

Recommended Adult Immunization Schedule United States, 2018

Paul Hunter, Chair

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Advisory Committee on Immunization Practices

October 24, 2018

Thank You



Laura Riley, MD
ACIP Adult Immunization WG Chair
2016–2018



Adult Immunization Schedule – Background

- Updated each year
 - Represents current, approved ACIP policy
 - Designed for implementation of ACIP policy
- Approved by
 - CDC Director
 - American College of Physicians
 - American Academy of Family Physicians
 - American College of Obstetricians and Gynecologists
 - American College of Nurse-Midwives
- Publication early February 2019
 - MMWR announcement of availability on ACIP website
 - Annals of Internal Medicine (published in entirety)

Updates in ACIP Recommendations for Adults

Policy Statements Published after 2018 Adult Schedule Approval

- Hepatitis B (Feb 2018 ACIP Meeting)
 - Schillie et al. *MMWR* Apr 2018;67(15):455–458
 - Recommended use of CpG-adjuvanted HepB
- Tdap (Summary)
 - Liang et al. *MMWR* Apr 2018;67(2):1–44
 - Reiterated use of Tdap for adult catch-up and during each pregnancy
- Influenza (Jun 2018)
 - Grohskopf et al. *MMWR* Aug 2018;67(3):1–20
 - Updated use of LAIV as option for 2018–2019
- Hepatitis A (Oct 2018)
 - *MMWR* publication pending
 - Added homelessness as indication for HepA

Usability Testing for Adult Immunization Schedule

- Formal evaluation of 2018 schedule for usability
- In-depth interviews of users
- Redesign adult immunization schedule
- Survey of providers on redesign (reactions and preferences)

Review Immunization Recommendations for Pregnancy

- “No recommendation” for HPV, zoster, PCV13, MenB, Hib in pregnancy
- Review policy and update pregnancy column

Figure 2. Recommended immunization schedule for adults aged 19 years or older by pregnancy status.
This figure should be reviewed with the accompanying footnotes. This figure and the footnotes describe indications for which vaccination is recommended.

Vaccine	Pregnancy ¹⁻⁶	Immuno-compromised (excluding HIV infection) ^{2-7,9,10}	HIV infection CD4+ count (cells/ μ L) ^{2-7,9,10}	Asplenia, complement deficiencies ^{7,10,11}	End-stage renal disease, on hemodialysis ¹²
Influenza ¹	Yellow				1 dose in each trimester
Tdap ² or Td ²	Yellow (1 dose Tdap each pregnancy)				1 dose Tdap, then Td annually
MMR ²	Contraindicated	Contraindicated	<200	>200	1 or 2 doses depending on history
VAR ⁴	Contraindicated	Contraindicated	<200	>200	1 or 2 doses depending on history
RZV ⁵ (preferred over ZV) or ZV ⁵					2 doses RZV at a 2-month interval
HPV–Female ⁶		Contraindicated			1 dose ZV
HPV–Male ⁶		Contraindicated			2 or 3 doses ZV
PCV13 ⁷			3 doses through age 26 yrs		2 or 3 doses ZV
PPSV23 ⁷			3 doses through age 26 yrs		2 or 3 doses ZV
HepA ⁸					
HepB ⁹					
MenACWY ¹⁰			1 or 2 doses depending on indication, 1 dose if immunocompromised		
MenB ¹⁰				2 or 3 doses depending on indication	
Hib ¹¹		3 doses HSCT recipients only		1 dose	

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

 Recommended for adults with contraindications

Harmonization with Child and Adolescent Schedule

- Overlapping vaccinations
 - H. flu, hepatitis A, hepatitis B, HPV, influenza, MMR, meningococcal, pneumococcal, Tdap/Td, varicella
- Harmonize language, text structure, graphics (to extent possible)
- Collaborators
 - Adult Immunization WG, Child/Adolescent Immunization WG, disease and vaccination SMEs, communication and training staff

Adult Immunization Session Agenda

- Usability testing of 2018 adult immunization schedule
- Updated display for pregnancy
- Harmonization with draft 2019 child and adolescent schedule
- Draft 2019 adult immunization schedule
 - Updated ACIP recommendations
 - Standardized language and text structure
 - Revised graphics and format
- Discussion and vote on *Recommended Adult Immunization Schedule, United States, 2019*

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Updates in ACIP Recommendations

Updates in ACIP Recommendations 2019 Adult Immunization Schedule

- Influenza vaccination
 - Use of LAIV
- Hepatitis A vaccination
 - Homelessness as an indication
- Hepatitis B vaccination
 - Use of CpG-adjuvanted HepB

Usability Testing of Adult Schedule

Usability Testing of Adult Schedule – Background

- 2016 schedule evaluated ad hoc to improve usability
 - By Human Factors and Ergonomics Society, Georgia Institute of Technology¹
 - Based on human factors-driven efficiency of use, select recommendations incorporated in 2017 adult schedule
- 2017 schedule footnotes updated
 - For consistency between vaccination sections
 - Format, language, abbreviations, mathematical symbols
- 2018 schedules formally evaluated for usability²

1. Chen D et al. Improving the U.S. adult immunization schedule by applying usability principles. Proceed Human Factors Ergonom Soc Ann Meet 2018;62:1316–1320

2. Porter-Novelli Public Services, Inc. Contract number 200–2015–F–88117

Adult Schedule Evaluation – Overview

- Purpose – Determine how providers use adult immunization schedule to guide practices and identify improvements to increase usability
- Feb 2017 to Sep 2018
- Methods
 - Qualitative interviews of providers
 - Redesign of immunization schedules
 - Survey of providers on immunization schedule preferences (old vs. new)

Qualitative Interviews

- Purpose – Identify ways to increase usability, acceptability, and adoption of adult immunization schedule by providers
- In-depth interviews with providers (N=48)
 - Internists (8); family physicians (8); PAs and NPs (12); RNs, LPNs, MAs (12); pharmacists (8) screened for reported familiarity with schedule
 - Feedback on case-based patient scenarios by telephone and screen-sharing platform
- Discussion
 - Physicians, PAs, NPs, RNs, pharmacists reported recommending vaccines
 - Not confident EMRs updated and comprehensive
 - Difficulty using generic and trade names
 - Most providers referenced Figure 1 (recs by age) only, few referenced Figure 2 (recs by medical and other indications), fewer referenced footnotes and Table of Contraindications and Precautions

Redesign Graphics

- Purpose – Improve usability of the adult schedule based on results from qualitative interviews
- Methods
 - Little direction provided through qualitative interviews
 - Develop prototype graphics based on assumptions
 - Balance document length and text size and density
- Discussion
 - Re-title to “Recommended Adult Immunization Schedule, United States, 20XX”
 - Maintain overall format and flow
 - Reduce amount of information on cover page, redesign to “compartmentalize” information
 - Include table of generic and trade names, abbreviations
 - Figures replaced by Tables, Footnotes replaced by Notes (vaccinations listed alphabetically)
 - Delete Table of Contraindications and Precautions, make Notes easier to read

Survey of Providers on Usability

- Purpose – Obtain feedback from providers on redesign features of adult and child/adolescent immunization schedules
- Methods
 - Standardized survey administered online to primary care providers who see at least 50 patients/month
 - Adult schedule: 251 internists and family physicians
 - Child and adolescent schedule: 249 pediatricians and family physicians
 - Compared original and redesigned 2018 immunization schedules

2018 Cover Page

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 became effective, as recommended by 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 College of Physicians, the American Academy of Family Physicians, the American College of Obstetricians and Gynecologists, 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)*.¹ The schedule is published in its entirety in the *Annals of Internal Medicine*.²

The adult immunization schedule consists of figures that summarize routinely recommended vaccines for adults by age groups 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 ACIP or CDC.

