

Updates in Adult Immunization Schedule 2020

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Disclosure and Disclaimer

- I, Mark Freedman, have been asked to disclose any significant relationships with commercial entities that are either providing financial support for this program or whose products or services are mentioned during our presentations
 - I have no relationships to disclose
- I may/will discuss the use of vaccines in a manner not approved by the U.S. Food and Drug Administration
 - But in accordance with ACIP recommendations

Overview

- Background
- ACIP policy updates
- Changes in the 2020 adult immunization schedule
- MA vaccine coverage estimates
- New vaccines
- COVID-19

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
- Published in February, 2020
 - MMWR Notice to Readers – announcement of availability on ACIP website
 - Annals of Internal Medicine – published in entirety

Updates in Adult Immunization Recommendations

Updates in ACIP Recommendations for Adults

Policy Statements Published after 2019 Adult Schedule Approval

- Human Papillomavirus (HPV) – June 2019 ACIP Meeting
 - Meites et al. MMWR Aug 2019; 68(32); 698-702
 - Catch-up vaccination for all persons through age 26
 - Shared clinical decision-making for persons 27-45 years
- Pneumococcal Vaccines – June 2019 ACIP Meeting
 - Matanock et al. MMWR Nov 2019; 68(46); 1069-1075
 - PPSV23 recommended for all persons 65 and older
 - Shared clinical decision-making for PCV13 in persons 65 and older
- Influenza Vaccines – June 2019 ACIP Meeting
 - Grohskopf et al. MMWR Aug 2019; 68(3); 1-21
 - Annual influenza vaccination recommended for all persons 6 months and older who do not have contraindications

Updates in ACIP Recommendations for Adults

Policy Statements Published after 2019 Adult Schedule Approval

- Hepatitis A Vaccines
 - All persons with HIV aged ≥ 1 year be routinely vaccinated
 - Vaccination recommended in settings for exposure
- Serogroup Meningococcal B Vaccines – June 2019 ACIP Meeting
 - For persons aged ≥ 10 years with complement deficiency, complement inhibitor use, asplenia, or who are microbiologists, MenB booster dose 1 year after primary series; booster every 2-3 years if risk remains
 - For persons aged ≥ 10 years determined by public health officials to be at increased risk during an outbreak, MenB booster dose if it has been ≥ 1 year since completion of primary series
- Tdap Vaccines – October 2019 ACIP Meeting
 - [Havers et al. MMWR Jan 2020; 69\(3\); 77-83](#)
 - Either Td vaccine or Tdap to be used for the decennial Td booster, tetanus prophylaxis for wound management, and for additional required doses in the catch-up immunization schedule if a person has received at least 1 Tdap dose

HPV Updates

- Routine recommendations for HPV vaccination of adolescents have not changed
- Catch-up HPV vaccination is now recommended for all persons through age 26 years
- For adults aged 27 through 45 years, public health benefit of HPV vaccination in this age range is minimal; shared clinical decision-making is recommended because some persons who are not adequately vaccinated might benefit

Pneumococcal Updates

- ACIP recommends a routine single dose of PPSV23 for adults aged ≥ 65 years
- Shared clinical decision-making is recommended regarding administration of PCV13 to persons aged ≥ 65 years who do not have an immunocompromising condition, cerebrospinal fluid leak, or cochlear implant and who have not previously received PCV13
- If a decision to administer PCV13 is made, PCV13 should be administered first, followed by PPSV23 at least 1 year later.

Pneumococcal Update

- ACIP asked CDC to examine the data on the PCV13 recommendation
- Pediatric use of PCV13 has indirectly reduced the incidence of PCV13-type disease among adults age 65 years and older
- Implementation of a PCV13 recommendation for all adults age 65 years and older in 2014 has had minimal impact on PCV13-type disease at the population level in this age group

Pneumococcal Update

- The following adults aged ≥ 65 years are potentially at increased risk for exposure to PCV13 serotypes and might attain higher than average benefit from PCV13 vaccination:
 - Persons residing in nursing homes or other long-term care facilities
 - Persons residing in settings with low pediatric PCV13 uptake
 - Persons traveling to settings with no pediatric PCV13 program
- Incidence of PCV13-type invasive pneumococcal disease and pneumonia increases with increasing age and is higher among persons with chronic heart, lung, or liver disease, diabetes, or alcoholism, and those who smoke cigarettes or who have more than one chronic medical condition
 - Providers/practices caring for patients with these medical conditions may consider offering PCV13 to such patients who are aged ≥ 65 years and who have not previously received PCV13

Matanock et al. Use of 13-Valent Pneumococcal Conjugate Vaccine and 23-Valent Pneumococcal Polysaccharide Vaccine Among Adults Aged ≥ 65 Years: Updated Recommendations of the Advisory Committee on Immunization Practices. MMWR 2019; 68(46); 1069-1075

Ahmed SS, Pondo T, Xing W, et al. Early impact of 13-valent pneumococcal conjugate vaccine use on invasive pneumococcal disease among adults with and without underlying medical conditions—United States. Clin Infect Dis 2019. Epub August 12, 2019

Influenza Updates

- Routine annual influenza vaccination is recommended for all persons aged ≥ 6 months who do not have contraindications. A licensed, recommended, and age-appropriate vaccine should be used
- Inactivated influenza vaccines (IIVs), recombinant influenza vaccine (RIV), and live attenuated influenza vaccine (LAIV) are available for the 2019–20 season
- No preferential recommendation is made for one influenza vaccine product over another for persons for whom more than one licensed, recommended, and appropriate product is available

