



## ***PARTICIPANT HANDOUTS*** **2022 Immunization Update**

*Thank you for attending today's training. By doing so you are strengthening the ability of your community-based and patient-directed health center to deliver comprehensive, culturally competent, high-quality primary health care services.*

### **Presented by:**

A. Patricia Wodi, MD, Public Health Physician, Immunization Services Division, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention

### **Live Broadcast Date/Time:**

Wednesday, June 1, 2022

11:30–1:00PM Mountain Time / 12:30–2:00PM Central Time

### **Target Audience:**

This event is designed for clinical leadership, clinicians, and clinical support staff at Community Health Centers in Region VIII (CO, MT, ND, SD, UT, WY), including physicians, PAs, NPs, nurses, MAs, and other interested health care professionals.

### **Event Overview:**

This annual presentation is intended to update health care personnel on the latest recommended immunization schedules and the most recent Advisory Committee on Immunization Practices (ACIP) recommendations.

### **Learning Objectives:**

Upon completion of this session, participants should be able to:

1. Identify important updates to the 2022 ACIP recommended immunization schedule for adults and childhood/adolescents
2. Locate the most recent recommendations for COVID-19 vaccinations
3. Identify which routine vaccines can be co-administered
4. Explain CDC's vaccine safety monitoring systems
5. Locate current vaccination resources for healthcare providers

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## **CHAMPS ARCHIVES**

This event will be archived online. This online version will be posted within two weeks of the live event and will be available for at least one year from the live presentation date. For information about all CHAMPS archives, please visit [www.CHAMPSonline.org/events-trainings/distance-learning](http://www.CHAMPSonline.org/events-trainings/distance-learning).

## **DESCRIPTION OF CHAMPS**

Community Health Association of Mountain/Plains States (CHAMPS) is a non-profit organization dedicated to supporting all Region VIII (CO, MT, ND, SD, UT, and WY) federally-designated Community, Migrant, and Homeless Health Centers so they can better serve their patients and communities. Currently, CHAMPS programs and services focus on education and training, collaboration and networking, workforce development, policy and funding communications, and the collection and dissemination of regional data. Staff and board members of [CHAMPS Organizational Members](#) receive targeted benefits in the areas of business intelligence, networking and peer support, recognition and awards, recruitment and retention, training discounts and reimbursement, and more.

**For over 35 years, CHAMPS has been an essential resource for Community Health Center training and support!** Be sure to take advantage of CHAMPS' programs, products, resources, and other services. For more information about CHAMPS, please visit [www.CHAMPSonline.org](http://www.CHAMPSonline.org). The Happenings box on the lower left side of the CHAMPS home page highlights the newest CHAMPS offerings, while the CHAMPS Membership box on the lower right side of the page lists current benefits for CHAMPS Organizational Members.

## **SPEAKER BIOGRAPHY**



Dr. Patricia Wodi, M.D., is a public health physician with the Centers for Disease Control and Prevention's Immunization Services Division, located in the National Center for Immunization and Respiratory Diseases. Following her training in general pediatrics and pediatric infectious diseases, she worked as a general pediatrician and in pediatric drug development for over 10 years before joining the CDC. At the CDC, she is the co-lead for the Advisory Committee on Immunization Practice Combined Immunization Schedule Work Group, an editor for the *Epidemiology and Prevention of Vaccine-Preventable Disease* textbook (Pink Book), provides immunization educational resources and training to healthcare personnel, and has worked on several research studies in vaccine safety. Dr. Wodi holds a Doctor of Medicine degree from the College of Medicine, University of Port-Harcourt in Nigeria, and is board certified in general pediatrics and pediatric infectious diseases.

# 2022 Immunization Update

June 1, 2022

A. Patricia Wodi, MD  
Public Health Physician  
Immunization Services Division  
National Center for Immunization  
and Respiratory Diseases  
Centers for Disease Control and Prevention

Hosted by:



The AAFP has reviewed 2022 Immunization Update and deemed it acceptable for up to 1.50 Online Only, Live AAFP Prescribed credit. Term of Approval is from 06/01/2022 to 06/01/2022. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

# Question

How many people are watching this event at your computer, including yourself?

*(Use the Questions box to reply.)*

# Disclosure

- The speaker is a federal government employee with no financial interest in, or conflict with the manufacturer of any product named in this presentation.
- The speaker will not discuss a vaccine not currently approved or authorized by the U.S. Food and Drug Administration (FDA).
- The speaker's use of trade names is for identification purposes only.
- The speaker will discuss the off-label use of some vaccines in a manner consistent with recommendations by the Advisory Committee on Immunization Practices (ACIP).
- The views expressed in this presentation are those of the authors and do not necessarily reflect the official policy or position of the Centers for Disease Control and Prevention (CDC).

# Learning Objectives

1. Identify important updates to the 2022 ACIP recommended immunization schedule for adults and children/adolescents
2. Locate the most recent recommendations for COVID-19 vaccination
3. Identify which vaccines can be co-administered
4. Explain CDC's post-licensure vaccine safety monitoring systems
5. Locate current vaccination resources for healthcare providers

# Outline

- Updates to the 2022 immunization schedules
  - Child and adolescent schedule
  - Adult schedule
- COVID-19 vaccination recommendations
- Co-administration of routine vaccines
- CDC's post-licensure vaccine safety monitoring systems
- Vaccination resources for healthcare providers

# Immunization schedule: Overview

# Immunization Schedules: Overview

- Two separate schedules
  - Child and adolescent schedule (age birth through 18 years)
  - Adult schedule (age 19 years or older)
- Updated each year
  - Represents current, approved ACIP policy
  - Designed for implementation of ACIP policy
- Published in February
  - *MMWR* Notice to Readers – announcement of availability on ACIP website
  - *Annals of Internal Medicine* – published in entirety (adult schedule only)

## Recommended Adult Immunization Schedule for ages 19 years or older

**UNITED STATES 2022**

**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 (Notes)
- 3 Review vaccine types, frequencies, intervals, and considerations for special situations (Notes)
- 4 Review contraindications and precautions for vaccine types (Appendix)

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), American Academy of Family Physicians (www.aafp.org), American College of Obstetricians and Gynecologists (www.acog.org), American College of Nurse-Midwives (www.midwife.org), and American Academy of Physician Associates (www.aapa.org), and Society for Healthcare Epidemiology of America (www.shea-online.org).

## Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger

**UNITED STATES 2022**

**Vaccines in the Child and Adolescent Immunization Schedule\***

Vaccine	Abbreviation(s)	Trade name(s)
Dengue vaccine	DEN4CYD	Dengvaxia <sup>®</sup>
Diphtheria, tetanus, and acellular pertussis vaccine	DTaP	Daptacel <sup>®</sup> Infanrix <sup>®</sup>
Diphtheria, tetanus vaccine	DT	No trade name
Haemophilus influenzae type b vaccine	Hib (PRP-T)	ActHib <sup>®</sup> Hiberix <sup>®</sup> PedvaxiHB <sup>®</sup>
Hib (PRP-OMP)	Hib	PedvaxiHB <sup>®</sup>
Hepatitis A vaccine	HepA	Harvix <sup>®</sup> Viatris <sup>®</sup>
Hepatitis B vaccine	HepB	Engerix-B <sup>®</sup> Recombivax HB <sup>®</sup>
Human papillomavirus vaccine	HPV	Gardasil 9 <sup>®</sup>
Influenza vaccine (inactivated)	IV4	Multiple
Influenza vaccine (live, attenuated)	LAIV4	FuMist <sup>®</sup> Quadrivalent
Measles, mumps, and rubella vaccine	MMR	M-M-R II <sup>®</sup>
Meningococcal serogroups A, C, W, Y vaccine	MenACWY-D	Menactra <sup>®</sup>
	MenACWY-CRM	Menveo <sup>®</sup>
	MenACWY-TT	MenQuadfi <sup>®</sup>
Meningococcal serogroup B vaccine	MenB-4C	Bexsero <sup>®</sup>
	MenB-FHbp	Trumenb <sup>®</sup>
Pneumococcal 13-valent conjugate vaccine	PCV13	Pneum <sup>®</sup> 13 <sup>®</sup>
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax 23 <sup>®</sup>
Poliovirus vaccine (inactivated)	IPV	IPOL <sup>®</sup>
Rotavirus vaccine	RV1	Rotarix <sup>®</sup>
	RV5	RotaTeq <sup>®</sup>
Tetanus, diphtheria, and acellular pertussis vaccine	Tdap	Adacel <sup>®</sup> Boostrix <sup>®</sup>
Tetanus and diphtheria vaccine	Td	Tenivac <sup>®</sup> Tdvax <sup>®</sup>
Varicella vaccine	VAR	Varivax <sup>®</sup>

**Combination vaccines (use combination vaccines instead of separate injections when appropriate)**

DTaP, hepatitis B, and inactivated poliovirus vaccine	DTaP-HepB-IPV	Pediarix <sup>®</sup>
DTaP, inactivated poliovirus, and Haemophilus influenzae type b vaccine	DTaP-IPV/Hib	Pentacel <sup>®</sup>
DTaP and inactivated poliovirus vaccine	DTaP-IPV	Kinrix <sup>®</sup> Quadricel <sup>®</sup>
DTaP, inactivated poliovirus, Haemophilus influenzae type b, and hepatitis B vaccine	DTaP-IPV-Hib-HepB	Vaxelis <sup>®</sup>
Measles, mumps, rubella, and varicella vaccine	MMRV	ProQuad <sup>®</sup>

**How to use the child and adolescent immunization schedule**

- 1 Determine recommended vaccine by age (Table 1)
- 2 Determine recommended interval for catch-up vaccination (Table 2)
- 3 Assess need for additional recommended vaccines by medical condition or other indication (Table 3)
- 4 Review vaccine types, frequencies, intervals, and considerations for special situations (Notes)
- 5 Review contraindications and precautions for vaccine types (Appendix)

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 Academy of Pediatrics (www.aap.org), American Academy of Family Physicians (www.aafp.org), American College of Obstetricians and Gynecologists (www.acog.org), American College of Nurse-Midwives (www.midwife.org), American Academy of Physician Associates (www.aapa.org), and National Association of Pediatric Nurse Practitioners (www.napnpp.org).

**Report**

- Suspected cases of reportable vaccine-preventable diseases or outbreaks to your state or local health department
- Clinically significant adverse events to the Vaccine Adverse Event Reporting System (VAERS) at www.vaers.hhs.gov or 800-622-7967

**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 Advisory Committee on Immunization Practices (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/viv/index.html
- Manual for the Surveillance of Vaccine-Preventable Diseases (including case identification and outbreak response): www.cdc.gov/vaccines/pubs/surv-manual
- ACIP Shared Clinical Decision-Making Recommendations: www.cdc.gov/vaccines/acip/acip-scdm-faqs.html

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Centers for Disease Control and Prevention

\*Administer recommended vaccines if immunization history is incomplete or unknown. Do not restart or add doses to vaccine series for extended intervals between doses. When a vaccine is not administered at the recommended age, administer at a subsequent visit. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

outbreaks to  
adverse event

Report pneumococcal  
are covered by the  
file a vaccine injury

36), in English or  
holidays.

Advisers at  
pp.html.

P) recommendations:  
/index.html

United States, 2022:

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CS310021-A

# Approving Partners

Child/Adolescent Schedule	Both Schedules	Adult Schedule
<ul style="list-style-type: none"><li data-bbox="186 462 721 572">• American Academy of Pediatrics (AAP)</li><li data-bbox="186 651 861 825">• National Association of Pediatric Nurse Practitioners (NAPNAP)</li></ul>	<ul style="list-style-type: none"><li data-bbox="930 462 1612 572">• American Academy of Family Physicians (AAFP)</li><li data-bbox="930 682 1582 792">• American Academy of Physician Associates (AAPA)</li><li data-bbox="930 902 1454 1076">• American College of Obstetricians and Gynecologists (ACOG)</li><li data-bbox="930 1186 1574 1296">• American College of Nurse-Midwives (ACNM)</li></ul>	<ul style="list-style-type: none"><li data-bbox="1674 462 2168 572">• American College of Physicians (ACP)</li><li data-bbox="1674 651 2270 825">• Society for Healthcare Epidemiology of America (SHEA)</li></ul>

# Major Updates: 2022 Child/Adolescent Immunization Schedule

- Vaccine Specific Changes
  - Influenza<sup>1</sup>
  - Dengue<sup>2</sup>
- Appendix



1. Grohskopf LA et al. Recommendations for preventing and controlling 2021-22 influenza with vaccination in the United States. *MMWR* Aug 2021; 70(No. RR-5); 1-28  
2. Paz-Bailey G et al. Recommendations for use of dengue vaccine in the United States. *MMWR* Dec 2010; 70(No. RR-6); 1-16

# Major Updates: 2022 Adult Immunization Schedule

- Vaccine Specific Changes
  - Influenza<sup>1</sup>
  - Pneumococcal<sup>2</sup>
  - Hepatitis B<sup>3</sup>
  - Herpes zoster<sup>4</sup>
- Appendix



1. Grohskopf LA et al. Recommendations for preventing and controlling 2021-22 influenza with vaccination in the United States. *MMWR* Aug 2021; 70(No. RR-5); 1-28
2. Kobayashi M et al. Recommendations for use of PCV15 and PCV20 vaccines in the United States. *MMWR* Jan 2022; 71: 109–117
3. Weng M et al. Recommendations for universal hepatitis B vaccination for persons aged  $\geq 19$  years. ACIP Meeting November 3, 2021 (Vote)
4. Anderson TC et al. Recommendations for use of recombinant zoster vaccine in immunocompromised adults aged  $\geq 19$  years, United States. *MMWR* Jan 2021; 71:80– 82

# 2022 Recommended Child and Adolescent Immunization Schedule



# Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger

UNITED STATES  
2022

## Vaccines in the Child and Adolescent Immunization Schedule\*

Vaccine	Abbreviation(s)	Trade name(s)
Dengue vaccine	DEN4CYD	Dengvaxia*
Diphtheria, tetanus, and acellular pertussis vaccine	DTaP	Daptacel* Infanrix®
Diphtheria, tetanus vaccine	DT	No trade name
<i>Haemophilus influenzae</i> type b vaccine	Hib (PRP-T)	ActHIB* Hiberix*
	Hib (PRP-OMP)	PedvaxHIB*
Hepatitis A vaccine	HepA	Havrix* Vaqta*
Hepatitis B vaccine	HepB	Engerix-B* Recombivax HB*
Human papillomavirus vaccine	HPV	Gardasil 9*
Influenza vaccine (inactivated)	IIV4	Multiple
Influenza vaccine (live, attenuated)	LAIV4	FuMist® Quadrivalent
Measles, mumps, and rubella vaccine	MMR	M-M-R II*
Meningococcal serogroups A, C, W, Y vaccine	MenACWY-D	Menactra*
	MenACWY-CRM	Menveo*
	MenACWY-TT	MenQuadfi*
Meningococcal serogroup B vaccine	MenB-4C	Bexsero*
	MenB-FHbp	Trumenba*
Pneumococcal 13-valent conjugate vaccine	PCV13	Pneumovax 13*
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax 23*
Poliovirus vaccine (inactivated)	IPV	IPOL*
Rotavirus vaccine	RV1 RV5	Rotarix* RotaTeq*
Tetanus, diphtheria, and acellular pertussis vaccine	Tdap	Adacel* Boostrix*
Tetanus and diphtheria vaccine	Td	Tenivac* Tdvax™
Varicella vaccine	VAR	Varivax*
<b>Combination vaccines (use combination vaccines instead of separate injections when appropriate)</b>		
DTaP, hepatitis B, and inactivated poliovirus vaccine	DTaP-HepB-IPV	Pediarix*
DTaP, inactivated poliovirus, and <i>Haemophilus influenzae</i> type b vaccine	DTaP-IPV/Hib	Pentacel*
DTaP and inactivated poliovirus vaccine	DTaP-IPV	Kinrix* Quadracel*
DTaP, inactivated poliovirus, <i>Haemophilus influenzae</i> type b, and hepatitis B vaccine	DTaP-IPV-Hib-HepB	Vaxelis*
Measles, mumps, rubella, and varicella vaccine	MMRV	ProQuad*

\*Administer recommended vaccines if immunization history is incomplete or unknown. Do not restart or add doses to vaccine series for extended intervals between doses. When a vaccine is not administered at the recommended age, administer at a subsequent visit. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

## How to use the child and adolescent immunization schedule

- 1** Determine recommended vaccine by age (Table 1)
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- 3** Assess need for additional recommended vaccines by medical condition or other indication (Table 3)
- 4** Review vaccine types, frequencies, intervals, and considerations for special situations (Notes)
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Recommended by the Advisory Committee on Immunization Practices ([www.cdc.gov/vaccines/acip](http://www.cdc.gov/vaccines/acip)) and approved by the Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)), American Academy of Pediatrics ([www.aap.org](http://www.aap.org)), American Academy of Family Physicians ([www.aafp.org](http://www.aafp.org)), American College of Obstetricians and Gynecologists ([www.acog.org](http://www.acog.org)), American College of Nurse-Midwives ([www.midwife.org](http://www.midwife.org)), American Academy of Physician Assistants ([www.aapa.org](http://www.aapa.org)), and National Association of Pediatric Nurse Practitioners ([www.napnap.org](http://www.napnap.org)).

### Report

- \* Suspected cases of reportable vaccine-preventable diseases or outbreaks to your state or local health department
- \* Clinically significant adverse events to the Vaccine Adverse Event Reporting System (VAERS) at [www.vaers.hhs.gov](http://www.vaers.hhs.gov) or 800-822-7967

### Questions or comments

Contact [www.cdc.gov/cdc-info](http://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](http://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html)

### Helpful information

- \* Complete Advisory Committee on Immunization Practices (ACIP) recommendations: [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://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](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html)
- \* Vaccine information statements: [www.cdc.gov/vaccines/hcp/vis/index.html](http://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](http://www.cdc.gov/vaccines/pubs/surv-manual)
- \* ACIP Shared Clinical Decision-Making Recommendations [www.cdc.gov/vaccines/acip/acip-scdm-faqs.html](http://www.cdc.gov/vaccines/acip/acip-scdm-faqs.html)



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CS210020-A

# Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger

UNITED STATES  
2022

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Vaccine	Abbreviation(s)	Trade name(s)
Dengue vaccine	DEN4CYD	Dengvaxia*
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Diphtheria, tetanus vaccine	DT	No trade name
<i>Haemophilus influenzae</i> type b vaccine	Hib (PRP-T) Hib (PRP-OMP)	ActHIB® Hiberix® PedvaxHIB®
Hepatitis A vaccine	HepA	Havrix® Vaqta®
Hepatitis B vaccine	HepB	Engerix-B® Recombivax HB®
Human papillomavirus vaccine	HPV	Gardasil 9®
Influenza vaccine (inactivated)	IIV4	Multiple
Influenza vaccine (live, attenuated)	LAIV4	FluMist® Quadrivalent
Measles, mumps, and rubella vaccine	MMR	M-M-R II®
Meningococcal serogroups A, C, W, Y vaccine	MenACWY-D MenACWY-CRM MenACWY-TT	Menactra® Menveo® MenQuadfi®
Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero® Trumenba®
Pneumococcal 13-valent conjugate vaccine	PCV13	Prenar 13®
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax 23®
Poliovirus vaccine (inactivated)	IPV	IPOL®
Rotavirus vaccine	RV1 RV5	Rotarix® RotaTeq®
Tetanus, diphtheria, and acellular pertussis vaccine	Tdap	Adacel® Boostrix®
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Varicella vaccine	VAR	Varivax®
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DTaP and inactivated poliovirus vaccine	DTaP-IPV	Kinrix® Quadracel®
DTaP, inactivated poliovirus, <i>Haemophilus influenzae</i> type b, and hepatitis B vaccine	DTaP-IPV-Hib-HepB	Vaxelis®
Measles, mumps, rubella, and varicella vaccine	MMRV	ProQuad®

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- 1 Determine recommended vaccine by age (Table 1)
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### leport

Suspected cases of reportable vaccine-preventable diseases or outbreaks to your state or local health department  
Clinically significant adverse events to the Vaccine Adverse Event Reporting System (VAERS) at [www.vaers.hhs.gov](http://www.vaers.hhs.gov) or 800-822-7967

### Questions or comments

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Download the CDC Vaccine Schedules app for providers at [www.cdc.gov/vaccines/schedules/hcp/schedule-app.html](http://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html)

### Helpful information

Complete Advisory Committee on Immunization Practices (ACIP) recommendations:

[www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://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](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html)

Vaccine information statements:

[www.cdc.gov/vaccines/hcp/vis/index.html](http://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](http://www.cdc.gov/vaccines/pubs/surv-manual)

ACIP Shared Clinical Decision-Making Recommendations:

[www.cdc.gov/vaccines/acip/acip-scdm-faqs.html](http://www.cdc.gov/vaccines/acip/acip-scdm-faqs.html)



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Health and Human Services  
Centers for Disease  
Control and Prevention

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CS210020-A

# Table 1

## Recommended Child and Adolescent Immunization Schedule by Age

**Table 1** Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2).

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2–3 yrs	4–6 yrs	7–10 yrs	11–12 yrs	13–15 yrs	16 yrs	17–18 yrs	
Hepatitis B (HepB)	1 <sup>st</sup> dose	← 2 <sup>nd</sup> dose →		← 3 <sup>rd</sup> dose →														
Rotavirus (RV): RV1 (2-dose series), RV5 (3-dose series)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	See Notes													
Diphtheria, tetanus, acellular pertussis (DTaP <7 yrs)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	3 <sup>rd</sup> dose				← 4 <sup>th</sup> dose →				5 <sup>th</sup> dose					
Haemophilus influenzae type b (Hib)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	See Notes		← 3 <sup>rd</sup> or 4 <sup>th</sup> dose → See Notes											
Pneumococcal conjugate (PCV13)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	3 <sup>rd</sup> dose				← 4 <sup>th</sup> dose →									
Inactivated poliovirus (IPV <18 yrs)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	← 3 <sup>rd</sup> dose →							4 <sup>th</sup> dose						
Influenza (IV4)						Annual vaccination 1 or 2 doses						Annual vaccination 1 dose only						
<b>OR</b>																		
Influenza (LAIV4)											Annual vaccination 1 or 2 doses		Annual vaccination 1 dose only					
Measles, mumps, rubella (MMR)					See Notes		← 1 <sup>st</sup> dose →					2 <sup>nd</sup> dose						
Varicella (VAR)					← 1 <sup>st</sup> dose →					2 <sup>nd</sup> dose								
Hepatitis A (HepA)					See Notes		2-dose series, See Notes											
Tetanus, diphtheria, acellular pertussis (Tdap ≥7 yrs)													1 dose					
Human papillomavirus (HPV)														See Notes				
Meningococcal (MenACWY-D ≥9 mos, MenACWY-CRM ≥2 mos, MenACWY-TT ≥2years)															1 <sup>st</sup> dose			2 <sup>nd</sup> dose
Meningococcal B (MenB-4C, MenB-FHbp)																See Notes		
Pneumococcal polysaccharide (PPSV23)													See Notes					
Dengue (DEN4CYD; 9–16 yrs)														Seropositive in endemic areas only (See Notes)				

Range of recommended ages for all children

Range of recommended ages for catch-up vaccination

Range of recommended ages for certain high-risk groups

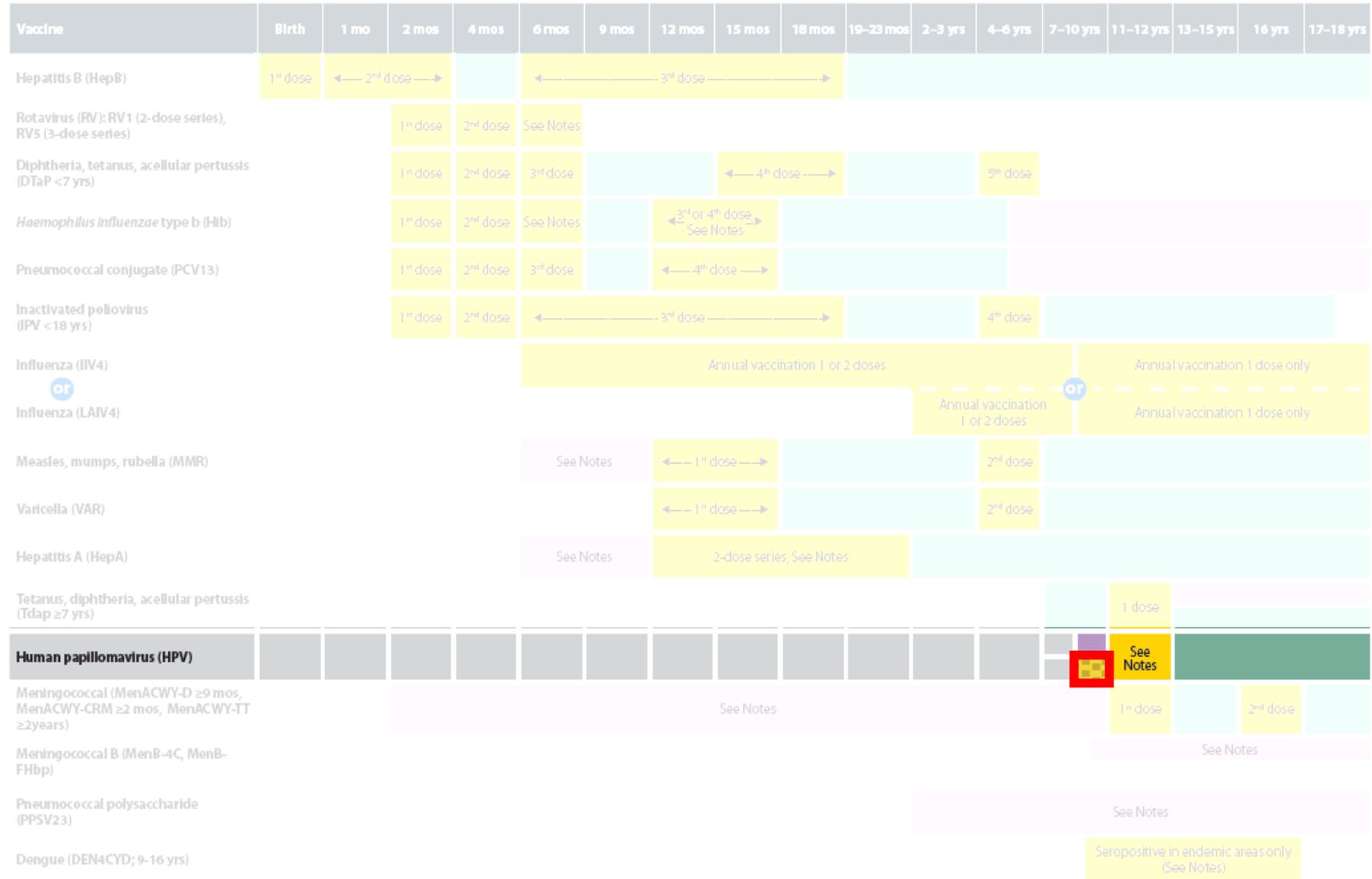
Recommended vaccination can begin in this age group

