HPV) vaccine to females through age 26 years and males through age 21 years (males aged 22 through 26 years may be vaccinated based on individual clinical decision)

Special populations:
- Age 9-14 years at HPV vaccine series initiation and received 1 dose or 2 doses less than 5 months apart
- Age 15-18 years at HPV vaccine series initiation and received 2 doses at least 5 months apart

Pneumococcal vaccination
www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/pneumo.html

General information:
- Administer to immunocompetent adults aged 65 years or older 1 dose of 13-valent pneumococcal conjugate vaccine (PCV13), if not previously 4 years apart
- Administer 2 doses of RZV: 2-6 months apart to adults aged 50 years or older regardless of prior exposure to herpes zoster or receipt of varicella vaccine
- Administer 2 doses of RZV: 2-6 months apart to adults who previously received ZVL at least 2 months after ZVL

Special populations:
- Age 15-18 years at HPV vaccine series initiation and received 2 doses at least 5 months apart

Zoster vaccination
www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/shingles.html

General information:
- Administer 2 doses of recombinant zoster vaccine (RZV): 2-6 months apart to adults aged 50 years or older regardless of prior exposure to herpes zoster or receipt of varicella vaccine
- Administer 2 doses of RZV: 2-6 months apart to adults who previously received ZVL at least 2 months after ZVL
- For adults aged 50 years or older, administer either RZV or ZVL (RZV is preferred)

Special populations:
- ZVL is contraindicated for pregnant women and adults with severe general medical conditions.
### Table. Contraindications and precautions for vaccines recommended for adults aged 19 years or older

The Advisory Committee on Immunization Practices (ACIP) recommendations and package inserts for vaccines provide information on contraindications and precautions related to vaccines. Contraindications are conditions that increase chances of a serious adverse reaction in vaccine recipients and the vaccine should not be administered when a contraindication is present. Precautions should be reviewed for potential risks and benefits for vaccine recipients.

#### Contraindications and precautions for vaccines routinely recommended for adults

<table>
<thead>
<tr>
<th>Vaccine(s)</th>
<th>Contraindications</th>
<th>Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>All vaccines routinely recommended for adults</td>
<td>Moderate or severe acute illness with or without fever</td>
<td>History of Guillain-Barré syndrome within 6 weeks after previous influenza vaccination</td>
</tr>
<tr>
<td>IIV³</td>
<td>Severe reaction, e.g., anaphylaxis, after a previous dose or to a vaccine component</td>
<td>Egg allergy other than hives, e.g., angioedema, respiratory distress, lightheadedness, or recurrent eczema; or required epinephrine or another emergency medical intervention (IIV may be administered in an inpatient or outpatient medical setting and under the supervision of a health care provider who is able to recognize and manage severe allergic conditions)</td>
</tr>
<tr>
<td>RV²</td>
<td>For pertussis-containing vaccines: encephalopathy, e.g., coma, decreased level of consciousness, or prolonged seizures, not attributable to another identifiable cause within 7 days of administration of a previous dose of a vaccine containing tetanus or diphtheria toxoid or acellular pertussis</td>
<td>Guillain-Barré syndrome within 6 weeks after a previous dose of tetanus toxoid-containing vaccine</td>
</tr>
<tr>
<td>RotaTeq, RotaShield</td>
<td></td>
<td>History of Arthus-type hypersensitivity reactions after a previous dose of tetanus or diphtheria toxoid-containing vaccine. Defer vaccination until at least 10 years have elapsed since the last tetanus toxoid-containing vaccine</td>
</tr>
<tr>
<td>MMR²</td>
<td>Severe immunodeficiency, e.g., hematologic and solid tumors, chemotherapy, congenital immunodeficiency or long-term immunosuppressive therapy, human immunodeficiency virus (HIV) infection with severe immunocompromise</td>
<td>For pertussis-containing vaccine, progressive or unstable neurologic disorder, uncontrolled seizures, or progressive encephalopathy (until a treatment regimen has been established and the condition has stabilized)</td>
</tr>
<tr>
<td>VAR⁵</td>
<td>Severe immunodeficiency, e.g., hematologic and solid tumors, chemotherapy, congenital immunodeficiency or long-term immunosuppressive therapy, HIV infection with severe immunocompromise</td>
<td>Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product)¹</td>
</tr>
<tr>
<td>ZVL³</td>
<td>Severe immunodeficiency, e.g., hematologic and solid tumors, chemotherapy, congenital immunodeficiency or long-term immunosuppressive therapy, HIV infection with severe immunocompromise</td>
<td>History of thrombocytopenia or thrombocytopenic purpura</td>
</tr>
<tr>
<td>HPV vaccine</td>
<td>Pregnancy</td>
<td>Need for tuberculin skin testing²</td>
</tr>
<tr>
<td>PCV13</td>
<td>Severe allergic reaction to any vaccine containing diphtheria toxoid</td>
<td>Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product)³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination)</td>
</tr>
</tbody>
</table>