Hepatitis A Updates

- ACIP recommends all persons with HIV aged ≥ 1 year be routinely vaccinated with Hepatitis A vaccine
- Hepatitis A vaccination is recommended in settings of exposure (e.g., health care settings for injection or noninjection drug users or group homes and nonresidential day care facilities for developmentally disabled persons)
- Clotting factor disorders have been removed as an indication for Hepatitis A vaccine

Meningococcal B Updates

- Persons ≥ 10 years with complement deficiency, complement inhibitor use, or asplenia or who are microbiologists should receive a MenB booster dose 1 year following completion of a MenB primary series
 - MenB booster doses every 2–3 years thereafter, for as long as the increased risk remains
- For persons ≥ 10 years determined by public health officials to be at increased risk during an outbreak, ACIP recommends a one-time booster dose if it has been 1 year or more since completion of a MenB primary series
- Adolescents and young adults 16–23 years (16–18 years preferred) not at increased risk for meningococcal disease may be vaccinated based on shared clinical decision-making

Tdap Updates

- Either Td or Tdap to be used for:
 - The decennial Td booster
 - Tetanus prophylaxis for wound management
 - For additional required doses in the catch-up immunization schedule if a person has received at least 1 Tdap dose

Shared Clinical Decision-Making Recommendation

- Shared clinical decision-making (SCDM) vaccinations are not recommended for everyone in a particular age group or everyone in an identifiable risk group
- SCDM recommendations are individually based and informed by a decision process between the health care provider and the patient or parent/guardian
- The key distinction between routine, catch-up, and risk-based recommendations and SCDM recommendations is the default decision to vaccinate
- ACIP makes SCDM recommendations when individuals may benefit from vaccination, but broad vaccination of people in that group is unlikely to have population-level impacts

*Recommended Adult Immunization Schedule,
United States, 2020*

Cover Page

Recommended Adult Immunization Schedule

Recommended Adult Immunization Schedule for ages 19 years or older

UNITED STATES

2020

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 Nurse-Midwives (www.midwife.org).

Instructions on how to use

Vaccines in the Adult Immunization Schedule*

Vaccines	Abbreviations	Trade names
<i>Haemophilus influenzae</i> type b vaccine	Hib	ActHIB® Hiberix® PedvaxHIB®
Hepatitis A vaccine	HepA	Havrix® Vaqta®
Hepatitis A and hepatitis B vaccine	HepA-HepB	Twinrix®
Hepatitis B vaccine	HepB	Engerix-B® Recombivax HB® Heplisav-B®
Human papillomavirus vaccine	HPV vaccine	Gardasil 9®
Influenza vaccine (inactivated)	IV	Many brands
Influenza vaccine (live, attenuated)	LAIV	FluMist® Quadrivalent
Influenza vaccine (recombinant)	RV	Flublok® Quadrivalent
Measles, mumps, and rubella vaccine	MMR	M-M-R® II
Meningococcal serogroups A, C, W, Y vaccine	MenACWY	Menactra® Menveo®
Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero® Trumenba®
Pneumococcal 13-valent conjugate vaccine	PCV13	Pneumovax 13®
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax® 23
Tetanus and diphtheria toxoids	Td	Tenivac® Tdvax™
Tetanus and diphtheria toxoids and acellular pertussis vaccine	Tdap	Adacel® Boostrix®
Varicella vaccine	VAR	Varivax®
Zoster vaccine, recombinant	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 if there are 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 or outbreaks to the local or state health department
- Clinically significant postvaccination 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 (PPSV23) and zoster (RZV, ZVL) 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.

Questions or comments

Contact 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.



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

Helpful information

- Complete ACIP recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- General Best Practice Guidelines for Immunization (including contraindications and precautions): 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, 2020: www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html



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Recommended Adult Immunization Schedule for ages 19 years or older

UNITED STATES

2020

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**)

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Hepatitis A and hepatitis B vaccine	HepA-HepB	Twinrix®
Hepatitis B vaccine	HepB	Engerix-B® Recombivax HB® Heplisav-B®
Human papillomavirus vaccine	HPV vaccine	Gardasil 9®
Influenza vaccine (inactivated)	IIV	Many brands
Influenza vaccine (live, attenuated)	LAIV	FluMist® Quadrivalent
Influenza vaccine (recombinant)	RIV	Flublok® Quadrivalent
Measles, mumps, and rubella vaccine	MMR	M-M-R® II
Meningococcal serogroups A, C, W, Y vaccine	MenACWY	Menactra® Menveo®
Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero® Trumenba®
Pneumococcal 13-valent conjugate vaccine	PCV13	Prevnar 13®
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax® 23
Tetanus and diphtheria toxoids	Td	Tenivac® Tdvax™
Tetanus and diphtheria toxoids and acellular pertussis vaccine	Tdap	Adacel® Boostrix®
Varicella vaccine	VAR	Varivax®
Zoster vaccine, recombinant	RZV	Shingrix
Zoster vaccine live	ZVL	Zostavax®

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Injury claims

All vaccines included in the adult immunization schedule except pneumococcal 23-valent polysaccharide (PPSV23) and zoster (RZV, ZVL) 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.

Questions or comments

Contact www.cdc.gov/cdc-info or 800-CDC-INFO (800-232-4636), in English or Spanish.