Recommended vaccination based on shared clinical decision-making

No recommendation/not applicable

**Table 1** Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

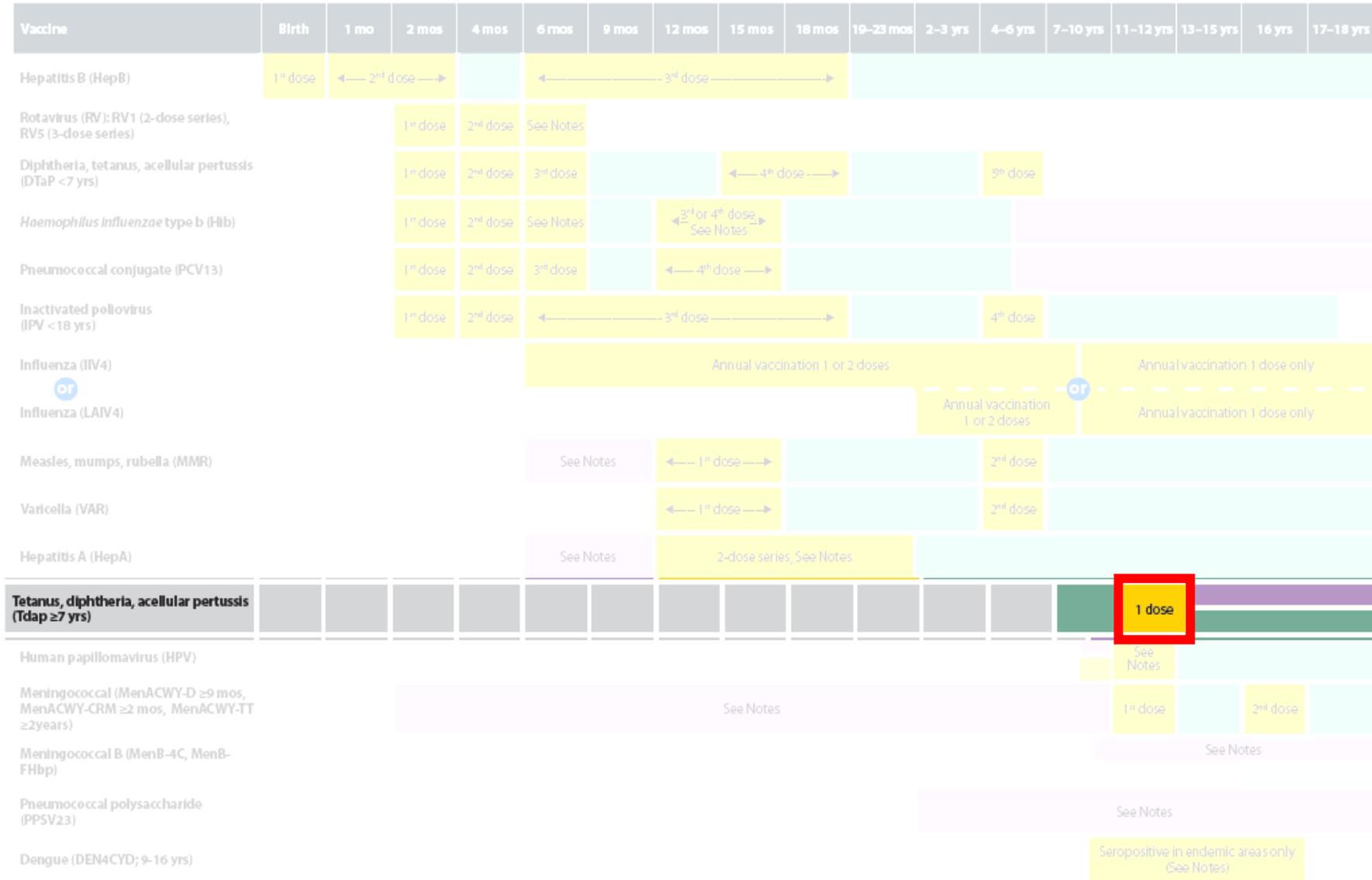
These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2).



  Range of recommended ages for all children
   Range of recommended ages for catch-up vaccination
   Range of recommended ages for certain high-risk groups
   Recommended vaccination can begin in this age group
   Recommended vaccination based on shared clinical decision-making
   No recommendation/ not applicable

**Table 1** Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2).



Range of recommended ages for all children
Range of recommended ages for catch-up vaccination
Range of recommended ages for certain high-risk groups
Recommended vaccination can begin in this age group
Recommended vaccination based on shared clinical decision-making
No recommendation/not applicable

# Table 2

## Catch-Up Immunization Schedule

## Table 2 Recommended Catch-up Immunization Schedule for Children and Adolescents Who Start Late or Who Are More than 1 Month Behind, United States, 2022

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. **Always use this table in conjunction with Table 1 and the Notes that follow.**

Children age 4 months through 6 years					
Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
Hepatitis B	Birth	4 weeks	8 weeks <i>and</i> at least 16 weeks after first dose minimum age for the final dose is 24 weeks		
Rotavirus	6 weeks Maximum age for first dose is 14 weeks, 6 days.	4 weeks	4 weeks maximum age for final dose is 8 months, 0 days		
Diphtheria, tetanus, and acellular pertussis	6 weeks	4 weeks	4 weeks	6 months	6 months
<i>Haemophilus influenzae</i> type b	6 weeks	No further doses needed if first dose was administered at age 15 months or older. 4 weeks if first dose was administered before the 1 <sup>st</sup> birthday. 8 weeks (as final dose) if first dose was administered at age 12 through 14 months.	No further doses needed if previous dose was administered at age 15 months or older. 4 weeks if current age is younger than 12 months <i>and</i> first dose was administered at younger than age 7 months <i>and</i> at least 1 previous dose was PRP-T (ActHib®, Pentacel®, Hiberix®), Vaxelis® or unknown 8 weeks <i>and</i> age 12 through 59 months (as final dose) if current age is younger than 12 months <i>and</i> first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months <i>and</i> first dose was administered before the 1 <sup>st</sup> birthday <i>and</i> second dose was administered at younger than 12 months; OR if both doses were PedvaxHIB® and were administered before the 1st birthday	8 weeks (as final dose) This dose only necessary for children age 12 through 59 months who received 3 doses before the 1 <sup>st</sup> birthday.	
Pneumococcal conjugate	6 weeks	No further doses needed for healthy children if first dose was administered at age 24 months or older 4 weeks if first dose was administered before the 1 <sup>st</sup> birthday 8 weeks (as final dose for healthy children) if first dose was administered at the 1 <sup>st</sup> birthday or after	No further doses needed for healthy children if previous dose was administered at age 24 months or older 4 weeks if current age is younger than 12 months and previous dose was administered at <7 months old 8 weeks (as final dose for healthy children) if previous dose was administered between 7–11 months (wait until at least 12 months old); OR if current age is 12 months or older and at least 1 dose was administered before age 12 months	8 weeks (as final dose) This dose only necessary for children age 12 through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age.	
Inactivated poliovirus	6 weeks	4 weeks	4 weeks if current age is <4 years 6 months (as final dose) if current age is 4 years or older	6 months (minimum age 4 years for final dose)	
Measles, mumps, rubella	12 months	4 weeks			
Varicella	12 months	3 months			
Hepatitis A	12 months	6 months			
Meningococcal ACWY	2 months MenACWY-CRM 9 months MenACWY-D 2 years MenACWY-TT	8 weeks	See Notes	See Notes	
Children and adolescents age 7 through 18 years					
Meningococcal ACWY	Not applicable (N/A)	8 weeks			
Tetanus, diphtheria; tetanus, diphtheria, and acellular pertussis	7 years	4 weeks	4 weeks if first dose of DTaP/DT was administered before the 1 <sup>st</sup> birthday 6 months (as final dose) if first dose of DTaP/DT or Tdap/Td was administered at or after the 1 <sup>st</sup> birthday	6 months if first dose of DTaP/DT was administered before the 1 <sup>st</sup> birthday	
Human papillomavirus	9 years	Routine dosing intervals are recommended.			
Hepatitis A	N/A	6 months			
Hepatitis B	N/A	4 weeks	8 weeks <i>and</i> at least 16 weeks after first dose		
Inactivated poliovirus	N/A	4 weeks	6 months A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.	A fourth dose of IPV is indicated if all previous doses were administered at <4 years or if the third dose was administered <6 months after the second dose.	
Measles, mumps, rubella	N/A	4 weeks			
Varicella	N/A	3 months if younger than age 13 years. 4 weeks if age 13 years or older			
Dengue	9 years	6 months	6 months		

**Table 2**

**Recommended Catch-up Immunization Schedule for Children and Adolescents Who Start Late or Who Are More than 1 Month Behind, United States, 2022**

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. **Always use this table in conjunction with Table 1 and the Notes that follow.**

Children age 4 months through 6 years					
Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
Hepatitis B	Birth	4 weeks	8 weeks <i>and</i> at least 16 weeks after first dose minimum age for the final dose is 24 weeks		
Rotavirus	6 weeks Maximum age for first dose is 14 weeks, 6 days.	4 weeks	4 weeks maximum age for final dose is 8 months, 0 days		
Diphtheria, tetanus, and acellular pertussis	6 weeks	4 weeks	4 weeks	6 months	6 months
<i>Haemophilus influenzae</i> type b	6 weeks	No further doses needed if first dose was administered at age 15 months or older. 4 weeks if first dose was administered before the 1 <sup>st</sup> birthday. 8 weeks (as final dose) if first dose was administered at age 12 through 14 months.	No further doses needed if previous dose was administered at age 15 months or older 4 weeks if current age is younger than 12 months <i>and</i> first dose was administered at younger than age 7 months <i>and</i> at least 1 previous dose was PRP-T (ActHib®, Pentacel®, Hiberix®), Vaxelis® or unknown 8 weeks <i>and</i> age 12 through 59 months (as final dose) if current age is younger than 12 months <i>and</i> first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months <i>and</i> first dose was administered before the 1 <sup>st</sup> birthday <i>and</i> second dose was administered at younger than 15 months; OR if both doses were PedvaxHIB® and were administered before the 1st birthday	8 weeks (as final dose) This dose only necessary for children age 12 through 59 months who received 3 doses before the 1 <sup>st</sup> birthday.	
Pneumococcal conjugate	6 weeks	No further doses needed for healthy children if first dose was administered at age 24 months or older 4 weeks if first dose was administered before the 1 <sup>st</sup> birthday 8 weeks (as final dose for healthy children) if first dose was administered at the 1 <sup>st</sup> birthday or after	No further doses needed for healthy children if previous dose was administered at age 24 months or older 4 weeks if current age is younger than 12 months and previous dose was administered at <7 months old 8 weeks (as final dose for healthy children) if previous dose was administered between 7–11 months (wait until at least 12 months old); OR if current age is 12 months or older and at least 1 dose was administered before age 12 months	8 weeks (as final dose) This dose only necessary for children age 12 through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age.	
Inactivated poliovirus	6 weeks	4 weeks	4 weeks if current age is <4 years 6 months (as final dose) if current age is 4 years or older	6 months (minimum age 4 years for final dose)	
Measles, mumps, rubella	12 months	4 weeks			
Varicella	12 months	3 months			
Hepatitis A	12 months	6 months			
Meningococcal ACWY	2 months MenACWY-CRM 9 months MenACWY-D 2 years MenACWY-TT	8 weeks	See Notes	See Notes	
Children and adolescents age 7 through 18 years					
Meningococcal ACWY	Not applicable (N/A)	8 weeks			
Tetanus, diphtheria; tetanus, diphtheria, and acellular pertussis	7 years	4 weeks	4 weeks if first dose of DTaP/DT was administered before the 1 <sup>st</sup> birthday 6 months (as final dose) if first dose of DTaP/DT or Tdap/Td was administered at or after the 1 <sup>st</sup> birthday	6 months if first dose of DTaP/DT was administered before the 1 <sup>st</sup> birthday	
Human papillomavirus	9 years	Routine dosing intervals are recommended.			
Hepatitis A	N/A	6 months			
Hepatitis B	N/A	4 weeks	8 weeks <i>and</i> at least 16 weeks after first dose		
Inactivated poliovirus	N/A	4 weeks	6 months A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.	A fourth dose of IPV is indicated if all previous doses were administered at <4 years or if the third dose was administered <6 months after the second dose.	
Measles, mumps, rubella	N/A	4 weeks			
Varicella	N/A	3 months if younger than age 13 years. 4 weeks if age 13 years or older			
Dengue	9 years	6 months	6 months		

## Table 3

*Recommended Child and Adolescent  
Immunization Schedule by Medical Indication*

**Table 3**

**Recommended Child and Adolescent Immunization Schedule by Medical Indication, United States, 2022**

Always use this table in conjunction with Table 1 and the Notes that follow.

VACCINE	INDICATION									
	Pregnancy	Immunocompromised status (excluding HIV infection)	HIV infection CD4+ count <sup>1</sup>		Kidney failure, end-stage renal disease, or on hemodialysis	Heart disease or chronic lung disease	CSF leak or cochlear implant	Asplenia or persistent complement deficiencies	Chronic liver disease	Diabetes
			<15% or total CD4 cell count of <200/mm <sup>3</sup>	≥15% and total CD4 cell count of ≥200/mm <sup>3</sup>						
Hepatitis B										
Rotavirus		SCD <sup>2</sup>								
Diphtheria, tetanus, and acellular pertussis (DTaP)										
Haemophilus influenzae type b										
Pneumococcal conjugate										
Inactivated poliovirus										
Influenza (IIV4)										
<b>or</b> Influenza (LAV4)						Asthma, wheezing 2–4 yrs <sup>3</sup>				
Measles, mumps, rubella	*									
Varicella	*									
Hepatitis A										
Tetanus, diphtheria, and acellular pertussis (Tdap)										
Human papillomavirus	*									
Meningococcal ACWY										
Meningococcal B										
Pneumococcal polysaccharide										
Dengue										

  Vaccination according to the routine schedule recommended  
  Recommended for persons with an additional risk factor for which the vaccine would be indicated  
  Vaccination is recommended, and additional doses may be necessary based on medical condition or vaccine. See Notes.  
  Precaution—vaccine might be indicated if benefit of protection outweighs risk of adverse reaction  
  Contraindicated or not recommended—vaccine should not be administered  
  No recommendation/not applicable  
 \*Vaccinate after pregnancy

1 For additional information regarding HIV laboratory parameters and use of live vaccines, see the *General Best Practice Guidelines for Immunization*, "Altered Immunocompetence," at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html) and Table 4-1 (footnote G) at [www.cdc.gov/vaccines/hcp/adp-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/adp-recs/general-recs/contraindications.html).  
 2 Severe Combined Immunodeficiency  
 3 LAV4 contraindicated for children 2–4 years of age with asthma or wheezing during the preceding 12 months

**Table 3**

Recommended Child and Adolescent Immunization Schedule by Medical Indication, United States, 2022

Always use this table in conjunction with Table 1 and the Notes that follow.

VACCINE	INDICATION									
	Pregnancy	Immunocompromised status (excluding HIV infection)	HIV infection CD4+ count <sup>1</sup>		Kidney failure, end-stage renal disease, or on hemodialysis	Heart disease or chronic lung disease	CSF leak or cochlear implant	Asplenia or persistent complement deficiencies	Chronic liver disease	Diabetes
			<15% or total CD4 cell count of <200/mm <sup>3</sup>	≥15% and total CD4 cell count of ≥200/mm <sup>3</sup>						
Hepatitis B										
Rotavirus		SDD <sup>2</sup>								
Diphtheria, tetanus, and acellular pertussis (DTaP)										
Haemophilus influenzae type b										
Pneumococcal conjugate										
Inactivated poliovirus										
Influenza (IIV4)										
<b>OR</b> Influenza (LAM4)					Asthma, wheezing 2–4yrs <sup>3</sup>					
Measles, mumps, rubella	*									
Varicella	*									
Hepatitis A										
Tetanus, diphtheria, and acellular pertussis (Tdap)										
Human papillomavirus	*									
Meningococcal ACWY										
Meningococcal B										
Pneumococcal polysaccharide										
Dengue										

Vaccination according to the routine schedule recommended
  No recommendation/not applicable

Recommended for persons with an additional risk factor for which the vaccine would be indicated
  Vaccination is recommended, and additional doses may be necessary based on medical condition or vaccine. See Notes.
  Precaution—vaccine might be indicated if benefit of protection outweighs risk of adverse reaction
  Contraindicated or not recommended—vaccine should not be administered

\*Vaccinate after pregnancy

1 For additional information regarding HIV laboratory parameters and use of live vaccines, see the *General Best Practice Guidelines for Immunization, "Altered Immunocompetence,"* at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html) and Table 4-1 (footnote G) at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html).

2 Severe Combined Immunodeficiency

3 LAM4 contraindicated for children 2–4 years of age with asthma or wheezing during the preceding 12 months

# Notes

## Routine vaccination

- Age 9–16 years living in dengue endemic areas **AND** have laboratory confirmation of previous dengue infection  
-3-dose series administered at 0, 6, and 12 months
- Endemic areas include Puerto Rico, American Samoa, US Virgin Islands, Federated States of Micronesia, Republic of Marshall Islands, and the Republic of Palau. For updated guidance on dengue endemic areas and pre-vaccination laboratory testing see [www.cdc.gov/mmwr/volumes/70/rr/rr7006a1.htm?s\\_cid=rr7006a1\\_w](http://www.cdc.gov/mmwr/volumes/70/rr/rr7006a1.htm?s_cid=rr7006a1_w) and [www.cdc.gov/dengue/vaccine/hcp/index.html](http://www.cdc.gov/dengue/vaccine/hcp/index.html)

\* The National Vaccine Injury Compensation Program (VICP) is a no-fault alternative to the traditional legal system for resolving vaccine injury claims. All routine child and adolescent vaccines are covered by VICP except for pneumococcal polysaccharide vaccine (PPSV23). For more information, see [www.hrsa.gov/vaccinecompensation/index.html](http://www.hrsa.gov/vaccinecompensation/index.html).

### Dengue vaccination (minimum age: 9 years)

#### Routine vaccination

- Age 9–16 years living in dengue endemic areas **AND** have laboratory confirmation of previous dengue infection  
- 3-dose series administered at 0, 6, and 12 months
- Endemic areas include Puerto Rico, American Samoa, US Virgin Islands, Federated States of Micronesia, Republic of Marshall Islands, and the Republic of Palau. For updated guidance on dengue endemic areas and pre-vaccination laboratory testing see [www.cdc.gov/mmwr/volumes/70/rr/rr7006a1.htm?s\\_cid=rr7006a1\\_w](http://www.cdc.gov/mmwr/volumes/70/rr/rr7006a1.htm?s_cid=rr7006a1_w) and [www.cdc.gov/dengue/vaccine/hcp/index.html](http://www.cdc.gov/dengue/vaccine/hcp/index.html)

### Diphtheria, tetanus, and pertussis (DTaP) vaccination (minimum age: 6 weeks [4 years for Kinrix® or Quadracel®])

#### Routine vaccination

- \* 5-dose series at age 2, 4, 6, 15–18 months, 4–6 years
- **Prospectively:** Dose 4 may be administered as early as age 12 months if at least 6 months have elapsed since dose 3.
- **Retrospectively:** A 4<sup>th</sup> dose that was inadvertently administered as early as age 12 months may be counted if at least 4 months have elapsed since dose 3.

#### Catch-up vaccination

- \* Dose 5 is not necessary if dose 4 was administered at age 4 years or older and at least 6 months after dose 3.
- \* For other catch-up guidance, see Table 2.

#### Special situations

- \* Wound management in children less than age 7 years with history of 3 or more doses of tetanus-toxoid-containing vaccine: For all wounds except clean and minor wounds, administer DTaP if more than 5 years since last dose of tetanus-toxoid-containing vaccine. For detailed information, see [www.cdc.gov/mmwr/volumes/67/rr/rr6702a1.htm](http://www.cdc.gov/mmwr/volumes/67/rr/rr6702a1.htm).

### Haemophilus influenzae type b vaccination (minimum age: 6 weeks)

#### Routine vaccination

- \* ActHIB®, Hiberix®, Pentacel®, or Vaxelis®: 4-dose series (3 dose primary series at age 2, 4, and 6 months, followed by a booster dose\* at age 12–15 months)
- \*Vaxelis® is not recommended for use as a booster dose. A different Hib-containing vaccine should be used for the booster dose.
- \* PedvaxHIB®: 3-dose series (2-dose primary series at age 2 and 4 months, followed by a booster dose at age 12–15 months)

#### Catch-up vaccination

- \* Dose 1 at age 7–11 months: Administer dose 2 at least 4 weeks later and dose 3 (final dose) at age 12–15 months or 8 weeks after dose 2 (whichever is later).
- \* Dose 1 at age 12–14 months: Administer dose 2 (final dose) at least 8 weeks after dose 1.

Dose 1 before age 12 months and dose 2 before age 15 months: Administer dose 3 (final dose) at least 8 weeks after dose 2.

2 doses of PedvaxHIB® before age 12 months: Administer dose 3 (final dose) at 12–59 months and at least 8 weeks after dose 2.

1 dose administered at age 15 months or older: No further doses needed

Unvaccinated at age 15–59 months: Administer 1 dose.

Previously unvaccinated children age 60 months or older who are not considered high risk: Do not require catch-up vaccination or other catch-up guidance, see Table 2. Vaxelis® can be used for catch-up vaccination in children less than age 5 years. Follow the catch-up schedule even if Vaxelis® is used for one or more doses. For detailed information on use of Vaxelis® see [www.cdc.gov/mmwr/volumes/69/wr/mm6905a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6905a5.htm).

#### Special situations

##### \* Chemotherapy or radiation treatment:

###### Age 12–59 months

- Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
- 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

Doses administered within 14 days of starting therapy or during therapy should be repeated at least 3 months after therapy completion.

##### \* Hematopoietic stem cell transplant (HSCT):

- 3-dose series 4 weeks apart starting 6 to 12 months after successful transplant, regardless of Hib vaccination history

##### \* Anatomic or functional asplenia (including sickle cell disease):

###### Age 12–59 months

- Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
- 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

###### Unvaccinated\* persons age 5 years or older

- 1 dose

##### \* Elective splenectomy:

###### Unvaccinated\* persons age 15 months or older

- 1 dose (preferably at least 14 days before procedure)

##### \* HIV infection:

###### Age 12–59 months

- Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
- 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

###### Unvaccinated\* persons age 5–18 years

- 1 dose

##### \* Immunoglobulin deficiency, early component complement deficiency:

###### Age 12–59 months

- Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
- 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

\*Unvaccinated = Less than routine series (through age 14 months) OR no doses (age 15 months or older)

For vaccination recommendations for persons ages 19 years or older, see the Recommended Adult Immunization Schedule, 2022.

### Catch-up vaccination

For other catch-up guidance, see Table 2. **Vaxelis®** can be used for catch-up vaccination in children less than age 5 years. Follow the catch-up schedule even if Vaxelis® is used for one or more doses. For detailed information on use of Vaxelis® see [www.cdc.gov/mmwr/volumes/69/wr/mm6905a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6905a5.htm).

### Routine vaccination

- **ActHIB®, Hiberix®, Pentacel®, or Vaxelis®:** 4-dose series (3 dose primary series at age 2, 4, and 6 months, followed by a booster dose\* at age 12–15 months)  
- \*Vaxelis® is not recommended for use as a booster dose. A different Hib-containing vaccine should be used for the booster dose.
- **PedvaxHIB®:** 3-dose series (2-dose primary series at age 2 and 4 months, followed by a booster dose at age 12–15 months)

### Dengue vaccination

- **Dose 1 before age 12 months and dose 2 before age 15 months:** Administer dose 3 (final dose) at least 8 weeks after dose 2.
- **2 doses of PedvaxHIB® before age 12 months:** Administer dose 3 (final dose) at 12–59 months and at least 8 weeks after dose 2.
- **1 dose administered at age 15 months or older:** No further doses needed
- **Unvaccinated at age 15–59 months:** Administer 1 dose.
- **Previously unvaccinated children age 60 months or older who are not considered high risk:** Do not require catch-up vaccination

For other catch-up guidance, see Table 2. Vaxelis® can be used for catch-up vaccination in children less than age 5 years. Follow the catch-up schedule even if Vaxelis® is used for one or more doses. For detailed information on use of Vaxelis® see [www.cdc.gov/mmwr/volumes/69/wr/mm6905a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6905a5.htm).

