



## 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](http://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/vaccines.htm](http://www.cdc.gov/flu/protect/vaccine/vaccines.htm)

#### Special populations

- Administer 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](http://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 (routinely 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/rr5517a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5517a1.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/mmr.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mmr.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
- 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)

#### Special populations

- Administer to adults aged 19 through 64 years with the following chronic conditions 1 dose of PPSV23 (at age 65 years or older, administer 1 dose of PCV13, if not previously received, and another dose of PPSV23 at least 1 year after PCV13 and at least 5 years after PPSV23):
  - Chronic heart disease** (excluding hypertension)
  - Chronic lung disease**
  - Chronic liver disease**
  - Alcoholism**
  - Diabetes mellitus**
  - Cigarette smoking**
- Administer to adults aged 19 years or older with the following indications 1 dose of PCV13 followed by 1 dose of PPSV23 at least 8 weeks after PCV13, and a second dose of PPSV23 at least 5 years after the first dose of PPSV23 (if the most recent dose of PPSV23 was administered before age 65 years, at age 65 years or older, administer another dose of PPSV23 at least 5 years after the last dose of PPSV23):
  - Immunodeficiency disorders** (including B- and T-lymphocyte deficiency, complement deficiencies, and phagocytic disorders)
  - HIV infection**
  - Anatomical or functional asplenia** (including sickle cell disease and other hemoglobinopathies)
  - Chronic renal failure and nephrotic syndrome**
- Administer to adults aged 19 years or older with the following indications 1 dose of PCV13 followed by 1 dose of PPSV23 at least 8 weeks after PCV13 (if the dose of PPSV23 was administered before age 65 years, at age 65 years or older, administer another dose of PPSV23 at least 5 years after the last dose of PPSV23):
  - Cerebrospinal fluid leak**
  - Cochlear implant**

### 8. Hepatitis A vaccination

[www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepa.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepa.html)

#### General information

- Administer to adults who have a specific risk (see below), or lack a risk factor but want protection, 2-dose series of single antigen hepatitis A vaccine (HepA; Havrix at 0 and 6–12 months or Vaqta at 0 and 6–18 months; minimum interval: 6 months) or a 3-dose series of combined hepatitis A and hepatitis B vaccine (HepA-HepB) at 0, 1, and 6 months; minimum intervals: 4 weeks between first and second doses, 5 months between second and third doses

#### Special populations

- Administer HepA or HepA-HepB to adults with the following indications:
  - Travel to or work in countries with high or intermediate hepatitis A endemicity**
  - Men who have sex with men**
  - Injection or noninjection drug use**
  - Work with hepatitis A virus in a research laboratory or with nonhuman primates infected with hepatitis A virus**
  - Clotting factor disorders**
  - Chronic liver disease**

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- HIV infection and CD4 cell count ≥200 cells/ $\mu$ 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  $\leq$ 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

### 4. Varicella vaccination

[www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/varicella.html](http://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 VAR 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

- 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 VAR 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**
- Adults with **HIV infection and CD4 cell count  $\geq$ 200 cells/ $\mu$ L:** May administer, based on individual clinical decision, 2 doses of VAR 3 months apart
- VAR is contraindicated for pregnant women and adults with severe immunodeficiency

### 5. Zoster vaccination

[www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/shingles.html](http://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 past episode of herpes zoster or receipt of zoster vaccine live (ZVL)

- Close, personal **contact with an international adoptee** (e.g., household or regular babysitting) during the first 60 days after arrival in the United States from a country with high or intermediate endemicity (administer the first dose as soon as the adoption is planned)
- Healthy adults **through age 40 years who have recently been exposed to hepatitis A virus;** adults older than age 40 years may receive HepA if hepatitis A immunoglobulin cannot be obtained

### 9. Hepatitis B vaccination

[www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb.html)