List of vaccines, abbreviations, trade names

Helpful information

- Complete ACIP recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- General Best Practice Guidelines for Immunization (including contraindications and precautions): 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, 2020: www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html



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Recommended Adult Immunization Schedule for ages 19 years or older

UNITED STATES
2020

How to use the adult immunization schedule

- 1** Determine recommended vaccinations by age (**Table 1**)
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Vaccines in the Adult Immunization Schedule*

Vaccines	Abbreviations	Trade names
<i>Haemophilus influenzae</i> type b vaccine	Hib	ActHIB® Hiberix® PedvaxHIB®
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Hepatitis A and hepatitis B vaccine		
Hepatitis B vaccine		Recombinax HB® Hepilisav-B®
Human papillomavirus vaccine	HPV vaccine	Gardasil 9®
Influenza vaccine (inactivated)	IIV	Many brands
Influenza vaccine (live, attenuated)	LAIV	FluMist® Quadrivalent
Influenza vaccine (recombinant)	RV	Flublok® Quadrivalent
Measles, mumps, and rubella vaccine		
Meningococcal serogroups A, C, W, Y vaccine		
Meningococcal serogroup B vaccine		
Pneumococcal 13-valent conjugate vaccine		
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax® 23
Tetanus and diphtheria toxoids	Td	Tenivac® Tdvax™
Tetanus and diphtheria toxoids and acellular pertussis vaccine	Tdap	Adacel® Boostrix®
Varicella vaccine	VAR	Varivax®
Zoster vaccine, recombinant	RZV	Shingrix
Zoster vaccine live	ZVL	Zostavax®

**Compartmentalized
information**

**Added resource on disease
case identification and
outbreak response**

Report

- Suspected cases of reportable vaccine-preventable diseases or outbreaks to the local or state health department
- Clinically significant postvaccination 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 (PPSV23) and zoster (RZV, ZVL) 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.

Questions or comments

Contact 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.



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

Helpful Information

- Complete ACIP recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- General Best Practice Guidelines for Immunization (including contraindications and precautions): 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, 2020: www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html

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Table 1

Recommended Adult Immunization Schedule by Age Group

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2020

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV) or Influenza recombinant (RIV)	1 dose annually			
Influenza live, attenuated (LAIV)	1 dose annually			
Tetanus, diphtheria, and pertussis (Tdap or Td)	1 dose of Tdap, then Td or Tdap booster every 10 years			
Measles, mumps, rubella (MMR)	2 doses depending on indication (1st dose in 1957 or later)			
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV) (preferred)			2 doses	
Zoster live (ZVL)			1 dose	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal conjugate (PCV13)	1 dose			65 years and older
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, see notes for booster recommendations			
Meningococcal B (MenB)	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations			
Haemophilus influenzae type b (Hib)	1 or 3 doses depending on indication			

Age groups 19–21 years and 22–26 years have been combined

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 another indication

Recommended vaccination based on shared clinical decision-making

No recommendation/Not applicable

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2020

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV) or Influenza recombinant (RIV) or Influenza live, attenuated (LAIV)	1 dose annually			
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap, then Td or Tdap booster every 10 years			
Measles, mumps, rubella (MMR)	1 or 2 doses depending on indication (if born in 1957 or later)			
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV) (preferred) or Zoster live (ZVL)			2 doses or 1 dose	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal conjugate (PCV13)	1 dose			65 years and older
Pneumococcal polysaccharide (PPSV23)				1 dose
Hepatitis A (HepA)				
Hepatitis B (HepB)	2 or 3 doses depending on vaccine			
Meningococcal A, C, W, Y (MenACWY)	1 or 2 doses depending on indication, see notes for booster recommendations			
Meningococcal B (MenB)	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations			
Haemophilus influenzae type b (Hib)	1 or 3 doses depending on indication			

HPV row combined for males and females

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 another indication

Recommended vaccination based on shared clinical decision-making

No recommendation/Not applicable

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2020

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV) or Influenza recombinant (RIV) ^{or} Influenza live, attenuated (LAIV)	1 dose annually			
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap, then Td or Tdap booster every 10 years			
Measles, mumps, rubella (MMR)	1 or 2 doses depending on indication (if born in 1957 or later)			
Varicella (VAR)	2 doses (if born in 1980 or later)			
Zoster recombinant (RZV) (preferred) ^{or} Zoster live (ZVL)				1 dose
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal conjugate (PCV13)	1 dose			65 years and older
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, see notes for booster recommendations			
Meningococcal B (MenB)	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations			
Haemophilus influenzae type b (Hib)	1 or 3 doses depending on indication			

Blue shading indicates shared clinical decision-making

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 another indication

Recommended vaccination based on shared clinical decision-making

No recommendation/ Not applicable

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, 2020

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 count	Asplenia, complement deficiencies	End-stage renal disease; or on hemodialysis	Heart or lung disease, alcoholism ¹	Chronic liver disease	Diabetes	Health care personnel ²	Men who have sex with men
			<200	≥200						
IIV or RIV or LAIV										1 dose annually
										1 dose annually
Tdap or Td	1 dose Tdap during pregnancy									
MMR										
VAR										
RZV (preferred) or ZVL										
HPV										
PCV13										
PPSV23										
HepA										
HepB										
MenACWY										
MenB										
Hib										

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 another indication
Precaution—vaccination might be indicated if benefit of protection outweighs risk of adverse reaction
Delay vaccination until after pregnancy if vaccine is indicated
Not recommended/contraindicated—vaccine should not be administered
No recommendation/Not applicable

1. Precaution for LAIV does not apply to alcoholism. 2. See notes for influenza; hepatitis B; measles, mumps, and rubella; and varicella vaccinations. 3. Hematopoietic stem cell transplant.