### Special situations

#### Chemotherapy or radiation treatment:

##### Age 12–59 months

- Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
- 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

*Doses administered within 14 days of starting therapy or during therapy should be repeated at least 3 months after therapy completion.*

#### Hematopoietic stem cell transplant (HSCT):

- 3-dose series 4 weeks apart starting 6 to 12 months after successful transplant, regardless of Hib vaccination history

#### Anatomic or functional asplenia (including sickle cell disease):

##### Age 12–59 months

- Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
- 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

##### Unvaccinated\* persons age 5 years or older

- 1 dose

#### Elective splenectomy:

##### Unvaccinated\* persons age 15 months or older

- 1 dose (preferably at least 14 days before procedure)

#### HIV infection:

##### Age 12–59 months

- Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
- 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

##### Unvaccinated\* persons age 5–18 years

- 1 dose

#### Immunoglobulin deficiency, early component complement deficiency:

##### Age 12–59 months

- Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
- 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

\*Unvaccinated = Less than routine series (through age 14 months) OR no doses (age 15 months or older)

### Catch-up vaccination

- Dose 5 is not necessary if dose 4 was administered at age 4 years or older and at least 6 months after dose 3.
- For other catch-up guidance, see Table 2.

### Special situations

- Wound management in children less than age 7 years with history of 3 or more doses of tetanus-toxoid-containing vaccine: For all wounds except clean and minor wounds, administer DTaP if more than 5 years since last dose of tetanus-toxoid-containing vaccine. For detailed information, see [www.cdc.gov/mmwr/volumes/69/wr/mm6905a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6905a5.htm).

### Haemophilus influenzae type b vaccination (minimum age: 6 weeks)

#### Routine vaccination

- **ActHIB®, Hiberix®, Pentacel®, or Vaxelis®:** 4-dose series (3 dose primary series at age 2, 4, and 6 months, followed by a booster dose\* at age 12–15 months)

- \*Vaxelis® is not recommended for use as a booster dose. A different Hib-containing vaccine should be used for the booster dose.

- **PedvaxHIB®:** 3-dose series (2-dose primary series at age 2 and 4 months, followed by a booster dose at age 12–15 months)

#### Catch-up vaccination

- **Dose 1 at age 7–11 months:** Administer dose 2 at least 4 weeks later and dose 3 (final dose) at age 12–15 months or 8 weeks after dose 2 (whichever is later).
- **Dose 1 at age 12–14 months:** Administer dose 2 (final dose) at least 8 weeks after dose 1.

## Notes

Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

### Hepatitis A vaccination (minimum age: 12 months for routine vaccination)

#### Routine vaccination

\* 2-dose series (minimum interval: 6 months) at age 12–23 months

#### Catch-up vaccination

- \* Unvaccinated persons through age 18 years should complete a 2-dose series (minimum interval: 6 months).
- \* Persons who previously received 1 dose at age 12 months or older should receive dose 2 at least 6 months after dose 1.
- \* Adolescents age 18 years or older may receive the combined HepA and HepB vaccine, **Twinrix**, as a 3-dose series (0, 1, and 6 months) or 4-dose series (3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months).

#### International travel

- \* Persons traveling to or working in countries with high or intermediate endemic hepatitis A ([www.cdc.gov/travel/](http://www.cdc.gov/travel/)):
  - **Infants age 6–11 months:** 1 dose before departure; revaccinate with 2 doses, separated by at least 6 months, between age 12–23 months.
  - **Unvaccinated age 12 months or older:** Administer dose 1 as soon as travel is considered.

### Hepatitis B vaccination (minimum age: birth)

Birth dose (monovalent HepB vaccine only)

- \* Administration of 4 doses is permitted when a combination vaccine containing HepB is used after the birth dose.
- \* **Minimum age** for the final (3<sup>rd</sup> or 4<sup>th</sup>) dose: 24 weeks
- \* **Minimum intervals:** dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks (when 4 doses are administered, substitute "dose 4" for "dose 3" in these calculations)

#### Catch-up vaccination

- \* Unvaccinated persons should complete a 3-dose series at 0, 1–2, 6 months.
- \* Adolescents age 11–15 years may use an alternative 2-dose schedule with at least 4 months between doses (adult formulation: **Recombivax HB**® only).
- \* Adolescents age 18 years or older may receive a 2-dose series of HepB (**HepBisav-B**®) at least 4 weeks apart.
- \* Adolescents age 18 years or older may receive the combined HepA and HepB vaccine, **Twinrix**, as a 3-dose series (0, 1, and 6 months) or 4-dose series (3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months).
- \* For other catch-up guidance, see Table 2.

#### Special situations

- \* Revaccination is not generally recommended for persons with a normal immune status who were vaccinated as infants, children, adolescents, or adults.
- \* Post-vaccination serology testing and revaccination (if anti-HBs < 10 mIU/mL) is recommended for certain populations, including:
  - Infants born to HBsAg-positive mothers
  - Hemodialysis patients
  - Other immunocompromised persons

For detailed revaccination recommendations, see [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specif/hcpb.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specif/hcpb.html).

### Human papillomavirus vaccination (minimum age: 9 years)

#### Routine and catch-up vaccination

- \* HPV vaccination routinely recommended at **age 11–12 years (can start at age 9 years)** and catch-up HPV vaccination recommended for all persons through age 18 years if not adequately vaccinated
- \* 2- or 3-dose series depending on age at initial vaccination:
  - **Age 9–14 years at initial vaccination:** 2-dose series at 0, 6–12 months (minimum interval: 5 months; repeat dose if administered too soon)
  - **Age 15 years or older at initial vaccination:** 3-dose series at 0, 1–2 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 5 months; repeat dose if administered too soon)
- \* **Interrupted schedules:** If vaccination schedule is interrupted, the series does not need to be restarted.
- \* No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.

#### Special situations

- \* **Immunocompromising conditions, including HIV infection:** 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
- \* **History of sexual abuse or assault:** Start at age 9 years.

- \* **Pregnancy:** Pregnancy testing not needed before vaccination; HPV vaccination not recommended until after pregnancy; no intervention needed if vaccinated while pregnant.

### Influenza vaccination (minimum age: 6 months [IIV], 2 years [LAIV4], 18 years [recombinant influenza vaccine, RIV4])

#### Routine vaccination

- \* Use any influenza vaccine appropriate for age and health status annually:
  - 2 doses, separated by at least 4 weeks, for **children age 6 months–8 years** who have received fewer than 2 influenza vaccine doses before July 1, 2021, or whose influenza vaccination history is unknown (administer dose 2 even if the child turns 9 between receipt of dose 1 and dose 2)
  - 1 dose for **children age 6 months–8 years** who have received at least 2 influenza vaccine doses before July 1, 2021
  - 1 dose for **all persons age 9 years or older**
- \* For the 2021–2022 season, see [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.html](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.html).
- \* For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

#### Special situations

- \* **Egg allergy, hives only:** Any influenza vaccine appropriate for age and health status annually
- \* **Egg allergy with symptoms other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- \* **Severe allergic reaction** (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine: see Appendix listing contraindications and precautions

### Measles, mumps, and rubella vaccination (minimum age: 12 months for routine vaccination)

#### Routine vaccination

- \* 2-dose series at age 12–15 months, age 4–6 years
- \* MMR or MMRV may be administered
- Note:** For dose 1 in children age 12–47 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

#### Catch-up vaccination

- \* Unvaccinated children and adolescents: 2-dose series at least 4 weeks apart
- \* The maximum age for use of MMRV is 12 years.
- \* Minimum interval between MMRV doses: 3 months

#### Special situations

##### International travel

- \* **Infants age 6–11 months:** 1 dose before departure; revaccinate with 2-dose series at age 12–15 months (12 months for children in high-risk areas) and dose 2 as early as 4 weeks later.
- \* **Unvaccinated children age 12 months or older:** 2-dose series at least 4 weeks apart before departure.

## Special situations

- **Immunocompromising conditions, including HIV infection:** 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
- **History of sexual abuse or assault:** Start at age 9 years.
- **Pregnancy:** Pregnancy testing not needed before vaccination; HPV vaccination not recommended until after pregnancy; no intervention needed if vaccinated while pregnant

## Routine vaccination

- Use any influenza vaccine appropriate for age and health status annually:
  - 2 doses, separated by at least 4 weeks, for **children age 6 months–8 years** who have received fewer than 2 influenza vaccine doses before July 1, 2021, or whose influenza vaccination history is unknown (administer dose 2 even if the child turns 9 between receipt of dose 1 and dose 2)
  - 1 dose for **children age 6 months–8 years** who have received at least 2 influenza vaccine doses before July 1, 2021
  - 1 dose for **all persons age 9 years or older**
- For the 2021-2022 season, see [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm).
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

## Special situations

- **Egg allergy, hives only:** Any influenza vaccine appropriate for age and health status annually
- **Egg allergy with symptoms other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- **Severe allergic reaction (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine:** see Appendix listing contraindications and precautions

\* Mother's HBsAg status is unknown:

- Administer HepB vaccine within 12 hours of birth, regardless of birth weight.
- For infants <2,000 grams, administer HBIG in addition to HepB vaccine (in separate [IMBs]) within 12 hours of birth. Administer 3 additional doses of vaccine (total of 4 doses) beginning at age 1 month.
- Determine mother's HBsAg status as soon as possible. If mother is HBsAg-positive, administer HBIG to infants ≥2,000 grams as soon as possible, but no later than 7 days of age.

### Routine series

- \* 3-dose series at age 0, 1–2, 6–18 months (use monovalent HepB vaccine for doses administered before age 6 weeks)
- \* Infants who did not receive a birth dose should begin the series as soon as feasible (see Table 2).

\* Hepatitis B (minimum interval 4 months; repeat doses administered too soon)

- **Age 15 years or older at initial vaccination:** 3-dose series at 0, 1–2 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks; dose 2 to dose 3: 12 weeks; dose 1 to dose 3: 5 months; repeat dose if administered too soon)

- \* **Interrupted schedules:** If vaccination schedule is interrupted, the series does not need to be restarted.
- \* No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.

### Special situations

- \* **Immunocompromising conditions, including HIV infection:** 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
- \* **History of sexual abuse or assault:** Start at age 9 years.

years or younger, United States, 2022

\* **Pregnancy:** Pregnancy testing not needed before vaccination; HPV vaccination not recommended until after pregnancy; no intervention needed if vaccinated while pregnant.

## Influenza vaccination

(minimum age: 6 months [IIV], 2 years [LAIV4], 18 years [recombinant influenza vaccine, RIV4])

### Routine vaccination

- Use any influenza vaccine appropriate for age and health status annually:
  - 2 doses, separated by at least 4 weeks, for **children age 6 months–8 years** who have received fewer than 2 influenza vaccine doses before July 1, 2021, or whose influenza vaccination history is unknown (administer dose 2 even if the child turns 9 between receipt of dose 1 and dose 2)
  - 1 dose for **children age 6 months–8 years** who have received at least 2 influenza vaccine doses before July 1, 2021
  - 1 dose for **all persons age 9 years or older**
- For the 2021-2022 season, see [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm).
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

### Special situations

- **Egg allergy, hives only:** Any influenza vaccine appropriate for age and health status annually
- **Egg allergy with symptoms other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- **Severe allergic reaction (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine:** see Appendix listing contraindications and precautions

## Measles, mumps, and rubella vaccination

(minimum age: 12 months for routine vaccination)

### Routine vaccination

- \* 2-dose series at age 12–15 months, age 4–6 years
- \* MMR or MMRV may be administered

**Note:** For dose 1 in children age 12–47 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

### Catch-up vaccination

- \* Unvaccinated children and adolescents: 2-dose series at least 4 weeks apart
- \* The maximum age for use of MMRV is 12 years
- \* Minimum interval between MMRV doses: 3 months

### Special situations

#### International travel

- \* **Infants age 6–11 months:** 1 dose before departure; revaccinate with 2-dose series at age 12–15 months (12 months for children in high-risk areas) and dose 2 as early as 4 weeks later.
- \* **Unvaccinated children age 12 months or older:** 2-dose series at least 4 weeks apart before departure

### Hepatitis A vaccination (minimum age: 12 months for routine vaccination)

#### Routine vaccination

- 2-dose series (minimum interval: 6 months) at age 12–23 months

#### Catch-up vaccination

- Unvaccinated persons through age 18 years should complete a 2-dose series (minimum interval: 6 months).
- Persons who previously received 1 dose at age 12 months or older should receive dose 2 at least 6 months after dose 1.
- Adolescents age 18 years or older may receive the combined HepA and HepB vaccine, **Twinrix**<sup>®</sup>, as a 3-dose series (0, 1, and 6 months) or 4-dose series (3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months).

- Administration of 4 doses is permitted when a combination vaccine containing HepB is used after the birth dose.

- **Minimum age** for the final (3<sup>rd</sup> or 4<sup>th</sup>) dose: 24 weeks

- **Minimum intervals:** dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks (when 4 doses are administered, substitute "dose 4" for "dose 3" in these calculations)

#### Catch-up vaccination

- Unvaccinated persons should complete a 3-dose series at 0, 1–2, 6 months.
- Adolescents age 11–15 years may use an alternative 2-dose schedule with at least 4 months between doses (adult formulation: **Recombivax HB**<sup>®</sup> only).
- Adolescents age 18 years or older may receive a 2-dose series of HepB (**HepIsav-B**<sup>®</sup>) at least 4 weeks apart.

- **Pregnancy:** Pregnancy testing not needed before vaccination; HPV vaccination not recommended until after pregnancy; no intervention needed if vaccinated while pregnant.

### Influenza vaccination (minimum age: 6 months [IIV], 2 years [LAIV], 18 years [recombinant influenza vaccine, RIV4])

#### Routine vaccination

- Use any influenza vaccine appropriate for age and health status annually:
  - 2 doses, separated by at least 4 weeks, for **children age 6 months–8 years** who have received fewer than 2 influenza vaccine doses before July 1, 2021, or whose influenza vaccination history is unknown (administer dose 2 even if the child turns 9 between receipt of dose 1 and dose 2).
  - 1 dose for **children age 6 months–8 years** who have received at least 2 influenza vaccine doses before July 1, 2021.
  - 1 dose for **all persons age 9 years or older**.
- For the 2021–2022 season, see [www.cdc.gov/immzrv/volumes/70/m1/r7005a7.htm](http://www.cdc.gov/immzrv/volumes/70/m1/r7005a7.htm).
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

#### Special situations

- **Egg allergy, hives only:** Any influenza vaccine appropriate for age and health status annually.
- **Egg allergy with symptoms other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions.
- **Severe allergic reaction** (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine: see Appendix listing contraindications and precautions.

### Measles, mumps, and rubella vaccination (minimum age: 12 months for routine vaccination)

#### Routine vaccination

- 2-dose series at age 12–15 months, age 4–6 years
- MMR or MMRV may be administered

**Note:** For dose 1 in children age 12–47 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

#### Catch-up vaccination

- Unvaccinated children and adolescents: 2-dose series at least 4 weeks apart
- The maximum age for use of MMRV is 12 years.
- Minimum interval between MMRV doses: 3 months

#### Special situations

##### International travel

- **Infants age 6–11 months:** 1 dose before departure; revaccinate with 2-dose series at age 12–15 months (12 months for children in high-risk areas) and dose 2 as early as 4 weeks later.
- **Unvaccinated children age 12 months or older:** 2-dose series at least 4 weeks apart before departure

## Routine vaccination

- 2-dose series at age 12–15 months, age 4–6 years
- MMR or MMRV may be administered

**Note:** For dose 1 in children age 12–47 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

## Catch-up vaccination

- Unvaccinated children and adolescents: 2-dose series at least 4 weeks apart
- The maximum age for use of MMRV is 12 years.
- Minimum interval between MMRV doses: 3 months

### Meningococcal serogroup A,C,W,Y vaccination (minimum age: 2 months [MenACWY-CRM, Menveo], 9 months [MenACWY-D, Menactra], 2 years [MenACWY-TT, MenQuadfi])

#### Routine vaccination

- 2-dose series at age 11–12 years; 16 years

#### Catch-up vaccination

- Age 13–15 years: 1 dose now and booster at age 16–18 years (minimum interval: 8 weeks)
- Age 16–18 years: 1 dose

#### Special situations

**Anatomic or functional asplenia (including sickle cell disease), HIV infection, persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use:**

- **Menveo**
  - Dose 1 at age 2 months: 4-dose series (additional 3 doses at age 4, 6 and 12 months)
  - Dose 1 at age 3–6 months: 3- or 4- dose series (dose 2 [and dose 3 if applicable] at least 8 weeks after previous dose until a dose is received at age 7 months or older, followed by an additional dose at least 12 weeks later and after age 12 months)
  - Dose 1 at age 7–23 months: 2-dose series (dose 2 at least 12 weeks after dose 1 and after age 12 months)
  - Dose 1 at age 24 months or older: 2-dose series at least 8 weeks apart

#### • Menactra

- **Persistent complement component deficiency or complement inhibitor use:**

- Age 9–23 months: 2-dose series at least 12 weeks apart
- Age 24 months or older: 2-dose series at least 8 weeks apart
- **Anatomic or functional asplenia, sickle cell disease, or HIV infection:**
  - Age 9–23 months: Not recommended
  - Age 24 months or older: 2-dose series at least 8 weeks apart

- **Menactra®** must be administered at least 4 weeks after completion of PCV13 series.

#### • MenQuadfi®

- Dose 1 at age 24 months or older: 2-dose series at least 8 weeks apart

**Travel in countries with hyperendemic or epidemic meningococcal disease, including countries in the African meningitis belt or during the Hajj** ([www.cdc.gov/travel/](http://www.cdc.gov/travel/)):

- Children less than age 24 months:
  - **Menveo® (age 2–23 months)**
    - Dose 1 at age 2 months: 4-dose series (additional 3 doses at age 4, 6 and 12 months)
    - Dose 1 at age 3–6 months: 3- or 4- dose series (dose 2 [and dose 3 if applicable] at least 8 weeks after previous dose until a dose is received at age 7 months or older, followed by an additional dose at least 12 weeks later and after age 12 months)
    - Dose 1 at age 7–23 months: 2-dose series (dose 2 at least 12 weeks after dose 1 and after age 12 months)
  - **Menactra® (age 9–23 months)**
    - 2-dose series (dose 2 at least 12 weeks after dose 1; dose 2 may be administered as early as 8 weeks after dose 1 in travelers)
- Children age 2 years or older: 1 dose Menveo®, Menactra®, or MenQuadfi®

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

- 1 dose Menveo®, Menactra®, or MenQuadfi®

### Adolescent vaccination of children who received MenACWY prior to age 10 years:

- **Children for whom boosters are recommended** because of an ongoing increased risk of meningococcal disease (e.g., those with complement deficiency, HIV, or asplenia): Follow the booster schedule for persons at increased risk.
- **Children for whom boosters are not recommended** (e.g., a healthy child who received a single dose for travel to a country where meningococcal disease is endemic): Administer MenACWY according to the recommended adolescent schedule with dose 1 at age 11–12 years and dose 2 at age 16 years.

**Note: Menactra®** should be administered either before or at the same time as DTaP. MenACWY vaccines may be administered simultaneously with MenB vaccines if indicated, but at a different anatomic site, if feasible.

For MenACWY booster dose recommendations for groups listed under "Special situations" and in an outbreak setting and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm).

### Meningococcal serogroup B vaccination (minimum age: 10 years [MenB-4C, Bexsero®; MenB-FHbp, Trumenba®])

#### Shared clinical decision-making

- Adolescents not at increased risk age 16–23 years (preferred age 16–18 years) based on shared clinical decision-making:
  - Bexsero®: 2-dose series at least 1 month apart
  - Trumenba®: 2-dose series at least 6 months apart; if dose 2 is administered earlier than 6 months, administer a 3<sup>rd</sup> dose at least 4 months after dose 2.

#### Special situations

**Anatomic or functional asplenia (including sickle cell disease), persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use:**

- Bexsero®: 2-dose series at least 1 month apart
- Trumenba®: 3-dose series at 0, 1–2, 6 months

**Note:** Bexsero® and Trumenba® are not interchangeable; the same product should be used for all doses in a series.

For MenB booster dose recommendations for groups listed under "Special situations" and in an outbreak setting and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm).

### Pneumococcal vaccination (minimum age: 6 weeks [PCV13], 2 years [PPSV23])

#### Routine vaccination with PCV13

- 4-dose series at age 2, 4, 6, 12–15 months

#### Catch-up vaccination with PCV13

- 1 dose for healthy children age 24–59 months with any incomplete<sup>1</sup> PCV13 series
- For other catch-up guidance, see Table 2.

#### Special situations

Underlying conditions below: When both PCV13 and PPSV23 are indicated, administer PCV13 first. PCV13 and PPSV23 should not

## Special situations

**Note: Menactra®** should be administered either before or at the same time as DTaP. MenACWY vaccines may be administered simultaneously with MenB vaccines if indicated, but at a different anatomic site, if feasible.

- No history of either PCV13 or PPSV23: 1 dose PCV13, 1 dose PPSV23 at least 8 weeks later

- Any PCV13 but no PPSV23: 1 dose PPSV23 at least 8 weeks after the most recent dose of PCV13

- PPSV23 but no PCV13: 1 dose PCV13 at least 8 weeks after the most recent dose of PPSV23

**Sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; congenital or acquired immunodeficiency; HIV infection; chronic renal failure; nephrotic syndrome; malignant neoplasms, leukemias, lymphomas, Hodgkin disease, and other diseases associated with treatment with immunosuppressive drugs or radiation therapy; solid organ transplantation; multiple myeloma:**

**Age 2–5 years:**

- Any incomplete<sup>1</sup> series with:

- 3 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 dose)

- Less than 3 PCV13 doses: 2 doses PCV13 (6 weeks after the most recent dose and administered 8 weeks apart)

- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after any prior PCV13 dose) and a dose 2 of PPSV23 5 years later

**Age 6–18 years:**

- No history of either PCV13 or PPSV23: 1 dose PCV13, 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after PCV13 and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23)

- Any PCV13 but no PPSV23: 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after the most recent dose of PCV13 and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23)

- PPSV23 but no PCV13: 1 dose PCV13 at least 8 weeks after the most recent PPSV23 dose and a dose 2 of PPSV23 administered 5 years after dose 1 of PPSV23 and at least 8 weeks after a dose of PCV13

## Routine vaccination

- 2-dose series at age 12–15 months, 4–6 years
- VAR or MMRV may be administered\*
- Dose 2 may be administered as early as 3 months after dose 1 (a dose inadvertently administered after at least 4 weeks may be counted as valid)

\***Note:** For dose 1 in children age 12–47 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

## Catch-up vaccination

- Ensure persons age 7–18 years without evidence of immunity (see *MMWR* at [www.cdc.gov/mmwr/pdf/rr/rr5604.pdf](http://www.cdc.gov/mmwr/pdf/rr/rr5604.pdf)) have a 2-dose series:
  - **Age 7–12 years:** routine interval: 3 months (a dose inadvertently administered after at least 4 weeks may be counted as valid)
  - **Age 13 years and older:** routine interval: 4–8 weeks (minimum interval: 4 weeks)
- The maximum age for use of MMRV is 12 years.

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 \* For other catch-up guidance, see Table 2.

### Rotavirus vaccination (minimum age: 6 weeks)

#### Routine vaccination

- \* **Rotarix**®: 2-dose series at age 2 and 4 months
- \* **RotaTeq**®: 3-dose series at age 2, 4, and 6 months
- \* If any dose in the series is either RotaTeq® or unknown, default to 3-dose series.

tetanus-toxoid-containing vaccine. Tdap is preferred for persons age 11 years or older who have not previously received Tdap or whose Tdap history is unknown. If a tetanus-toxoid-containing vaccine is indicated for a pregnant adolescent, use Tdap.

\* For detailed information, see [www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm).

\* *Fully vaccinated* = 5 valid doses of DTaP OR 4 valid doses of DTaP if dose 4 was administered at age 4 years or older

### Varicella vaccination (minimum age: 12 months)

#### Routine vaccination

- 2-dose series at age 12–15 months, 4–6 years
- VAR or MMRV may be administered\*
- Dose 2 may be administered as early as 3 months after dose 1 (a dose inadvertently administered after at least 4 weeks may be counted as valid)

\***Note:** For dose 1 in children age 12–47 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

#### Catch-up vaccination

- Ensure persons age 7–18 years without evidence of immunity (see *MMWR* at [www.cdc.gov/mmwr/pdf/rr/rr5604.pdf](http://www.cdc.gov/mmwr/pdf/rr/rr5604.pdf)) have a 2-dose series:
  - **Age 7–12 years:** routine interval: 3 months (a dose inadvertently administered after at least 4 weeks may be counted as valid)
  - **Age 13 years and older:** routine interval: 4–8 weeks (minimum interval: 4 weeks)
- The maximum age for use of MMRV is 12 years.

# Appendix

## Appendix

### Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

#### **Guide to Contraindications and Precautions to Commonly Used Vaccines**

*Adapted from Table 4-1 in Advisory Committee on Immunization Practices (ACIP) General Best Practice Guidelines for Immunization: Contraindication and Precautions available at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html) and ACIP's Recommendations for the Prevention and Control of 2021-22 seasonal influenza with Vaccines available at [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm).*

**Interim clinical considerations for use of COVID-19 vaccines including contraindications and precautions can be found at [www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html)**

**Guide to Contraindications and Precautions to Commonly Used Vaccines**

Adapted from Table 4-1 in Advisory Committee on Immunization Practices (ACIP) General Best Practice Guidelines for Immunization: Contraindication and Precautions available at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html) and ACIP's Recommendations for the Prevention and Control of 2021-22 seasonal influenza with Vaccines available at [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm).

