



Immunization Updates from the CDC and DHA: Catching Kids Up and Keeping Them Healthy in the Post Covid Era

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- At the CDC, she is the co-lead for the Advisory Committee on Immunization Practice Combined Immunization Schedule Work Group, editor for the Epidemiology and Prevention of Vaccine-Preventable Disease textbook (Pink Book), provides immunization educational resources and training to healthcare providers, and has worked on several vaccine safety research studies.
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- Dr. Hall first joined the CDC in 2017, transitioning to immunizations in 2020. In addition to being the lead editor on CDC's Epidemiology and Prevention of Vaccine-Preventable Diseases, otherwise known as the "Pink Book", she has spent the majority of the past two years in CDC's COVID-19 emergency response, holding various education and leadership roles within its Vaccine Task Force, most recently as the Clinical Guidelines Lead.
- She holds a BS and an MS in Nutrition and Health Sciences and a PhD in Human Sciences from the University of Nebraska-Lincoln.



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- CAPT Gregory Gorman is the Executive Director of the Defense Health Board and Chair of the Defense Health Agency Complex Pediatrics Clinical Community. He is a Professor of Pediatrics at the F. Edward Hébert School of Medicine at the Uniformed Services University and a practicing pediatric nephrologist for the Military Health System and the National Institutes of Health.
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Disclosures

- Dr. A. Patricia Wodi, Dr. Elisha Hall and CAPT Gregory Gorman have no relevant financial or non-financial relationships to disclose relating to the content of this activity; or presenter(s) must disclose the type of affiliation/financial interest (e.g., employee, speaker, consultant, principal investigator, grant recipient) with company name(s) included.
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- Use of trade names of vaccine products is for identification purposes and does not imply endorsement by the Centers for Disease Control and Prevention (CDC).



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Disclosures

- Use of vaccines in a manner not approved by the U.S. Food and Drug Administration will be discussed.
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Child and Adolescent Immunization Schedule

Catch-up Vaccination

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Learning Objectives

At the conclusion of this session participants will be able to:

1. Identify the various sections of CDC's childhood and adolescent immunization schedule.
2. Describe how to use the immunization schedule for children and adolescents who are behind on the recommended vaccination schedule.
3. Learn which vaccines can be co-administered.
4. Locate current CDC vaccination resources.

Outline

- Overview of child and adolescent immunization schedule
- Clinical scenario on catch-up vaccination
- Co-administration of vaccines
- Vaccination resources for healthcare providers

Child and Adolescent Immunization Schedule

Child and Adolescent Immunization Schedule

- Covers birth through 18 years
- Updated each year
 - Represents current, approved Advisory Committee on Immunization Practices (ACIP) policy
 - Designed for implementation of ACIP policy
- Published in February
 - *MMWR* Notice to Readers – announcement of availability of schedules on CDC website

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	DENACYD	Dengvaxia [®]
Diphtheria, tetanus, and acellular pertussis vaccine	DTaP	Daptacel [®] Infanrix [®]
Diphtheria, tetanus vaccine	DT	No trade name
Haemophilus influenzae type b vaccine	Hib (PRP-T)	ActHib [®] Hibberx [®] PedvaxHib [®]
Hib (PRP-OMP)	Hib (PRP-OMP)	Havrix [®] Vaxta [®]
Hepatitis A vaccine	HepA	Engerix-B [®] Recombivax HB [®]
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	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 [®]
Combination vaccines (use combination vaccines instead of separate injections when appropriate)		
DTaP, hepatitis B, and inactivated poliovirus vaccine	DTaP-HepB-IPV	Pediaris [®]
DTaP, inactivated poliovirus, and Haemophilus influenzae type b vaccine	DTaP-IPV/Hib	Pentacel [®]
DTaP and inactivated poliovirus vaccine	DTaP-IPV	Kinrix [®] Quadricel [®]
DTaP, inactivated poliovirus, Haemophilus influenzae type b, and hepatitis B vaccine	DTaP-IPV-Hib-HepB	Vaxelis [®]
Measles, mumps, rubella, and varicella vaccine	MMRV	ProQuad [®]

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 Assistants (www.aapa.org), and National Association of Pediatric Nurse Practitioners (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 or 800-822-7967

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/vis/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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<https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html>

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

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.napnap.org).

Report

- Suspected cases of reportable vaccine-preventable diseases or outbreaks to your state or local health department
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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

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/vis/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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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 st dose	← 2 nd dose →			← 3 rd dose →													
Rotavirus (RV): RV1 (2-dose series), RV5 (3-dose series)			1 st dose	2 nd dose	See Notes													
Diphtheria, tetanus, acellular pertussis (DTaP <7 yrs)			1 st dose	2 nd dose	3 rd dose			← 4 th dose →				5 th dose						
Haemophilus influenzae type b (Hib)			1 st dose	2 nd dose	See Notes		← 3 rd or 4 th dose, See Notes →											
Pneumococcal conjugate (PCV13)			1 st dose	2 nd dose	3 rd dose		← 4 th dose →											
Inactivated poliovirus (IPV <18 yrs)			1 st dose	2 nd dose	← 3 rd dose →							4 th dose						
Influenza (IIV4)					Annual vaccination 1 or 2 doses								Annual vaccination 1 dose only					
OR												Annual vaccination 1 or 2 doses	OR	Annual vaccination 1 dose only				
Influenza (LAIV4)												Annual vaccination 1 or 2 doses		Annual vaccination 1 dose only				
Measles, mumps, rubella (MMR)					See Notes		← 1 st dose →					2 nd dose						
Varicella (VAR)							← 1 st dose →					2 nd 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 ≥2 years)			See Notes											1 st dose		2 nd 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 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 and 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 st 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 and first dose was administered at younger than age 7 months and at least 1 previous dose was PRP-T (ActHib [®] , Pentacel [®] , Hiberix [®]), Vaxelis [®] or unknown 8 weeks and age 12 through 59 months (as final dose) if current age is younger than 12 months and first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months and first dose was administered before the 1 st birthday and 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 st 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 st birthday 8 weeks (as final dose for healthy children) if first dose was administered at the 1 st 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 st birthday 6 months (as final dose) if first dose of DTaP/DT or Tdap/Td was administered at or after the 1 st birthday	6 months if first dose of DTaP/DT was administered before the 1 st birthday	
Human papillomavirus	9 years	Routine dosing intervals are recommended.			
Hepatitis A	N/A	6 months			
Hepatitis B	N/A	4 weeks	8 weeks and 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.			
Dengue	9 years	6 months	6 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 ¹		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 ³	≥15% and total CD4 cell count of ≥200/mm ³						
Hepatitis B										
Rotavirus		SCID ²								
Diphtheria, tetanus, and acellular pertussis (DTaP)										
<i>Haemophilus influenzae</i> type b										
Pneumococcal conjugate										
Inactivated poliovirus										
Influenza (IIV4)										
or Influenza (LAIV4)						Asthma, wheezing: 2–4yrs ³				
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 and Table 4-1 (footnote J) at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.