Table 2 Recommended Adult Immunization Schedule by Medical Condition and Other Indications, United States, 2020

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 count		Asplenia, complement deficiencies	End-stage renal disease; or on hemodialysis	Heart or lung disease, alcoholism ¹	Chronic liver disease	Diabetes	Health care personnel ²	Men who have sex with men
			<200	≥200							
IIV or RIV or LAIV	1 dose annually										
	NOT RECOMMENDED					PRECAUTION				1 dose annually	
Tdap or Td	1 dose Tdap each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years									
MMR	NOT RECOMMENDED				1 or 2 doses depending on indication						
VAR	NOT RECOMMENDED				2 doses						
RZV (preferred) or ZVL	DELAY				2 doses at age ≥50 years						
	NOT RECOMMENDED				1 dose at age ≥60 years						
HPV	DELAY	3 doses through age 26 years			2 or 3 doses through age 26 years						
PCV13		1 dose									
PPSV23		1 dose depending on age and indication									
HepA		1 dose depending on vaccine									
HepB						2 or 3 doses depending on vaccine					
MenACWY	1 or 2 doses depending on indication, see notes for booster recommendations										
MenB	PRECAUTION	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations									
Hib		3 doses HSCT ³ recipients only			1 dose						

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 another indication

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

Delay vaccination until after pregnancy if vaccine is indicated

Not recommended/contraindicated—vaccine should not be administered

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			<200	≥200							
IIV or RIV or LAIV	1 dose annually										
	NOT RECOMMENDED					PRECAUTION				1 dose annually or	
Tdap or Td	1 dose Tdap each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years									
MMR	NOT RECOMMENDED			1 or 2 doses depending on indication							
VAR	NOT RECOMMENDED			2 doses							
RZV (preferred) or ZVL	DELAY				2 doses at age ≥50 years or						
	NOT RECOMMENDED				1 dose at age ≥60 years						
HPV	DELAY	3 doses through age 26 years			2 or 3 doses through age 26 years						
PCV13		1 dose									
PPSV23		1 dose									
HepA		1 dose									
HepB		1 dose									
MenACWY	1 or 2 doses depending on indication, see notes for booster recommendations										
MenB	PRECAUTION	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations									
Hib		3 doses HSCT ³ recipients only			1 dose						

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

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

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Notes

Recommended Adult Immunization Schedule

Haemophilus influenzae* type b vaccination*Special situations**

- **Anatomical or functional asplenia (including sickle cell disease):** 1 dose if previously did not receive Hib; if elective splenectomy, 1 dose, preferably at least 14 days before splenectomy
- **Hematopoietic stem cell transplant (HSCT):** 3-dose series 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 Vaxna 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 virus infection:** 2-dose series HepA or 3-dose series HepA-HepB as above
 - **Chronic liver disease** (e.g., persons with hepatitis B, hepatitis C, 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**
 - **Men who have sex with men**
 - **Injection or noninjection drug use**
 - **Persons experiencing homelessness**
 - **Work with hepatitis A virus** in research laboratory or with nonhuman primates with hepatitis A virus infection
 - **Travel in countries with high or intermediate endemic hepatitis A**
 - **Close, personal contact with international adoptee** (e.g., household or 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)

- **Pregnancy** if at risk for infection or severe outcome from infection during pregnancy (HepA-HepB not currently recommended due to lack of safety data in pregnant women)
- **Settings for exposure, including** targeting services to injection or noninjection drug users or group homes and nonresidential facilities for developmentally disabled persons (individual risk factor screening not required)

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 (2-dose series HepB only applies when 2 doses of HepB 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 2/8 weeks between doses 2 and 3/16 weeks between doses 1 and 3] 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 B virus infection:** 2-dose (HepB) or 3-dose (Engerix-B, Recombivax HB) series or 3-dose series HepA-HepB (Twinrix) as above
 - **Chronic liver disease** (e.g., persons with hepatitis C, 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**
 - **Men who have sex with men**
 - **Injection or noninjection drug use**
 - **Persons experiencing homelessness**
 - **Work with hepatitis B virus** in research laboratory or with nonhuman primates with hepatitis B virus infection
 - **Travel in countries with high or intermediate endemic hepatitis B**
 - **Close, personal contact with international adoptee** (e.g., household or regular babysitting) in first 60 days after arrival from country with high or intermediate endemic hepatitis B (administer dose 1 as soon as adoption is planned, at least 2 weeks before adoptee's arrival)

Recommended in settings for exposure

- **Incarcerated persons**
- **Travel in countries with high or intermediate endemic hepatitis B**
- **Pregnancy** if at risk for infection or severe outcome from infection during pregnancy (HepB not currently recommended due to lack of safety data in pregnant women)

Human papillomavirus vaccination**Routine vaccination**

- **HPV vaccination recommended for all adults through age 26 years:** 2- or 3-dose series depending on age at initial vaccination or condition:
 - **Age 15 years or older at initial vaccination:** 3-dose series at 0, 1–2, 6 months (minimum intervals: 4 weeks between doses 1 and 2/12 weeks between doses 2 and 3/5 months between doses 1 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
 - **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**