Special populations that need additional considerations include:

- Pregnant women. Pregnant women should receive the tetanus, diphtheria, 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 contraindicated.
- Asplenia. Adults with asplenia have specific vaccination recommendations because of their increased risk for infection by encapsulated bacteria. Anatomical 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 live vaccines. Inactivated vaccines (e.g., pneumococcal vaccines) are generally acceptable. High-level immunosuppression includes HIV infection with a CD4 cell count <200 cells/ μ l, receipt of daily corticosteroid therapy with ≥20 mg of 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 *ISDA Clinical Practice Guideline for Vaccination of the Immunocompromised Host*.³ Additional information on vaccinating immunocompromised adults is in *General Best Practice Guidelines for Immunization*.⁴

Additional resources for health care providers include:

- Details on vaccines recommended for adults and complete ACIP statements at www.cdc.gov/vaccines/hcp/acip-recs/index.html
- Vaccine Information Statements that explain benefits and risks of vaccines at www.cdc.gov/vaccines/hcp/vis/index.html
- Information and resources on vaccinating pregnant women at www.cdc.gov/vaccines/adults/hec-vac/pregnant.html
- Information on travel vaccine requirements and recommendations at www.cdc.gov/travel/destinations/list
- CDC Vaccine Schedules App for immunization 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 www2.cdc.gov/nip/adultvaccines/default.asp
- Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger at www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html

Report suspected cases of reportable vaccine-preventable diseases to the local or state health department, and report all clinically significant postvaccination events to the Vaccine Adverse Event Reporting System at www.fda.gov or by telephone, 800-822-7967. All vaccines included in the adult immunization schedule except 23-valent pneumococcal polysaccharide and zoster vaccines are covered by the Vaccine Injury Compensation Program. Information on how to file a vaccine injury claim is available at www.hrsa.gov/vaccinecompensation or by telephone, 800-232-4363, in English and Spanish, 8:00am–8:00pm ET, Monday–Friday, excluding holidays.

The following abbreviations are used for vaccines in the adult immunization schedule (in the order of their appearance):

IV	inactivated influenza vaccine
RV	recombinant influenza vaccine
Tdap	tetanus and diphtheria toxoids
Td	tetanus and diphtheria toxoids, and acellular pertussis vaccine
MMR	measles, mumps, and rubella vaccine
VAR	varicella vaccine
RZV	recombinant zoster vaccine
ZVL	zoster vaccine live
HPV vaccine	human papillomavirus vaccine
PCV13	13-valent pneumococcal conjugate vaccine
PPSV23	23-valent pneumococcal polysaccharide vaccine
HepA	hepatitis A vaccine
HepA-HepB	hepatitis A vaccine and hepatitis B vaccine
HepB	hepatitis B vaccine
MenACWY	serogroups A, C, W, and Y meningococcal vaccine
MenB	serogroup B meningococcal vaccine
Hib	Haemophilus influenzae type b vaccine

1. MMWR Morb Mortal Wkly Rep. 2018;67(5). Available at: www.cdc.gov/mmwr/volumes/67/ww/mm6705e1.htm.

2. Ann Intern Med. 2018;168:210–220. Available at: annals.org/aim/article/doi/10.7326/M17-3439.

3. Clin Infect Dis. 2014;58:e44–100. Available at: [www.isda.org.org/Templates/Content.aspx?Id=3221229&Id1=1](http://isda.org.org/Templates/Content.aspx?Id=3221229&Id1=1).

4. ACIP. Available at: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html.

Redesigned Cover Page

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

How to determine which licensed vaccines are recommended* for adults age 19 years and older in the United States:

Recommendation By Age: Table 1	Recommendation By Medical Condition and Other Indications: Table 2	General Information and Considerations for Special Populations: Table 3	REPORT Cases Suspected cases of reportable vaccine-preventable diseases to the local or state health department.
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BEFORE ADMINISTERING ANY VACCINE

- Adults with incomplete or unknown vaccination histories may receive recommended vaccines when indicated.
- Restarting or adding doses to a multi-dose vaccine series is not necessary if the intervals increase between doses because such intervals do not diminish effectiveness.
- For adults with immunocompromising conditions: In general, inactivated vaccines, such as the pneumococcal or inactivated influenza vaccines may be used, but avoid live vaccines, such as the measles, mumps, and rubella vaccine.
- Combination vaccines may be used when any of component is indicated and the other components are not contraindicated.

* Adults with incomplete or unknown vaccination histories may receive recommended vaccines when indicated.

† Restarting or adding doses to a multi-dose vaccine series is not necessary if the intervals increase between doses because such intervals do not diminish effectiveness.

‡ For adults with immunocompromising conditions: In general, inactivated vaccines, such as the pneumococcal or inactivated influenza vaccines may be used, but avoid live vaccines, such as the measles, mumps, and rubella vaccine.

§ Combination vaccines may be used when any of component is indicated and the other components are not contraindicated.

Abbreviation	Vaccine	Trade Name ^{**}
IV	inactivated influenza vaccine	Many
TD	tetanus and diphtheria toxoids	Tetradac
Tdap	tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine	Adacel, Boostrix
MMR	measles, mumps, and rubella vaccine	M-M-R II, ProQuad
VAR	varicella vaccine	Varivax
RZV	recombinant zoster vaccine	Shingrix
HIV	recombinant influenza vaccine	Flublok
ZVL	zoster vaccine live	Zostavax
HPV vaccine	human papillomavirus vaccine	Gardasil, Gardasil 9
PCV13	13-valent pneumococcal conjugate vaccine	Pneumovax 13
PPSV23	23-valent pneumococcal polysaccharide vaccine	Pneumovax 23
HepA	hepatitis A vaccine	Hevacite, Vacitec
HepA-HepB	hepatitis A vaccine and hepatitis B vaccine	Twinrix
HepB	hepatitis B vaccine	Engerix-B, Heplix-B, Recombivax HB
MenACWY	serogroups A, C, W, and Y meningococcal vaccine	Menactra
MenB	serogroup B meningococcal vaccine	Bexsero, Trumenba
Hib	Haemophilus influenzae type b vaccine	ActHib, Hiberix, PedvaxHib

^{**}The Schedule became effective in January 1, 2018, after recommendation by the Advisory Committee on Immunization Practices (ACIP) and approval by the Centers for Disease Control and Prevention (CDC). The Schedule also received review and approval from the American Academy of Pediatrics (www.acip.org), the American College of Physicians (www.acip.org), and the American College of Obstetricians and Gynecologists (www.acip.org). Complete ACIP statements are available at www.cdc.gov/acip.