2 Severe Combined Immunodeficiency

3 LAIV4 contraindicated for children 2–4 years of age with asthma or wheezing during the preceding 12 months

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

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 1 (minimum interval: 8 weeks)
* Age 16–18 years: 1 dose

Special situations

Anatomic or functional asplenia / HIV infection, persistent complement inhibitor (e.g., eculizumab), or Menveo

- Dose 1 at age 2 months: 4-dose series (minimum interval: 4 weeks and 12 months)
- Dose 1 at age 3–6 months: 3- or 4- (if applicable) at least 8 weeks after received at age 7 months or older
- Dose 1 at age 7–23 months: 2-dose series (minimum interval: 8 weeks and 12 months)
- Dose 1 at age 24 months or older: 1 dose

Menactra

- Persistent complement component inhibitor use:

- Age 9–23 months: 2-dose series
- Age 24 months or older: 2-dose series

Anatomic or functional asplenia / HIV infection:

- Age 9–23 months: Not recommended
- Age 24 months or older: 2-dose series

Menactra* must be administered of PCV13 series.

MenQuadfi*

- Dose 1 at age 24 months or older

Travel in countries with hyperendemic disease, including countries in the Hajj (www.cdc.gov/travel/):

* Children less than age 24 months:
- **Menveo*** (age 2–23 months):

- Dose 1 at age 2 months: 4-dose series (minimum interval: 4 weeks and 12 months)

- Dose 1 at age 3–6 months: 3- or 3 if applicable) at least 8 weeks after received at age 7 months or older

- Dose 1 at age 7–23 months: 2-dose series (minimum interval: 8 weeks and 12 months)

- Dose 1 at age 24 months or older: 2-dose series (minimum interval: 8 weeks and 12 months)

* Children age 2 years or older: 1 dose
MenQuadfi*

First-year college students who live previously vaccinated at age 16

* 1 dose **Menveo***, **Menactra***, or 16

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 routine schedule.

Special situations

Underlying conditions below: When both PCV13 and PPSV23 are indicated, administer PCV13 first. PCV13 and PPSV23 should not be administered during same visit.

Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma treated with high-dose, oral corticosteroids); diabetes mellitus:

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/):

- **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)

* **Mother is HBsAg-negative:**

- **All** medically stable infants ≥2,000 grams: 1 dose within 24 hours of birth

- Infants <2,000 grams: Administer 1 dose at chronological age 1 month or hospital discharge (whichever is earlier and even if weight is still <2,000 grams).

* **Mother is HBsAg-positive:**

- Administer **HepB vaccine** and **hepatitis B immune globulin (HBIG)** (in separate limbs) within 12 hours of birth, regardless of birth weight. For infants <2,000 grams, administer 3 additional doses of vaccine (total of 4 doses) beginning at age 1 month.

- Test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose.

* **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 limbs) 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.

- Test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose.

* **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 limbs) 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.

- Test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose.

* **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 limbs) 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.

- Test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose.

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

* **Minimum age** for the final (3rd or 4th) dose is 12 months.

* **Minimum intervals:** dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 16 weeks (with substitute "dose 4" for "dose 3" in these cases).

* **Catch-up vaccination:** Unvaccinated persons should complete months.

* Adolescents age 11–15 years may use schedule with at least 4 months between **Recombivax HB*** only).

* Adolescents age 18 years or older may receive **Heplisav-B*** at least 4 weeks apart.

* Adolescents age 18 years or older may receive **Twinrix***, as a 3-dose 4-dose series (3 doses at 0, 7, and 21–30 days at 12 months).

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

* **Special situations**

* Revaccination is not generally recommended for normal immune status who were vaccinated adolescents, or adults.

* **Post-vaccination serology testing and 10mIU/mL** is recommended for certain

- **Infants born to HBsAg-positive mother**

- **Hemodialysis patients**

- **Other immunocompromised person**

For detailed revaccination recommendations: www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb

Human papillomavirus vaccine (minimum age: 9 years)

Routine and catch-up vaccination

* HPV vaccination routinely recommends **start at age 9 years** and catch-up HPV for all persons through age 18 years if not at

* 2- or 3-dose series depending on age at

- **Age 9–14 years at initial vaccination:** months (minimum interval: 5 months; too soon)

- **Age 15 years or older at initial vaccination:** months, 6 months (minimum intervals: dose 2 to dose 3: 12 weeks / dose 1 to dose 2: 6 months (too soon))

* **Interrupted schedules:** If vaccination series does not need to be restarted.

* No additional dose recommended when being completed using the recommended schedule.

* **Special situations**

* **Immunocompromising conditions, in 3-dose series, even for those who initiate 14 years.**

* **History of sexual abuse or assault:** Start

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.

Additional information

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.

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.

* Consult relevant ACIP statements for detailed recommendations at 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*.

* Information on travel vaccination requirements and recommendations is available at 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*, and *Immunization in Special Clinical Circumstances* (In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*. 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:67–111).

* 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 (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.

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/mr7006a1.htm?cid=rr7006a1_w and 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 4th 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/r6702a1.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

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.