Shared clinical decision-making

- **Age 27 through 45 years based on shared clinical decision-making:**
 - 2- or 3-dose series as above

Special situations

- **Pregnancy through age 26 years:** HPV vaccination is not recommended until after pregnancy; no intervention needed if vaccinated while pregnant; pregnancy testing not needed before vaccination

Recommended for all persons ≥1 year living with HIV

Haemophilus influenzae* type b vaccination*Special situations**

- **Anatomical or functional asplenia (including sickle cell disease):** 1 dose if previously did not receive Hib; if elective splenectomy, 1 dose, preferably at least 14 days before splenectomy
- **Hematopoietic stem cell transplant (HSCT):** 3-dose series 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 Vaxta 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 virus infection:** 2-dose series HepA or 3-dose series HepA-HepB as above
 - **Chronic liver disease** (e.g., persons with hepatitis B, hepatitis C, 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**
 - **Men who have sex with men**
 - **Injection or noninjection drug use**
 - **Persons experiencing homelessness**
 - **Work with hepatitis A virus** in research laboratory or with nonhuman primates with hepatitis A virus infection
 - **Travel in countries with high or intermediate endemic hepatitis A**
 - **Close, personal contact with international adoptee** (e.g., household or 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)

- **Pregnancy** if at risk for infection or severe outcome from infection during pregnancy
- **Settings for exposure, including** health care settings targeting services to injection or noninjection drug users or group homes and nonresidential day care facilities for developmentally disabled persons (individual risk factor screening not required)

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 (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

Catch up recommended for all persons through age 26 years

and 2/5 months between doses 2 and 3])

Special situations

- **At risk for hepatitis B virus infection:** 2-dose (Heplisav-B) or 3-dose (Engerix-B, Recombivax HB) series or 3-dose series HepA-HepB (Twinrix) as above
 - **Chronic liver disease** (e.g., persons with hepatitis C, cirrhosis, fatty liver disease, alcoholic liver disease, autoimmune hepatitis, alanine aminotransferase [ALT] or aspartate aminotransferase [AST] level greater than twice upper limit of normal)

Shared clinical decision-making recommended for persons 27-45 years

- **Current or recent injection drug use**
- **Percutaneous or mucosal risk for exposure to blood** (e.g., household contacts of HBsAg-positive persons; residents and staff of facilities for developmentally disabled persons; health care and public safety personnel with reasonably anticipated risk for

exposure to blood or blood-contaminated body fluids; hemodialysis, peritoneal dialysis, home dialysis, and predialysis patients; persons with diabetes mellitus age younger than 60 years and, at discretion of treating clinician, those age 60 years or older)

- Incarcerated persons**- Travel in countries with high or intermediate endemic hepatitis B**

- **Pregnancy** if at risk for infection or severe outcome from infection during pregnancy (Heplisav-B not currently recommended due to lack of safety data in pregnant women)

Human papillomavirus vaccination**Routine vaccination**

- **HPV vaccination recommended for all adults through age 26 years:** 2- or 3-dose series depending on age at initial vaccination or condition:

- **Age 15 years or older at initial vaccination:** 3-dose series at 0, 1–2, 6 months (minimum intervals: 4 weeks between doses 1 and 2/12 weeks between doses 2 and 3/5 months between doses 1 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
- **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**

Shared clinical decision-making

Age 27 through 45 years based on shared clinical decision-making:

- 2- or 3-dose series as above

Special situations

- **Pregnancy through age 26 years:** HPV vaccination is not recommended until after pregnancy; no intervention needed if vaccinated while pregnant; pregnancy testing not needed before vaccination

Notes

Recommended Adult Immunization Schedule, United States, 2020

Influenza vaccination

Routine vaccination

- **Persons age 6 months or older:** 1 dose any influenza vaccine appropriate for age and health status annually
- For additional guidance, see www.cdc.gov/flu/professionals/index.htm

Special situations

- **Egg allergy, hives only:** 1 dose any influenza vaccine appropriate for age and health status annually
- **Egg allergy more severe than hives** (e.g., angioedema, respiratory distress): 1 dose any influenza vaccine appropriate for age and health status annually in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions
- **LAIV should not be used** in persons with the following conditions or situations:
 - History of severe allergic reaction to any vaccine component (excluding egg) or to a previous dose of any influenza vaccine
 - Immunocompromised due to any cause (including medications and HIV infection)
 - Anatomic or functional asplenia
 - Cochlear implant
 - Cerebrospinal fluid-opharyngeal communication
 - Close contacts or caregivers of severely immunosuppressed persons who require a protected environment
 - Pregnancy
 - Received influenza antiviral medications within the previous 48 hours
- **History of Guillain-Barré syndrome within 6 weeks of previous dose of influenza vaccine:** Generally should not be vaccinated unless vaccination benefits outweigh risks for those at higher risk for severe complications from influenza

Measles, mumps, and rubella vaccination

Routine vaccination

- **No evidence of immunity to measles, mumps, or rubella:** 1 dose
- **Evidence of immunity:** Born before 1957 (health care personnel, see below), documentation of receipt of MMR vaccine, laboratory evidence of immunity or disease (diagnosis of disease without laboratory confirmation is not evidence of immunity)