#### Additional contraindications and precautions for vaccines routinely recommended for adults

<table>
<thead>
<tr>
<th>Vaccine(s)</th>
<th>Additional Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIV³</td>
<td>History of Guillain-Barré syndrome within 6 weeks after previous influenza vaccination</td>
</tr>
<tr>
<td>RV²</td>
<td></td>
</tr>
<tr>
<td>MMR²</td>
<td></td>
</tr>
<tr>
<td>VAR⁵</td>
<td></td>
</tr>
<tr>
<td>ZVL³</td>
<td></td>
</tr>
<tr>
<td>HPV vaccine</td>
<td></td>
</tr>
<tr>
<td>PCV13</td>
<td></td>
</tr>
</tbody>
</table>

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2. May be administered together with VAR or ZVL on the same day. If not administered on the same day, separate live vaccines by at least 28 days.
3. Immunosuppressive steroid dose is considered to be daily receipt of 20 mg or more prednisone or equivalent for 2 or more weeks. Vaccination should be deferred for at least 1 month after discontinuation of immunosuppressive steroid therapy. Providers should consult ACIP recommendations for complete information on the use of specific live vaccines among immunocompromised patients with immunosuppressive medications or with immune suppression because of other reasons.
4. Vaccine should be deferred for the appropriate interval if replacement immune globulin products are being administered. See: Best practices guidance of the Advisory Committee on Immunization Practices (ACIP). Available at www.cdc.gov/vaccines/hcp/prof/general-scs/index.html.
5. Measles vaccine may temporarily suppress tuberculin reactivity. Measles-containing vaccine may be administered on the same day as tuberculin skin testing, or should be postponed for at least 4 weeks after vaccination.

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Recommended Immunization Schedule for Adults Aged 19 Years or Older, 2018

- "Syndication"
  - Display immunization schedules on your website
  - You will see the CDC words and images display within your web page
  - Nothing else changes on your web page

- CDC vaccine schedule app
  - Complete schedule including medical conditions and footnotes
  - For smartphone and tablet devices
  - Free downloads are available from the iTunes App Store and Google Play
  - 2018 version of the schedules App will be available in early March

CDC website: Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States 2018 [www.cdc.gov/vaccines/schedules/hcp/adult.html#schedules](http://www.cdc.gov/vaccines/schedules/hcp/adult.html#schedules)
Updates/Changes to this Year’s Schedule

- **Tdap/Td:**
  - “Td/Tdap” has been replaced by “Tdap or Td” on Figures 1 and 2 and the text in the indication bar has been revised to “1 dose Tdap, then Td booster every 10 years.”

- **HPV:**
  - Figure 1, the text in the indication bar for HPV in Figure 1 vaccine for females and males has been revised to “2 or 3 doses depending on age at series initiation.”

- **MMR:**
  - Administer 1 dose of MMR to adults who previously received ≤2 doses of mumps-containing vaccine and are identified by a public health authority to be at increased risk during a mumps outbreak.
  - The text in the indication bar for MMR in Figure 1 for has been changed to “1 or 2 doses depending on indication (if born in 1957 or later).”
Upd ades/Changes to this Year’s Schedule

- **MenACWY:**
  - In Figures 1 and 2, the text in the indication bar for MenACWY (serogroups A, C, W, and Y meningococcal vaccine) has been revised to “1 or 2 doses depending on indication, then booster every 5 years if risk remains.”
  - MPSV4 (4-valent meningococcal polysaccharide vaccine) is no longer available and has been removed from the adult immunization schedule.