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)*

Appendix

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

Vaccine	Contraindications ¹	Precautions ²
Dengue (DEN4CYD)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 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) 	<ul style="list-style-type: none"> Pregnancy HIV infection without evidence of severe immunosuppression Moderate or severe acute illness with or without fever
Diphtheria, tetanus, pertussis (DTaP) Tetanus, diphtheria (DT)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 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 DTaP or DTaP 	<ul style="list-style-type: none"> Guillain-Barré syndrome (GBS) within 6 weeks after previous dose of tetanus-toxoid-containing vaccine 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

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 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.

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

<i>Haemophilus influenzae</i> type b (Hib)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) For Hibrix, ActHib, and PedvaxHIB only: HIV Less than age 6 weeks
Hepatitis A (HepA)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) to neomycin
Hepatitis B (HepB)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) For HepIsav-B only: Pregnancy
Hepatitis A- Hepatitis B vaccine [HepA-HepB, (Twinrix [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) to neomycin and yeast
Human papillomavirus (HPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis)
Measles, mumps, rubella (MMR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) Severe immunodeficiency (e.g., hematologic immunodeficiency, long-term immunosuppression, immunocompromised) Pregnancy Family history of altered immunocompetent
Meningococcal ACWY (MenACWY) [MenACWY-CRM (Menveo [®]); MenACWY-D (Menactra [®]); MenACWY-TT (MenQuadfi [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) For MenACWY-D and Men ACWY-CRM only: containing vaccine For MenACWY-TT only: severe allergic reaction
Meningococcal B (MenB) [MenB-4C (Bexsero [®]); MenB-FHbp (Trumenb [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis)
Pneumococcal conjugate (PCV13)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) Severe allergic reaction (e.g., anaphylaxis) to egg
Pneumococcal polysaccharide (PPSV23)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) to egg
Poliovirus vaccine, inactivated (IPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis)
Rotavirus (RV) [RV1 (Rotarix [®]), RV5 (RotaTeq [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) Severe combined immunodeficiency (SCID) History of intussusception
Tetanus, diphtheria, and acellular pertussis (Tdap) Tetanus, diphtheria (Td)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) For Tdap only: Encephalopathy (e.g., coma, attributable to another identifiable cause within 7 days of administration of previous dose of Tdap or Td)
Varicella (VAR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) Severe immunodeficiency (e.g., hematologic immunodeficiency, long-term immunosuppression, immunocompromised) Pregnancy Family history of altered immunocompetent

- 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
- 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
- Vaccination providers should check FDA-approved prescribing information for www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states

Vaccine	Contraindications ¹	Precautions ²
Influenza, egg-based, inactivated injectable (IIV4)	<ul style="list-style-type: none"> 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) Severe allergic reaction (e.g., anaphylaxis) to any vaccine component³ (excluding egg) 	<ul style="list-style-type: none"> Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine 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. Moderate or severe acute illness with or without fever
Influenza, cell culture-based inactivated injectable [(cclIV4), Flucelvax [®] Quadrivalent]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) to any cclIV of any valency, or to any component³ of cclIV4 	<ul style="list-style-type: none"> Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine 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 cclV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist. Moderate or severe acute illness with or without fever
Influenza, recombinant injectable [(RIV4), Flublok [®] Quadrivalent]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) to any RIV of any valency, or to any component³ of RIV4 	<ul style="list-style-type: none"> Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine 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. Moderate or severe acute illness with or without fever
Influenza, live attenuated [LAIV4, Flumist [®] Quadrivalent]	<ul style="list-style-type: none"> 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) Severe allergic reaction (e.g., anaphylaxis) to any vaccine component³ (excluding egg) Children age 2 – 4 years with a history of asthma or wheezing Anatomic or functional asplenia Immunocompromised due to any cause including, but not limited to, medications and HIV infection Close contacts or caregivers of severely immunosuppressed persons who require a protected environment Pregnancy Cochlear implant Active communication between the cerebrospinal fluid (CSF) and the oropharynx, nasopharynx, nose, ear or any other cranial CSF leak Children and adolescents receiving aspirin or salicylate-containing medications 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 	<ul style="list-style-type: none"> Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine Asthma in persons aged 5 years old or older 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. 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)] Moderate or severe acute illness with or without fever

- 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
- 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
- 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

Clinical Scenario



Image courtesy of CDC/NCIRD

Medical and Vaccination History

- 14-year-old female (Date of birth-03/03/2008)
- Medical history: none
- Vaccination record shows the following:
 - DTaP on 6/29/2008 and 4/20/2013
 - Tdap on 7/20/2019
 - IPV on 6/29/2008 and 4/20/2013
 - Hepatitis B vaccine on 3/03/2008 and 6/29/2008
- Parents report she received other vaccines and is up-to-date but have no record of those vaccinations

Vaccination History ¹

- Healthcare providers should only accept written, dated records as evidence of vaccination except for the following vaccines:
 - Influenza vaccine
 - Pneumococcal 23-valent polysaccharide vaccine (PPSV23)

- Self-reported doses of influenza vaccine and PPSV23 are acceptable because:
 - Influenza vaccine: the time period of recall is one year or less, making it very likely that correct recall will occur
 - PPSV23: a high frequency of vaccination leads to an increased rate of local reactions due to the reactogenicity of this vaccine.

1. Kroger A, Bahta L, Hunter P. General Best Practice Guidelines for Immunization. Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP). www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/generalrecs.pdf.