**Interim clinical considerations for use of COVID-19 vaccines including contraindications and precautions can be found at [www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html)**

Vaccine	Contraindications <sup>1</sup>	Precautions <sup>2</sup>
Influenza, egg-based, inactivated injectable (IIV4)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IIV, cclIV, RIV, or LAIV of any valency)</li> <li>Severe allergic reaction (e.g., anaphylaxis) to any vaccine component<sup>3</sup> (excluding egg)</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine</li> <li>Persons with egg allergy with symptoms other than hives (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using egg-based IIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist.</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Influenza, cell culture-based inactivated injectable [(cclIV4), Flucelvax <sup>®</sup> Quadrivalent]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) to any cclIV of any valency, or to any component<sup>3</sup> of cclIV4</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine</li> <li>Persons with a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose of any egg-based IIV, RIV, or LAIV of any valency. If using cclIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist.</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Influenza, recombinant injectable [(RIV4), Flublok <sup>®</sup> Quadrivalent]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) to any RIV of any valency, or to any component<sup>3</sup> of RIV4</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine</li> <li>Persons with a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose of any egg-based IIV, cclIV, or LAIV of any valency. If using RIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist.</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Influenza, live attenuated [LAIV4, Flumist <sup>®</sup> Quadrivalent]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IIV, cclIV, RIV, or LAIV of any valency)</li> <li>Severe allergic reaction (e.g., anaphylaxis) to any vaccine component<sup>3</sup> (excluding egg)</li> <li>Children age 2 – 4 years with a history of asthma or wheezing</li> <li>Anatomic or functional asplenia</li> <li>Immunocompromised due to any cause including, but not limited to, medications and HIV infection</li> <li>Close contacts or caregivers of severely immunosuppressed persons who require a protected environment</li> <li>Pregnancy</li> <li>Cochlear implant</li> <li>Active communication between the cerebrospinal fluid (CSF) and the oropharynx, nasopharynx, nose, ear or any other cranial CSF leak</li> <li>Children and adolescents receiving aspirin or salicylate-containing medications</li> <li>Received influenza antiviral medications oseltamivir or zanamivir within the previous 48 hours, peramivir within the previous 5 days, or baloxavir within the previous 17 days</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine</li> <li>Asthma in persons aged 5 years old or older</li> <li>Persons with egg allergy with symptoms other than hives (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using LAIV4 (which is egg based), administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist.</li> <li>Persons with underlying medical conditions (other than those listed under contraindications) that might predispose to complications after wild-type influenza virus infection [e.g., chronic pulmonary, cardiovascular (except isolated hypertension), renal, hepatic, neurologic, hematologic, or metabolic disorders (including diabetes mellitus)]</li> <li>Moderate or severe acute illness with or without fever</li> </ul>

- When a contraindication is present, a vaccine should NOT be administered. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html)
- When a precaution is present, vaccination should generally be deferred but might be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html)
- Vaccination providers should check FDA-approved prescribing information for the most complete and updated information, including contraindications, warnings, and precautions. Package inserts for U.S.-licensed vaccines are available at [www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states](http://www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states)

# Appendix

## Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

Vaccine	Contraindications <sup>1</sup>	Precautions <sup>2</sup>
Dengue (DEN4CYD)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> <li>Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised)</li> </ul>	<ul style="list-style-type: none"> <li>Pregnancy</li> <li>HIV infection without evidence of severe immunosuppression</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Diphtheria, tetanus, pertussis (DTaP) Tetanus, diphtheria (DT)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> <li>For DTaP only: Encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures) not attributable to another identifiable cause within 7 days of administration of previous dose of DTP or DTaP</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after previous dose of tetanus-toxoid-containing vaccine</li> <li>History of Arthus-type hypersensitivity reactions after a previous dose of diphtheria-toxoid—containing or tetanus-toxoid—containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus-toxoid-containing vaccine</li> <li>For DTaP only: Progressive neurologic disorder, including infantile spasms, uncontrolled epilepsy, progressive encephalopathy; defer DTaP until neurologic status clarified and stabilized</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Haemophilus influenzae type b (Hib)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> <li>For Hibert, Act-Hib, and Pedvax-HIB only: History of severe allergic reaction to dry natural latex</li> <li>Less than age 6 weeks</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Hepatitis A (HepA)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup> including neomycin</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Hepatitis B (HepB)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup> including yeast</li> <li>For HepB-sav-B only: Pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Hepatitis A–Hepatitis B vaccine [HepA–HepB, (Twintrix®)]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup> including neomycin and yeast</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Human papillomavirus (HPV)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Measles, mumps, rubella (MMR)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> <li>Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised)</li> <li>Pregnancy</li> <li>Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent</li> </ul>	<ul style="list-style-type: none"> <li>Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product)</li> <li>History of thrombocytopenia or thrombocytopenic purpura</li> <li>Need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Meningococcal ACWY (MenACWY) [MenACWY-CRM (Menveo®); MenACWY-D (Menactra®); MenACWY-TT (MenQuadri®)]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> <li>For MenACWY-D and MenACWY-CRM only: severe allergic reaction to any diphtheria-toxoid- or CRM197-containing vaccine</li> <li>For MenACWY-TT only: severe allergic reaction to a tetanus-toxoid-containing vaccine</li> </ul>	<ul style="list-style-type: none"> <li>For MenACWY-CRM only: Preterm birth if less than age 9 months</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Meningococcal B (MenB) [MenB-4C (Bexsero®); MenB-FHbp (Trumenb®)]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>Pregnancy</li> <li>For MenB-4C only: Latex sensitivity</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Pneumococcal conjugate (PCV13)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> <li>Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid-containing vaccine or its component<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Pneumococcal polysaccharide (PPSV23)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Poliovirus vaccine, inactivated (IPV)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>Pregnancy</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Rotavirus (RV) [RV1 (Rotarix®), RV5 (RotaTeq®)]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> <li>Severe combined immunodeficiency (SCID)</li> <li>History of intussusception</li> </ul>	<ul style="list-style-type: none"> <li>Altered immunocompetence other than SCID</li> <li>Chronic gastrointestinal disease</li> <li>RV1 only: Spina bifida or bladder exstrophy</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Tetanus, diphtheria, and acellular pertussis (Tdap) Tetanus, diphtheria (Td)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> <li>For Tdap only: Encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures) not attributable to another identifiable cause within 7 days of administration of previous dose of DTP, DTaP, or Tdap</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus-toxoid-containing vaccine</li> <li>History of Arthus-type hypersensitivity reactions after a previous dose of diphtheria-toxoid—containing or tetanus-toxoid—containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus-toxoid-containing vaccine</li> <li>For Tdap only: Progressive or unstable neurological disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Varicella (VAR)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>1</sup></li> <li>Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised)</li> <li>Pregnancy</li> <li>Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent</li> </ul>	<ul style="list-style-type: none"> <li>Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product)</li> <li>Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination)</li> <li>Use of aspirin or aspirin-containing products</li> <li>Moderate or severe acute illness with or without fever</li> </ul>

- When a contraindication is present, a vaccine should NOT be administered. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html)
- When a precaution is present, vaccination should generally be deferred but might be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html)
- Vaccination providers should check FDA-approved prescribing information for the most complete and updated information, including contraindications, warnings, and precautions. Package inserts for U.S.-licensed vaccines are available at [www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states](http://www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states).

## Knowledge Check #1:

A 11-year-old girl is immunocompromised due to underlying DiGeorge syndrome. How many **total doses** of HPV vaccine should she receive?

- a) 2 doses of 9vHPV
- b) 3 doses of 9vHPV



## Notes

Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

### Hepatitis A vaccination (minimum age: 12 months for routine vaccination)

#### Routine vaccination

\* 2-dose series (minimum interval: 6 months) at age 12–23 months

#### Catch-up vaccination

- \* Unvaccinated persons through age 18 years should complete a 2-dose series (minimum interval: 6 months).
- \* Persons who previously received 1 dose at age 12 months or older should receive dose 2 at least 6 months after dose 1.
- \* Adolescents age 18 years or older may receive the combined HepA and HepB vaccine, **Twinrix**, as a 3-dose series (0, 1, and 6 months) or 4-dose series (3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months).

#### International travel

- \* Persons traveling to or working in countries with high or intermediate endemic hepatitis A ([www.cdc.gov/travel/](http://www.cdc.gov/travel/)):
  - **Infants age 6–11 months:** 1 dose before departure; revaccinate with 2 doses, separated by at least 6 months, between age 12–23 months.
  - **Unvaccinated age 12 months or older:** Administer dose 1 as soon as travel is considered.

### Hepatitis B vaccination (minimum age: birth)

Birth dose (monovalent HepB vaccine only)

- \* Administration of 4 doses is permitted when a combination vaccine containing HepB is used after the birth dose.
- \* **Minimum age** for the final (3<sup>rd</sup> or 4<sup>th</sup>) dose: 24 weeks
- \* **Minimum intervals:** dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks (when 4 doses are administered, substitute “dose 4” for “dose 3” in these calculations)

#### Catch-up vaccination

- \* Unvaccinated persons should complete a 3-dose series at 0, 1–2, 6 months.
- \* Adolescents age 11–15 years may use an alternative 2-dose schedule with at least 4 months between doses (adult formulation: **Recombivax HB**® only).
- \* Adolescents age 18 years or older may receive a 2-dose series of HepB (**HepiSav-B**®) at least 4 weeks apart.
- \* Adolescents age 18 years or older may receive the combined HepA and HepB vaccine, **Twinrix**, as a 3-dose series (0, 1, and 6 months) or 4-dose series (3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months).
- \* For other catch-up guidance, see Table 2.

#### Special situations

- \* Revaccination is not generally recommended for persons with a normal immune status who were vaccinated as infants, children, adolescents, or adults.
- \* Post-vaccination serology testing and revaccination (if anti-HBs < 10 mIU/mL) is recommended for certain populations, including:
  - Infants born to HBsAg-positive mothers
  - Hemodialysis patients
  - Other immunocompromised persons

For detailed revaccination recommendations, see [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb.html).

### Human papillomavirus vaccination (minimum age: 9 years)

#### Routine and catch-up vaccination

- \* HPV vaccination routinely recommended at **age 11–12 years (can start at age 9 years)** and catch-up HPV vaccination recommended for all persons through age 18 years if not adequately vaccinated
- \* 2- or 3-dose series depending on age at initial vaccination:
  - **Age 9–14 years at initial vaccination:** 2-dose series at 0, 6–12 months (minimum interval: 5 months; repeat dose if administered too soon)
  - **Age 15 years or older at initial vaccination:** 3-dose series at 0, 1–2 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 5 months; repeat dose if administered too soon)
- \* **Interrupted schedules:** If vaccination schedule is interrupted, the series does not need to be restarted.
- \* No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.

#### Special situations

- \* **Immunocompromising conditions, including HIV infection:** 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
- \* **History of sexual abuse or assault:** Start at age 9 years.

- \* **Pregnancy:** Pregnancy testing not needed before vaccination; HPV vaccination not recommended until after pregnancy; no intervention needed if vaccinated while pregnant.

### Influenza vaccination (minimum age: 6 months [IV], 2 years [LAIV], 18 years [recombinant influenza vaccine, RIV4])

#### Routine vaccination

- \* Use any influenza vaccine appropriate for age and health status annually:
  - 2 doses, separated by at least 4 weeks, for **children age 6 months–8 years** who have received fewer than 2 influenza vaccine doses before July 1, 2021, or whose influenza vaccination history is unknown (administer dose 2 even if the child turns 9 between receipt of dose 1 and dose 2)
  - 1 dose for **children age 6 months–8 years** who have received at least 2 influenza vaccine doses before July 1, 2021
  - 1 dose for **all persons age 9 years or older**
- \* For the 2021–2022 season, see [www.cdc.gov/immzrv/volumes/70/01/r17005a1.htm](http://www.cdc.gov/immzrv/volumes/70/01/r17005a1.htm).
- \* For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

#### Special situations

- \* **Egg allergy, hives only:** Any influenza vaccine appropriate for age and health status annually
- \* **Egg allergy with symptoms other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- \* **Severe allergic reaction** (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine: see Appendix listing contraindications and precautions

### Measles, mumps, and rubella vaccination (minimum age: 12 months for routine vaccination)

#### Routine vaccination

- \* 2-dose series at age 12–15 months, age 4–6 years
- \* MMR or MMRV may be administered
- Note:** For dose 1 in children age 12–47 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

#### Catch-up vaccination

- \* Unvaccinated children and adolescents: 2-dose series at least 4 weeks apart
- \* The maximum age for use of MMRV is 12 years.
- \* Minimum interval between MMRV doses: 3 months

#### Special situations

##### International travel

- \* **Infants age 6–11 months:** 1 dose before departure; revaccinate with 2-dose series at age 12–15 months (12 months for children in high-risk areas) and dose 2 as early as 4 weeks later.
- \* **Unvaccinated children age 12 months or older:** 2-dose series at least 4 weeks apart before departure.

## Special situations

- **Immunocompromising conditions, including HIV infection:** 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
- **History of sexual abuse or assault:** Start at age 9 years.
- **Pregnancy:** Pregnancy testing not needed before vaccination; HPV vaccination not recommended until after pregnancy; no intervention needed if vaccinated while pregnant

## Knowledge Check #1:

A 11-year-old girl is severely immunocompromised due to DiGeorge syndrome. How many **total doses** of HPV vaccine should she receive?

- a) 2 doses of 9vHPV
- b) 3 doses of 9vHPV



# 2022 Recommended Adult Immunization Schedule



# Recommended Adult Immunization Schedule

## for ages 19 years or older

UNITED STATES  
**2022**

### 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 or other indication (**Table 2**)
- 3** Review vaccine types, frequencies, intervals, and considerations for special situations (**Notes**)
- 4** Review contraindications and precautions for vaccine types (**Appendix**)

Recommended by the Advisory Committee on Immunization Practices ([www.cdc.gov/vaccines/acip](http://www.cdc.gov/vaccines/acip)) and approved by the Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)), American College of Physicians ([www.acponline.org](http://www.acponline.org)), American Academy of Family Physicians ([www.aafp.org](http://www.aafp.org)), American College of Obstetricians and Gynecologists ([www.acog.org](http://www.acog.org)), American College of Nurse-Midwives ([www.midwife.org](http://www.midwife.org)), and American Academy of Physician Associates ([www.aapa.org](http://www.aapa.org)), and Society for Healthcare Epidemiology of America ([www.shea-online.org](http://www.shea-online.org)).

### Vaccines in the Adult Immunization Schedule\*

Vaccine	Abbreviation(s)	Trade name(s)
<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	Gardasil 9®
Influenza vaccine (inactivated)	IIV4	Many brands
Influenza vaccine (live, attenuated)	LAIV4	FluMist® Quadrivalent
Influenza vaccine (recombinant)	RIV4	Flublok® Quadrivalent
Measles, mumps, and rubella vaccine	MMR	M-M-R II®
Meningococcal serogroups A, C, W, Y vaccine	MenACWY-D MenACWY-CRM MenACWY-TT	Menactra® Menveo® MenQuadfi®
Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero® Trumenba®
Pneumococcal 15-valent conjugate vaccine	PCV15	Vaxneuvance™
Pneumococcal 20-valent conjugate vaccine	PCV20	Prevnar 20™
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

\*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](http://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) 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](http://www.hrsa.gov/vaccinecompensation).

### Questions or comments

Contact [www.cdc.gov/cdc-info](http://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](http://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html).

### Helpful information

- Complete Advisory Committee on Immunization Practices (ACIP) recommendations: [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://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](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html)
- Vaccine information statements: [www.cdc.gov/vaccines/hcp/vis/index.html](http://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](http://www.cdc.gov/vaccines/pubs/surv-manual)
- Travel vaccine recommendations: [www.cdc.gov/travel](http://www.cdc.gov/travel)
- Recommended Child and Adolescent Immunization Schedule, United States, 2022: [www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html](http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html)
- ACIP Shared Clinical Decision-Making Recommendations: [www.cdc.gov/vaccines/acip/acip-scdm-faqs.html](http://www.cdc.gov/vaccines/acip/acip-scdm-faqs.html)

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

# Recommended Adult Immunization Schedule

## for ages 19 years or older

UNITED STATES  
**2022**

### 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 or other indication (Table 2)
- 3 Review vaccine types, frequencies, intervals, and considerations for special situations (Notes)
- 4 Review contraindications and precautions for vaccine types (Appendix)

#### Vaccines in the Adult Immunization Schedule\*

Vaccine	Abbreviation(s)	Trade name(s)
<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	Gardasil 9®
Influenza vaccine (inactivated)	IIV4	Many brands
Influenza vaccine (live, attenuated)	LAIV4	FluMist® Quadrivalent
Influenza vaccine (recombinant)	RIV4	Flublok® Quadrivalent
Measles, mumps, and rubella vaccine	MMR	M-M-R II®
Meningococcal serogroups A, C, W, Y vaccine	MenACWY-D MenACWY-CRM MenACWY-TT	Menactra® Menveo® MenQuadfi®
Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero® Trumenba®
Pneumococcal 15-valent conjugate vaccine	PCV15	Vaxneuvance™
Pneumococcal 20-valent conjugate vaccine	PCV20	Prevnar 20™
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

\*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.

Recommended by the Advisory Committee on Immunization Practices ([www.cdc.gov/vaccines/acip](http://www.cdc.gov/vaccines/acip)) and approved by the Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)), American College of Physicians ([www.acponline.org](http://www.acponline.org)), American Academy of Family Physicians ([www.aafp.org](http://www.aafp.org)), American College of Obstetricians and Gynecologists ([www.acog.org](http://www.acog.org)), American College of Nurse-Midwives ([www.midwife.org](http://www.midwife.org)), and American Academy of Physician Associates ([www.aapa.org](http://www.aapa.org)), and Society for Healthcare Epidemiology of America ([www.shea-online.org](http://www.shea-online.org)).

#### 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](http://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) 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](http://www.hrsa.gov/vaccinecompensation).

#### Questions or comments

Contact [www.cdc.gov/cdc-info](http://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](http://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html).

#### Helpful information

- Complete Advisory Committee on Immunization Practices (ACIP) recommendations: [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://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](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html)
- Vaccine information statements: [www.cdc.gov/vaccines/hcp/vis/index.html](http://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](http://www.cdc.gov/vaccines/pubs/surv-manual)
- Travel vaccine recommendations: [www.cdc.gov/travel](http://www.cdc.gov/travel)
- Recommended Child and Adolescent Immunization Schedule, United States, 2022: [www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html](http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html)
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Centers for Disease  
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# Table 1

## *Recommended Adult Immunization Schedule by Age*

**Table 1** Recommended Adult Immunization Schedule by Age Group, United States, 2022

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV4) or Influenza recombinant (RIV4)	1 dose annually			
Influenza live, attenuated (LAIV4)	1 dose annually			
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)			
Measles, mumps, rubella (MMR)	1 dose Tdap, then Td or Tdap booster every 10 years			
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
<b>Zoster recombinant (RZV)</b>	<b>2 doses for immunocompromising conditions (see notes)</b>		2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal (PCV15, PCV20, PPSV23)	1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)			1 dose PCV15 followed by PPSV23 OR 1 dose PCV20
Hepatitis A (HepA)	2 or 3 doses depending on vaccine			
Hepatitis B (HepB)	2, 3, or 4 doses depending on vaccine or condition			
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			
<i>Haemophilus influenzae</i> type b (Hib)	19 through 23 years			
	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 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, 2022

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV4) or Influenza recombinant (RIV4)	1 dose annually			
Influenza live, attenuated (LAIV4)	1 dose annually			
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)			
Measles, mumps, rubella (MMR)	1 dose Tdap, then Td or Tdap booster every 10 years			
Varicella (VAR)	1 or 2 doses depending on indication (if born in 1957 or later)			
Zoster recombinant (RZV)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV)	2 doses for immunocompromising conditions (see notes)		2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
<b>Pneumococcal (PCV15, PCV20, PPSV23)</b>	1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)			1 dose PCV15 followed by PPSV23 OR 1 dose PCV20
Hepatitis A (HepA)	2 or 3 doses depending on vaccine			
Hepatitis B (HepB)	2, 3, or 4 doses depending on vaccine or condition			
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			
<i>Haemophilus influenzae</i> type b (Hib)	19 through 23 years			
<i>Haemophilus influenzae</i> 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 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, 2022

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV4) or Influenza recombinant (RIV4)	1 dose annually			
Influenza live, attenuated (LAIV4)				
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)			
	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)	2 doses for immunocompromising conditions (see notes)		2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal (PCV15, PCV20, PPSV23)	1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)			1 dose PCV15 followed by PPSV23 OR 1 dose PCV20
Hepatitis A (HepA)	2 or 3 doses depending on vaccine			
<b>Hepatitis B (HepB)</b>	2, 3, or 4 doses depending on vaccine or condition			
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			
	19 through 23 years			
<i>Haemophilus influenzae</i> 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 another indication

Recommended vaccination based on shared clinical decision-making

No recommendation/ Not applicable

## Table 2

*Recommended Adult Immunization Schedule by  
Medical Indication*



**Table 2** Recommended Adult Immunization Schedule by Medical Condition or Other Indication, United States, 2022

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 percentage and count		Asplenia, complement deficiencies	End-stage renal disease, or on hemodialysis	Heart or lung disease; alcoholism <sup>1</sup>	Chronic liver disease	Diabetes	Health care personnel <sup>2</sup>	Men who have sex with men	
			<15% or <200 mm <sup>3</sup>	≥15% and ≥200 mm <sup>3</sup>								
IIV or RIV4 <b>or</b> LAIV4	1 dose annually					Contraindicated			Precaution	<b>or</b> 1 dose annually		
Tdap or Td	1 dose Tdap each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years										
MMR	Contraindicated*	Contraindicated	1 or 2 doses depending on indication									
VAR	Contraindicated*	Contraindicated	2 doses									
RZV	2 doses at age ≥19 years		2 doses at age ≥50 years									
HPV	Not Recommended*	3 doses through age 26 years		2 or 3 doses through age 26 years depending on age at initial vaccination or condition								
Pneumococcal (PCV15, PCV20, PPSV23)	1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)											
HepA	Contraindicated or not recommended											
HepB	3 doses (see notes)	Contraindicated or not recommended										
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									Precaution	
Hib	3 doses HSCT <sup>3</sup> recipients only		1 dose		Contraindicated or not recommended							

Reworded: "Contraindicated or not recommended"

Contraindicated or not recommended—vaccine should not be administered.  
\*Vaccinate after pregnancy.

**Legend:**

- 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
- Precaution—vaccination might be indicated if benefit of protection outweighs risk of adverse reaction
- Contraindicated or not recommended—vaccine should not be administered.  
\*Vaccinate after pregnancy.
- No recommendation/Not applicable

1. Precaution for LAIV4 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 or Other Indication, United States, 2022

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 percentage and count		Asplenia, complement deficiencies	End-stage renal disease, or on hemodialysis	Heart or lung disease; alcoholism <sup>1</sup>	Chronic liver disease	Diabetes	Health care personnel <sup>2</sup>	Men who have sex with men
			<15% or <200 mm <sup>3</sup>	≥15% and ≥200 mm <sup>3</sup>							
LAIV4		Contraindicated	Contraindicated					Precaution		1 dose annually	
Tdap or Td	1 dose Tdap each pregnancy				1 dose Tdap, then Td or Tdap booster every 10 years						
MMR	Contraindicated*	Contraindicated						1 or 2 doses depending on indication			
VAR	Contraindicated*	Contraindicated						2 doses			
HPV	Not Recommended*	3 doses through age 26 years			2 or 3 doses through age 26 years depending on age at initial vaccination or condition						
Pneumococcal (PCV15, PCV20, PPSV23)					1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)						
HepA					2 or 3 doses depending on vaccine						
HepB	3 doses (see notes)				2, 3, or 4 doses depending on vaccine or condition						
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 <sup>3</sup> 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
   Recommended vaccination based on shared clinical decision-making
   Precaution—vaccination might be indicated if benefit of protection outweighs risk of adverse reaction
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			<15% or <200 mm <sup>3</sup>	≥15% and ≥200 mm <sup>3</sup>							
IIV or RIV4			1 dose annually								
<b>OR</b> LAIV4		Contraindicated				Precaution			<b>OR</b> 1 dose annually		
Tdap or Td	1 dose Tdap each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years									
MMR	Contraindicated*	Contraindicated	1 or 2 doses depending on indication								
VAR	Contraindicated*	Contraindicated	2 doses								
R7V		2 doses at age ≥19 years			2 doses at age ≥50 years						
<b>HPV</b>	Not Recommended*	3 doses through age 26 years			2 or 3 doses through age 26 years depending on age at initial vaccination or condition						
Pneumococcal (PCV15, PCV20, PPSV23)		1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)									
HepA			2 or 3 doses depending on vaccine								
HepB	3 doses (see notes)	2, 3, or 4 doses depending on vaccine or condition									
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 <sup>3</sup> recipients only				1 dose					

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1. Precaution for LAIV4 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 or Other Indication, United States, 2022

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 percentage and count		Asplenia, complement deficiencies	End-stage renal disease, or on hemodialysis	Heart or lung disease; alcoholism <sup>1</sup>	Chronic liver disease	Diabetes	Health care personnel <sup>2</sup>	Men who have sex with men
			<15% or <200 mm <sup>3</sup>	≥15% and ≥200 mm <sup>3</sup>							
IIV or RIV4 or LAIV4											
Tdap or Td	1 dose Tdap each pregnancy										
MMR	Contraindicated*	Contraindicated									
VAR	Contraindicated*	Contraindicated									
<b>RZV</b>			<b>2 doses at age ≥19 years</b>								
HPV	Not Recommended*		3 doses through age 26 years								
Pneumococcal (PCV15, PCV20, PPSV23)											
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MenB	Precaution										
Hib											

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Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 percentage and count		Asplenia, complement deficiencies	End-stage renal disease, or on hemodialysis	Heart or lung disease; alcoholism <sup>1</sup>	Chronic liver disease	Diabetes	Health care personnel <sup>2</sup>	Men who have sex with men
			<15% or <200 mm <sup>3</sup>	≥15% and ≥200 mm <sup>3</sup>							
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Tdap or Td	1 dose Tdap each pregnancy										
MMR	Contraindicated*	Contraindicated									
VAR	Contraindicated*	Contraindicated									
RZV											
HPV	Not Recommended*										
Pneumococcal (PCV15, PCV20, PPSV23)											
HepA											
<b>HepB</b>	<b>3 doses (see notes)</b>	<b>2, 3, or 4 doses depending on vaccine or condition</b>									
MenACWY											
MenB	Precaution										
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
Recommended vaccination based on shared clinical decision-making
Precaution—vaccination might be indicated if benefit of protection outweighs risk of adverse reaction
Contraindicated or not recommended—vaccine should not be administered.
No recommendation/ Not applicable

\*Vaccinate after pregnancy.