#### General information

- Administer to adults who have a specific risk (see below), or lack a risk factor but want protection, 3-dose series of single antigen hepatitis B vaccine (HepB) or combined hepatitis A and hepatitis B vaccine (HepA-HepB) at 0, 1, and 6 months (minimum intervals: 4 weeks between doses 1 and 2 for HepB and HepA-HepB; between doses 2 and 3, 8 weeks for HepB and 5 months for HepA-HepB)
- Special populations**
  - Administer HepB or HepA-HepB to adults with the following indications:
    - Chronic liver disease** (e.g., hepatitis C infection, cirrhosis, fatty liver disease, alcoholic liver disease, autoimmune hepatitis, alanine aminotransferase [ALT] or aspartate aminotransferase [AST] level greater than twice the upper limit of normal)
    - HIV infection**
    - Percutaneous or mucosal risk of exposure to blood** (e.g., **household contacts** of hepatitis B surface antigen [HBsAg]-positive persons; adults younger than age 60 years with **diabetes mellitus** or aged 60 years or older with diabetes mellitus based on individual clinical decision; adults in predialysis care or receiving **hemodialysis or peritoneal dialysis**; recent or current **injection drug users**; **health care and public safety workers** at risk for exposure to blood or blood-contaminated body fluids)
    - Sexual exposure risk** (e.g., sex partners of HBsAg-positive persons; sexually active persons not in a mutually monogamous relationship; persons seeking evaluation or treatment for a sexually transmitted infection; and **men who have sex with men** [MSM])
    - Receive care in **settings where a high proportion of adults have risks for hepatitis B infection** (e.g., facilities providing sexually transmitted disease treatment, drug-abuse treatment and prevention services, hemodialysis and end-stage renal disease programs, institutions for developmentally disabled persons, health care settings targeting services to injection drug users or MSM, HIV testing and treatment facilities, and correctional facilities)
    - Travel** to countries with high or intermediate hepatitis B endemicity

### 10. Meningococcal vaccination

[www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html)

- Special populations:** Serogroups A, C, W, and Y meningococcal vaccine (MenACWY)

- 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)

#### Special populations

- ZVL is contraindicated for pregnant women and adults with severe immunodeficiency

### 6. Human papillomavirus vaccination

[www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hpv.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hpv.html)

#### General information

- Administer human papillomavirus (HPV) vaccine to **males through age 26 years** and **males through age 21 years** (males aged 22 through 26 years may be vaccinated based on individual clinical decision)
- The number of doses of HPV vaccine to be administered depends on age at initial HPV vaccination
  - No previous dose of HPV vaccine:** Administer 3-dose series at 0, 1–2, and 6 months (minimum intervals: 4 weeks between doses 1 and 2, 12 weeks between doses 2 and 3, and 5 months between doses 1 and 3; repeat doses if given too soon)
  - Aged 9–14 years at HPV vaccine series initiation and received 1 dose or 2 doses less than 5 months apart:** Administer 1 dose
  - Aged 9–14 years at HPV vaccine series initiation and received 2 doses at least 5 months apart:** No additional dose is needed

#### 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 remaining 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](http://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 administered, 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](http://www.cdc.gov/vaccines/vpd/pneumo/downloads/pneumo-vaccine-timing.pdf)

- Administer 2 doses of MenACWY at least 8 weeks apart and revaccinate with 1 dose of MenACWY every 5 years, if the risk remains, to adults with the following indications:
  - Anatomical or functional asplenia** (including sickle cell disease and other hemoglobinopathies)
  - HIV infection**
  - Persistent complement component deficiency**
  - Eculizumab use**
- Administer 1 dose of MenACWY and revaccinate with 1 dose of MenACWY every 5 years, if the risk remains, to adults with the following indications:
  - Travel to or live in countries where meningococcal disease is hyperendemic or epidemic**, including countries in the African meningitis belt or during the Hajj
  - At risk from a **meningococcal disease outbreak attributed to serogroup A, C, W, or Y**
  - Microbiologists** routinely exposed to *Neisseria meningitidis*
  - Military recruits**
  - First-year college students who live in residential housing** (if they did not receive MenACWY at age 16 years or older)