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 y	13-15 yrs	16 yrs	17-18 yrs
Hepatitis B (HepB)	1 st dose	← 2 nd dose →															
Rotavirus (RV): RV1 (2-dose series), RV5 (3-dose series)			1 st dose	2 nd dose	See Notes												
Diphtheria, tetanus, acellular pertussis (DTaP <7 yrs)		1 st dose	2 nd dose	3 rd dose					← 4 th dose →			5 th dose					
Haemophilus influenzae type b (Hib)		1 st dose	2 nd dose	See Notes					← 3 rd or 4 th dose, See Notes →								
Pneumococcal conjugate (PCV13)		1 st dose	2 nd dose	3 rd dose					← 4 th dose →								
Inactivated poliovirus (IPV <18 yrs)		1 st dose	2 nd dose						← 3 rd dose →			4 th dose					
Influenza (IIV4)										Annual vaccination 1 or 2 doses							Annual vaccination dose only
OR																	
Influenza (LAIV4)												Annual vaccination 1 or 2 doses					Annual vaccination dose only
Measles, mumps, rubella (MMR)					See Notes				← 1 st dose →			2 nd dose					
Varicella (VAR)									← 1 st dose →			2 nd 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 ≥2 years)																	1 st dose
Meningococcal B (MenB-4C, MenB-FHbp)																	See Notes
Pneumococcal polysaccharide (PPSV23)																	See Notes
Dengue (DEN4CYD; 9-16 yrs)																	Seropositivity 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

1. Documented vaccination history

- HepB, IPV, and DTaP/Tdap

2. Routine vaccinations needed

- Influenza
- HepB
- IPV
- MMR
- VAR
- HepA
- Tdap
- HPV
- MenACWY

3. Other vaccinations needed

- COVID-19

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 ¹		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 ³	≥15% and total CD4 cell count of ≥200/mm ³						
Hepatitis B	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Rotavirus	Yellow	Orange (SCID ²)	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Diphtheria, tetanus, and acellular pertussis (DTaP)	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
<i>Haemophilus influenzae</i> type b	Yellow	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots
Pneumococcal conjugate	Yellow	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots
Inactivated poliovirus	Orange	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Influenza (IIV4)	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
or Influenza (LAIV4)	Red	Red	Red	Red	Orange (Asthma, wheezing: 2–4yrs ³)	Red	Red	Orange	Orange	Orange
Measles, mumps, rubella	Red (*)	Red	Red	Red	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Varicella	Red (*)	Red	Red	Red	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Hepatitis A	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Tetanus, diphtheria, and acellular pertussis (Tdap)	Yellow with dots	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Human papillomavirus	Red (*)	Yellow with dots	Yellow with dots	Yellow with dots	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Meningococcal ACWY	Yellow	Yellow with dots	Yellow with dots	Yellow with dots	Yellow	Yellow	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots
Meningococcal B	Orange	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple	Purple
Pneumococcal polysaccharide	Purple	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots	Yellow with dots
Dengue	Orange	Red	Red	Orange	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

Yellow Vaccination according to the routine schedule recommended
Purple Recommended for persons with an additional risk factor for which the vaccine would be indicated
Yellow with dots Vaccination is recommended, and additional doses may be necessary based on medical condition or vaccine. See Notes.
Orange Precaution—vaccine might be indicated if benefit of protection outweighs risk of adverse reaction
Red Contraindicated or not recommended—vaccine should not be administered
Lightgrey 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 and Table 4-1 (footnote J) at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.
 2 Severe Combined Immunodeficiency
 3 LAIV4 contraindicated for children 2–4 years of age with asthma or wheezing during the preceding 12 months

Hepatitis B Vaccination Catch-up

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):

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)

• Mother is HBsAg-negative:

- All medically stable infants $\geq 2,000$ grams: 1 dose within 24 hours of birth
- Infants $< 2,000$ grams: Administer 1 dose at chronological age 1 month or hospital discharge (whichever is earlier and even if weight is still $< 2,000$ grams).

• Mother is HBsAg-positive:

- Administer **HepB vaccine** and **hepatitis B immune globulin (HBIG)** (in separate limbs) within 12 hours of birth, regardless of birth weight. For infants $< 2,000$ grams, administer 3 additional doses of vaccine (total of 4 doses) beginning at age 1 month.
- Test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose.

• 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 limbs) 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 $\geq 2,000$ 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).

- Administration of **4 doses** is permitted when a combination vaccine containing HepB is used after the birth dose.
- **Minimum age** for the final (3rd or 4th) 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, minimum dose 1 to dose 2 is 24 weeks)

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/imz/faq-vcv/faq-specific/hepb.html

(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 interval: 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], 3 years [recombinant influenza vaccine, RIV4])

Routine vaccination

- Any influenza vaccine appropriate for age and health status (usually:
 - 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
- In the 2021–2022 season, see www.cdc.gov/mmwr/preview/mmwrhtml/6602a1.htm
- In the 2022–23 season, see the 2022–23 ACP 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 12–36 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 B Vaccination Catch-up

Vaccine	Contraindications ¹	Precautions ²
Dengue (DENACYD)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ 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) 	<ul style="list-style-type: none"> Pregnancy HIV infection without evidence of severe immunosuppression Moderate or severe acute illness with or without fever
Diphtheria, tetanus, pertussis (DTaP) Tetanus, diphtheria (DT)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ 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 	<ul style="list-style-type: none"> Gaillain-Barré syndrome (GBS) within 6 weeks after previous dose of tetanus-toxoid-containing vaccine 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 For DTaP only: Progressive neurologic disorder, including infantile spasms, uncontrolled epilepsy, progressive encephalopathy; defer DTaP until neurologic status clarified and stabilized Moderate or severe acute illness with or without fever
Haemophilus influenzae type b (Hib)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ For Hibrix, ActHib, and PedvaxHB only: History of severe allergic reaction to dry natural latex Less than age 6 weeks 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis A (HepA)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ including 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis B (HepB)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ including yeast 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis A-Hepatitis B vaccine (HepA-HepB, Twinrix [®])	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ including neomycin and yeast 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Human papillomavirus (HPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Measles, mumps, rubella (MMR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ 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) Pregnancy Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent 	<ul style="list-style-type: none"> Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product) History of thrombocytopenia or thrombocytopenic purpura Need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing Moderate or severe acute illness with or without fever
Meningococcal ACWY (MenACWY) (MenACWY-CRM (Menveo [®]); MenACWY-D (Menactra [®]); MenACWY-TT (MenQuadri [®]))	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ For MenACWY-D and MenACWY-CRM only: severe allergic reaction to any diphtheria-toxoid- or CRM197-containing vaccine For MenACWY-TT only: severe allergic reaction to a tetanus-toxoid-containing vaccine 	<ul style="list-style-type: none"> For MenACWY-CRM only: Preterm birth if less than age 9 months Moderate or severe acute illness with or without fever
Meningococcal B (MenB) (MenB-4C (Bexsero [®]); MenB-FHbp (Trumenb [®]))	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ 	<ul style="list-style-type: none"> Pregnancy For MenB-4C only: Latex sensitivity Moderate or severe acute illness with or without fever
Pneumococcal conjugate (PCV13)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid-containing vaccine or its component⁴ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Pneumococcal polysaccharide (PPSV23)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Poliovirus vaccine, inactivated (IPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ 	<ul style="list-style-type: none"> Pregnancy Moderate or severe acute illness with or without fever
Rotavirus (RV) (RV1 (Rotarix [®]), RV5 (RotaTeq [®]))	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ Severe combined immunodeficiency (SCID) History of intussusception 	<ul style="list-style-type: none"> Altered immunocompetence other than SCID Chronic gastrointestinal disease RV1 only: Spina bifida or bladder exstrophy Moderate or severe acute illness with or without fever
Tetanus, diphtheria, and acellular pertussis (Tdap) Tetanus, diphtheria (Td)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ 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 	<ul style="list-style-type: none"> Gaillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus-toxoid-containing vaccine 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 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 Moderate or severe acute illness with or without fever
Varicella (VAR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component⁴ 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) Pregnancy Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent 	<ul style="list-style-type: none"> Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product) Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination) Use of aspirin or aspirin-containing products Moderate or severe acute illness with or without fever