1. Precaution for LAIV4 does not apply to alcoholism. 2. See notes for influenza; hepatitis B; measles, mumps, and rubella; and varicella vaccinations. 3. Hematopoietic stem cell transplant.

# Notes

## Notes

### Recommended Adult Immunization Schedule for ages 19 years or older, United States, 2022

For vaccine recommendations for persons 18 years of age or younger, see the Recommended Child and Adolescent Immunization Schedule.

#### COVID-19 Vaccination

COVID-19 vaccines are recommended within the scope of the Emergency Use Authorization or Biologics License Application for the particular vaccine. ACIP recommendations for the use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html).

CDC's interim clinical considerations for use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html).

#### 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 Vaqta 6–18 months apart [minimum interval: 6 months]) or 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])

##### 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 (HepA-HepB [Twinrix] may be administered on an accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months)

- Clostridium (e.g., C. difficile)

- ampicillin

- Pre-hepatic infection

- Set point

- target organ

- development

- screening not required)

#### COVID-19 Vaccination:

- Added the link to the Interim Clinical Considerations for use of COVID-19 vaccines

#### Hepatitis B vaccination

##### Routine vaccination

- **Age 19 through 59 years:** complete a 2- or 3-, or 4-dose series
  - 2-dose series only applies when 2 doses of Heplisav-B\* are used at least 4 weeks apart
  - 3-dose series Engerix-B or Recombivax HB at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks]
  - 3-dose series HepA-HepB (Twinrix) at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months]
  - 4-dose series HepA-HepB (Twinrix) accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months
  - 4-dose series Engerix-B at 0, 1, 2, and 6 months for persons on adult hemodialysis (note: each dosage is double that of normal adult dose, i.e., 2 mL instead of 1 mL)

\*Note: Heplisav-B not recommended in pregnancy due to lack of safety data in pregnant women

##### Special situations

- **Age 60 years or older\* and 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)

At risk (e.g., sex partners of hepatitis B virus [HBsAg]-positive persons; sexually active persons in nonmonogamous relationships; persons who have sex with men) or need for evaluation or treatment for a sexually transmitted infection; men who have sex with men)

**Injection drug use**  
Persons with mucosal risk for exposure to blood or body fluids from contacts of HBsAg-positive persons; persons who work in facilities for developmentally disabled persons; health care and public safety personnel; persons with anticipated risk for exposure to blood or body fluids (e.g., blood-contaminated body fluids; hemodialysis, peritoneal dialysis, home dialysis, and predialysis patients; patients with diabetes)

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

\*Note: Anyone age 60 years or older who does not meet risk-based recommendations may still receive Hepatitis B vaccination.

#### Human papillomavirus vaccination

##### Routine vaccination

- **HPV vaccination recommended for all persons 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 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 5 months; repeat dose if administered too soon)
  - **Age 9–14 years at initial vaccination and received 1 dose or 2 doses less than 5 months apart:** 1 additional dose
  - **Age 9–14 years at initial vaccination and received 2 doses at least 5 months apart:** HPV vaccination series complete, no additional dose needed

## Notes

### Recommended Adult Immunization Schedule - United States, 2022

For vaccine recommendations for persons 18 years of age or younger, see the Recommended Child and Adolescent Immunization Schedule.

#### COVID-19 Vaccination

COVID-19 vaccines are recommended within the scope of the Emergency Use Authorization or Biologics License Application for the particular vaccine. ACIP recommendations for the use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html).

CDC's interim clinical considerations for use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.htm](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.htm).

#### Haemophilus influenzae type b vaccination

### Routine vaccination:

- Universally recommended for all adults aged 19 through 59 years.
- Clarification of 2, 3, and 4 dose series

apart [minimum interval: 6 months]) or 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])

#### 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)

### Special situations:

- Risk-based recommendations for adults  $\geq 60$  years of age.

- **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

- **Age 19 through 59 years:** complete a 2- or 3-, or 4-dose series
- 2-dose series only applies when 2 doses of Heplisav-B\* are used at least 4 weeks apart
- 3-dose series Engerix-B or Recombivax HB at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks])
- 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])
- 4-dose series HepA-HepB (Twinrix) accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months
- 4-dose series Engerix-B at 0, 1, 2, and 6 months for persons on adult hemodialysis (note: each dosage is double that of normal adult dose, i.e., 2 mL instead of 1 mL)

\*Note: Heplisav-B not recommended in pregnancy due to lack of safety data in pregnant women

#### Special situations

- **Age 60 years or older\* and 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)
- **HIV infection**
- **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; men who have sex with men)
- **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; patients with diabetes)
- **Incarcerated persons**
- **Travel in countries with high or intermediate endemic hepatitis B**

\*Note: A risk-based vaccination

\*Note: Anyone age 60 years or older who does not meet risk-based recommendations may still receive Hepatitis B vaccination.

#### Human papillomavirus vaccination

##### Routine vaccination

- HPV vaccination recommended for all persons 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 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 5 months; repeat dose if administered too soon)
- **Age 9–14 years at initial vaccination and received 1 dose or 2 doses less than 5 months apart:** 1 additional dose
- **Age 9–14 years at initial vaccination and received 2 doses at least 5 months apart:** HPV vaccination series complete, no additional dose needed

## Notes

### Recommended Adult Immunization Schedule for ages 19 years or older, United States, 2022

For vaccine recommendations for persons 18 years of age or younger, see the Recommended and Adolescent Immunization Schedule.

#### COVID-19 Vaccination

COVID-19 vaccines are recommended within scope of the Emergency Use Authorization Biologics License Application for the particular vaccine. ACIP recommendations for the use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html](https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html). CDC's interim clinical considerations for use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html](https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html).

#### 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 Vaqta 6–18 months apart [minimum interval: 6 months]) or 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])

##### 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

### Special situations:

- **Note: Anyone age 60 years or older who does not meet risk-based recommendations may still receive Hepatitis B vaccination.**

- Settings for exposure, including

targeting services to injection or non-injection settings or group homes and nonresidential day care centers for developmentally disabled persons (individual screening not required)

#### Hepatitis B vaccination

##### Routine vaccination

- **Age 19 through 59 years:** complete a 2- or 3-, or 4-dose series
  - 2-dose series only applies when 2 doses of Heplisav-B\* are used at least 4 weeks apart
  - 3-dose series Engerix-B or Recombivax HB at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks])
  - 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])
  - 4-dose series HepA-HepB (Twinrix) accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months
  - 4-dose series Engerix-B at 0, 1, 2, and 6 months for persons on adult hemodialysis (note: each dosage is double that of normal adult dose, i.e., 2 mL instead of 1 mL)

\*Note: Heplisav-B not recommended in pregnancy due to lack of safety data in pregnant women

##### Special situations

- **Age 60 years or older\* and 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)
  - **HIV infection**
  - **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; men who have sex with men)
  - **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; patients with diabetes)
  - **Incarcerated persons**
  - **Travel in countries with high or intermediate endemic hepatitis B**

\*Note: Anyone age 60 years or older who does not meet risk-based recommendations may still receive Hepatitis B vaccination.

#### Human papillomavirus vaccination

##### Routine vaccination

- HPV vaccination recommended for all persons 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 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 5 months; repeat dose if administered too soon)
  - **Age 9–14 years at initial vaccination and received 1 dose or 2 doses less than 5 months apart:** 1 additional dose
  - **Age 9–14 years at initial vaccination and received 2 doses at least 5 months apart:** HPV vaccination series complete, no additional dose needed

## Notes

## Recommended Adult Immunization Schedule for ages 19 years or older, United States, 2022

For vaccine recommendations for persons 18 years of age or younger, see the Recommended Child and Adolescent Immunization Schedule.

### COVID-19 Vaccination

COVID-19 vaccines are recommended within the scope of the Emergency Use Authorization or Biologics License Application for the particular vaccine. ACIP recommendations for the use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html).

CDC's interim clinical considerations for use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html).

### 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 Vaqta 6–18 months apart [minimum interval: 6 months]) or 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])

#### 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** (HepA-HepB [Twinrix] may be administered on an accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months)
- **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

- **Age 19 through 59 years:** complete a 2- or 3-, or 4-dose series
  - 2-dose series only applies when 2 doses of Heplisav-B\* are used at least 4 weeks apart
  - 3-dose series Engerix-B or Recombivax HB at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks]
  - 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])
  - 4-dose series HepA-HepB (Twinrix) accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months
  - 4-dose series Engerix-B at 0, 1, 2, and 6 months for persons on adult hemodialysis (note: each dosage is double that of normal adult dose, i.e., 2 mL instead of 1 mL)

\*Note: Heplisav-B not recommended in pregnancy due to lack of safety data in pregnant women

#### Special situations

- **Age 60 years or older\* and 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)
  - **HIV infection**
  - **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; men who have sex with men)
  - **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; patients with diabetes)
  - **Incarcerated persons**
  - **Travel in countries with high or intermediate endemic hepatitis B**

\*Note: Anyone age 60 years or older who does not meet risk-based recommendations may still receive Hepatitis B vaccination.

### Human papillomavirus vaccination

#### Routine vaccination

- **HPV vaccination recommended for all persons 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 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 5 months; repeat dose if administered too soon)
  - **Age 9–14 years at initial vaccination and received 1 dose or 2 doses less than 5 months apart:** 1 additional dose
  - **Age 9–14 years at initial vaccination and received 2 doses at least 5 months apart:** HPV vaccination series complete, no additional dose needed

## Notes

## Recommended Adult Immunization Schedule

- **Interrupted schedules:** If vaccination schedule is interrupted, the series does not need to be restarted
- **No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.**

### Shared clinical decision-making

- **Some adults age 27–45 years: Based on shared clinical decision-making, 2- or 3-dose series as above**

### Special situations

- **Age ranges recommended above for routine and catch-up vaccination or shared clinical decision-making also apply in special situations**
  - **Immunocompromising conditions, including HIV Infection:** 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
  - **Pregnancy:** Pregnancy testing is not needed before vaccination; HPV vaccination is not recommended until after pregnancy; no intervention needed if inadvertently vaccinated while pregnant

## Routine vaccination

- Changed wording for clarity: No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.

## Special situations

- Added wording to “Immunocompromising Conditions” for clarity: 3-dose series as above, even for those who initiate vaccination at age 9 through 14 years.

## Influenza vaccination

### Routine vaccination

- **Age 19 years or older:** 1 dose any influenza vaccine appropriate for age and health status annually
- For the 2021–2022 season, see [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm)
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

### Special situations

- **Egg allergy, hives only:** any influenza vaccine appropriate for age and health status annually
- **Egg allergy—any symptom other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- **Severe allergic reaction** (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine: see Appendix listing contraindications and precautions
- **History of Guillain-Barré syndrome within 6 weeks after 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

for HIV infection with CD4 percentage <15% or CD4 count <200 cells/mm<sup>3</sup>

- **Severe immunocompromising conditions:** 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:** 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 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
  - **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

and revaccinate every 5 years if risk remains

- **Travel in countries with hyperendemic or epidemic meningococcal disease, or microbiologists routinely**

meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

### Shared clinical decision-making for MenB

- **Adolescents and young adults age 16–23 years** (age 16–18 years preferred) **not at increased risk for meningococcal disease:** Based on shared clinical decision-making, 2-dose series MenB-4C (Bexsero) at least 1 month apart or 2-dose series MenB-FHbp (Trumenba) 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, or 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 (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); 1 dose MenB booster 1 year after primary series and revaccinate every 2–3 years if risk remains

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- Interrupted schedules: If vaccination schedule is interrupted, the series does not need to be restarted
- No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.

#### Shared clinical decision-making

- Some adults age 27–45 years: Based on shared clinical decision-making, 2- or 3-dose series as above

#### Special situations

- Age ranges recommended above for routine and catch-up vaccination or shared clinical decision-making also apply in special situations
  - Immunocompromising conditions, including HIV infection: 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
  - Pregnancy: Pregnancy testing is not needed before vaccination; HPV vaccination is not recommended until after pregnancy; no intervention needed if inadvertently vaccinated while pregnant

#### Influenza vaccination

##### Routine vaccination

- **Age 19 years or older:** 1 dose any influenza vaccine appropriate for age and health status annually
- For the 2021–2022 season, see [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm)
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

##### Special situations

- **Egg allergy, hives only:** any influenza vaccine appropriate for age and health status annually
- **Egg allergy—any symptom other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- **Severe allergic reaction (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine:** see Appendix listing contraindications and precautions
- **History of Guillain-Barré syndrome within 6 weeks after 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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> 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 for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>

#### Routine vaccination

- Added hyperlink to the 2021-2022 influenza recommendations and a bullet for the 2022-2023 influenza recommendations.

#### 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-D (Menactra, Menveo, or MenQuadfi) at least 8 weeks apart and revaccinate every 5 years if risk remains
- Travel in countries with hyperendemic or epidemic meningococcal disease, or microbiologists routinely exposed to *Neisseria meningitidis*: 1 dose MenACWY (Menactra, Menveo, or MenQuadfi) 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) or military recruits: 1 dose MenACWY (Menactra, Menveo, or MenQuadfi)
- For MenACWY booster dose recommendations for groups listed under "Special situations" and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm)

##### Special situations for MenB

- 16–23 years (age based risk for shared clinical decision-making) at least 1 month (Trumenb) or at 0, 6 months (Bexsero) if less than 6 months after previous dose (at least 4 months after dose if 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, or 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

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- Interrupted schedules: If vaccination schedule is interrupted, the series does not need to be restarted
- No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.

#### Shared clinical decision-making

- Some adults age 27–45 years: Based on shared clinical decision-making, 2- or 3-dose series as above

#### Special situations

- Age ranges recommended above for routine and catch-up vaccination or shared clinical decision-making also apply in special situations
  - Immunocompromising conditions, including HIV infection: 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
  - Pregnancy: Pregnancy testing is not needed before vaccination; HPV vaccination is not recommended until after pregnancy; no intervention needed if inadvertently vaccinated while pregnant

#### Influenza vaccination

##### Routine vaccination

- **Age 19 years or older:** 1 dose any influenza vaccine appropriate for age and health status annually
- For the 2021–2022 season, see [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm)
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

##### Special situations

- **Egg allergy, hives only:** any influenza vaccine appropriate for age and health status annually
- **Egg allergy—any symptom other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- **Severe allergic reaction** (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine: see Appendix listing contraindications and precautions
- **History of Guillain-Barré syndrome within 6 weeks after 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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> 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 for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- Severe immunocompromising conditions: 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

#### Special Situations

- Condensed this section. Refer health care providers to the Appendix for more information on contraindications and precautions.

#### 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-D (Menactra, Menveo, or MenQuadfi) at least 8 weeks apart and revaccinate every 5 years if risk remains
- Travel in countries with hyperendemic or epidemic meningococcal disease, or microbiologists routinely exposed to *Neisseria meningitidis*: 1 dose MenACWY (Menactra, Menveo, or MenQuadfi) 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) or military recruits: 1 dose MenACWY (Menactra, Menveo, or MenQuadfi)
- For MenACWY booster dose recommendations for groups listed under "Special situations" and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

##### Shared clinical decision-making for MenB

- Adolescents and young adults age 16–23 years (age 16–18 years preferred) not at increased risk for meningococcal disease: Based on shared clinical decision-making, 2-dose series MenB-4C (Bexsero) at least 1 month apart or 1 dose MenB-4B (Trumenb) at 0, 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

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Interrupted schedules:** If vaccination schedule is interrupted, the series does not need to be restarted
- **No additional dose recommended** when any HPV vaccine series has been completed using the recommended dosing intervals.

#### Shared clinical decision-making

- **Some adults age 27–45 years:** Based on shared clinical decision-making, 2- or 3-dose series as above

#### Special situations

- **Age ranges recommended above for routine and catch-up vaccination or shared clinical decision-making also apply in special situations**
  - **Immunocompromising conditions, including HIV infection:** 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
  - **Pregnancy:** Pregnancy testing is not needed before vaccination; HPV vaccination is not recommended until after pregnancy; no intervention needed if inadvertently vaccinated while pregnant

#### Influenza vaccination

##### Routine vaccination

- **Age 19 years or older:** 1 dose any influenza vaccine appropriate for age and health status annually
- For the 2021–2022 season, see [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm)
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

##### Special situations

- **Egg allergy, hives only:** any influenza vaccine appropriate for age and health status annually
- **Egg allergy—any symptom other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- **Severe allergic reaction** (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine: see Appendix listing contraindications and precautions
- **History of Guillain-Barré syndrome within 6 weeks after 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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> 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 for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- **Severe immunocompromising conditions:** 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:** 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 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
  - **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

#### 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-D (Menactra, Menveo, or MenQuadfi) at least 8 weeks apart and revaccinate every 5 years if risk remains
- **Travel in countries with hyperendemic or epidemic meningococcal disease, or microbiologists routinely exposed to *Neisseria meningitidis*:** 1 dose MenACWY (Menactra, Menveo, or MenQuadfi) 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) or **military recruits:** 1 dose MenACWY (Menactra, Menveo, or MenQuadfi)
- For MenACWY booster dose recommendations for groups listed under "Special situations" and in an outbreak

## Special Situations

- Added CD4 percentages in addition to CD4 counts for HIV infection (to harmonize language with child/adolescent schedule)

##### Special situations for MenB

- **Anatomical or functional asplenia** (including sickle cell disease), persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use, or 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 (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); 1 dose MenB booster 1 year after primary series and revaccinate every 2–3 years if risk remains

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Interrupted schedules:** If vaccination schedule is interrupted, the series does not need to be restarted
- **No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.**

#### Shared clinical decision-making

- **Some adults age 27–45 years:** Based on shared clinical decision-making, 2- or 3-dose series as above

#### Special situations

- **Age ranges recommended above for routine and catch-up vaccination or shared clinical decision-making also apply in special situations**
  - **Immunocompromising conditions, including HIV infection:** 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
  - **Pregnancy:** Pregnancy testing is not needed before vaccination; HPV vaccination is not recommended until after pregnancy; no intervention needed if inadvertently vaccinated while pregnant

#### Influenza vaccination

##### Routine vaccination

- **Age 19 years or older:** 1 dose any influenza vaccine appropriate for age and health status annually
- For the 2021–2022 season, see [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm)
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

##### Special situations

- **Egg allergy, hives only:** any influenza vaccine appropriate for age and health status annually
- **Egg allergy—any symptom other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- **Severe allergic reaction** (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine: see Appendix listing contraindications and precautions
- **History of Guillain-Barré syndrome within 6 weeks after 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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> 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 for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- **Severe immunocompromising conditions:** 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:** 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 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
  - **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

#### 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-D (Menactra, Menveo, or MenQuadfi) at least 8 weeks apart and revaccinate every 5 years if risk remains
- **Travel in countries with hyperendemic or epidemic meningococcal disease, or microbiologists routinely exposed to *Neisseria meningitidis*:** 1 dose MenACWY (Menactra, Menveo, or MenQuadfi) 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) or military recruits:** 1 dose MenACWY (Menactra, Menveo, or MenQuadfi)
- For MenACWY **booster dose recommendations** for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

##### Shared clinical decision-making for MenB

- **Adolescents and young adults age 16–23 years (age 16–18 years preferred) not at increased risk for meningococcal disease:** Based on shared clinical decision-making, 2-dose series MenB-4C (Bexsero) at least 1 month apart or 2-dose series MenB-FHbp (Trumenba) 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, or 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 (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); 1 dose MenB booster 1 year after primary series and revaccinate every 2–3 years if risk remains

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB booster dose recommendations for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

**Note:** MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

#### Pneumococcal vaccination

##### Routine vaccination

- Age 65 years or older who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

##### Special situations

- Age 19–64 years with certain underlying medical conditions or other risk factors\*\* who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

\*Note: Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

Added note at end of section stating: “MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.”

##### 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: 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
- Wound management: Persons with 3 or more doses of tetanus-toxoid-containing vaccine: For clean and minor wounds, administer Tdap or Td if more than 10 years since last dose of tetanus-toxoid-containing vaccine; for all other wounds, administer Tdap or Td if more than 5 years since last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons who have not previously received Tdap or whose Tdap history is unknown. If a tetanus-toxoid-containing vaccine is indicated for a pregnant woman, use Tdap. For detailed information, see [www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.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

previously did not receive any varicella-containing vaccine, regardless of whether U.S.-born before 1980

- HIV infection with CD4 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> with no evidence of immunity: Vaccination may be considered (2 doses 3 months apart); VAR contraindicated for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- 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 zoster vaccine live (ZVL, Zostavax) vaccination (administer RZV at least 2 months after ZVL)

##### Special situations

- Pregnancy: There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.
- Immunocompromising conditions (including HIV): RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy. For detailed information, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm).

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB booster dose recommendations for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

Note: MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

#### Pneumococcal vaccination

##### Routine vaccination

- **Age 65 years or older** who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

##### Special situations

- **Age 19–64 years** with certain underlying medical conditions or other risk factors\*\* who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

**\*Note:** Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

**\*\*Note:** Underlying medical conditions or other risk factors include alcoholism, chronic heart/liver/lung disease, chronic renal failure, cigarette smoking, cochlear implant, congenital or acquired asplenia, CSF leak, diabetes mellitus, generalized malignancy, HIV, Hodgkin disease, immunodeficiency, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic syndrome, solid organ transplants, or sickle cell disease or other hemoglobinopathies.

#### Routine vaccination

- Changed language to reflect the new recommendations: “Age 65 years or older who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23.”

wounds, administer Tdap or Td if more than 10 years since last dose of tetanus-toxoid-containing vaccine; for all other wounds, administer Tdap or Td if more than 5 years since last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons who have not previously received Tdap or whose Tdap history is unknown. If a tetanus-toxoid-containing vaccine is indicated for a pregnant woman, use Tdap. For detailed information, see [www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.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-

zoster or history of zoster vaccine live (ZVL, Zostavax) vaccination (administer RZV at least 2 months after ZVL)

##### Special situations

- **Pregnancy:** There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.
- **Immunocompromising conditions (including HIV):** RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy. For detailed information, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm).

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB booster dose recommendations for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

Note: MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

#### Pneumococcal vaccination

##### Routine vaccination

- **Age 65 years or older** who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

##### Special situations

- **Age 19–64 years** with certain underlying medical conditions or other risk factors\*\* who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

**\*Note:** Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

**\*\*Note:** Underlying medical conditions or other risk factors include alcoholism, chronic heart/liver/lung disease, chronic renal failure, cigarette smoking, cochlear implant, congenital or acquired asplenia, CSF leak, diabetes mellitus, generalized malignancy, HIV, Hodgkin disease, immunodeficiency, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic syndrome, solid organ transplants, or sickle cell disease or other hemoglobinopathies.

#### Tetanus, diphtheria, and pertussis vaccination

##### Routine vaccination

Previously did not receive Tdap at or after age 11 years:

### Routine vaccination

- Guidance on dosing intervals between PCV15 and PPSV23 is provided

- **Pregnancy:** 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36
- **Wound management:** Persons with 3 or more doses of tetanus-toxoid-containing vaccine: For clean and minor wounds, administer Tdap or Td if more than 10 years since last dose of tetanus-toxoid-containing vaccine; for all other wounds, administer Tdap or Td if more than 5 years since last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons who have not previously received Tdap or whose Tdap history is unknown. If a tetanus-toxoid-containing vaccine is indicated for a pregnant woman, use Tdap. For detailed information, see [www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.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 percentages  $\geq 15\%$  and CD4 counts  $\geq 350$  cells/mm<sup>3</sup> and no evidence of immunity:** 2 doses (2 doses 3 months apart); if CD4 percentage  $< 15\%$  or CD4 count  $< 350$  cells/mm<sup>3</sup>, infection with CD4 percentage  $< 15\%$  and CD4 count  $< 350$  cells/mm<sup>3</sup> are contraindications: VAR

#### Varicella 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 zoster vaccine live (ZVL, Zostavax) vaccination (administer RZV at least 2 months after ZVL)

##### Special situations

- **Pregnancy:** There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.
- **Immunocompromising conditions (including HIV):** RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy. For detailed information, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm).

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB booster dose recommendations for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

Note: MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

#### Pneumococcal vaccination

##### Routine vaccination

- **Age 65 years or older** who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

##### Special situations

- **Age 19–64 years** with certain underlying medical conditions or other risk factors\*\* who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

**\*Note:** Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

**\*\*Note:** Underlying medical conditions or other risk factors include alcoholism, chronic heart/liver/lung disease, chronic renal failure, cigarette smoking, cochlear implant, congenital or acquired asplenia, CSF leak, diabetes mellitus, generalized malignancy, HIV, Hodgkin disease, immunodeficiency, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic syndrome, solid organ transplants, or sickle cell disease or other hemoglobinopathies.

#### 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: 1 dose Tdap followed by 1 dose Td or Tdap at least 4 weeks after Tdap

## Routine vaccination

- For guidance for patients who have previously received PCV13 and/or PPSV23, refer to MMWR report

last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons who have not previously received Tdap or whose Tdap history is unknown. If a tetanus-toxoid-containing vaccine is indicated for a pregnant woman, use Tdap. For detailed information, see [www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> with no evidence of immunity:** Vaccination may be considered (2 doses 3 months apart); VAR contraindicated for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- **Severe immunocompromising conditions:** VAR contraindicated

##### Special situations

- **Pregnancy:** There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.
- **Immunocompromising conditions (including HIV):** RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy. For detailed information, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm).





## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB booster dose recommendations for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

Note: MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

#### Pneumococcal vaccination

##### Routine vaccination

- **Age 65 years or older** who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

##### Special situations

- **Age 19–64 years** with certain underlying medical conditions or other risk factors\*\* who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
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**\*Note:** Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

**\*\*Note:** Underlying medical conditions or other risk factors include alcoholism, chronic heart/liver/lung disease, chronic renal failure, cigarette smoking, cochlear implant, congenital or acquired asplenia, CSF leak, diabetes mellitus, generalized malignancy, HIV, Hodgkin disease, immunodeficiency, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic syndrome, solid organ transplants, or sickle cell disease or other hemoglobinopathies.