Special situations

- **Pregnancy with no evidence of immunity to rubella:** MMR contraindicated during pregnancy; after pregnancy (before discharge from health care facility), 1 dose
- **Nonpregnant women of childbearing age with no evidence of immunity to rubella:** 1 dose
- **HIV infection with CD4 count ≥ 200 cells/ μ L for at least 6 months and no evidence of immunity to**

Bulleted list of situations where LAIV should not be used

personal contacts of immunocompromised persons with no evidence of immunity to measles, mumps, or rubella: 2-dose series at least 4 weeks apart if previously did not receive any doses of MMR or 1 dose if previously received 1 dose MMR

Health care personnel:

- **Born in 1957 or later with no evidence of immunity to measles, mumps, or rubella:** 2-dose series at least 4 weeks apart for measles or mumps or at least 1 dose for rubella
- **Born before 1957 with no evidence of immunity to measles, mumps, or rubella:** Consider 2-dose series at least 4 weeks apart for measles or mumps or 1 dose for rubella

Meningococcal vaccination

Special situations for MenACWY

- **Anatomical or functional asplenia** (including sickle cell disease), **HIV infection, persistent complement component deficiency, complement inhibitor** (e.g., eculizumab, ravulizumab) **use:** 2-dose series MenACWY (Menactra, Menveo) at least 8 weeks apart and revaccinate every 5 years if risk remains
- **Travel in countries with hyperendemic or epidemic meningococcal disease, microbiologists routinely exposed to *Neisseria meningitidis*:** 1 dose MenACWY (Menactra, Menveo) and revaccinate every 5 years if risk remains
- **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 (Menactra, Menveo)

Shared clinical decision-making for MenB

- **Adolescents and young adults age 16 through 23 years** (age 16 through 18 years preferred) **not at increased risk for meningococcal disease:** Based on shared clinical decision-making, 2-dose series MenB-4C at least 1 month apart or 2-dose series MenB-FHbp at 0, 6 months (if dose 2 was administered less than 6 months after dose 1, administer dose 3 at least 4 months after dose 2); MenB-4C and MenB-FHbp are not interchangeable (use same product for all doses in series)

Special situations for MenB

- **Anatomical or functional asplenia** (including sickle cell disease), **persistent complement component deficiency, complement inhibitor** (e.g., eculizumab, ravulizumab) **use, microbiologists routinely exposed to *Neisseria meningitidis*:** 2-dose primary series MenB-4C (Bexsero) at least 1 month apart or 3-dose primary series MenB-FHbp (Trumenb) 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); 1 dose MenB booster 1 year after primary series and revaccinate every 2–3 years if risk remains
- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks

Notes

Recommended Adult Immunization Schedule, United States, 2020

Influenza vaccination

Routine vaccination

- **Persons age 6 months or older:** 1 dose any influenza vaccine appropriate for age and health status annually
- For additional guidance, see www.cdc.gov/flu/professionals/index.htm

Special situations

- **Egg allergy, hives only:** 1 dose any influenza vaccine appropriate for age and health status annually
- **Egg allergy more severe than hives** (e.g., angioedema, respiratory distress): 1 dose any influenza vaccine appropriate for age and health status annually in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions
- **LAIV should not be used** in persons with the following conditions or situations:
 - History of severe allergic reaction to any vaccine component (excluding egg) or to a previous dose of any influenza vaccine
 - Immunocompromised due to any cause (including medications and HIV infection)
 - Anatomic or functional asplenia
 - Cochlear implant
 - Cerebrospinal fluid–oropharyngeal communication
 - Close contacts or caregivers of severely immunosuppressed persons who require a protected environment
 - Pregnancy
 - Received influenza antiviral medications within the previous 48 hours
- **History of Guillain-Barré syndrome within 6 weeks of previous dose of influenza vaccine:** Generally should not be vaccinated unless vaccination benefits outweigh risks for those at higher risk for severe complications from influenza

Measles, mumps, and rubella vaccination

Routine vaccination

- **No evidence of immunity to measles, mumps, or rubella:** 1 dose
- **Evidence of immunity:** Born before 1957 (health care personnel, see below), documentation of receipt of MMR vaccine, laboratory evidence of immunity or disease (diagnosis of disease without laboratory confirmation is not evidence of immunity)

Special situations

- **Pregnancy with no evidence of immunity to rubella:** MMR contraindicated during pregnancy; after pregnancy (before discharge from health care facility), 1 dose
- **Nonpregnant women of childbearing age with no evidence of immunity to rubella:** 1 dose
- **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 at least 4 weeks apart; MMR contraindicated in HIV infection with CD4 count < 200 cells/ μ L

Shared clinical decision-making for adolescents and young adults aged 16–23 years who are not at increased risk

Health care personnel:

- Born in 1957 or later with no evidence of immunity to measles, mumps, or rubella: 2-dose series at least 4 weeks apart for measles or mumps or at least 1 dose

Recommendation for booster doses every 2–3 years if risk remains

Meningococcal vaccination

Special situations for MenACWY

- **Anatomical or functional asplenia** (including sickle cell disease), **HIV infection, persistent complement component deficiency, complement inhibitor** (e.g., eculizumab, ravulizumab) **use:** 2-dose series MenACWY (Menactra, Menveo) at least 8 weeks apart and revaccinate every 5 years if risk remains
- **Travel in countries with hyperendemic or epidemic meningococcal disease, microbiologists routinely exposed to *Neisseria meningitidis*:** 1 dose MenACWY (Menactra, Menveo) and revaccinate every 5 years if risk remains
- **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