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
 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
 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.

- Date of birth-03/03/2008
- Hepatitis B vaccination history
 - Dose 1: 03/03/2008
 - Dose 2: 6/29/2008

Plan

Give dose 3 today as final dose if no contraindication or precaution.

Poliovirus Vaccination Catch-up

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 and 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
Haemophilus influenzae 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 st 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 and first dose was administered at younger than age 7 months and at least 1 previous dose was PRP-T (ActHib [®] , Pentace [®] , Hibicix [®] , Vaxelis [®] or unknown) 8 weeks and age 12 through 59 months (as final dose) if current age is younger than 12 months and first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months and first dose was administered before the 1 st birthday and second dose was administered at younger than 15 months; OR if both doses were PedvaxHB [®] 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 st 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 st birthday. 8 weeks (as final dose for healthy children) if first dose was administered at the 1 st 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 st birthday 6 months (as final dose) if first dose of DTaP/DT or Tdap/Td was administered at or after the 1 st birthday	6 months if first dose of DTaP/DT was administered before the 1 st birthday	
Human papillomavirus	9 years	Routine dosing intervals are recommended.			
Hepatitis A	N/A	6 months			
Hepatitis B	N/A	4 weeks	8 weeks and 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		

- Date of birth-03/03/2008
- Inactivated Poliovirus (IPV) vaccination history
 - Dose 1: 4/25/2008
 - Dose 2: 4/20/2013

IPV Vaccination Catch-up

Notes

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

Chronic liver disease, alcoholism:

Age 6–18 years

- No history of PPSV23: 1 dose PPSV23 at least 8 weeks after any prior IPV-13 dose

*Incomplete series – Not having received all doses in either the recommended series or an age-appropriate catch-up series. See Tables 8, 9, and 11 in the ACP pneumococcal vaccine recommendations (www.aacp.org/immunization/pdctrm9911.pdf) for complete schedule details.

Poliovirus vaccination (minimum age: 6 weeks)

Routine vaccination

- 4-dose series at ages 2, 4, 6–18 months, 4–6 years; administer the final dose on or after age 4 years and at least 6 months after the previous dose.
- 4 or more doses of IPV can be administered before age 4 years when a combination vaccine containing IPV is used. However, a dose is still recommended on or after age 4 years and at least 6 months after the previous dose.

Catch-up vaccination

- In the first 6 months of life, use minimum ages and intervals only for travel to a polio-endemic region or during an outbreak.
- IPV is not routinely recommended for U.S. residents age 18 years or older.

Series containing oral polio vaccine (OPV), either mixed OPV-IPV or OPV-only series:

- Total number of doses needed to complete the series is the same as that recommended for the U.S. IPV schedule. See www.cdc.gov/mmwr/volumes/66/wr/mm6601a6.htm?_%20cid=mm6601a6_w.
- Only trivalent OPV (tOPV) count toward the U.S. vaccination requirements.
 - Doses of OPV administered before April 1, 2016, should be counted (unless specifically noted as administered during a campaign).
 - Doses of OPV administered on or after April 1, 2016, should not be counted.
 - For guidance to assess doses documented as "OPV," see www.cdc.gov/mmwr/volumes/66/wr/mm6606a7.htm?_cid=mm6606a7_w.
- For other catch-up guidance, see Table 2.

Herpesvirus 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.

Catch-up vaccination

- Do not start the series on or after age 15 weeks, 0 days.
- The maximum age for the final dose is 8 months, 0 days.
- For other catch-up guidance, see Table 2.

Tetanus, diphtheria, and pertussis (Tdap) vaccination (minimum age: 11 years for routine vaccination, 7 years for catch-up vaccination)

Routine vaccination

- Adolescents age 11–12 years: 1 dose Tdap
- Pregnancy: 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36.
- Tdap may be administered regardless of the interval since the last tetanus- and diphtheria-toxoid-containing vaccine.

Catch-up vaccination

- Adolescents age 13–18 years who have not received Tdap: 1 dose Tdap, then Td or Tdap booster every 10 years.

Persons age 7–18 years not fully vaccinated^a with DTaP: 1 dose Tdap as part of the catch-up series (preferably the first dose); if additional doses are needed, use Td or Tdap.

Tdap administered at age 7–10 years:

- Children age 7–9 years who receive Tdap should receive the routine Tdap dose at age 11–12 years.
- Children age 10 years who receive Tdap do not need the routine Tdap dose at age 11–12 years.

DTaP inadvertently administered on or after age 7 years:

- Children age 7–9 years: DTaP may count as part of catch-up series. Administer routine Tdap dose at age 11–12 years.
- Children age 10–18 years: Count dose of DTaP as the adolescent Tdap booster.