- **Zoster:**
  - Administer 2 doses of recombinant zoster vaccine (RZV, Shingrix) 2–6 months apart to adults aged 50 years or older regardless of past episode of herpes zoster or receipt of zoster vaccine live (ZVL, Zostavax).
  - Administer 2 doses of RZV 2–6 months apart to adults who previously received ZVL at least 2 months after ZVL.
  - For adults aged 60 years or older, administer either RZV or ZVL (RZV is preferred).
  - “ZVL” has replaced the term “HZV” (herpes zoster vaccine) that was used in past adult immunization schedules to refer to the live zoster vaccine. A row for RZV was added above the row for ZVL and a dashed line was used to separate RZV and ZVL rows to denote that the two zoster vaccines are recommended for the same purpose.
Adult Immunization Rates
Adult Immunization Coverage, Selected Vaccines by Age and Increased-Risk Status, 2013-2015, United States

- **Pneumococcal, IR 19-64 yrs**
  - 2013
  - 2014
  - 2015

- **Pneumococcal, ≥65 yrs**
  - 2013
  - 2014
  - 2015

- **Zoster, ≥60 yrs**
  - 2013
  - 2014
  - 2015

HP 2020 Targets: 90% PPV ≥65 years, 60% PPV IR 19-64 years, 30% zoster ≥60 years

Hepatitis A Vaccination Coverage by Age and High-Risk Status, United States

- HepA (≥2 doses), 19-49 yrs: 12%
- HepA (≥2 doses), Endemic Area Travel: 16%
- HepA (≥2 doses), No Endemic Area Travel: 5%
- HepA (≥2 doses), Chronic Liver Disease: 9%
- HepA (≥2 doses), ≥19 yrs: 9%

2015 National Health Interview Survey at www.cdc.gov/nchs/nhis/index.htm
Proportion of Adults 19 Years of Age and Older Who Received Tdap Vaccine

<table>
<thead>
<tr>
<th>Group</th>
<th>Tdap/Td+Tdap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults, ≥19 years, Overall</td>
<td>72</td>
</tr>
<tr>
<td>HCP, ≥19 years</td>
<td>78*</td>
</tr>
<tr>
<td>Non-HCP, ≥19 years</td>
<td>71</td>
</tr>
</tbody>
</table>

*p<0.05 by t test for comparisons between HCP and non-HCP ≥19 years

HPV Vaccination Coverage (at Least 1 Dose Ever), Adults 19-26 Years of Age by Sex, United States

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

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Influenza Adults ≥65 years 2014–2015</th>
<th>Pneumonia Adults ≥65 years 2015</th>
<th>Tdap Adults ≥65 years 2015</th>
<th>Zoster Adults ≥60 years 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>75.1%</td>
<td>68.1%</td>
<td>18.2%</td>
<td>34.6%</td>
</tr>
<tr>
<td>Black</td>
<td>64.3%</td>
<td>50.2%</td>
<td>9.7%</td>
<td>13.6%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>64.1%</td>
<td>41.7%</td>
<td>9.1%</td>
<td>16.0%</td>
</tr>
<tr>
<td>Asian</td>
<td>83.5%</td>
<td>49.0%</td>
<td>13.8%</td>
<td>26.0%</td>
</tr>
<tr>
<td>Other</td>
<td>77.2%</td>
<td>62.7%</td>
<td>n/a</td>
<td>28.0%</td>
</tr>
<tr>
<td>Overall</td>
<td>73.5%</td>
<td>63.6%</td>
<td>16.5%</td>
<td>30.6%</td>
</tr>
</tbody>
</table>

Standards for Adult Immunization Practice

www.cdc.gov/vaccines/AdultStandards
Standards for Adult Immunization Practice

- Developed in 1990 to improve vaccine delivery to adults, updated in 2014 by National Vaccine Advisory Committee (NVAC)
- All HCPs, including those who do not provide vaccination services, have role in ensuring patients up to date on vaccines
- Call to action:
  - ASSESS vaccination status of all patients at every clinical encounter
  - Strongly RECOMMEND vaccines that patients need
  - ADMINISTER needed vaccines or REFER to a vaccine service provider
  - DOCUMENT vaccines received by patients in state immunization information systems

Public Health Reports 2014;129:115–123
Assessment is the critical first step in ensuring that your adult patients get the vaccines they need for protection against serious vaccine-preventable diseases.