#### 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: 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
- **Wound management:** Persons with 3 or more doses of tetanus-toxoid-containing vaccine: For clean and minor wounds, administer Tdap or Td if more than 10 years since last dose of tetanus-toxoid-containing vaccine; for all other wounds, administer Tdap or Td if more than 5 years since last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons who have not previously received

### Special situations

- For guidance for patients who have previously received PCV13 and/or PPSV23, refer to MMWR report

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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> with no evidence of immunity:** Vaccination may be considered (2 doses 3 months apart); VAR contraindicated for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- **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 zoster vaccine live (ZVL, Zostavax) vaccination (administer RZV at least 2 months after ZVL)

##### Special situations

- **Pregnancy:** There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB booster dose recommendations for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

Note: MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

#### Pneumococcal vaccination

##### Routine vaccination

- **Age 65 years or older** who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

##### Special situations

- **Age 19–64 years** with certain underlying medical conditions or other risk factors\*\* who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

**\*Note:** Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

**\*\*Note:** Underlying medical conditions or other risk factors include alcoholism, chronic heart/liver/lung disease, chronic renal failure, cigarette smoking, cochlear implant, congenital or acquired asplenia, CSF leak, diabetes mellitus, generalized malignancy, HIV, Hodgkin disease, immunodeficiency, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic syndrome, solid organ transplants, or sickle cell disease or other hemoglobinopathies.

#### Tetanus, diphtheria, and pertussis vaccination

##### Routine vaccination

- **Previously vaccinated:** Tdap at or after age 11 years;

Notes section: lists underlying medical conditions and risk factors

tetanus-toxoid-containing vaccine. For clean and minor wounds, administer Tdap or Td if more than 10 years since last dose of tetanus-toxoid-containing vaccine; for all other wounds, administer Tdap or Td if more than 5 years since last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons who have not previously received Tdap or whose Tdap history is unknown. If a tetanus-toxoid-containing vaccine is indicated for a pregnant woman, use Tdap. For detailed information, see [www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm](http://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> with no evidence of immunity:** Vaccination may be considered (2 doses 3 months apart); VAR contraindicated for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- **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 zoster vaccine live (ZVL, Zostavax) vaccination (administer RZV at least 2 months after ZVL)

##### Special situations

- **Pregnancy:** There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.
- **Immunocompromising conditions (including HIV):** RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy. For detailed information, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm).

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB **booster dose recommendations** for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

**Note:** MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

#### Pneumococcal vaccination

##### Routine vaccination

- **Age 65 years or older** who have not previously received a pneumococcal conjugate vaccine or whose vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm)

##### Special situations

- **Age 19–64 years** with certain underlying medical conditions or other risk factors\*\* who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm)

\***Note:** Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

\*\***Note:** Underlying medical conditions or other risk factors include alcoholism, chronic heart/liver/lung disease, chronic renal failure, cigarette smoking, cochlear implant, congenital or acquired asplenia, CSF leak, diabetes mellitus, generalized malignancy, HIV, Hodgkin disease, immunodeficiency, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic

## Special Situations

- Added CD4 percentages in addition to CD4 counts for HIV infection (to harmonize language with child/adolescent schedule)

#### 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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> with no evidence of immunity:** Vaccination may be considered (2 doses 3 months apart); VAR contraindicated for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- **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 zoster vaccine live (ZVL, Zostavax) vaccination (administer RZV at least 2 months after ZVL)

##### Special situations

- **Pregnancy:** There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.
- **Immunocompromising conditions (including HIV):** RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy. For detailed information, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm).

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB **booster dose recommendations** for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

**Note:** MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

#### Pneumococcal vaccination

##### Routine vaccination

- **Age 65 years or older** who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm)

##### Special situations

- **Age 19 years or older** with certain conditions: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm)

#### Special Situations

- Revised the language for the pregnancy bullet:  
“There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.”

**\*Note:** Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

**\*\*Note:** Underlying medical conditions or other risk factors include alcoholism, chronic heart/liver/lung disease, chronic renal failure, cigarette smoking, cochlear implant, congenital or acquired asplenia, CSF leak, diabetes mellitus, generalized malignancy, HIV, Hodgkin disease, immunodeficiency, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic syndrome, solid organ transplants, or sickle cell disease or other hemoglobinopathies.

#### 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:** 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 (preferably

#### 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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> with no evidence of immunity:** Vaccination may be considered (2 doses 3 months apart); VAR contraindicated for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- **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 zoster vaccine live (ZVL, Zostavax) vaccination (administer RZV at least 2 months after ZVL)

##### Special situations

- **Pregnancy:** There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.
- **Immunocompromising conditions (including HIV):** RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy. For detailed information, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm).

## Notes

### Recommended Adult Immunization Schedule, United States, 2022

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB **booster dose recommendations** for groups listed under “Special situations” and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see [www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm](http://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm)

**Note:** MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

#### Pneumococcal vaccination

##### Routine vaccination

- **Age 65 years or older** who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,\* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see [www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm).

\***Note:** Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

\*\***Note:** Underlying medical conditions or other risk factors include alcoholism, chronic heart/liver/lung disease, chronic renal failure, cigarette smoking, cochlear implant, congenital or acquired asplenia, CSF leak, diabetes mellitus, generalized malignancy, HIV, Hodgkin disease, immunodeficiency, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic syndrome, solid organ transplants, or sickle cell disease or other hemoglobinopathies.

#### 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:** 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

- 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 percentages  $\geq 15\%$  and CD4 count  $\geq 200$  cells/mm<sup>3</sup> with no evidence of immunity:** Vaccination may be considered (2 doses 3 months apart); VAR contraindicated for HIV infection with CD4 percentage  $< 15\%$  or CD4 count  $< 200$  cells/mm<sup>3</sup>
- **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 zoster vaccine live (ZVL, Zostavax) vaccination (administer RZV at least 2 months after ZVL)

##### Special situations

- **Pregnancy:** There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.
- **Immunocompromising conditions (including HIV):** RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy. For detailed information, see [www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm).

## Special Situations

- Added language to reflect the new recommendations for immunocompromising conditions: “RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy.”

[www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm](http://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm)

##### 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

# Appendix

## Appendix

### Recommended Adult Immunization Schedule, United States, 2022

#### Guide to Contraindications and Precautions to Commonly Used Vaccines

*Adapted from Table 4-1 in Advisory Committee on Immunization Practices (ACIP) General Best Practice Guidelines for Immunization: Contraindication and Precautions available at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html) and ACIP's Recommendations for the Prevention and Control of 2021-22 Seasonal Influenza with Vaccines available at [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm)*

**Interim clinical considerations for use of COVID-19 vaccines including contraindications and precautions can be found at [www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html)**

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### Guide to Contraindications and Precautions to Commonly Used Vaccines

Adapted from Table 4-1 in Advisory Committee on Immunization Practices (ACIP) General Best Practice Guidelines for Immunization: Contraindication and Precautions available at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html) and ACIP's Recommendations for the Prevention and Control of 2021-22 Seasonal Influenza with Vaccines available at [www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm](http://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm)

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Vaccine	Contraindications <sup>1</sup>	Precautions <sup>2</sup>
Influenza, egg-based, inactivated injectable (IIV4)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IIV, cclIV, RIV, or LAIV of any valency)</li> <li>Severe allergic reaction (e.g., anaphylaxis) to any vaccine component<sup>3</sup> (excluding egg)</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine</li> <li>Persons with egg allergy with symptoms other than hives (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using egg-based IIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist.</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Influenza, cell culture-based inactivated injectable [(cclIV4), Flucelvax® Quadrivalent]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) to any cclIV of any valency, or to any component<sup>3</sup> of cclIV4</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine</li> <li>Persons with a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose of any egg-based IIV, RIV, or LAIV of any valency. If using cclIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist.</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Influenza, recombinant injectable [(RIV4), Flublok® Quadrivalent]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) to any RIV of any valency, or to any component<sup>3</sup> of RIV4</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine</li> <li>Persons with a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose of any egg-based IIV, cclIV, or LAIV of any valency. If using RIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist.</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Influenza, live attenuated [LAIV4, Flumist® Quadrivalent]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IIV, cclIV, RIV, or LAIV of any valency)</li> <li>Severe allergic reaction (e.g., anaphylaxis) to any vaccine component<sup>3</sup> (excluding egg)</li> <li>Adults age 50 years or older</li> <li>Anatomic or functional asplenia</li> <li>Immunocompromised due to any cause including, but not limited to, medications and HIV infection</li> <li>Close contacts or caregivers of severely immunosuppressed persons who require a protected environment</li> <li>Pregnancy</li> <li>Cochlear implant</li> <li>Active communication between the cerebrospinal fluid (CSF) and the oropharynx, nasopharynx, nose, ear, or any other cranial CSF leak</li> <li>Received influenza antiviral medications oseltamivir or zanamivir within the previous 48 hours, peramivir within the previous 5 days, or baloxavir within the previous 17 days.</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine</li> <li>Asthma in persons aged 5 years old or older</li> <li>Persons with egg allergy with symptoms other than hives (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using LAIV4 (which is egg based), administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist.</li> <li>Persons with underlying medical conditions (other than those listed under contraindications) that might predispose to complications after wild-type influenza virus infection [e.g., chronic pulmonary, cardiovascular (except isolated hypertension), renal, hepatic, neurologic, hematologic, or metabolic disorders (including diabetes mellitus)]</li> <li>Moderate or severe acute illness with or without fever</li> </ul>

1. When a contraindication is present, a vaccine should NOT be administered. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html)

2. When a precaution is present, vaccination should generally be deferred but might be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html)

3. Vaccination providers should check FDA-approved prescribing information for the most complete and updated information, including contraindications, warnings, and precautions. Package inserts for U.S.-licensed vaccines are available at [www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states](http://www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states).

# Appendix

## Recommended Adult Immunization Schedule, United States, 2022

Vaccine	Contraindications <sup>1</sup>	Precautions <sup>2</sup>
<i>Haemophilus influenzae</i> type b (Hib)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> <li>For Hiberix, ActHib, and Pedvax-HIB only: History of severe allergic reaction to dry natural latex</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Hepatitis A (HepA)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup> including neomycin</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Hepatitis B (HepB)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup> including yeast</li> <li>For Heplisav-B only: Pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Hepatitis A- Hepatitis B vaccine [HepA-HepB, (Twinrix <sup>®</sup> )]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup> including neomycin and yeast</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Human papillomavirus (HPV)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Measles, mumps, rubella (MMR)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> <li>Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised)</li> <li>Pregnancy</li> <li>Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent</li> </ul>	<ul style="list-style-type: none"> <li>Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product)</li> <li>History of thrombocytopenia or thrombocytopenic purpura</li> <li>Need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Meningococcal ACWY (MenACWY) [MenACWY-CRM (Menveo <sup>®</sup> ); MenACWY-D (Menactra <sup>®</sup> ); MenACWY-TT (MenQuadfi <sup>®</sup> )]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> <li>For MenACWY-D and Men ACWY-CRM only: severe allergic reaction to any diphtheria toxoid- or CRM197-containing vaccine</li> <li>For MenACWY-TT only: severe allergic reaction to a tetanus toxoid-containing vaccine</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Meningococcal B (MenB) [MenB-4C (Bexsero); MenB-FHbp (Trumenba)]	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Pregnancy</li> <li>For MenB-4C only: Latex sensitivity</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Pneumococcal conjugate (PCV15)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> <li>Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid-containing vaccine or to its vaccine component<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Pneumococcal conjugate (PCV20)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> <li>Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid-containing vaccine or to its vaccine component<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Pneumococcal polysaccharide (PPSV23)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
Tetanus, diphtheria, and acellular pertussis (Tdap) Tetanus, diphtheria (Td)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> <li>For Tdap only: Encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures), not attributable to another identifiable cause, within 7 days of administration of previous dose of DTP, DTaP, or Tdap</li> </ul>	<ul style="list-style-type: none"> <li>Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus-toxoid-containing vaccine</li> <li>History of Arthus-type hypersensitivity reactions after a previous dose of diphtheria-toxoid-containing or tetanus-toxoid-containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus-toxoid-containing vaccine</li> <li>Moderate or severe acute illness with or without fever</li> <li>For Tdap only: Progressive or unstable neurological disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized</li> </ul>
Varicella (VAR)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> <li>Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised)</li> <li>Pregnancy</li> <li>Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent</li> </ul>	<ul style="list-style-type: none"> <li>Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product)</li> <li>Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination)</li> <li>Use of aspirin or aspirin-containing products</li> <li>Moderate or severe acute illness with or without fever</li> </ul>
Zoster recombinant vaccine (RZV)	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> <li>Current herpes zoster infection</li> </ul>

1. When a contraindication is present, a vaccine should NOT be administered. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html)

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## **Knowledge Check #2:**

An unvaccinated 61-year-old man with chronic renal failure received Prevnar20 today. Which pneumococcal vaccine should be administered after age 65 years?

- a) Pneumovax23
- b) Prevnar15
- c) Prevnar20
- d) No further doses of pneumococcal vaccine





## **Knowledge Check #2:**

An unvaccinated 61-year-old man with chronic renal failure got Prevnar 20 vaccine today. Which pneumococcal vaccine should be given to him after age 65 years?

- a) Pneumovax23
- b) Prevnar15
- c) Prevnar20
- d) No further doses of pneumococcal vaccine



# COVID-19 vaccination



# Overview of COVID-19 Vaccination

- Recommended for everyone ages 5 years and older in the United States for the prevention of COVID-19
- Effective in preventing serious outcomes of COVID-19
- Safe; known benefits continue to outweigh possible risks
- Critical to get people up to date on COVID-19 vaccination

# COVID-19 Vaccine Products

Preferred for primary and booster vaccination in all populations

mRNA vaccine



Pfizer-BioNTech  
recommended for  
ages 5 years and older



EUA= Emergency Use Authorization

mRNA vaccine



Moderna  
recommended for  
ages 18 years and older



BLA= Biologics License Application

Viral vector vaccine



Janssen  
recommended for  
ages 18 years and older





## COVID-19 Vaccination

### Product Info by U.S. Vaccine

Pfizer-BioNTech Vaccines +

Moderna Vaccine

Janssen/J&J Vaccine

EUA

EUI

FAQs for Healthcare Professionals +

Interim Clinical Considerations +

Clinical Care +

Provider Requirements and +

## U.S. COVID-19 Vaccine Product Information

[Español](#)

Find a suite of information and materials that are needed for each specific COVID-19 vaccine that cover administration, storage and handling, safety, and reporting.

Pfizer-BioNTech

Moderna

Janssen/J&J



### Prevaccination Screening Form

Download a prevaccination checklist in multiple languages.

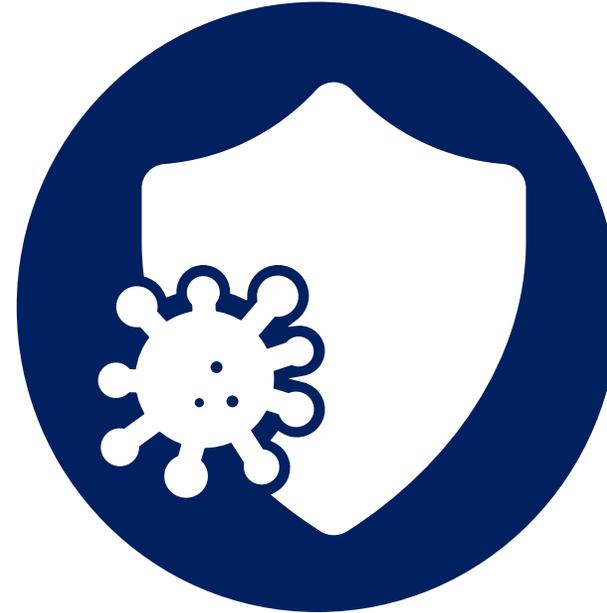
[English](#) 🇺🇸 | [Spanish](#) 🇪🇸

Requirements, Trainings, and Resources

# COVID-19 Vaccination Recommendations



**Age group**



**Degree of immune  
suppression**

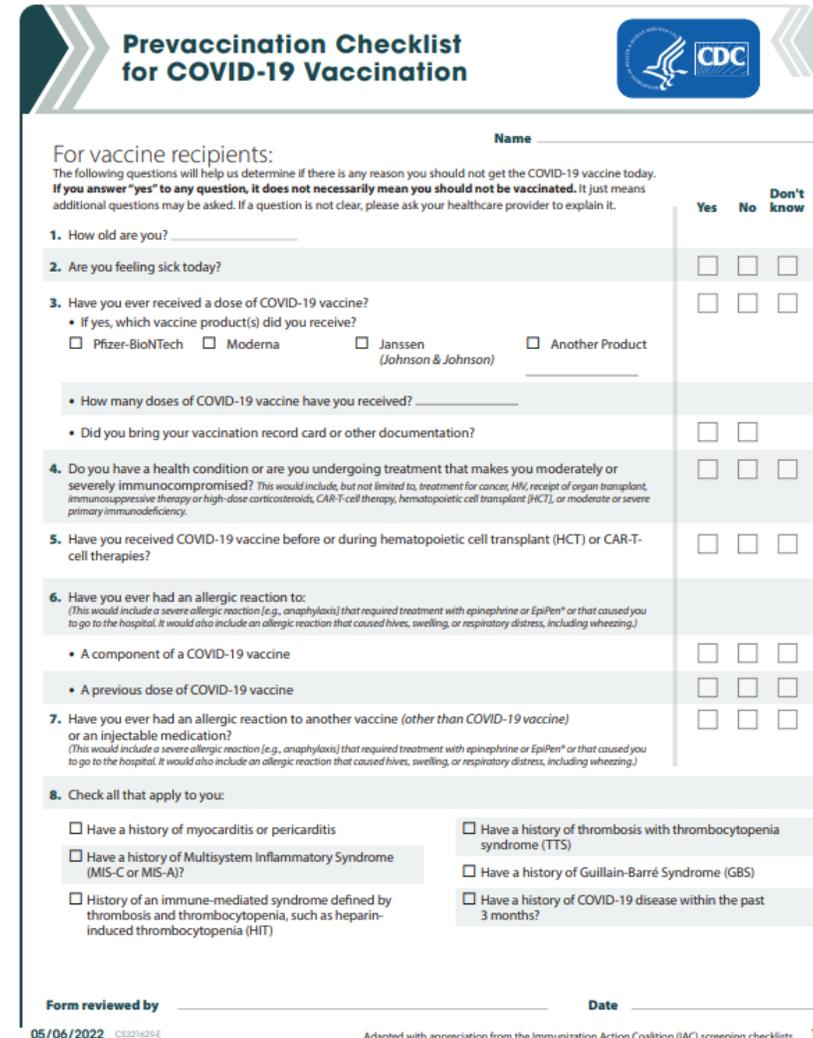
# COVID-19 Vaccination Recommendations

- Recommendations vary with degree of immune suppression.
- People with immunocompromising conditions or people who take immunosuppressive medications or therapies:
  - Are at increased risk for severe COVID-19
  - May be less likely to mount a protective immune response after initial vaccination
  - Have waning protection over time

Children should receive the age-appropriate vaccine formulation and follow the schedule based on their age on the day of vaccination, regardless of their size or weight.

# People Who Are Moderately or Severely Immunocompromised

- People can self-attest.
- Patients do NOT need to provide documentation.
- Vaccinators should NOT deny COVID-19 vaccination to a person due to lack of documentation.
- People who are moderately or severely immunocompromised can discuss what is appropriate for them with their healthcare provider.
- CDC offers a prevaccination checklist, where people can check if they are considered moderately or severely immunocompromised.



**Prevaccination Checklist for COVID-19 Vaccination** 

Name \_\_\_\_\_

For vaccine recipients:  
The following questions will help us determine if there is any reason you should not get the COVID-19 vaccine today. If you answer "yes" to any question, it does not necessarily mean you should not be vaccinated. It just means additional questions may be asked. If a question is not clear, please ask your healthcare provider to explain it.

	Yes	No	Don't know
1. How old are you? _____			
2. Are you feeling sick today?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Have you ever received a dose of COVID-19 vaccine? • If yes, which vaccine product(s) did you receive? <input type="checkbox"/> Pfizer-BioNTech <input type="checkbox"/> Moderna <input type="checkbox"/> Janssen (Johnson & Johnson) <input type="checkbox"/> Another Product _____ • How many doses of COVID-19 vaccine have you received? _____ • Did you bring your vaccination record card or other documentation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do you have a health condition or are you undergoing treatment that makes you moderately or severely immunocompromised? <i>(This would include, but not be limited to, treatment for cancer, HIV, receipt of organ transplant, immunosuppressive therapy or high-dose corticosteroids, CAR-T-cell therapy, hematopoietic cell transplant [HCT], or moderate or severe primary immunodeficiency.)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Have you received COVID-19 vaccine before or during hematopoietic cell transplant (HCT) or CAR-T-cell therapies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Have you ever had an allergic reaction to: <i>(This would include a severe allergic reaction [e.g., anaphylaxis] that required treatment with epinephrine or EpiPen® or that caused you to go to the hospital. It would also include an allergic reaction that caused hives, swelling, or respiratory distress, including wheezing.)</i> • A component of a COVID-19 vaccine • A previous dose of COVID-19 vaccine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Have you ever had an allergic reaction to another vaccine (other than COVID-19 vaccine) or an injectable medication? <i>(This would include a severe allergic reaction [e.g., anaphylaxis] that required treatment with epinephrine or EpiPen® or that caused you to go to the hospital. It would also include an allergic reaction that caused hives, swelling, or respiratory distress, including wheezing.)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Check all that apply to you: <input type="checkbox"/> Have a history of myocarditis or pericarditis <input type="checkbox"/> Have a history of Multisystem Inflammatory Syndrome (MIS-C or MIS-A)? <input type="checkbox"/> History of an immune-mediated syndrome defined by thrombosis and thrombocytopenia, such as heparin-induced thrombocytopenia (HIT) <input type="checkbox"/> Have a history of thrombosis with thrombocytopenia syndrome (TTS) <input type="checkbox"/> Have a history of Guillain-Barré Syndrome (GBS) <input type="checkbox"/> Have a history of COVID-19 disease within the past 3 months?			