^aFor other catch-up guidance, see Table 2.

Special situations

Wound management in persons age 7 years or older with history of 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 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.

^aFor detailed information, see www.cdc.gov/mmwr/volumes/66/wr/mm6602a2.htm.

^bFully 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^a
- 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 MMRV at www.cdc.gov/mmwr/pdf/mm6602a2.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.

IPV Vaccination Catch-up

Appendix

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

Vaccine	Contraindications ¹	Precautions ²
Dengue (DENV4CVD)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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) 	<ul style="list-style-type: none"> Pregnancy HIV infection without evidence of severe immunosuppression Moderate or severe acute illness with or without fever
Diphtheria, tetanus, pertussis (DTaP) Tetanus, diphtheria (DT)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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 	<ul style="list-style-type: none"> Gullain-Barré syndrome (GBS) within 6 weeks after previous dose of tetanus-toxoid-containing vaccine 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 For DTaP only: Progressive neurologic disorder, including infantile spasms, uncontrolled epilepsy, progressive encephalopathy; defer DTaP until neurologic status clarified and stabilized Moderate or severe acute illness with or without fever
Haemophilus influenzae type b (Hib)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ For Hibrix, ActHib, and PedvaxHB only: History of severe allergic reaction to dry natural latex Less than age 6 weeks 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis A (HepA)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ including neomycin 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis B (HepB)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ including yeast For HepSiv-B only: Pregnancy 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis A–Hepatitis B vaccine (HepA–HepB, Twinrix [®])	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ including neomycin and yeast 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Human papillomavirus (HPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Measles, mumps, rubella (MMR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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) Pregnancy Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent 	<ul style="list-style-type: none"> Recent (<11 months) receipt of antibody-containing blood product (specific interval depends on product) History of thrombocytopenia or thrombocytopenic purpura Need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing Moderate or severe acute illness with or without fever
Meningococcal ACWY (MenACWY) (MenACWY-CRM (Menveo [®]); MenACWY-D (Menactra [®]); MenACWY-TT (MenQuadri [®]))	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ For MenACWY-D and MenACWY-CRM only: severe allergic reaction to any diphtheria-toxoid- or CRM1197-containing vaccine For MenACWY-TT only: severe allergic reaction to a tetanus-toxoid-containing vaccine 	<ul style="list-style-type: none"> For MenACWY-CRM only: Preterm birth if less than age 9 months Moderate or severe acute illness with or without fever
Meningococcal B (MenB) (MenB-4C (Bexsero [®]); MenB-FHbp (Trumenba [®]))	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 	<ul style="list-style-type: none"> Pregnancy For MenB-4C only: Latex sensitivity Moderate or severe acute illness with or without fever
Pneumococcal conjugate (PCV13)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid-containing vaccine or its component³ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Pneumococcal polysaccharide	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Poliovirus vaccine, inactivated (IPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 	<ul style="list-style-type: none"> Pregnancy Moderate or severe acute illness with or without fever
Rotavirus (RV) (RV1 (Rotarix [®]), RV5 (RotaTeq [®]))	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ Severe combined immunodeficiency (SCID) History of intussusception 	<ul style="list-style-type: none"> Altered immunocompetence other than SCID Chronic gastrointestinal disease RV1 only: Spina bifida or bladder exstrophy Moderate or severe acute illness with or without fever
Tetanus, diphtheria, and acellular pertussis (Tdap) Tetanus, diphtheria (Td)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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 	<ul style="list-style-type: none"> Gullain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus-toxoid-containing vaccine 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 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 Moderate or severe acute illness with or without fever
Varicella (VAR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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) Pregnancy Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent 	<ul style="list-style-type: none"> Recent (<11 months) receipt of antibody-containing blood product (specific interval depends on product) Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination) Use of aspirin or aspirin-containing products Moderate or severe acute illness with or without fever

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

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

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.

- Date of birth-03/03/2008
- IPV vaccination history
 - Dose 1: 4/25/2008
 - Dose 2: 4/20/2013

Plan

Give dose 3 today as final dose if no contraindication or precaution.

Tdap Vaccination Catch-up

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 and 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
Haemophilus influenzae 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 st 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 and first dose was administered at younger than age 7 months and at least 1 previous dose was PRP-T (ActHib [®] , Pertacep [®] , Hiberix [®] , Vaxelis [®] or unknown) 8 weeks and age 12 through 59 months (as final dose) if current age is younger than 12 months and first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months and first dose was administered before the 1 st birthday and second dose was administered at younger than 15 months; OR if both doses were PedvaxiHB [®] 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 st 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 st birthday 8 weeks (as final dose for healthy children) if first dose was administered at the 1 st 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 st birthday 6 months (as final dose) if first dose of DTaP/DT or Tdap/Td was administered at or after the 1 st birthday	6 months if first dose of DTaP/DT was administered before the 1 st birthday	
Human papillomavirus	9 years	Routine dosing intervals are recommended.			
Hepatitis A	N/A	6 months			
Hepatitis B	N/A	4 weeks	8 weeks and 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		

- Date of birth-03/03/2008
- DTaP/Tdap vaccination history
 - Dose 1: 6/29/2008 (DTaP)
 - Dose 2: 4/20/2013 (DTaP)
 - Dose 3: 7/20/2019 (Tdap)

Tdap Vaccination Catch-up

Notes

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

Chronic liver disease, alcoholism:

Age 6–18 years

- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after any prior PCV13 dose)

*Incomplete series – Not having received all doses in either the recommended series or an age-appropriate catch-up series. See Tables 8, 9, and 11 in the ACP pneumococcal vaccine recommendations (www.cdc.gov/mmwr/pdf/0000a1.pdf) for complete schedule details.

Poliovirus vaccination (minimum age: 6 weeks)

Routine vaccination

- 4-dose series at ages 2, 4, 6–18 months, 4–6 years; administer the final dose on or after age 4 years and at least 6 months after the previous dose.
- 4 or more doses of IPV can be administered before age 4 years when a combination vaccine containing IPV is used. However, a dose is still recommended on or after age 4 years and at least 6 months after the previous dose.