Shared clinical decision-making for MenB

Adolescents and young adults aged 16 through 23 years (age 16 through 18 years preferred) not at increased risk for meningococcal disease: Based on shared clinical decision-making, 2-dose series MenB-4C at least 1 month apart or 2-dose series MenB-FHbp at 0, 6 months (if dose 2 was administered less than 6 months after dose 1, administer dose 3 at least 4 months after dose 2); MenB-4C and MenB-FHbp are not interchangeable (use same product for all doses in series)

Special situations for MenB

- **Anatomical or functional asplenia** (including sickle cell disease), **persistent complement component deficiency, complement inhibitor** (e.g., eculizumab, ravulizumab) **use, microbiologists routinely exposed to *Neisseria meningitidis*:** 2-dose primary series MenB-4C (Bexsero) at least 1 month apart or 3-dose primary series MenB-FHbp (Trumenb) 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); 1 dose MenB booster 1 year after primary series and revaccinate every 2–3 years if risk remains
- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks

Pneumococcal vaccination**Routine vaccination**

- **Age 65 years or older** (immunocompetent—see www.cdc.gov/mmwr/volumes/68/wr/mm6846a5.htm?s_cid=mm6846a5_w): 1 dose PPSV23
- If PPSV23 was administered prior to age 65 years, administer 1 dose PPSV23 at least 5 years after previous dose

Shared clinical decision-making

- **Age 65 years and older** (immunocompetent): 1 dose PCV13 based on **shared clinical decision-making**
- If both PCV13 and PPSV23 are to be administered, PCV13 should be administered first
- PCV13 and PPSV23 should be administered at least 1 year apart
- PCV13 and PPSV23 should not be administered during the same visit

Special situations

- (see www.cdc.gov/mmwr/volumes/68/wr/mm6846a5.htm?s_cid=mm6846a5_w)
- **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 previous PPSV23; at age 65 years or older, administer 1 dose PPSV23 at least 5 years after most recent 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**

Shared clinical decision-making recommendation for PCV-13

- but preferred as first dose); Td or Tdap every 10 years thereafter
- **Pregnancy**: 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36
 - For information on use of Td or Tdap as tetanus prophylaxis in wound management, see www.cdc.gov/mmwr/volumes/67/rr/mm6702a1.htm

Varicella vaccination**Routine vaccination**

- **No evidence of immunity to varicella**: 2-dose series 4–8 weeks apart if previously did not receive varicella-containing vaccine (VAR or MMRV [measles-mumps-rubella-varicella vaccine] for children); if previously received 1 dose varicella-containing vaccine, 1 dose at least 4 weeks after first dose
- Evidence of immunity: U.S.-born before 1980 (except for pregnant women and health care personnel [see below]), documentation of 2 doses 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 situations

- **Pregnancy with no evidence of immunity to varicella**: VAR contraindicated during pregnancy; after pregnancy (before discharge from health care facility) 1 dose if previously received 1 dose varicella-containing vaccine or dose 1 of 2-dose series (dose 2: 4–8 weeks later) if previously did not receive any varicella-containing vaccine, regardless of whether U.S.-born before 1980
- **Health care personnel with no evidence of immunity to varicella**: 1 dose if previously received 1 dose varicella-containing vaccine; 2-dose series 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**: Vaccination may be considered (2 doses, administered 3 months apart); VAR contraindicated in HIV infection with CD4 count < 200 cells/ μ L
- **Severe immunocompromising conditions**: VAR contraindicated

Zoster vaccination**Routine vaccination**

- **Age 50 years or older**: 2-dose series RZV (Shingrix) 2–6 months apart (minimum interval: 4 weeks; repeat dose if administered too soon), regardless of previous herpes zoster or history of ZVL (Zostavax) vaccination (administer RZV at least 2 months after ZVL)
- **Age 60 years or older**: 2-dose series RZV 2–6 months apart (minimum interval: 4 weeks; repeat if administered too soon) or 1 dose ZVL if not previously vaccinated. RZV preferred over ZVL (if previously received ZVL, administer RZV at least 2 months after ZVL)

Special situations

- **Pregnancy**: ZVL contraindicated; consider delaying RZV until after pregnancy if RZV is otherwise indicated
- **Severe immunocompromising conditions (including HIV infection with CD4 count < 200 cells/ μ L)**: ZVL contraindicated; recommended use of RZV under review

Pneumococcal vaccination

Routine vaccination

- **Age 65 years or older** (immunocompetent—see www.cdc.gov/mmwr/volumes/68/wr/mm6846a5.htm?s_cid=mm6846a5_w): 1 dose PPSV23
- If PPSV23 was administered prior to age 65 years, administer 1 dose PPSV23 at least 5 years after previous dose

Shared clinical decision-making

- **Age 65 years and older** (immunocompetent): 1 dose PCV13 based on **shared clinical decision-making**
- If both PCV13 and PPSV23 are to be administered, PCV13 should be administered first
- PCV13 and PPSV23 should be administered at least 1 year apart
- PCV13 and PPSV23 should not be administered during the same visit

Special situations

(see www.cdc.gov/mmwr/volumes/68/wr/mm6846a5.htm?s_cid=mm6846a5_w)