Your patients’ vaccination needs will change over time based on factors such as:
- Age
- Health conditions
- Lifestyle
- Occupation
- Travel

Adults think immunization is important, but most are not aware of all the vaccines they need. They rely on HCP to tell them which vaccines are recommended for them.
Recommend Needed Vaccines

- Strongly recommend vaccines that your patients need, whether your office stocks them or not.
- Your recommendation can make a difference.
- Clinicians are the most valued and trusted source of health information for adults.
- Adults believe that vaccines are important, but many are not aware of all the vaccines they need.
Strong Recommendation

- Strong provider recommendation for vaccines has been shown in numerous studies to be a key factor in the patient’s decision to vaccinate or not

- Framing a strong recommendation = Same way and same day!
  - “Bundle recommendation”: an effective recommendation includes all needed vaccines
  - “Today, you need 2 vaccines- flu and pneumococcal vaccines. These vaccine will protect you from influenza and invasive pneumococcal disease. We’ll give you those shots today.”
Administer Needed Vaccines

- Recommend and offer vaccines at the same visit.
- Research shows that when patients receive a vaccine recommendation and are offered the vaccine at the same time, they are more likely to get vaccinated.
- For vaccines you don’t stock, REFER patients to a local immunization provider that can vaccinate.
Influenza vaccination coverage before and during pregnancy among women pregnant any time during October 1, 2016 – January 31, 2017, and who visited a health care provider at least once since July 2016, by provider recommendation or offer

- Offered: 71% (n = 1,243)
- Recommended but not offered: 44% (n = 223)
- No recommendation: 15% (n = 371)

CDC Internet Panel Survey 2017
Keeping All Staff On the Same Page

- Align consistent immunization messages for ALL staff
- Communicate with mission
  - All staff need to be saying the same thing
  - Create/share talking points
  - Educate staff about vaccine recommendations including schedule, administration, storage and handling
Document Vaccinations

▪ Keep an up-to-date record of the vaccines your patients have received to make sure they have the best protection against vaccine-preventable diseases.

▪ To ensure patients get the vaccines they need and to prevent unnecessary vaccination, you should:
  – Record vaccinations in patients’ medical records.
  – Provide documentation of vaccines received to patients for their personal records.
  – Document vaccinations in immunization information systems (IISs).
Documenting Vaccination and Immunization Records

- Federal law requires the following information must be documented on the patient's paper or electronic medical record or on a permanent office log the:
  - Vaccine manufacturer
  - Vaccine lot number
  - Date the vaccine is administered
  - Name, office address, and title of the health care provider administering the vaccine
  - Vaccine information statement (VIS) edition date located in the lower right corner on the back of the VIS
  - Date the VIS is given to the patient, parent, or guardian

- Some states and/or local jurisdictions have additional requirements

https://www.cdc.gov/vaccines/hcp/adults/for-practice/standards/documentation.html
Evidence-Based Strategies to Improve Vaccination Rates
Components of Successful Vaccination Programs

- Strategies shown to improve coverage:
  - Reduce missed opportunities
  - Integrate standing orders
  - Use reminder prompts to providers
  - Educate clinicians and staff
  - Use a patient reminder–recall system
  - Use immunization information systems (IISs)

- Use a combination of strategies

www.thecommunityguide.org/vaccines/index.html
Missed Opportunities

- Missed opportunity: a health care encounter in which a person is eligible to receive vaccination but is not vaccinated completely.

- Reasons cited for missed opportunities:
  - Lack of simultaneous administration
  - Unaware the patient needs additional vaccines
  - Invalid contraindications
  - Inappropriate clinic policies
  - Reimbursement deficiencies
Standing Orders

- Standing orders authorize nurses, pharmacists, and other appropriately trained healthcare personnel, where allowed by state law, to assess a patient’s immunization status and administer vaccinations according to a protocol approved by an institution, physician, or other authorized clinician.