The CDC, on behalf of the availability of the Schedule in the *Morbidity and Mortality Weekly Report (MMWR)* (Morb Mortal Wkly Rep. 2018;67:210–220), has made the Schedule available online at www.cdc.gov/acip.

The Schedule is not copyrighted and may be used and copied without permission. Citation of the source is, however, appreciated.

[†]The use of trade names in the adult immunization schedule is for identification purposes only and does not imply endorsement by the ACIP or CDC.

**U.S. Department of Health & Human Services
Centers for Disease Control**

Download the CDC Vaccine Schedules App
for service providers at
www.cdc.gov/acip/mobile/vaccine-schedule-app.html

The Schedule became effective in January 1, 2018, after recommendation by the Advisory Committee on Immunization Practices (ACIP) and approval by the Centers for Disease Control and Prevention (CDC). The Schedule also received review and approval from the American Academy of Pediatrics (www.acip.org), the American College of Physicians (www.acip.org), and the American College of Obstetricians and Gynecologists (www.acip.org). Complete ACIP statements are available at www.cdc.gov/acip.

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SUGGESTED CITATION:
Centers for Disease Control and Prevention. Recommended Immunization Schedule for Adults Aged 19 Years or Older, United States, 2018. www.cdc.gov/acip/mobile/vaccine-schedule-app.html. Published February 2018. Accessed 1/10.



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

2018 Figure 2

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

Vaccine	Pregnancy ¹⁻⁶	Immuno-compromised (excluding HIV infection) ³⁻¹¹	HIV infection CD4+ count (cells/uL) ^{1-6,10} <200 ≥200	Asplenia, complement deficiencies ^{1,10,11}	End-stage renal disease, on hemodialysis ^{1,9}	Heart or lung disease, alcoholism ^{7,9}	Chronic liver disease ¹⁻⁴	Diabetes ^{1,9}	Health care personnel ¹⁻⁴	Men who have sex with men ¹⁻⁴
Influenza ¹										1 dose annually
Tdap ¹ or Td ¹	1 dose Tdap each pregnancy									1 dose Tdap, then Td booster every 10 yrs
MMR ¹	contraindicated									1 or 2 doses depending on indication
VAR ¹	contraindicated									2 doses
RZV ¹ (preferred)										2 doses RZV at age ≥50 yrs (preferred)
or										OR
ZVL ¹	contraindicated									1 dose ZVL at age ≥60 yrs
HPV-Female ⁸		3 doses through age 26 yrs					2 or 3 doses through age 26 yrs			
HPV-Male ⁹		3 doses through age 26 yrs					2 or 3 doses through age 21 yrs		2 or 3 doses through age 26 yrs	
PCV13 ²						1 dose				
PPSV23 ⁷							1, 2, or 3 doses depending on indication			
HepA ⁴							2 or 3 doses depending on vaccine			
HepB ⁹							3 doses			
MenACWY ¹⁰										1 or 2 doses depending on indication, then booster every 5 yrs if risk remains
MenB ¹¹										2 or 3 doses depending on vaccine
Hib ¹¹		3 doses HSCT recipients only				1 dose				

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

 Recommended for adults with other indications

 Contraindicated

 No recommendation

Redesigned Table 2

Table 2. Medical condition and other indications recommendations for immunization of adults aged 19 years or older, *United States, 2018*



Medical condition and other indications recommendations

for immunization of adults aged 19 years or older, *United States, 2018*

Note: general information and considerations for special populations are in Table 3, on page 4. Additional vaccination information and resources are available:

- **Pregnancy** www.cdc.gov/vaccines/adults/recs/vaccine-pregnant.html
- **Immune-compromising conditions:** www.ncbi.nlm.nih.gov/Template/Content.cgi?ID=3212256011 and www.cdc.gov/mmwr/preview/mmwrhtml/mm602a3.htm
- **Asplenia** places adults at increased risk for encapsulated bacteria infection. Anatomical or functional asplenia includes congenital or acquired asplenia, splenic dysfunction, sickle cell disease and other hemoglobinopathies, and splenectomy.
- **Travel:** wwwnc.cdc.gov/travel/destinations/

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4+ count (cells/uL) <200 ≥200	Asplenia, persistent complement deficiencies	End-stage renal disease, on hemodialysis	Heart or lung disease, chronic alcoholism	Chronic liver disease	Diabetes	Health care personnel	Men who have sex with men
1 dose annually										
1 dose Tdap, then Td booster every 10 years										
1 or 2 doses depending on indication										
2 doses										
2 doses RZV at age ≥50 years (preferred)										
OR										
1 dose ZVL at age ≥60 years										
3 doses through age 26 years										
2 or 3 doses through age 26 years										
2 or 3 doses through age 21 years										
2 or 3 doses through age 26 years										
1 dose										
1, 2, or 3 doses depending on indication										
2 or 3 doses depending on vaccine										
3 doses										
1 or 2 doses depending on indication, then booster every 5 yrs if risk remains										
2 or 3 doses depending on vaccine										
3 doses										
1 or 2 doses depending on indication, then booster every 5 years if risk remains										
2 or 3 doses depending on vaccine										
1 dose										
3 doses post-HSCT recipients only										
1 dose										
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										

2018 Footnotes

Redesigned Notes

Footnotes. Recommended immunization schedule for adults aged 19 years or older, United States, 2018

1. 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 influenza season
- A list of currently available influenza vaccines is available at www.cdc.gov/flu/protect/vaccine/vaccine.htm

Special populations

- Adults age-appropriate IIV or RIV to:
 - Pregnant women
 - Adults with **hives-only** egg allergy
 - Adults with **egg allergy** other than hives (e.g., angioedema or respiratory distress): Administer IIV or RIV in a medical setting under supervision of a health care provider who can recognize and manage severe allergic conditions

2. 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 (initially recommended at age 11–12 years; 1 dose of Tdap, followed by a dose of tetanus and diphtheria toxoids [Td] booster every 10 years)
- Information on the use of Tdap or Td as tetanus prophylaxis in wound management is available at www.cdc.gov/mmwr/preview/mmwrhtml/mm5127a1.htm

Special populations

- Pregnant women: Administer 1 dose of Tdap during each pregnancy, preferably in the early part of gestational weeks 27–36

3. Measles, mumps, and rubella vaccination

www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/meas.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 is:
 - Born before 1957 (except for health care personnel, see below)
 - Documentation of receipt of MMR
 - Laboratory evidence of immunity or disease