Catch-up vaccination

- In the first 6 months of life, use minimum ages and intervals only for travel to a polio-endemic region or during an outbreak.
- IPV is not routinely recommended for U.S. residents age 18 years or older.

Series containing oral polio vaccine (OPV), either mixed OPV-IPV or OPV-only series.

- Total number of doses needed to complete the series is the same as that recommended for the U.S. IPV schedule. See www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm for detailed information.
- Only inactivated OPV (iOPV) counts toward the U.S. vaccination requirements.

Doses of OPV administered before April 1, 2016, should be counted unless specifically noted as administered during a campaign.

Doses of OPV administered on or after April 1, 2016, should not be counted.

For guidance to assess doses documented as “OPV” see www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm.

- 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.

Catch-up vaccination

- Do not start the series on or after age 15 weeks, 0 days.
- The maximum age for the final dose is 8 months, 0 days.
- For other catch-up guidance, see Table 2.

Tetanus, diphtheria, and pertussis (Tdap) vaccination (minimum age: 11 years for routine vaccination, 7 years for catch-up vaccination)

Routine vaccination

- Adolescents age 11–12 years: 1 dose Tdap
- Pregnancy: 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36.
- Tdap may be administered regardless of the interval since the last Tdap dose.

Catch-up vaccination

- Adolescents age 13–18 years who have not received Tdap: 1 dose Tdap, then Td or Tdap booster every 10 years
- Persons age 7–18 years not fully vaccinated* with DTaP: 1 dose Tdap as part of the catch-up series (preferably the first dose); if additional doses are needed, use Td or Tdap.
- Tdap administered at age 7–10 years:
 - Children age 7–9 years who receive Tdap should receive the routine Tdap dose at age 11–12 years.
 - Children age 10 years who receive Tdap do not need the routine Tdap dose at age 11–12 years.
- DTaP inadvertently administered on or after age 7 years:
 - Children age 7–9 years: DTaP may count as part of catch-up series. Administer routine Tdap dose at age 11–12 years.
 - Children age 10–18 years: Count dose of DTaP as the adolescent Tdap booster.
- For other catch-up guidance, see Table 2.

Special situations

- Wound management in persons age 7 years or older with history of 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 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.

*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 MMRV at www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm) 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.

Tdap Vaccination Catch-up

Appendix

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

Vaccine	Contraindications ¹	Precautions ²
Dengue (DEN4CYD)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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) 	<ul style="list-style-type: none"> Pregnancy HIV infection without evidence of severe immunosuppression Moderate or severe acute illness with or without fever
Diphtheria, tetanus, pertussis (DTaP) Tetanus, diphtheria (DT)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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 	<ul style="list-style-type: none"> Guillain-Barré syndrome (GBS) within 6 weeks after previous dose of tetanus-toxoid-containing vaccine 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 For DTaP only: Progressive neurologic disorder, including infantile spasms, uncontrolled epilepsy, progressive encephalopathy; defer DTaP until neurologic status clarified and stabilized Moderate or severe acute illness with or without fever
Haemophilus influenzae type b (Hib)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ For Hiberix, ActHib, and PedvaxHB only: History of severe allergic reaction to dry natural latex Less than age 6 weeks 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis A (HepA)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ including neomycin 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis B (HepB)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ including yeast For Hepisav B only: Pregnancy 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis A- Hepatitis B vaccine (HepA-HepB, Twintrix [®])	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ including neomycin and yeast 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Human papillomavirus (HPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Measles, mumps, rubella (MMR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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) Pregnancy Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent 	<ul style="list-style-type: none"> Recent (<11 months) receipt of antibody-containing blood product (specific interval depends on product) History of thrombocytopenia or thrombocytopenic purpura Need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing Moderate or severe acute illness with or without fever
Meningococcal ACWY (MenACWY) [MenACWY-CRM (Menveo [®]); MenACWY-D (Menactra [®]); MenACWY-TT (MenQuadri [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ For MenACWY-D and MenACWY-CRM only: severe allergic reaction to any diphtheria-toxoid- or CRM197-containing vaccine For MenACWY-TT only: severe allergic reaction to a tetanus-toxoid-containing vaccine 	<ul style="list-style-type: none"> For MenACWY-CRM only: Preterm birth if less than age 9 months Moderate or severe acute illness with or without fever
Meningococcal B (MenB) [MenB-4C (Bexsero [®]); MenB-FHbp (Trumenba [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 	<ul style="list-style-type: none"> Pregnancy For MenB-4C only: Latex sensitivity Moderate or severe acute illness with or without fever
Pneumococcal conjugate (PCV13)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid-containing vaccine or its component³ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Pneumococcal polysaccharide (PPSV23)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Poliovirus vaccine, inactivated (IPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 	<ul style="list-style-type: none"> Pregnancy Moderate or severe acute illness with or without fever
Rotavirus (RV) [RV1 (Rotarix [®]), RV5 (RotaTeq [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ Severe combined immunodeficiency (SCID) History of intussusception 	<ul style="list-style-type: none"> Altered immunocompetence other than SCID Chronic gastrointestinal disease RV1 only: Spina bifida or bladder exstrophy Moderate or severe acute illness with or without fever
Tetanus, diphtheria, and acellular pertussis (Tdap) Tetanus, diphtheria (Td)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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 	<ul style="list-style-type: none"> Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus-toxoid-containing vaccine 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 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 Moderate or severe acute illness with or without fever
Varicella (VAR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component³ 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) Pregnancy Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent 	<ul style="list-style-type: none"> Recent (<11 months) receipt of antibody-containing blood product (specific interval depends on product) Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination) Use of aspirin or aspirin-containing products Moderate or severe acute illness with or without fever

- 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
- 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
- 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.

- Date of birth-03/03/2008
- DTaP/Tdap vaccination history
 - Dose 1: 6/29/2008 (DTaP)
 - Dose 2: 4/20/2013 (DTaP)
 - Dose 3: 7/20/2019 (Tdap)

Plan

Give dose 4 (Tdap) today if no contraindication or precaution.