Form reviewed by \_\_\_\_\_ Date \_\_\_\_\_

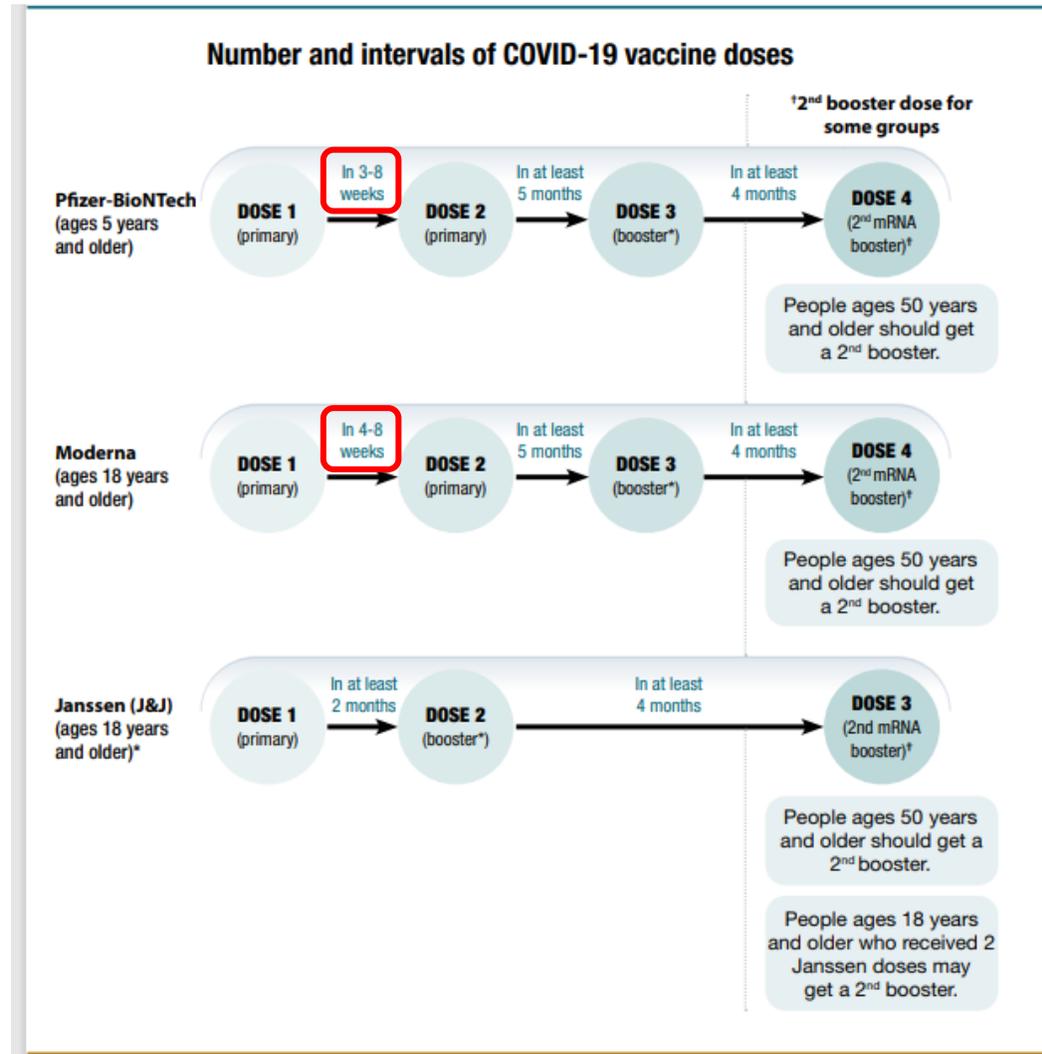
05/06/2022 CS2216294 Adapted with appreciation from the Immunization Action Coalition (IAC) screening checklists 1

# COVID-19 Vaccine Recommendations for Ages 4 Years or Younger

- Currently no FDA-approved or –authorized COVID-19 vaccine for children ages 4 years and younger
- Should **not** receive any COVID-19 vaccine doses at this time

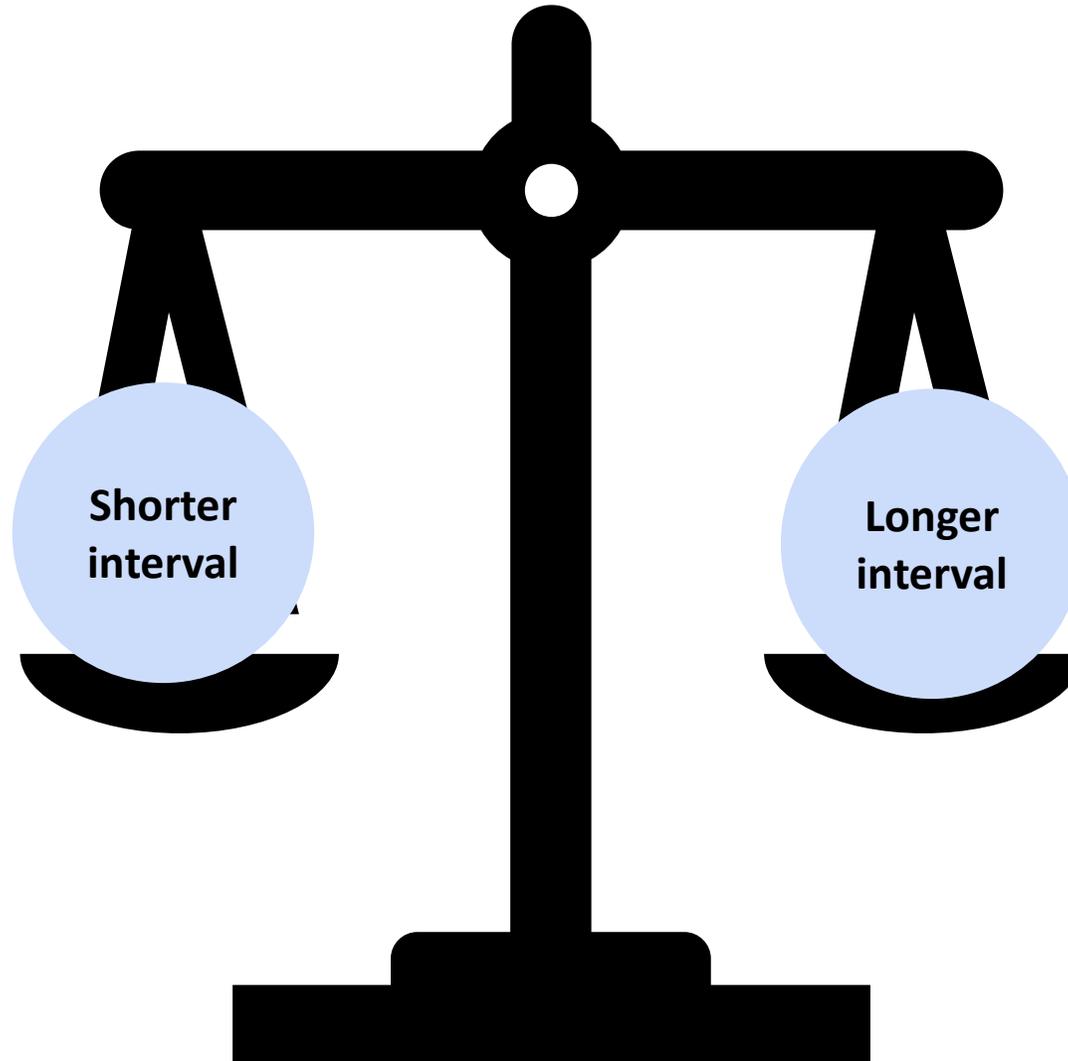


# COVID-19 Vaccination Schedule for Most People



# Primary Series Intervals for mRNA COVID-19 Vaccines

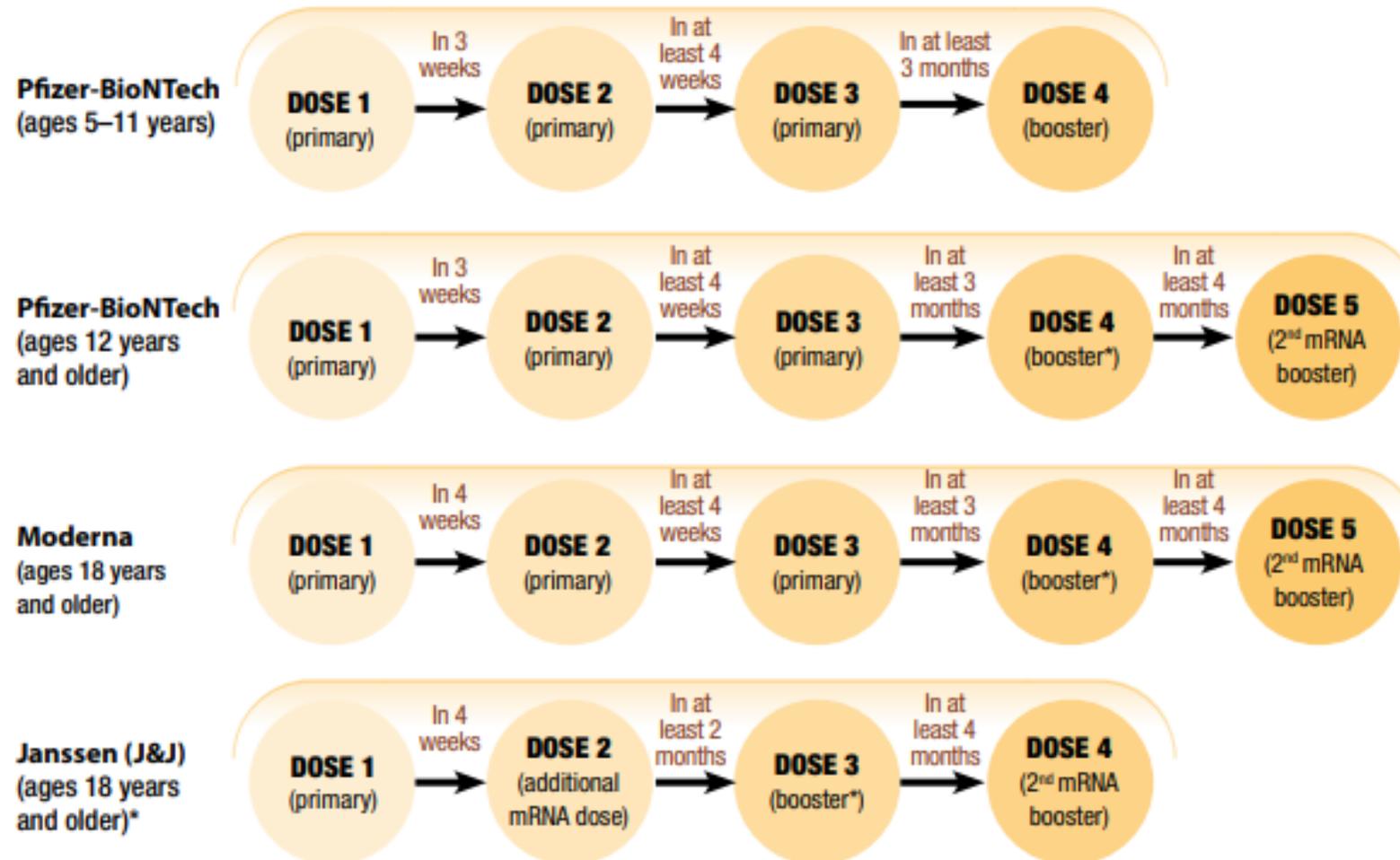
- High COVID-19 community levels
- Adults aged 65 years and older
- Higher risk for severe disease



- Reduced myocarditis risk
- Optimize vaccine effectiveness

# COVID-19 Vaccination Schedule for People Who are Moderately or Severely Immunocompromised

## Number and intervals of COVID-19 vaccine doses



# COVID-19 Vaccination Updates in 2022 Immunization Schedules

## Notes Recommended Adult Immunization Schedule for ages 19 years or older, United States, 2022

For vaccine recommendations for persons 18 years of age or younger, see the Recommended Child and Adolescent Immunization Schedule.

**COVID-19 Vaccination**

COVID-19 vaccines are recommended within the scope of the Emergency Use Authorization or Biologics License Application for the particular vaccine. ACIP recommendations for the use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html). CDC's interim clinical considerations for use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html).

### 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 Vaqta 6–18 months apart [minimum interval: 6 months]) or 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])

**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 labs with nonhuman primates with hepatitis A virus
- Travel in countries with high or intermediate hepatitis A (HepA-HepB [Twinrix] may be added on an accelerated schedule of 3 doses at 0, 7 days, followed by a booster dose at 12 months
- Close, personal contact with international (e.g., household or regular babysitting) in first after arrival from country with high or intermediate hepatitis A (administer dose 1 as to adoption is planned, at least 2 weeks before arrival)
- Pregnancy if at risk for infection or severe infection during pregnancy
- Settings for exposure, including health care targeting services to injection or noninjection or group homes and nonresidential day care developmentally disabled persons (individual screening not required)

### Hepatitis B vaccination

**Routine vaccination**

- Age 19 through 59 years:** complete a 2- or 3-series
  - 2-dose series only applies when 2 doses of HB used at least 4 weeks apart
  - 3-dose series Engerix-B or Recombivax HB at [minimum intervals: dose 1 to dose 2: 4 week dose 3: 8 weeks / dose 1 to dose 3: 16 weeks]
  - 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])
  - 4-dose series HepA-HepB (Twinrix) accelerated of 3 doses at 0, 7, and 21–30 days, followed 1 dose at 12 months
  - 4-dose series Engerix-B at 0, 1, 2, and 6 months on adult hemodialysis (note: each dosage is 0.5 normal adult dose, i.e., 2 mL instead of 1 mL)

**Note:** Hepatitis B not recommended in pregnant women

**Special situations**

- Age 60 years or older\* and at risk for hepatitis B virus infection: 2-dose (Hepatitis B) or 3-dose (Engerix-B)

## Notes Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

For vaccination recommendations for persons ages 19 years or older, see the Recommended Adult Immunization Schedule, 2022.

**COVID-19 Vaccination**

COVID-19 vaccines are recommended for use within the scope of the Emergency Use Authorization or Biologics License Application for the particular vaccine. ACIP recommendations for the use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html). CDC's interim clinical considerations for use of COVID-19 vaccines can be found at [www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html).

**Additional information**

- [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html)
- For calculating intervals between doses, 4 weeks = 28 days. Intervals of ≥4 months are determined by calendar months.
- Within a number range (e.g., 12–18), a dash (–) should be read as “through.”
- Vaccine doses administered ≥4 days before the minimum age or interval are considered valid. Doses of any vaccine administered ≥5 days earlier than the minimum age or minimum interval should not be counted as valid and should be repeated as age appropriate. **The repeat dose should be spaced after the invalid dose by the recommended minimum interval.** For further details, see Table 3-1, Recommended and minimum ages and intervals between vaccine doses, in *General Best Practice Guidelines for Immunization* at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/timing.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/timing.html).
- Information on travel vaccination requirements and recommendations is available at [www.cdc.gov/travel/](http://www.cdc.gov/travel/).
- For vaccination of persons with immunodeficiencies, see Table B-1, Vaccination of persons with primary and secondary immunodeficiencies, in *General Best Practice Guidelines for Immunization* at [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html), and Immunization in Special Clinical Circumstances (in: Kimberlin DN, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31<sup>st</sup> ed. Texas, IL: American Academy of Pediatrics; 2018):7–111).
- For information about vaccination in the setting of a vaccine-preventable disease outbreak, contact your state or local health department.
- The National Vaccine Injury Compensation Program (NVICP) is a no-fault alternative to the traditional legal system for resolving vaccine injury claims. All routine (child and adolescent) vaccines are covered by NVICP except for pneumococcal polysaccharide vaccine (PPSV23). For more information, see [www.hrsa.gov/vaccinecompensation/index.html](http://www.hrsa.gov/vaccinecompensation/index.html).

### Dengue vaccination (minimum age: 9 years)

**Routine vaccination**

- Age 9–16 years living in dengue endemic areas **AND** have laboratory confirmation of previous dengue infection
  - 3-dose series administered at 0, 6, and 12 months
- Endemic areas include Puerto Rico, American Samoa, US Virgin Islands, Federated States of Micronesia, Republic of Marshall Islands, and the Republic of Palau. For updated guidance on dengue endemic areas and pre-vaccination laboratory testing see [www.cdc.gov/mmwr/rr/rr0112a1.htm](http://www.cdc.gov/mmwr/rr/rr0112a1.htm) and [www.cdc.gov/dengue/vaccine/faq/index.html](http://www.cdc.gov/dengue/vaccine/faq/index.html)

### Diphtheria, tetanus, and pertussis (DTaP) vaccination (minimum age: 6 weeks [4 years for Kinrix\* or Quadracel\*\*])

**Routine vaccination**

- 5-dose series at age 2, 4, 6, 15–18 months, 4–6 years
  - Prospectively:** Dose 4 may be administered as early as age 12 months if at least 6 months have elapsed since dose 3.
  - Retrospectively:** A 4<sup>th</sup> dose that was inadvertently administered as early as age 12 months may be counted if at least 4 months have elapsed since dose 3.

**Catch-up vaccination**

- Dose 5 is not necessary if dose 4 was administered at age 4 years or older and at least 6 months after dose 3.
- For other catch-up guidance, see Table 2.

**Special situations**

- Wound management in children less than age 7 years with history of 3 or more doses of tetanus-toxoid-containing vaccine. For all wounds except clean and minor wounds, administer Tdap if more than 5 years since last dose of tetanus-toxoid-containing vaccine. For detailed information, see [www.cdc.gov/mmwr/rr/vol16no63/rr1606a3.htm](http://www.cdc.gov/mmwr/rr/vol16no63/rr1606a3.htm).

### Haemophilus influenzae type b vaccination (minimum age: 6 weeks)

**Routine vaccination**

- ActHib\*, Hibrix\*, Pentacel\*, or Vaxella\*:** 4-dose series (3 dose primary series at age 2, 4, and 6 months, followed by a booster dose\* at age 12–15 months)
  - \*Vaxella\* is not recommended for use as a booster dose. A different Hib-containing vaccine should be used for the booster dose.
- ProQuadHB®:** 3-dose series (2-dose primary series at age 2 and 4 months, followed by a booster dose at age 12–15 months)

**Catch-up vaccination**

- Dose 1 at age 7–11 months:** Administer dose 2 at least 4 weeks later and dose 3 (final dose) at age 12–15 months or 8 weeks after dose 2 (whichever is later).
- Dose 1 at age 12–14 months:** Administer dose 2 (final dose) at least 8 weeks after dose 1.

- Dose 1 before age 12 months and dose 2 before age 15 months:** Administer dose 3 (final dose) at least 8 weeks after dose 2.
- 2 doses of ProQuadHB® before age 12 months:** Administer dose 3 (final dose) at 12–15 months and at least 8 weeks after dose 2.
- 1 dose administered at age 15 months or older:** No further doses needed.
- Unvaccinated at age 15–59 months:** Administer 1 dose.
- Previously unvaccinated children age 60 months or older who are not considered high risk:** Do not require catch-up vaccination

For other catch-up guidance, see Table 2. Vaxella\* can be used for catch-up vaccination in children less than age 5 years. Follow the catch-up schedule even if Vaxella\* is used for one or more doses. For detailed information on use of Vaxella\* see [www.cdc.gov/mmwr/volumes/66/ww/mm6605a5.htm](http://www.cdc.gov/mmwr/volumes/66/ww/mm6605a5.htm).

### Special situations

- Chemotherapy or radiation treatment:**
  - Age 12–59 months:**
    - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
    - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose
  - Doses administered within 14 days of starting therapy or during therapy should be repeated at least 3 months after therapy completion.
- Hematopoietic stem cell transplant (HSCT):**
  - 3-dose series 4 weeks apart starting 6 to 12 months after successful transplant, regardless of Hib vaccination history
- Anatomic or functional asplenia (including sickle cell disease):**
  - Age 12–59 months:**
    - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
    - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose
  - Unvaccinated\* persons age 5 years or older:**
    - 1 dose
- Elective splenectomy:**
  - Unvaccinated\* persons age 15 months or older:**
    - 1 dose (preferably at least 14 days before procedure)
- HIV infection:**
  - Age 12–59 months:**
    - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
    - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose
  - Unvaccinated\* persons age 5–18 years:**
    - 1 dose
- Immunoglobulin deficiency, early component complement deficiency:**
  - Age 12–59 months:**
    - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
    - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

\*Unvaccinated = Less than routine series (through age 14 months) OR no doses (age 15 months or older)

# COVID-19 Vaccination Guidance Is Continuously Being Reviewed and Updated

- Visit <https://www.cdc.gov/vaccines/covid-19/info-by-product/clinical-considerations.html#Coadministration> for the most recent guidance.
- Sign up to be notified when information on the web page changes.

The screenshot shows the CDC website interface. At the top left is the CDC logo and the text "Centers for Disease Control and Prevention CDC 24/7: Saving Lives, Protecting People™". To the right is a search bar and a dropdown menu for "Vaccines site" with a search icon. Below the search bar is a link for "Advanced Search". The main header is "Vaccines & Immunizations" in a dark green bar. Below this is a breadcrumb trail: "CDC > COVID-19 Vaccination". On the left side, there is a navigation menu with "COVID-19 Vaccination" selected, and sub-items like "Product Info by U.S. Vaccine", "Interim Clinical Considerations" (which is expanded to show "Managing Anaphylaxis", "Myocarditis and Pericarditis Considerations", and "Lab Tests After Severe Allergic Reactions"), "Clinical Care", and "Provider Requirements and Support". The main content area features the title "Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Approved or Authorized in the United States". Below the title is a "Reference Materials" section with three links, each with a red update icon: "COVID-19 Vaccine Administration Error Revaccination Guidance", "COVID-19 Vaccine Administration Error Revaccination Guidance – Poster", and "COVID-19 Vaccine Administration Errors Revaccination Guidance Checklist". On the right side of the page, there is a "Get Email Updates" form with a checkbox, a text input field for "Email Address", a "Submit" button, and a link for "What's this?". A red circle is drawn around the "Get Email Updates" form.

**LAST UPDATED  
ON  
MAY 20, 2022**

## **Knowledge Check #3:**

How should vaccinators verify that a patient is moderately or severely immunocompromised before administering COVID-19 vaccines?

- a) Note from the patient's primary physician
- b) Self-attestation from patient or parent/guardian
- c) Diagnosis by the healthcare provider administering the vaccine



# People Who Are Moderately or Severely Immunocompromised

- People can self-attest.
- Patients do NOT need to provide documentation.
- Vaccinators should NOT deny COVID-19 vaccination to a person due to lack of documentation.
- People who are moderately or severely immunocompromised can discuss what is appropriate for them with their healthcare provider.
- CDC offers a prevaccination checklist, where people can check if they are considered moderately or severely immunocompromised.

## Prevaccination Checklist for COVID-19 Vaccination



For vaccine recipients:  
The following questions will help us determine if there is any reason you should not get the COVID-19 vaccine today. **If you answer "yes" to any question, it does not necessarily mean you should not be vaccinated.** It just means additional questions may be asked. If a question is not clear, please ask your healthcare provider to explain it.

Name \_\_\_\_\_  
Age \_\_\_\_\_

	Yes	No	Don't know
1. Are you feeling sick today?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have you ever received a dose of COVID-19 vaccine? • If yes, which vaccine product(s) did you receive? <input type="checkbox"/> Pfizer-BioNTech <input type="checkbox"/> Moderna <input type="checkbox"/> Janssen (Johnson & Johnson) <input type="checkbox"/> Another Product _____  • How many doses of COVID-19 vaccine have you received? _____ • Did you bring your vaccination record card or other documentation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Do you have a health condition or are you undergoing treatment that makes you moderately or severely immunocompromised? <small>(This would include treatment for cancer or HIV, receipt of organ transplant, immunosuppressive therapy or high-dose corticosteroids, CAR-T-cell therapy, hematopoietic cell transplant (HCT), DiGeorge syndrome or Wiskott-Aldrich syndrome)</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Have you received hematopoietic cell transplant (HCT) or CAR-T-cell therapies since receiving COVID-19 vaccine?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Have you ever had an allergic reaction to: <small>(This would include a severe allergic reaction [e.g., anaphylaxis] that required treatment with epinephrine or EpiPen® or that caused you to go to the hospital. It would also include an allergic reaction that caused hives, swelling, or respiratory distress, including wheezing.)</small> • A component of a COVID-19 vaccine, including either of the following: ○ Polyethylene glycol (PEG), which is found in some medications, such as laxatives and preparations for colonoscopy procedures  ○ Polysorbate, which is found in some vaccines, film coated tablets, and intravenous steroids  • A previous dose of COVID-19 vaccine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Have you ever had an allergic reaction to another vaccine (other than COVID-19 vaccine) or an injectable medication? <small>(This would include a severe allergic reaction [e.g., anaphylaxis] that required treatment with epinephrine or EpiPen® or that caused you to go to the hospital. It would also include an allergic reaction that caused hives, swelling, or respiratory distress, including wheezing.)</small>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Check all that apply to you: <input type="checkbox"/> Am a female between ages 18 and 49 years old <input type="checkbox"/> Am a male between ages 12 and 29 years old <input type="checkbox"/> Have a history of myocarditis or pericarditis <input type="checkbox"/> Have been treated with monoclonal antibodies or convalescent serum to prevent or treat COVID-19 <input type="checkbox"/> Diagnosed with Multisystem Inflammatory Syndrome (MIS-C or MIS-A) after a COVID-19 infection <input type="checkbox"/> Have a bleeding disorder <input type="checkbox"/> Take a blood thinner <input type="checkbox"/> Have a history of heparin-induced thrombocytopenia (HIT) <input type="checkbox"/> Am currently pregnant or breastfeeding <input type="checkbox"/> Have received dermal fillers <input type="checkbox"/> Have a history of Guillain-Barré Syndrome (GBS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Form reviewed by \_\_\_\_\_ Date \_\_\_\_\_  
Adapted with appreciation from the Immunization Action Coalition (IAC) screening checklists

## **Knowledge Check #3:**

How should vaccinators verify that a patient is moderately or severely immunocompromised before administering COVID-19 vaccines?

- a) Note from the patient's primary physician
- b) Self-attestation from patient or parent/guardian
- c) Diagnosis by the healthcare provider administering the vaccine



# Co-administration of vaccines

# Co-administration of Vaccines

- Co-administration (simultaneous administration) of vaccines is defined as administering more than one vaccine on the same clinic day, at different anatomic sites, and not combined in the same syringe

<b>TABLE 3-4. Guidelines for spacing of live and non-live antigens</b>	
<b>Antigen combination</b>	<b>Recommended minimum interval between doses</b>
Two or more non-live <sup>(a),(b)</sup>	May be administered simultaneously or at any interval between doses
Non-live and live <sup>(c)</sup>	May be administered simultaneously or at any interval between doses
Two or more live injectable <sup>(c)</sup>	28 days minimum interval, if not administered simultaneously

**Source:** (83).

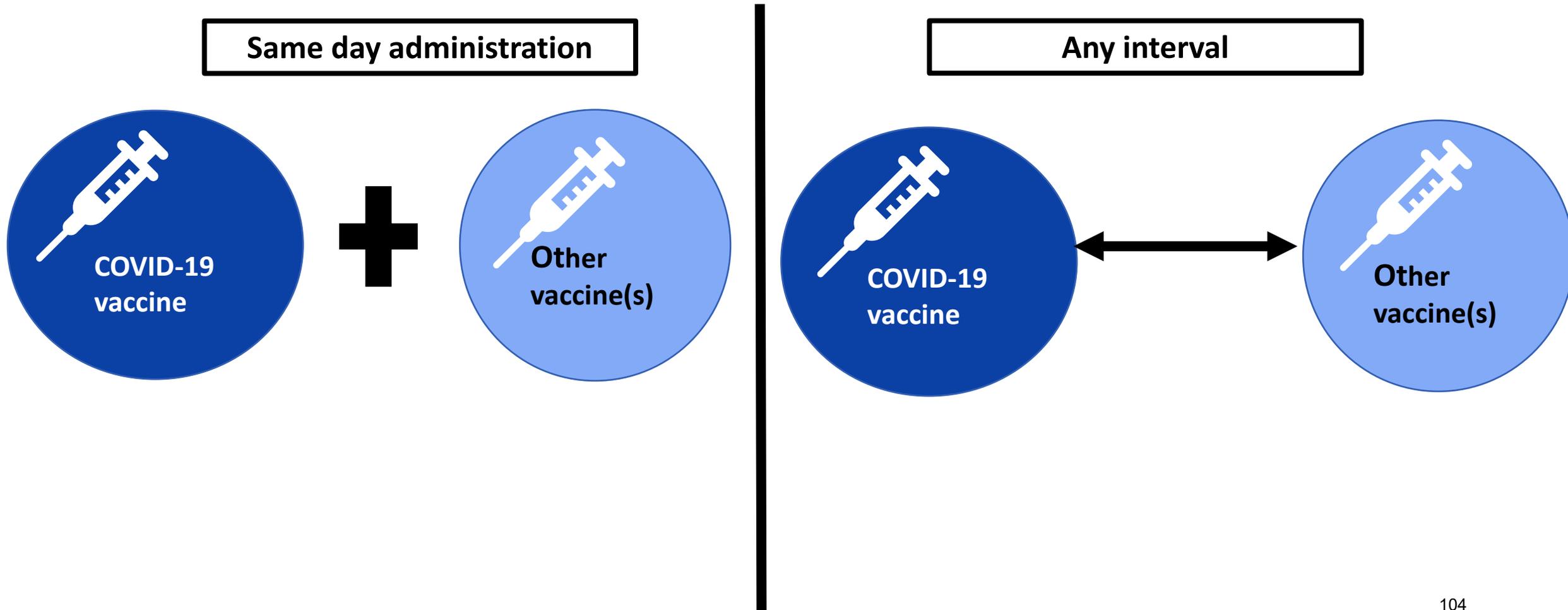
<sup>(a)</sup> Certain experts suggest a 28-day interval between tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine and tetravalent meningococcal conjugate vaccine if they are not administered simultaneously.