- Special populations:
 - Pregnant women: Administer 1 dose of Tdap during each pregnancy, preferably in the early part of gestational weeks 27–36
 - Measles, mumps, and rubella vaccination: Administer 2 doses of 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 rVAR at least 4 weeks after the first dose) to:
 - Pregnant women without evidence of immunity: Administer the first of the 2 doses or the second dose after pregnancy and before discharge from health care facility
 - Health care personnel without evidence of immunity: Administer 2 doses of rVAR and 1 dose of MMR

- Documentation of receipt of MMR

- Documentation of a health care provider-diagnosed disease without laboratory confirmation is not considered evidence of immunity

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)

- HIV infection and CD4 cell count ≥ 200 cells/ μ L, for at least 6 months and no evidence of immunity to measles, mumps, or rubella: Administer 2 doses of MMR at least 28 days apart
- Students in postsecondary educational institutions, international travelers, and household contacts of immunocompromised persons: Administer 2 doses of MMR at least 28 days apart (or 1 dose of MMR if previously administered 1 dose of MMR)
- Health care personnel born in 1957 or later with no evidence of immunity: Administer 2 doses of MMR at least 28 days apart for measles or mumps, or 1 dose of MMR for rubella (if born before 1957, consider MMR vaccination)
- Adults who previously received **2** doses of mumps-containing vaccine and are identified by public health authority to be at increased risk for mumps in an outbreak: Administer 1 dose of MMR
- MMR is contraindicated for pregnant women and adults with severe immunodeficiency

6. Human papillomavirus vaccination

www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/varicella.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 rVAR at least 4 weeks after the first dose)
- Evidence of immunity to varicella is:
 - U.S.-born 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 health care provider
 - Laboratory evidence of immunity or disease

Special populations

- Adults with immunocompromising conditions (including HIV infection) through age 26 years: Administer 3-dose series at 0, 1–2, and 6 months
- Men who have sex with men through age 26 years: Administer 2- or 3-dose series depending on age at initial vaccination (see above); if no history of HPV vaccine, administer 3-dose series at 0, 1–2, and 6 months
- Pregnant women through age 26 years: HPV vaccination is not recommended during pregnancy, but there is no evidence that the vaccine is harmful and no intervention needed for women who inadvertently receive HPV vaccine while pregnant; delay resuming doses until after pregnancy; pregnancy testing is not needed before vaccination

7. Pneumococcal vaccination

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

General information

- Administer 2 doses of PCV13 4–8 weeks apart if previously received no pneumococcal conjugate vaccine (PCV13) or if previously received 1 dose of PCV13, followed by 1 dose of 23-valent pneumococcal polysaccharide vaccine (PPSV23) at least 1 year after PCV13, if PPSV23 was previously administered but not PCV13; administer PCV13 at least 1 year after PPSV23
- When both PCV13 and PPSV23 are indicated, administer PCV13 first (PCV13 and PPSV23 should not be administered during the same visit); additional information on vaccine timing is available at www.cdc.gov/vaccines/vpd/pneumo/downloads/pneumo-vaccine-timing.pdf

Table 3.

Recommended schedule and use of vaccines for adults aged 19 years and older, *United States, 2018* cont.



HepA

Special populations (continued)

- More than three doses with more
- Injections or noninjection drug use
- Work with hepatitis A virus in research laboratory or nonhuman primates with hepatitis A infection

General recommendation

- Not at risk but want protection from hepatitis A (identification of risk factor not required): 3 doses HepA-alum at 0, 1–6 months (minimum intervals: 4 weeks between doses 1 and 2; 3 weeks between doses 2 and 3); or 3 doses HepA-CpG at least 1 month apart (unless 2 doses of HepA-CpG are used at least 1 month apart, 3 doses of HepA-CpG combined with other HepA is needed to complete series)

Special populations

- At risk for hepatitis B: 3 doses HepA-alum, 3 doses HepA-HepB, or 2 doses HepA-CpG as above
- Chronic liver disease (e.g., cirrhosis, fatty liver disease, alcoholic liver disease, autoimmune hepatitis, alanine aminotransferase [ALT] or aspartate aminotransferase [AST] level greater than twice upper limit of normal)
- Hepatitis C infection
- HBV infection

Special populations: MenACWY

- At risk for serogroup A, C, W, or Y meningococcal disease: 2 doses MenACWY at least 8 weeks apart and revaccinate every 5 years if risk remains

Anatomical or functional asplenia (including sickle cell disease and other hemophagocytoses)

- HBV infection
- Persistent complement component deficiency
- Eculizumab use

- Other risks for serogroup A, C, W, or Y meningococcal disease: 1 dose MenACWY and revaccinate every 5 years if risk remains

Travel in countries with hyperendemic or epidemic meningococcal disease

- Meningococcal disease outbreak attributed to serogroup A, C, W, or Y
- Microbiologists routinely exposed to Neisseria meningitidis
- Military recruits

Special populations:

- Anatomical or functional asplenia, including sickle cell disease: 1 dose Hib if not previously vaccinated; if elective splenectomy, 1 dose Hib; preferably at least 14 days before splenectomy

- Travel in countries with high or intermediate endemic hepatitis A

- Close contact with international adoptees in first 60 days after arrival from country with high or intermediate endemic hepatitis A

Post-exposure prophylaxis: 2 doses HepA

- Percutaneous or mucosal risk of exposure to blood (e.g., household contacts of hepatitis B surface antigen [HBsAg]-positive persons; younger than age 50 years with diabetes mellitus [age 50–64 years] or receiving hemodialysis or peritoneal dialysis; recent or current injection drug use; health-care and public safety workers at risk for exposure to blood or blood-contaminated body fluid)

- Sexual exposure risk (e.g., sex partners of hepatitis B surface antigen [HBsAg]-positive persons; sexually active persons not in mutually monogamous relationships; persons seeking evaluation or treatment for a sexually transmitted infection; and men who have sex with men [MSM])

- Rescue care in settings with high risk for hepatitis B (e.g., facilities for sexually transmitted disease treatment, HIV testing and treatment, drug abuse treatment and prevention services, hemodialysis and end-stage renal disease programs, and developmentally disabled persons; health care settings that target injection drug users; or MSM; and correctional facilities)

- Travel in countries with high or intermediate endemic hepatitis B

- Information on use of IMpD for post-exposure prophylaxis in health care and other settings available at www.cdc.gov/pneumococcal/im-pd.htm

- First-year college students who live in residential housing (if did not receive MenACWY at age 16 years or older)

Special populations: MenB

- At risk for serogroup B meningococcal disease: 2 doses MenB-4C at least 1 month apart or 3 doses MenB-Hib at 0, 1–2, 6 months

- Anatomical or functional asplenia (including sickle cell disease and other hemophagocytoses)

- Persistent complement component deficiency
- Eculizumab use

- Meningococcal disease outbreak attributed to serogroup B
- Microbiologists routinely exposed to Neisseria meningitidis