**General Information: Serogroup B meningococcal vaccine (MenB)**

- May administer, based on individual clinical decision, to young adults and adolescents aged 16–23 years (preferred age is 16–18 years) who are not at increased risk 2-dose series of MenB-4C (Bexsero) at least 1 month apart or 2-dose series of MenB-FHbp (Trumenba) at least 6 months apart
- MenB-4C and MenB-FHbp are not interchangeable

#### Special populations: MenB

- Administer 2-dose series of MenB-4C at least 1 month apart or 3-dose series of MenB-FHbp at 0, 1–2, and 6 months to adults with the following indications:
  - Anatomical or functional asplenia** (including sickle cell disease)
  - Persistent complement component deficiency**
  - Eculizumab use**
  - At risk from a **meningococcal disease outbreak attributed to serogroup B**
  - Microbiologists** routinely exposed to *Neisseria meningitidis*

### 11. *Haemophilus influenzae* type b vaccination

[www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hib.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hib.html)

#### Special populations

- Administer *Haemophilus influenzae* type b vaccine (Hib) to adults with the following indications:
  - Anatomical or functional asplenia** (including sickle cell disease) or undergoing elective splenectomy: Administer 1 dose if not previously vaccinated (preferably at least 14 days before elective splenectomy)
  - Hematopoietic stem cell transplant** (HSCT): Administer 3-dose series with doses 4 weeks apart starting 6 to 12 months after successful transplant regardless of Hib vaccination history

## 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

Vaccine(s)	Contraindications	Precautions
All vaccines routinely recommended for adults	• Severe reaction, e.g., anaphylaxis, after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever

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

Vaccine(s)	Additional Contraindications	Additional Precautions
IIV <sup>1</sup>		• History of Guillain-Barré syndrome within 6 weeks after previous influenza vaccination
RIV <sup>1</sup>		• History of Guillain-Barré syndrome within 6 weeks after previous influenza vaccination
Tdap, 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	• Guillain-Barré syndrome within 6 weeks after a previous dose of tetanus toxoid-containing vaccine
MMR <sup>2</sup>	• Severe immunodeficiency, e.g., hematologic and solid tumors, chemotherapy, congenital immunodeficiency or long-term immunosuppressive therapy <sup>3</sup> , human immunodeficiency virus (HIV) infection with severe immunocompromise	• Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product) <sup>4</sup>
VAR <sup>2</sup>	• Severe immunodeficiency, e.g., hematologic and solid tumors, chemotherapy, congenital immunodeficiency or long-term immunosuppressive therapy <sup>3</sup> , HIV infection with severe immunocompromise	• History of thrombocytopenia or thrombocytopenic purpura
ZVL <sup>2</sup>	• Severe immunodeficiency, e.g., hematologic and solid tumors, chemotherapy, congenital immunodeficiency or long-term immunosuppressive therapy <sup>3</sup> , HIV infection with severe immunocompromise	• Need for tuberculin skin testing <sup>5</sup>
HPV vaccine		• Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product) <sup>4</sup>
PCV13	• Severe allergic reaction to any vaccine containing diphtheria toxoid	• Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination)

- For additional information on use of influenza vaccines among persons with egg allergy, see: CDC. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices—United States, 2016–17 influenza season. *MMWR*. 2016;65(RR-5):1–54. Available at [www.cdc.gov/mmwr/volumes/65/rr/rr6505a1.htm](http://www.cdc.gov/mmwr/volumes/65/rr/rr6505a1.htm).
- MMR 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.
- 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 persons on immune-suppressing medications or with immune suppression because of other reasons.
- 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/acip-recs/general-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html).
- Measles vaccination 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.

\* Adapted from: CDC. Table 6. Contraindications and precautions to commonly used vaccines. General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices. *MMWR*. 2011;60(No. RR-2):40–1 and from: Hamborsky J, Kroger A, Wolfe S, eds. Appendix A. Epidemiology and prevention of vaccine preventable diseases. 13th ed. Washington, DC: Public Health Foundation, 2015. Available at [www.cdc.gov/vaccines/pubs/pinkbook/index.html](http://www.cdc.gov/vaccines/pubs/pinkbook/index.html).

## Abbreviations of vaccines

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