<sup>(b)</sup> In persons with functional or anatomic asplenia, MCV-D and PCV13 should not be administered simultaneously and should be spaced by 4 weeks. Likewise for persons with immunosuppressive high-risk conditions indicated for PCV13 and PPSV23, PCV13 should be administered first, and PPSV23 should be administered no earlier than 8 weeks later. For persons 65 years old or older indicated for PCV13 and PPSV23, PCV13 should be administered first and PPSV23 should be administered 6-12 months later.

<sup>(c)</sup> The live oral vaccines Ty21a typhoid vaccine and rotavirus vaccine may be administered simultaneously with or at any interval before or after non-live or live injectable vaccines.

# Coadministration of COVID-19 vaccines with other vaccines

COVID-19 vaccines **and** other vaccines may be administered without regard to timing.



## **Knowledge Check #4:**

A 4-year-old is here for his well child visit and needs MMR dose #2. His vaccination records shows he received varicella vaccine 10-days ago. Can MMR be administered today?

- a) Yes
- b) No



# Co-administration of Vaccines

- Co-administration (simultaneous administration) of vaccines is defined as administering more than one vaccine on the same clinic day, at different anatomic sites, and not combined in the same syringe

<b>Antigen combination</b>	<b>Recommended minimum interval between doses</b>
Two or more non-live <sup>(a),(b)</sup>	May be administered simultaneously or at any interval between doses
Non-live and live <sup>(c)</sup>	May be administered simultaneously or at any interval between doses
Two or more live injectable <sup>(c)</sup>	28 days minimum interval, if not administered simultaneously

**Source:** (83).

<sup>(a)</sup> Certain experts suggest a 28-day interval between tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine and tetravalent meningococcal conjugate vaccine if they are not administered simultaneously.

<sup>(b)</sup> In persons with functional or anatomic asplenia, MCV-D and PCV13 should not be administered simultaneously and should be spaced by 4 weeks. Likewise for persons with immunosuppressive high-risk conditions indicated for PCV13 and PPSV23, PCV13 should be administered first, and PPSV23 should be administered no earlier than 8 weeks later. For persons 65 years old or older indicated for PCV13 and PPSV23, PCV13 should be administered first and PPSV23 should be administered 6-12 months later.

<sup>(c)</sup> The live oral vaccines Ty21a typhoid vaccine and rotavirus vaccine may be administered simultaneously with or at any interval before or after non-live or live injectable vaccines.

## **Knowledge Check #4:**

A 4-year-old is here for his well child visit and needs MMR dose #2. His vaccination records shows he received varicella vaccine 10-days ago. Can MMR be administered today?

- a) Yes
- b) No



# CDC's Post-licensure Vaccine Safety Monitoring Systems

# Rationale for Post-licensure Vaccine Safety Monitoring

- Pre-licensure clinical trials are typically not designed to:
  - Detect and characterize rare adverse events (numbers enrolled too small)
  - Study safety in special populations (often excluded)
  - Evaluate adverse events with delayed onset
- Monitor vaccine safety in the general population
- Monitor other factors that can lead to adverse events following Immunization (AEFI) (e.g., incorrect vaccine administration)



# CDC's Vaccine Safety Monitoring Systems

## VAERS

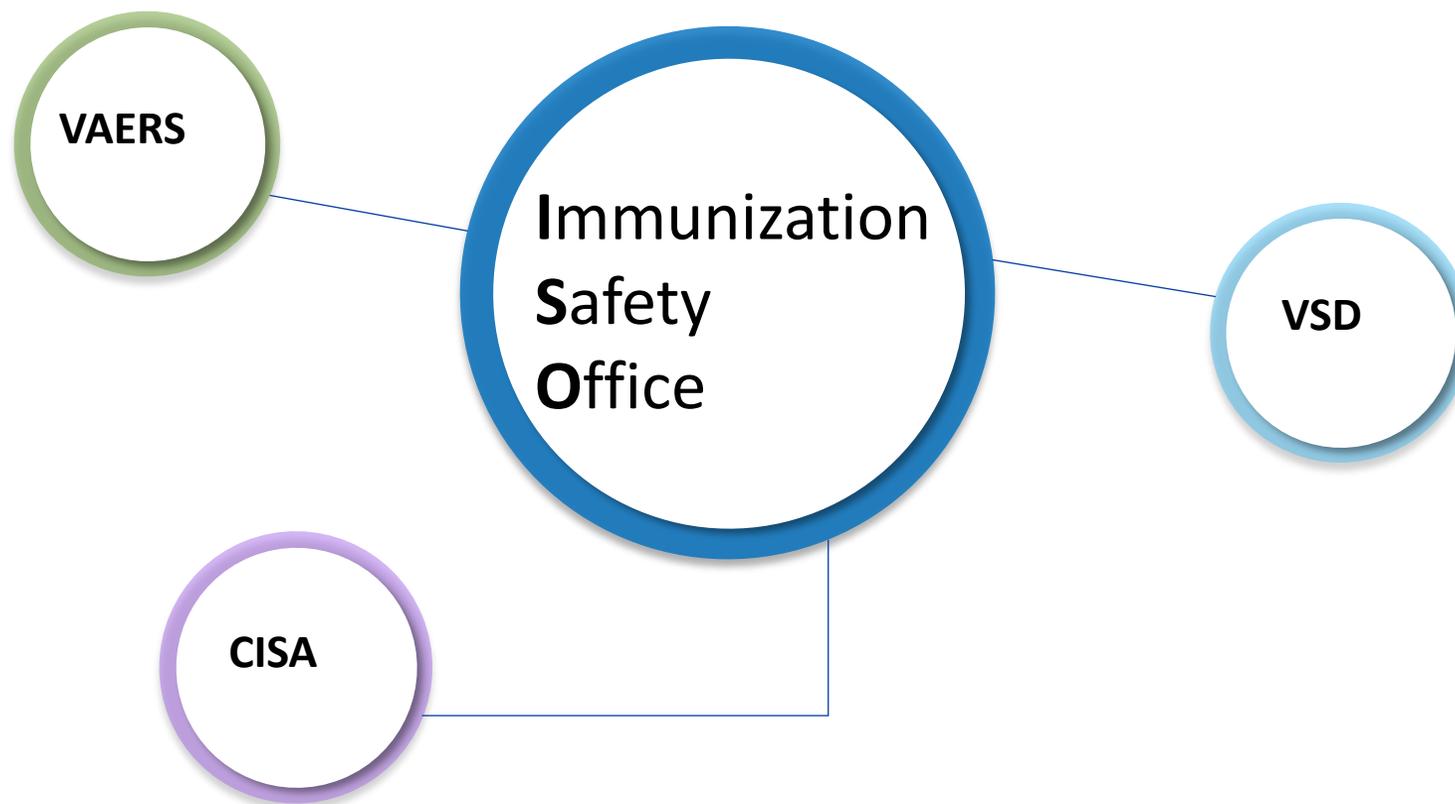
Vaccine Adverse Event Reporting System

## VSD

Vaccine Safety Datalink

## CISA

Clinical Immunization Safety Assessment Project



# VAERS is the nation's early warning system for vaccine safety



## VAERS

### Vaccine Adverse Event Reporting System

Primarily a safety signal detection and hypothesis generating system

<http://vaers.hhs.gov>



# VAERS

VAERS accepts all reports from everyone regardless of the plausibility of the vaccine causing the event or the clinical seriousness of the event

## key strengths

- Rapidly detects potential safety problems
- Can detect rare adverse events

## key limitations

- Inconsistent quality and completeness of information
- **Generally, cannot determine cause and effect** 

# Which Adverse Events Should be Reported to VAERS?

- Healthcare professionals are encouraged to report any clinically significant or unexpected adverse events (AEs) following any vaccination
  - Note: Submitting a VAERS report does not constitute filing a claim with the National Vaccine Injury Compensation Program
- Required reporting for healthcare providers<sup>1</sup>:
  - Any adverse event listed by the vaccine manufacturer as a contraindication to further doses of the vaccine
  - Any adverse event listed in the VAERS Reportable Events Table<sup>2</sup> following vaccination that occurs within the specified time period after vaccination

<sup>1</sup> National Childhood Vaccine Injury Act

<sup>2</sup> The Reportable Events Table reflects what is reportable by law (42 USC 300aa-25) to the Vaccine Adverse Event Reporting System (VAERS).  
[https://vaers.hhs.gov/resources/VAERS\\_Table\\_of\\_Reportable\\_Events\\_Following\\_Vaccination.pdf](https://vaers.hhs.gov/resources/VAERS_Table_of_Reportable_Events_Following_Vaccination.pdf)

# How to Report Adverse Events to VAERS?

## Two Ways to Submit an Online Report to VAERS



### Option 1 - Report Online to VAERS (Preferred)

Submit a VAERS report online. The report must be completed online and submitted in one sitting and cannot be saved and returned to at a later time. Your information will be erased if you are inactive for 20 minutes; you will receive a warning after 15 minutes.



### Option 2 - Report using a Writable PDF Form

Download the Writable PDF Form to a computer. Complete the VAERS report offline if you do not have time to complete it all at once. Return to this page to upload the completed Writable PDF form by clicking here.

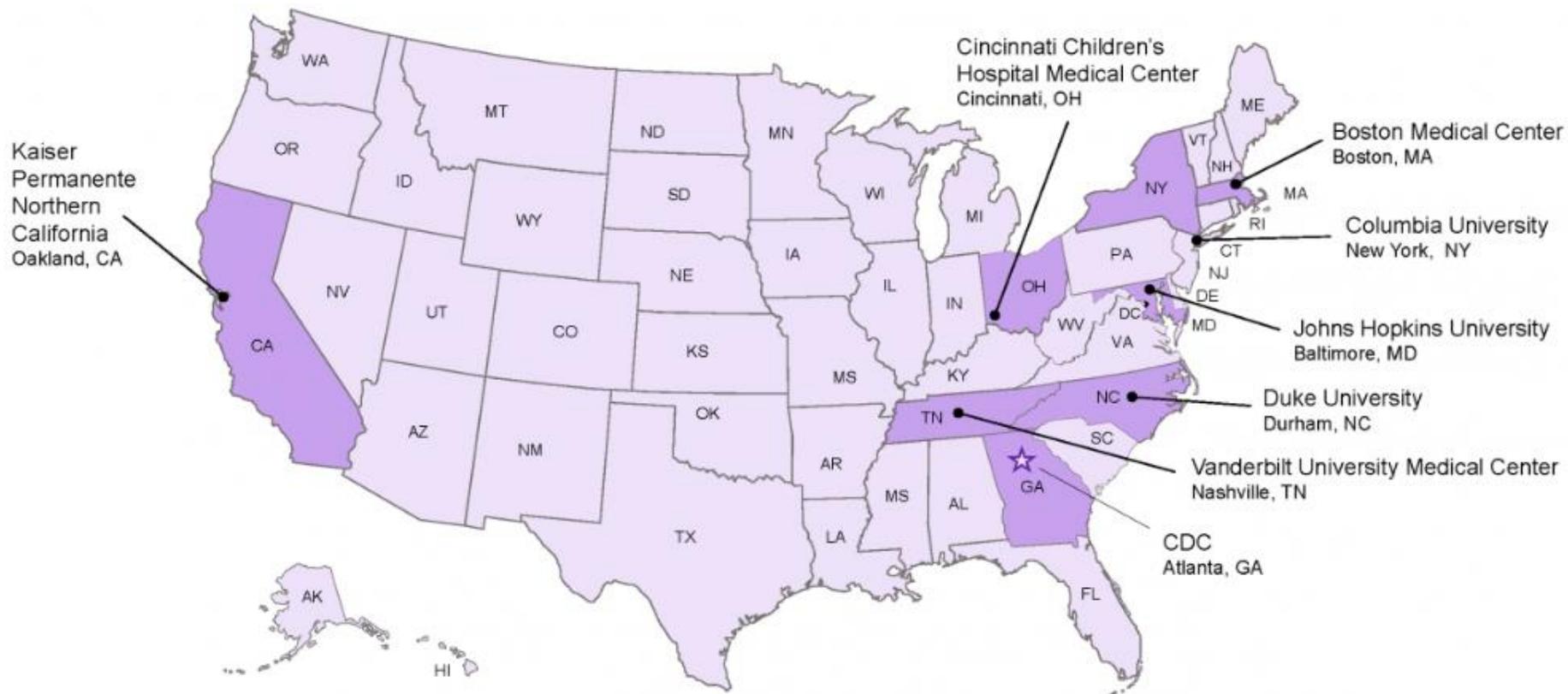
If you need further assistance with reporting to VAERS, please email [info@VAERS.org](mailto:info@VAERS.org) or call 1-800-822-7967.



# CISA

## Clinical Immunization Safety Assessment (CISA) Project

7 participating medical research centers with vaccine safety experts



- clinical consult services\*

[CISAEval@cdc.gov](mailto:CISAEval@cdc.gov)

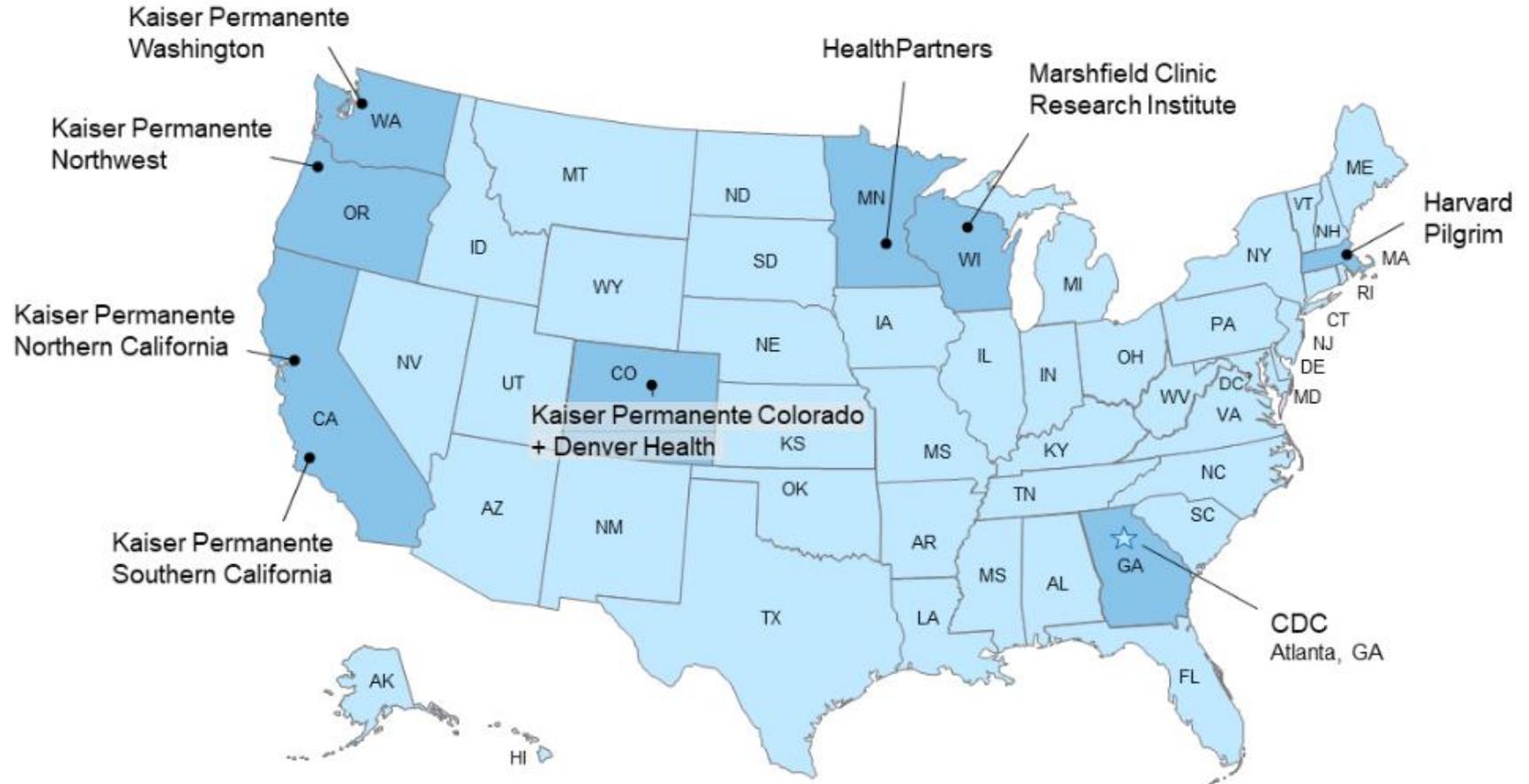
- clinical research

\*More information about clinical consults available at  
<http://www.cdc.gov/vaccinesafety/Activities/CISA.html>



# VSD

## Vaccine Safety Datalink



- 9 participating integrated healthcare organizations
- Data on over **12 million** persons per year

# Vaccination resources for healthcare providers

# CDC vaccination resources for healthcare providers

- Schedules App
- Pneumococcal Vaccination App
- Storage and Handling Toolkit
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# CDC vaccination resources for healthcare providers

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## Immunization Schedules

CDC > Schedules Home > For Health Care Providers



# Adult Immunization Schedule

Recommendations for Ages 19 Years or Older, United States, 2022

### COVID-19 Vaccination

ACIP recommends use of COVID-19 vaccines for everyone ages 5 and older. COVID-19 vaccine and other vaccines may be administered on the same day. See the [COVID-19 Vaccine Product Information page](#) for additional information.

### Using the schedule

To make vaccination recommendations, health care providers should:

1. Determine needed vaccines **based on age** ([Table 1](#))
2. Assess for **medical conditions and other indications** ([Table 2](#))
3. Review **special situations** ([Vaccination Notes](#))
4. Review **contraindications and precautions to vaccination** ([Appendix](#))

### Download the Schedule

[Printable schedule, color](#) 

[Printable schedule, black & white](#) 

[Download the mobile schedule app](#)

 [Get Email Updates](#)

### More Schedule Resources

[Compliant version of the schedule](#) >

[Schedule changes and guidance](#) >

[Vaccines in the schedule](#) >

[Syndicate the schedules on your website](#) >

# Download the App

**Note:** If you previously downloaded the app, check that you have version 8.0.1 with 2021 schedules and footnotes.

Download “CDC Vaccine Schedules” free for iOS and Android devices.



## Product Specs

**Version:** 7.0.1

**Requirements:** Requires iOS 9.0 or later and Android 4.0 or later; optimized for tablets and useful on smartphones.

**Updates:** Changes in the app are released through app updates.

Download app free for **iOS**



Download app free for **Android**





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## Vaccines and Preventable Diseases

Vaccines & Preventable Diseases Home > Vaccines by Disease > Pneumococcal > For Healthcare Professionals



Vaccines & Preventable Diseases  
Home

### Vaccines by Disease

Chickenpox (Varicella)	+
Dengue	+
Diphtheria	+
Flu (Influenza)	+
Hepatitis A	+
Hepatitis B	+
Hib	+
Human Papillomavirus (HPV)	+
Measles	+
Meningococcal	+
Mumps	+
Pneumococcal	-
What Everyone Should Know	
For Healthcare Professionals	
Polio	+
Rotavirus	+

# PneumoRecs VaxAdvisor Mobile App for Vaccine Providers

**i** The PneumoRecs VaxAdvisor Mobile App was updated on February 9, 2022, to reflect CDC's new adult pneumococcal vaccination recommendations.

The *PneumoRecs VaxAdvisor* mobile app helps vaccination providers quickly and easily determine which pneumococcal vaccines a patient needs and when. The app incorporates recommendations for all ages so internists, family physicians, pediatricians, and pharmacists alike will find the tool beneficial.

Users simply:

- Enter a patient's age.
- Note if the patient has specific underlying medical conditions.
- Answer questions about the patient's pneumococcal vaccination history.

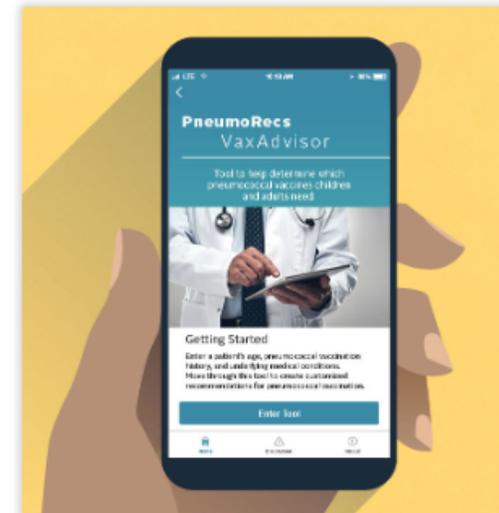
Then the app provides patient-specific guidance consistent with the immunization schedule recommended by the U.S. Advisory Committee on Immunization Practices (ACIP).

## Download the App Today

Download *PneumoRecs VaxAdvisor* for free:

- [iOS devices](#)
- [Android devices](#)

**Updates:** CDC will release guideline changes and enhancements to the app itself through app updates.



PneumoRecs VaxAdvisor is available for download on iOS and Android mobile devices.

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# Healthcare Providers / Professionals

Healthcare Professionals / Providers Home > Administration Tools > Vaccine Storage & Handling



Home Healthcare Professionals / Providers Home

Clinical Resources +

Administration Tools -

Vaccine Storage & Handling -

Storage and Handling Resources

Storage and Handling Toolkit

You Call The Shots: Vaccine Storage and Handling

Vaccine Administration +

Vaccines for Children (VFC) +

VIS

Reminder Systems and Strategies

Patient Education +

Immunization Training

Vaccine-Preventable Diseases

## Vaccine Storage and Handling Toolkit

### COVID-19 Vaccination Provider Requirements

The Vaccine Storage and Handling Toolkit has been updated with a COVID-19 Vaccine Addendum with information on Storage and Handling best practices for COVID-19 vaccines. All vaccination providers participating in the COVID-19 Vaccination Program must store and handle COVID-19 vaccines under proper conditions to maintain the cold chain as outlined in the toolkit and addendum.

This addendum will be updated with specific storage and handling information for each COVID-19 product. Please sign up for email alerts on this page to be notified when updates are made or check this website often.

For more information about COVID-19 vaccination provider requirements and resources on enrollment, ordering, and data in support of vaccination visit [COVID-19 Vaccination Provider Requirements and Support | CDC](#)

The 2021 Vaccine Storage and Handling Toolkit is a comprehensive guide that reflects best practices for vaccine storage and handling from Advisory Committee on Immunization Practices (ACIP) recommendations, product information from vaccine manufacturers, and scientific studies.

The toolkit has been updated for 2021 to clarify language including:

- Beyond use date (BUD)
- Routine maintenance for vaccine storage units
- New definition added to the glossary
- COVID-19 vaccine information



# Vaccine Storage and Handling Toolkit

Updated with COVID-19 Vaccine Storage and Handling Information  
Addendum added September 29, 2021



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## Vaccines & Immunizations

[CDC](#) > [COVID-19 Vaccination](#) > [Interim Clinical Considerations](#)



### COVID-19 Vaccination

Product Info by U.S. Vaccine +

Interim Clinical Considerations -

**Use of COVID-19 Vaccines in the U.S.**

FAQs for the Interim Clinical Considerations

Managing Anaphylaxis

Myocarditis and Pericarditis Considerations

# Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Approved or Authorized in the United States

Summary of recent changes (last updated May 20, 2022):

- New guidance for use of a Pfizer-BioNTech COVID-19 Vaccine booster dose in children ages 5–11 years
- Updated guidance that the following people **should** receive a second COVID-19 booster dose:
  - People ages 12 years and older who are moderately or severely immunocompromised
  - People ages 50 years and older
- Updated guidance for people who are moderately or severely immunocompromised and are treated with B-cell-depleting therapies

# CDC Vaccination Resources

- Schedules App
  - <https://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html>
- Pneumococcal Vaccination App
  - <https://www.cdc.gov/vaccines/vpd/pneumo/hcp/pneumoapp.html>
- Adult Vaccine Assessment Tool
  - <https://www2.cdc.gov/nip/adultimmsched>
- Child and Adolescent Vaccine Assessment Tool
  - <https://www2.cdc.gov/vaccines/childquiz>
- Storage and Handling Toolkit
  - <https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.html>
- Interim Clinical Considerations for Use of COVID-19 Vaccines
  - <https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html>



# CDC Contact Information

## ■ Immunization call center

- 1-800-232-4636 (1-800-CDC-INFO)
- 8:00 am through 8:00 pm
- English or Spanish
- Questions about immunization or vaccine-preventable diseases, to find vaccination locations, or to order single copies of immunization materials

## ■ Email

- [nipinfo@cdc.gov](mailto:nipinfo@cdc.gov)
  - Health care providers can submit questions about immunization or vaccine-preventable diseases.
  - Response usually within 24 hours
- [CISAeval@cdc.gov](mailto:CISAeval@cdc.gov)
  - U.S. health care providers can request consultation with CISA Project about complex vaccine safety questions for patients who reside in U.S.
  - Clinical Immunization Safety Assessment Project (CISA) needs access to medical records

# Combined Immunization Schedule Work Group 2021

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# Thank You!

## Questions?

For more information, contact CDC  
1-800-CDC-INFO (232-4636)  
TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

# Thank you for joining us!

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<http://champsonline.org/events-trainings/distance-learning>