- Age 16–22 years (age 16–18 years preferred) who are not at increased risk but, based on individual clinical decision, want protection from serogroup B meningococcal disease: 2 doses MenB-4C at least 1 month apart or 2 doses MenB-Hib at least 6 months apart (MenB-4C and MenB-Hib are not interchangeable)

- Hematopoietic stem cell transplant (HSCT): 3 doses Hib 4 weeks apart between doses starting 12 months after successful transplant regardless of Hib vaccination history

MenACWY or MenB

MenB

Special populations:

- Anatomical or functional asplenia, including sickle cell disease: 1 dose Hib if not previously vaccinated; if elective splenectomy, 1 dose Hib; preferably at least 14 days before splenectomy

Results – Survey of Providers on Usability

- Adult Immunization Schedule
 - Redesigned cover page easier to use
 - Original color scheme easier to use
 - Should increase font size
 - List fewer vaccines and health conditions per table
 - Overall, 2 out of 3 preferred original over redesigned schedule (mostly due to color)
- Child and Adolescent Immunization Schedule
 - No difference between original and redesigned cover page and Table 1
 - Original color scheme easier to use
 - Should increase font size
 - Overall, redesigned schedule (except for color) slightly preferred

Updated Display for Pregnancy

Review Available Information on Pregnancy

"In general, inactivated vaccines may be administered to pregnant women... [except] HPV vaccine, which should be deferred during pregnancy because of a lack of safety and efficacy data." Pink Book

"There are no available data to establish whether RZV is safe in pregnant or lactating women and there is currently no ACIP recommendation for RZV... Consider delaying vaccination with RZV..." MMWR 67(3);103–108

"HPV vaccines are not recommended for use in pregnant women... [Vaccination] should be delayed until completion of pregnancy." MMWR 64(11);300–304

"Available data... are insufficient to inform... risks in pregnancy. [A study] in female rabbits... revealed no evidence of harm to the fetus... due to [PCV13]." Package Insert (FDA)

"MenB... vaccination should be deferred in women known to be pregnant or lactating unless the woman is at increased risk for serogroup B meningococcal disease, and, after consultation with her health care provider, the benefits of vaccination are considered to outweigh the potential risks." MMWR 66(19);509–513

"Animal reproduction studies have not been conducted with [Hib]. It is also not known whether [Hib] can cause fetal harm when administered to a pregnant woman..." Package Inserts (FDA)

Figure 2. Recommended immunization schedule for adults aged 19 years or older by
This figure should be reviewed with the accompanying footnotes. This figure and the footnotes describe indications for whi

Vaccine	Pregnancy ¹⁻⁴	Immunocompromised (excluding HIV infection) ^{5-7, 11}	HIV infection CD4+ count (cells/µL) ^{2, 7, 9-10}	Asplenia, complement deficiencies ^{2, 10, 11}	End-stage renal disease, or hemodialysis ¹¹
		<200	≥200		
Influenza ¹	1 dose				1 dose
Tdap ² or Td ²	1 dose Tdap each pregnancy				1 dose Tdap, then Td
MMR ²	contraindicated				1 or 2 doses depending on indication
VAR ⁴	contraindicated				
RZV ⁵ (preferred over ZVL ⁶)					2 doses RZV at a minimum 1-month interval
ZVL ⁵	contraindicated				1 dose ZVL
HPV-Female ⁶		3 doses through age 26 yrs			2 or 3 doses
HPV-Male ⁶		3 doses through age 26 yrs			2 or 3 doses
PCV13 ⁷					
PPSV23 ⁷					
HepA ⁸					
HepB ⁹					
MenACWY ¹⁰		1 or 2 doses depending on indication, 1 dose for persons aged ≥50 yrs			
MenB ¹⁰				2 or 3 doses depending on indication	
Hib ¹¹		3 doses HSCT recipients only		1 dose	

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

 Recommended for adults with indications

Refine Display for Pregnancy Column

- Influenza (IIV, RIV), Tdap
 - ■ Recommended routinely
- PPSV23, HepA, HepB, MenACWY
 - ■ Recommended if other indications present
- MMR, VAR, ZVL, LAIV
 - ■ Contraindicated
- RZV, HPV, PCV13, MenB, Hib
 - ■ Delay until after pregnancy → RZV, HPV
 - ■ Precaution—weigh risk vs. benefit → MenB
 - ■ No recommendation → PCV13, Hib

Figure 2. Recommended immunization schedule for adults aged 19 years or older by
This figure should be reviewed with the accompanying footnotes. This figure and the footnotes describe indications for whi

Vaccine	Pregnancy ¹⁻⁴	Immu- nocompromised (excluding HIV infection) ^{2-7, 11}	HIV infection CD4+ count (cells/ μ L) ^{2-7, 9-10}		Asplenia, complement deficiencies ^{2, 10, 11}	End-stage renal disease, or hemodialysis ¹¹
			<200	≥ 200		
Influenza ¹						1 dose
Tdap ² or Td ²	1 dose Tdap each pregnancy					1 dose Tdap, then Td
MMR ²						1 or 2 doses depending on indication ²
VAR ²						
RZV ² (preferred) or ZVL ²						2 doses RZV at a minimum of 8 weeks apart ²
HPV-Female ⁶			3 doses through age 26 yrs			2 or 3 doses ⁶
HPV-Male ⁶			3 doses through age 26 yrs			2 or 3 doses ⁶
PCV13 ⁷						“no evidence of harm” (FDA)
PPSV23 ⁷						
HepA ⁸						
HepB ⁹						
MenACWY ¹⁰						“defer... unless at increased risk”, “weigh benefit/risk”
MenB ¹⁰						no information
Hib ¹¹			3 doses Hib ¹¹ recipients only			1 dose

■ Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection
■ Recommended for adults with indications

Table 1. Summary of Maternal Immunization Recommendations**ACOG Committee Opinion, 2018**

Vaccine*	Indicated During Every Pregnancy	May Be Given During Pregnancy in Certain Populations	Contraindicated During Pregnancy	Can Be Initiated Postpartum or When Breastfeeding or Both
Inactivated influenza	X ^{†,1,2}			X [‡]
Tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap)	X ^{†,3,4}			X [‡]
Pneumococcal vaccines		X ^{§,5,6}		X ^{§,5,6}
Meningococcal conjugate (MenACWY) and Meningococcal serogroup B		X ^{,7}		X ^{,7}
Hepatitis A		X ^{¶,8}		X ^{¶,8}
Hepatitis B		X ^{#,9,10}		X ^{#,9,10}
Human papillomavirus (HPV)**				X ^{**,11,12}
Measles–mumps–rubella			X ^{††,13,14}	X ^{††}
Varicella			X ^{††,13,15,16}	X ^{††}

*An “X” indicates that the vaccine can be given in this window. See the corresponding numbered footnote for details.