- Standing orders enable staff to assess and vaccinate patients without the need for clinician examination or direct order from the attending provider at the time of the visit.
Knowledgeable Staff

- Before administering vaccines, all personnel who will administer vaccines should:
  - Receive competency-based training
  - Have knowledge and skills validated

- Integrate competency-based training into:
  - New staff orientation
  - Annual education requirements

- Ongoing education:
  - Whenever vaccine administration recommendations are updated
  - When new vaccines are added to inventory

Skills checklist for immunization

Multiple education products available free through the CDC website:
  - You Call the Shots self-study modules
  - Netconferences
    • Next one: March 21, 2018
  - Immunization courses (webcasts and online self-study)

Continuing education available

Patient Reminder/Recall

- Reminder—notification that immunizations are due soon
- Recall—notification that immunizations are past due
- Content of message and technique of delivery vary
- Reminders and recall have been found to be effective
Provider Prompts

- Communication to health care providers that a patient’s immunizations are due soon or past due
- Examples include:
  - Computer-generated list
  - Stamped note in the chart
  - “Immunization Due” clip on chart
  - Electronic reminder in an electronic medical record
Immunization Information Systems (IISs)

Documenting vaccinations in the IIS can benefit your practice by:
- Consolidating vaccination records for your patients
- Helping you assess your patients’ immunization status
- Reducing chances for unnecessary doses of vaccine or missed opportunities to provide vaccines
- Facilitating use of reminder and recall notifications to send to patients
- Making calculation of your office’s immunization coverage rates easier

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

- Family Medicine: Assess 95, Recommend 97, Administer 95, Refer 75, Use IIS 47
- Internal Medicine: Assess 97, Recommend 98, Administer 94, Refer 69, Use IIS 47
- Ob/Gyn: Assess 84, Recommend 95, Administer 87, Refer 87, Use IIS 39
- Other Specialties: Assess 67, Recommend 85, Administer 80, Refer 55, Use IIS 22
- Pharmacy: Assess 68, Recommend 86, Administer 91, Refer 64, Use IIS 42
Reduce of Other Barriers to Immunization

- Physical barriers clinic hours
  - waiting time
  - distance

- Psychological barriers
  - unpleasant experience
  - vaccine safety concerns
What Can Be Done to Improve Vaccination?

- Increase convenience and access to vaccines.
- Incorporate vaccination into patient flow.
- Use IIS to document vaccination
  - Tools to remind patients and providers
  - Consolidates patients’ vaccination records in one place
- Consider immunization data as quality measures of choice.

Provide strong recommendations to patients
Health Care Personnel Resources
CDC Vaccine and Immunization Resources

Questions? Email CDC

nipinfo@cdc.gov or www.cdc.gov/cdcinfo

Immunization website

www.cdc.gov/vaccines

Twitter

@DrNancyM_CDC

Influenza

www.cdc.gov/flu

Vaccine Safety

www.cdc.gov/vaccinesafety
CDC Immunization Apps for Health Care Personnel

Childhood and adult immunization schedules
www.cdc.gov/vaccines/schedules/hcp/schedule-app.html

Influenza information
www.cdc.gov/flu/apps/cdc-influenza-hcp.html

*Morbidity and Mortality Weekly Report (MMWR)*
www.cdc.gov/mobile/applications/mobileframework/mmwrpromo.html

Travel well
www.nc.cdc.gov/travel/page/apps-about
Infections that can be prevented through vaccination impact persons of all ages
- Adults, especially older adults, often disproportionately impacted

Vaccines are available but are underutilized, especially for adults, including:
- Vaccination of pregnant women to prevent influenza and pertussis in infants younger than 6 months
- Adults 19 and older with high-risk conditions e.g., diabetes

Ensuring that adults are up to date on recommended vaccines, including vaccines they may not have received as a child or adolescent, is key to helping adults stay healthy and preventing hospitalizations, disability, and premature deaths

Summary
Questions?

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jwolicki@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)

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