- **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 previous PPSV23; at age 65 years or older, administer 1 dose PPSV23 at least 5 years after most recent 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 or Tdap every 10 years

Special situations

- **Previously did not receive primary vaccination series for tetanus, diphtheria, or pertussis:** At least 1 dose Tdap followed by 1 dose Td or Tdap at least 4 weeks after Tdap and another dose Td or Tdap 6–12 months after last Td or Tdap (Tdap can be substituted for any Td dose, but preferred as first dose); Td or Tdap every 10 years thereafter
- **Pregnancy:** 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36
- For information on use of Td or Tdap as tetanus prophylaxis in wound management, see www.cdc.gov/mmwr/volumes/67/rr/mm6702a1.htm

Varicella vaccination

Routine vaccination

- **No evidence of immunity to varicella:** 2-dose series 4–8 weeks apart if previously did not receive varicella-containing vaccine (VAR or MMRV [measles-mumps-rubella-varicella vaccine] for children); if previously received 1 dose varicella-containing vaccine, 1 dose at least 4 weeks after first dose
- Evidence of immunity: U.S.-born before 1980 (except for pregnant women and health care personnel [see below]), documentation of 2 doses 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 situations

- **Pregnancy with no evidence of immunity to varicella:** VAR contraindicated during pregnancy; after pregnancy (before discharge from health care facility) 1 dose if previously received 1 dose varicella-containing vaccine or dose 1 of 2-dose series (dose 2: 4–8 weeks later) if previously did not receive any varicella-containing vaccine

Td or Tdap may be used for decennial booster

- 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:** Vaccination may be considered (2 doses, administered 3 months apart); VAR contraindicated in HIV infection with CD4 count < 200 cells/ μ L
- **Severe immunocompromising conditions:** VAR contraindicated

Zoster vaccination

Routine vaccination

- **Age 50 years or older:** 2-dose series RZV (Shingrix) 2–6 months apart (minimum interval: 4 weeks; repeat dose if administered too soon), regardless of previous herpes zoster or history of ZVL (Zostavax) vaccination (administer RZV at least 2 months after ZVL)
- **Age 60 years or older:** 2-dose series RZV 2–6 months apart (minimum interval: 4 weeks; repeat if administered too soon) or 1 dose ZVL if not previously vaccinated. RZV preferred over ZVL (if previously received ZVL, administer RZV at least 2 months after ZVL)

Special situations

- **Pregnancy:** ZVL contraindicated; consider delaying RZV until after pregnancy if RZV is otherwise indicated
- **Severe immunocompromising conditions (including HIV infection with CD4 count < 200 cells/ μ L):** ZVL contraindicated; recommended use of RZV under review

Coverage Estimates

Estimated Vaccination Coverage among Adults ≥19 Years, NIS, 2017 and BRFSS, 2017

Vaccine	United States	Massachusetts
Influenza*	45.3%	53.5%
Influenza (65+)	68.1%	72.1%
Pneumococcal	24.5%	39.0%
Pneumococcal (65+)	74.7%	76.1%
Zoster	34.9%	45.9%
Td or Tdap	63.4%	69.8%

**Flu coverage estimates are for 2018-2019 flu season <https://www.cdc.gov/flu/fluview/coversage-1819estimates.htm>.*

<https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/data-reports/general-population/reports/2017.html>

New Vaccinations

Ebola Vaccine

- Pre-exposure vaccination with rVSVΔG-ZEBOV-GP vaccine is recommended for adults 18 years of age or older in the United States population who are at potential risk of exposure to Ebola vaccine (species *Zaire ebolavirus*) because they:
 - Are responding to an outbreak of Ebola virus disease
 - Work as healthcare personnel at a federally-designated Ebola Treatment Center in the United States
 - Work as laboratorians or other staff at biosafety-level 4 facilities in the United States
- These recommendations have been adopted by the CDC Director and will become official once published in MMWR

COVID-19 Vaccine

- Multiple candidate COVID-19 vaccines are currently under development
- The Advisory Committee on Immunization Practices (ACIP) will convene a COVID-19 vaccine work group to help inform ACIP's recommendations on potential use of COVID-19 vaccines in the United States
- A regularly updated list of in-development therapeutic and vaccine candidates can be found at <https://milkeninstitute.org/covid-19-tracker>

Administering Adult Vaccines during the COVID-19 Pandemic

Delivery of Adult Clinical Preventive Services, Including Immunizations, During the COVID-19 Pandemic*

- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/preparedness-checklists.html>
- Delivery of some clinical preventive services, such as immunizations, requires face to face encounters and in areas with community transmission of SARS-CoV-2, these should be postponed except when:
 - An in-person visit must be scheduled for some other purpose and the clinical preventive service can be delivered during that visit with no additional risk; or
 - An individual patient and their clinician believe that there is a compelling need to receive the service based on an assessment that the potential benefit outweighs the risk of exposure to the virus that causes COVID-19
- *For guidance on pediatric preventive healthcare during the COVID-19 Pandemic see <https://www.cdc.gov/coronavirus/2019-ncov/hcp/pediatric-hcp.html>

COVID-19 Resources

- <https://www.coronavirus.gov/>
- <https://www.cdc.gov/coronavirus/2019-nCoV/index.html>
- <https://www.cdc.gov/coronavirus/2019-nCoV/hcp/index.html>
For healthcare professionals
- <https://www.cdc.gov/coronavirus/2019-ncov/php/index.html>
For health departments

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