Harmonization with Child and Adolescent Schedule

Harmonization of Schedules & Standardization of Notes

- Shortened title
- Included trade names on list (trade names used in HepA, HepB, MenACWY, MenB notes)
- Simplified and compartmentalized content on cover page
- Changed “footnotes” to “notes” and alphabetized “notes”
- Organized notes by heading (“routine vaccination” and “special situations”—“special situations” used to refer to people and indications)
- Revised notes for brevity, clarity, consistency
- Used bold text to highlight population or indication for which vaccination recommended, minimized use of specialized text
- Removed articles, conjunctions, other words if meaning not compromised
- Used consistent text structure and language (e.g., 00-dose series VAC at 0, 00, 000 months)

Proposed Recommended Adult Immunization Schedule, United States, 2019

Cover Page

Recommended Adult Immunization Schedule

Recommended Adult Immunization Schedule for ages 19 years or older

UNITED STATES 2019

How to use the adult immunization schedule

- 1 Determine recommended vaccinations by age (**Table 1**)
- 2 Assess need for additional recommended vaccinations by medical condition and other indications (**Table 2**)
- 3 Review frequency and consider special circumstances (**Table 3**)

Vaccines in the Adult Immunization Schedule*

Antigens	Vaccines	Abbreviations	Trade names
<i>Haemophilus influenzae</i> type b	<i>Haemophilus influenzae</i> type b vaccine	Hib	ActHIB Hiberix
Hepatitis A	Hepatitis A vaccine	HepA	Havrix Vaqta
	Hepatitis A and hepatitis B vaccine	HepA-HepB	Twinrix

List of vaccines, abbreviations, trade names

Influenza	Inactivated influenza vaccine	IIV	Many brands
	Live attenuated influenza vaccine	LAIV	FluMist
	Recombinant influenza vaccine	RIV	Flublok
Measles, mumps, and rubella	Measles, mumps, and rubella vaccine	MMR	M-M-R II
Meningococcal	Meningococcal serogroups A, C, W, Y vaccine	MenACWY	Menactra Menveo
	Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero Trumenba
Pneumococcal	Pneumococcal 13-valent conjugate vaccine	PCV13	Prevnr 13
	Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax
Tetanus, diphtheria, and pertussis	Tetanus and diphtheria toxoids	Td	Tenivac Td vaccine
	Tetanus and diphtheria toxoids and acellular pertussis vaccine	Tdap	Adacel Boostrix
Varicella	Varicella vaccine	VAR	Varivax
Zoster	Recombinant zoster vaccine	RZV	Shingrix
	Zoster vaccine live	ZVL	Zostavax

***Administer recommended vaccines if vaccination history is incomplete or unknown. Do not restart or add doses to vaccine series for extended intervals between doses. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.**

Shortened title

on Immunization Practices (www.cdc.gov/vaccines/acip) and approved by the Centers for Disease Control and Prevention, the American Academy of Family Physicians (www.aafp.org), the American College of Obstetricians and Gynecologists (www.acog.org), and the American College of Nurse-Midwives (www.midwife.org).

Instructions on how to use

Report

- Suspected cases of reportable vaccine-preventable diseases to the local or state health department
- Clinically significant post-vaccination reactions to the Vaccine Adverse Event Reporting System at www.vaers.hhs.gov or 800-822-7967

Injury claims

All vaccines included in the ac

pneumococcal 23-valent poly:

by the Vaccine Injury Compensation Program. A vaccine injury claim is available at 800-338-2382.

Questions or comments

Contact CDC at www.cdc.gov/cdc-info or 800-CDC-INFO (800-232-4636), in English or Spanish, 8 a.m.–8 p.m. ET, Monday through Friday, excluding holidays.

Helpful information

- Complete ACIP recommendations:
www.cdc.gov/vaccines/hcp/acip-recs/index.html
- General Best Practice Guidelines for Immunization:
www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Vaccine Information Statements:
www.cdc.gov/vaccines/hcp/vics/index.html

Manual for the Surveillance of Vaccine-preventable Diseases
(including case identification and outbreak response):
www.cdc.gov/vaccines/pubs/surv-manual

- Travel vaccine recommendations: www.cdc.gov/travel

Added resource on disease case identification and outbreak response



Table 1

Recommended Adult Immunization Schedule by Age Group

Table 1 Recommended Adult Immunization Schedule by Age Group
United States, 2019

Vaccine	19–21 years	22–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV) or Influenza recombinant (RIV)			1 dose annually		
Influenza live attenuated (LAIV)	or		or	1 dose annually	
Tetanus, diphtheria, pertussis (Tdap or Td)			1 dose Tdap, then Td booster every 10 yrs		
LAIV separated from IIV and RIV			2 doses depending on indication (if born in 1957 or later)		
Varicella (VAR)			2 doses		
Zoster recombinant (RZV) (preferred)					2 doses
Zoster live (ZVL)	or				or 1 dose
Human papillomavirus (HPV) Female	2 or 3 doses depending on age at initial vaccination				
Human papillomavirus (HPV) Male	2 or 3 doses depending on age at initial vaccination				
Pneumococcal conjugate (PCV13)				1 dose	
Pneumococcal polysaccharide (PPSV23)			1 or 2 doses depending on indication		1 dose
Hepatitis A (HepA)			2 or 3 doses depending on vaccine		
Hepatitis B (HepB)			2 or 3 doses depending on vaccine		
Meningococcal A, C, W, Y (MenACWY)			1 or 2 doses depending on indication, then booster every 5 yrs if risk remains		
Meningococcal B (MenB)			2 or 3 doses depending on vaccine and indication		
Haemophilus influenzae type b (Hib)			1 or 3 doses depending on indication		
 Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of past infection		 Recommended vaccination for adults with an additional risk factor or other indication			
					

Table 2

Recommended Adult Immunization Schedule by Medical Condition and Other Indications

Table 2**Recommended Adult Immunization Schedule by Medical Condition and Other Indications**
United States, 2019

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 count <200 ≥200	Asplenia, complement deficiencies	End-stage renal disease, on hemodialysis	Heart or lung disease, alcoholism ¹	Chronic liver disease	Diabetes	Health care personnel ²	Men who have sex with men
IIV or RIV or LAIV						1 dose annually				
Tdap or Td	1 dose Tdap each pregnancy				1 dose Tdap, then Td boost					
MMR						1 or 2 doses				
VAR						2 doses				
RZV (preferred) or ZVL							2 doses at age ≥50 yrs			
HPV Female		3 doses through age 26 yrs				2 or 3 doses through age 26 yrs				
HPV Male		3 doses through age 26 yrs				2 or 3 doses through age 21 yrs			2 or 3 doses through age 26 yrs	
PCV13					1 dose					
PPSV23							2 or 3 doses depending on age and indication			
HepA							2 or 3 doses depending on vaccine			
HepB							2 or 3 doses depending on vaccine			
MenACWY			1 or 2 doses depending on indication			then booster every 5 yrs if risk remains				
MenB			2 or 3 doses							
Hib		3 doses HSCT ³ recipients only								

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

Recommended vaccination for adults with an additional risk factor or other indication

Delay vaccination until after pregnancy if vaccine indicated

Precaution—vaccine might be indicated if benefit of protection outweighs risk of adverse reaction

Contraindicated—vaccine should not be administered because of risk for serious adverse reaction

No recommendation
NOT APPROVED FOR DISTRIBUTION

1. Alcoholism is not a precaution for LAIV. 2. See notes for influenza; hepatitis B; measles, mumps, and rubella; and varicella vaccinations. 3. Hematopoietic stem cell transplant.

Notes

Recommended Adult Immunization Schedule

Removed language on use of HepA and Hep B in outbreaks

least 14 days before splenectomy

- **Hematopoietic stem cell transplant (HSCT):** 3-dose series Hib 4 weeks apart starting 6–12 months after successful transplant regardless of Hib vaccination history

Hepatitis A vaccination

Routine vaccination

- **Not at risk but want protection from hepatitis A** (identification of risk factor not required): 2-dose series HepA (Havrix 6–12 months apart or Vaqta 6–18 months apart [minimum interval: 6 months]) or 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: 4 weeks between doses 1 and 2, 5 months between doses 2 and 3])

Special situations

- **At risk for hepatitis A infection:** 2-dose series HepA as above
 - **Chronic liver disease**
 - **Clotting factor disorders**
 - **Men who have sex with men**
 - **Injection or non-injection drug use**
 - **Homelessness**
 - **work with hepatitis A virus** in research laboratory

Added “homelessness” for HepA

- **Close personal contact with international adoptee** (e.g., household, regular babysitting) in first 60 days after arrival from country with high or intermediate endemic hepatitis A (administer dose 1 as soon as adoption is planned, at least 2 weeks before adoptee’s arrival)

Hepatitis B vaccination

Routine vaccination

- **Not at risk but want protection from hepatitis B** (identification of risk factor not required): 2- or 3-dose series HepB (2-dose series Heplisav-B at least 4 weeks apart [2-dose series HepB only applies when 2 doses of Heplisav-B are used at least 4 weeks apart] or 3-dose series Engerix-B or Recombivax HB at 0, 1, 6 months [minimum intervals: 4 weeks between doses 1 and 2, 5 months between doses 2 and 3])

Added use of CpG-adjuvanted HepB

Human papillomavirus vaccination

Routine vaccination

- **Females through age 26 years and males through age 21 years;** males age 22 through 26 years may be vaccinated based on individual clinical decision (HPV vaccination routinely recommended at age 11–12 years)

- **Age 15 years or older at initial vaccination:** 3-dose

[minimum intervals: 2 months between doses 1 and 2, 1 month between doses 2 and 3; repeat dose if administered too soon]

- **Age 9 through 14 years at initial vaccination and received 1 dose, or 2 doses less than 5 months apart:** 1 dose HPV vaccine
- **Age 9 through 14 years at initial vaccination and received 2 doses at least 5 months apart:** HPV vaccination complete, no additional dose needed
- If completed valid vaccination series with any HPV vaccine, no additional doses needed

Special situations

- **Immunocompromising conditions, including HIV infection, through age 26 years:** 3-dose series HPV vaccine at 0, 1–2, 6 months as above
- **Men who have sex with men and transgender persons through age 26 years:** 2- or 3-dose series

Added “transgender persons” for HPV vaccination



Notes

Recommended Adult Immunization Schedule United States, 2019

Influenza vaccination

Routine vaccination

1 dose IIV, RIV, or LAIV appropriate for age and health status annually

• For additional guidance, see www.cdc.gov/flu/professionals/index.htm

Added LAIV option, when not to use LAIV

in medical setting under supervision of health care provider who can recognize and manage severe allergic conditions

Pregnancy, immunocompromising conditions including HIV infection, anatomical or functional asplenia, age 50 years or older, use of influenza antiviral medications in previous 48 hours, or care for severely immunocompromised persons in protected environment: 1 dose IIV or RIV annually (LAIV not recommended)

Measles, mumps, and rubella vaccination

Routine vaccination

• **No evidence of immunity to measles, mumps, or rubella:** 1 dose MMR

- Evidence of immunization or receipt of MMR or evidence of disease (diagnosis and confirmation is required)

Special situations for MMR

• **Pregnancy with no evidence of immunity to rubella:** MMR contraindicated during pregnancy; after pregnancy (before discharge from health care facility), 1 dose MMR

• **Non-pregnant women of childbearing age with no evidence of immunity to rubella:** 1 dose MMR

• **HIV infection with CD4 count ≥ 200 cells/ μ L for at least 6 months and no evidence of immunity to measles, mumps, or rubella:** 2-dose series MMR at least 4 weeks apart; MMR contraindicated in HIV infection with CD4 count < 200 cells/ μ L

• **Severe immunodeficiency:** MMR contraindicated

• **Students in postsecondary educational institutions, international travelers, and household or close personal contacts of immunocompromised persons with no evidence of immunity to measles, mumps, or rubella:** 1 dose MMR if previously received 1 dose MMR, or 2-dose series MMR at least 4 weeks apart if previously did not receive any MMR

• **Health care personnel born in 1957 or later with no evidence of immunity to measles, mumps, or rubella:** 2-dose series MMR at least 4 weeks apart for measles or mumps, or at least 1 dose MMR for rubella; if born before 1957, consider 2-dose series MMR at least 4 weeks apart for measles or mumps, or 1 dose MMR for rubella

Meningococcal vaccination

Special situations for MenACWY

Removed language on use of MMR in mumps outbreak and MenACWY and MenB in meningococcal outbreak

• **First-year college students who live in residential housing** (if not previously vaccinated at age 16 years or older) and **military recruits:** 1 dose MenACWY

Special situations for MenB

• **Anatomical or functional asplenia, including sickle cell disease, persistent complement component deficiency, eculizumab use, microbiologists routinely exposed to *Neisseria meningitidis*:** 2-dose series MenB-4C (Bexsero) at least 1 month apart, or 3-dose series MenB-FHbp (Trumenba) at 0, 1–2, 6 months (if dose 2 was administered at least 6 months after dose 1, dose 3 not needed); MenB-4C and MenB-FHbp are not interchangeable (use same product for all doses in series)

Pregnancy: Delay MenB until after pregnancy unless at increased risk and vaccination benefit outweighs potential risks

• **Healthy adolescents and young adults age 16 through**

Added “precaution” for MenB use in pregnancy

3 at least 4 months after dose 2); MenB-4C and MenB-FHbp are not interchangeable (use same product for all doses in series)



Pneumococcal vaccination

Routine vaccination

- **Age 65 years or older** (immunocompetent): 1 dose PCV13 if previously did not receive PCV13, followed by 1 dose PPSV23 at least 1 year after PCV13 and at least 5 years after last dose PPSV23
 - Previously received PPSV23 but not PCV13 at age 65 years or older: 1 dose PCV13 at least 1 year after PPSV23
 - When both PCV13 and PPSV23 are indicated, administer PCV13 first (PCV13 and PPSV23 should not be administered during same visit)

Special situations

- **Age 19 through 64 years with chronic medical conditions (chronic heart [excluding hypertension], lung, or liver disease; diabetes), alcoholism, or cigarette smoking:** 1 dose PPSV23
- **Age 19 years or older with immunocompromising conditions (congenital or acquired immunodeficiency including B- and T-lymphocyte deficiency, complement deficiencies, phagocytic disorders; HIV infection; chronic renal failure; nephrotic syndrome; leukemia; lymphoma; Hodgkin disease; generalized malignancy; iatrogenic immunosuppression, e.g., drug or radiation therapy; solid organ transplant; multiple myeloma) or anatomical or functional asplenia, including sickle cell disease and other hemoglobinopathies:** 1 dose PCV13 followed by 1 dose PPSV23 at least 8 weeks later, then another dose PPSV23 at least 5 years after PPSV23; at age 65 years or older, administer 1 dose PPSV23 at least 5 years after most recent dose PPSV23 (note: only 1 dose PPSV23 recommended at age 65 years or older)
- **Age 19 years or older with cerebrospinal fluid leak or cochlear implant:** 1 dose PCV13 followed by 1 dose PPSV23 at least 8 weeks later; at age 65 years or older, administer another dose PPSV23 at least 5 years after PPSV23 (note: only 1 dose PPSV23 recommended at age 65 years or older)

Tetanus, diphtheria, and pertussis vaccination

Routine vaccination

- **Previously did not receive Tdap at or after age 11 years:** 1 dose Tdap, then Td booster every 10 years

Special situations

- **Previously did not receive primary vaccination series for tetanus, diphtheria, and pertussis:** 1 dose Tdap followed by 1 dose Td at least 4 weeks after Tdap, and another dose Td 6–12 months after last Td (Tdap can be substituted for any Td dose, but preferred as first dose); Td booster every 10 years
- **Pregnancy:** 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36
- For information on use of Tdap or Td as tetanus prophylaxis in wound management, see www.cdc.gov/mmwr/volumes/67/rr/rr6702a1.htm

- **Health care personnel with no evidence of immunity to varicella:** 1 dose VAR if previously received 1 dose varicella-containing vaccine, or 2-dose series VAR 4–8 weeks apart if previously did not receive any varicella-containing vaccine, regardless of whether U.S.-born before 1980
- HIV infection with CD4 count ≥ 200 cells/ μ L with no evidence of immunity: Consider 2-dose series VAR 3 months apart based on individual clinical decision; VAR contraindicated in HIV infection with CD4 count < 200 cells/ μ L
- Severe immunocompromising conditions: VAR contraindicated

Zoster vaccination

Routine vaccination

Updated use of RZV in pregnancy and status of RZV recommendations in severely immunocompromised

Special situations

- Pregnancy: ZVL contraindicated; consider delaying RZV until after pregnancy if RZV indicated
- Severe immunocompromising conditions including HIV infection with CD4 count < 200 cells/ μ L: ZVL contraindicated; recommendations for RZV under review



Discussion

Recommended Adult Immunization Schedule for ages 19 years or older

UNITED STATES
2019

How to use the adult immunization schedule

1 Determine recommended vaccinations by age (**Table 1**)

2 Assess need for additional recommended vaccinations by medical condition and other indications (**Table 2**)

3 Review vaccine types, frequencies, and intervals, and considerations for special situations (**Notes**)

Recommended by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip) and approved by the Centers for Disease Control and Prevention (www.cdc.gov), American College of Physicians (www.acponline.org), Academy of Family Physicians (www.aafp.org), American College of Obstetricians and Gynecologists (www.acog.org), and American College of Nurse-Midwives (www.midwife.org).

Vaccines in the Adult Immunization Schedule*

Antigens	Vaccines	Abbreviations	Trade names
<i>Haemophilus influenzae</i> type b	<i>Haemophilus influenzae</i> type b vaccine	Hib	ActHIB Hiberix
Hepatitis A	Hepatitis A vaccine	HepA	Havrix Vaqta
	Hepatitis A and hepatitis B vaccine	HepA-HepB	Twinrix
Hepatitis B	Hepatitis B vaccine	HepB	Enerix-B Recombivax HB Heplisav-B
	Hepatitis A and hepatitis B vaccine	HepA-HepB	Twinrix
Human papillomavirus	Human papillomavirus vaccine	HPV vaccine	Gardasil 9
Influenza	Inactivated influenza vaccine	IIV	Many brands
	Live attenuated influenza vaccine	LAIV	FluMist
	Recombinant influenza vaccine	RIV	Flublok
Measles, mumps, and rubella	Measles, mumps, and rubella vaccine	MMR	M-M-R II
Meningococcal	Meningococcal serogroups A, C, W, Y vaccine	MenACWY	Menactra Menveo
	Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero Trumenba
Pneumococcal	Pneumococcal 13-valent conjugate vaccine	PCV13	Prevnar 13
	Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax
Tetanus, diphtheria, and pertussis	Tetanus and diphtheria toxoids	Td	Tenivac Td vaccine
	Tetanus and diphtheria toxoids and acellular pertussis vaccine	Tdap	Adacel Boostrix
Varicella	Varicella vaccine	VAR	Varivax
Zoster	Recombinant zoster vaccine	RZV	Shingrix
	Zoster vaccine live	ZVL	Zostavax

*Administer recommended vaccines if vaccination history is incomplete or unknown. Do not restart or add doses to vaccine series for extended intervals between doses. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

Report

- Suspected cases of reportable vaccine-preventable diseases to the local or state health department
- Clinically significant post-vaccination reactions to the Vaccine Adverse Event Reporting System at www.vaers.hhs.gov or 800-822-7967

Injury claims

All vaccines included in the adult immunization schedule except pneumococcal 23-valent polysaccharide and zoster vaccines are covered by the Vaccine Injury Compensation Program. Information on how to file a vaccine injury claim is available at www.hrsa.gov/vaccinecompensation or 800-338-2382.

Questions or comments

Contact CDC at www.cdc.gov/cdc-info or 800-CDC-INFO (800-232-4636), in English or Spanish, 8 a.m.–8 p.m. ET, Monday through Friday, excluding holidays.

Helpful information

- Complete ACIP recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- General Best Practice Guidelines for Immunization: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Vaccine Information Statements: www.cdc.gov/vaccines/hcp/vis/index.html
- Manual for the Surveillance of Vaccine-preventable Diseases (including case identification and outbreak response): www.cdc.gov/vaccines/pubs/surv-manual
- Travel vaccine recommendations: www.cdc.gov/travel
- Recommended Child and Adolescent Immunization Schedule, United States, 2019: www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html



Download the CDC Vaccine Schedules App for providers at www.cdc.gov/vaccines/schedules/hcp/schedule-app.html



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