Catch-up Vaccination Job Aid

Vaccine Catch-Up Guidance

CDC has developed catch-up guidance job aids to assist health care providers in interpreting Table 2 in the child and adolescent immunization schedule.

- [Pneumococcal Conjugate Vaccine \(PCV\) Catch-Up Guidance for Children 4 Months through 4 Years of Age](#)  [3 pages]
- [Haemophilus influenzae type b-Containing Vaccines Catch-Up Guidance for Children 4 Months through 4 Years of Age](#)
 - [Hib vaccine products: ActHIB, Pentacel, Hiberix, or unknown](#)  [3 pages]
 - [Hib vaccine products: PedvaxHIB vaccine only](#)  [2 pages]
- [Diphtheria-, Tetanus-, and Pertussis-Containing Vaccines Catch-Up Guidance for Children 4 Months through 6 Years of Age](#)  [2 pages]
- [Inactivated Polio Vaccine \(IPV\)](#)  [2 pages]
- [Tetanus-, Diphtheria-, and Pertussis-Containing Vaccines Catch-Up Guidance for Children 7 through 9 Years of Age](#)  [2 pages]
- [Tetanus-, Diphtheria-, and Pertussis-Containing Vaccines Catch-Up Guidance for Children 10 through 18 Years of Age](#) 

Tdap Catch-up Guidance for Ages 10-18 years

Catch-Up Guidance for Children 10 through 18 Years of Age

Tetanus-, Diphtheria-, and Pertussis-Containing Vaccines: Tdap/Td

IF current age is	AND # of previous doses of DTaP, DT, Td, or Tdap is	AND	AND	AND	THEN	Next dose due
10 through 18 years	3	Dose 1 was given before 12 months of age	It has been at least 6 calendar months since Dose 3	Any dose was Tdap ¹	Give Dose 4 (Td or Tdap) today ²	Give Td or Tdap 10 years after Dose 4
				No dose was Tdap ³	Give Dose 4 (Tdap) today	
		It has not been 6 calendar months since Dose 3	Any dose was Tdap ¹	No dose today	Give Dose 4 (Td or Tdap) at least 6 calendar months after Dose 3 ²	
			No dose was Tdap ³	No dose today	Give Dose 4 (Tdap) at least 6 calendar months after Dose 3	
	Dose 1 was given at 12 months of age or older	No dose was Tdap ¹	→	Give Dose 4 (Tdap) today	Give Td or Tdap 10 years after Dose 4	
		Any dose was Tdap ²	→	No dose today	Give Td or Tdap 10 years after Dose 3	
	4	→	No Tdap was given after 7 th birthday	→	Give a dose of Tdap today ⁴	Give Td or Tdap 10 years after Tdap dose
			Any dose of Tdap was given at age 7 years	No Tdap was given after 10 th birthday		

DTaP/Tdap vaccination history

- Dose 1 (DTaP): 6/29/2008
- Dose 2 (DTaP): 4/20/2013
- Dose 3 (Tdap): 7/20/2019

Plan

Give dose 4 (Tdap) today if no contraindication or precaution.

*Child and adolescent Immunization schedule [Immunization Schedule Changes | CDC](#)

Other Catch-up Vaccinations Needed

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 st dose	← 2 nd dose →			← 3 rd dose →												
Rotavirus (RV): RV1 (2-dose series), RVS (3-dose series)			1 st dose	2 nd dose	See Notes												
Diphtheria, tetanus, acellular pertussis (DTaP <7 yrs)			1 st dose	2 nd dose	3 rd dose				← 4 th dose →			5 th dose					
Haemophilus influenzae type b (Hib)			1 st dose	2 nd dose	See Notes				← 3 rd or 4 th dose, See Notes →								
Pneumococcal conjugate (PCV13)			1 st dose	2 nd dose	3 rd dose				← 4 th dose →								
Inactivated poliovirus (IPV <18 yrs)			1 st dose	2 nd dose					← 3 rd dose →			4 th dose					
Influenza (IIV4)					Annual vaccination 1 or 2 doses											Annual vaccination dose only	
OR																	
Influenza (LAIV4)												Annual vaccination 1 or 2 doses			Annual vaccination dose only		
Measles, mumps, rubella (MMR)					See Notes				← 1 st dose →			2 nd dose					
Varicella (VAR)									← 1 st dose →			2 nd 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 ≥2yrs)															1 st dose	2 nd dose	
Meningococcal B (MenB-4C, MenB-FHbp)															See Notes		
Pneumococcal polysaccharide (PPSV23)															See Notes		
Dengue (DEN4CYD; 9-16 yrs)															Seropositivity 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

1. Documented vaccination history

- HepB, IPV, and DTaP/Tdap

2. Routine vaccinations needed

- Influenza
- HepB
- IPV
- Tdap
- MMR
- VAR
- HepA
- HPV
- MenACWY

3. Other vaccinations needed

- COVID-19

Other Catch-up Vaccinations Needed

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 and 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
Haemophilus influenzae 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 st 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 and first dose was administered at younger than age 7 months and at least 1 previous dose was PRP-T (ActHib [®] , Pentacel [®] , Hiberix [®] , Vaxelis [®] or unknown 8 weeks and age 12 through 59 months (as final dose) if current age is younger than 12 months and first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months and first dose was administered before the 1 st birthday and second dose was administered at younger than 15 months; OR if both doses were PedvaxHB [®] 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 st 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 st birthday 8 weeks (as final dose for healthy children) if first dose was administered at the 1 st 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			
Hepatitis A, hepatitis B, tetanus, diphtheria, and acellular pertussis	7 years	4 weeks	4 weeks if first dose of DTaP/DT was administered before the 1 st birthday 6 months (as final dose) if first dose of DTaP/DT or Tdap/Td was administered at or after the 1 st birthday	6 months if first dose of DTaP/DT was administered before the 1 st birthday	
Human papillomavirus	9 years	Routine dosing intervals are recommended.			
Hepatitis A	N/A	6 months			
Hepatitis B	N/A	4 weeks			
Inactivated poliovirus	N/A	4 weeks	8 weeks and at least 16 weeks after first dose 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		

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

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 1 dose later (minimum interval: 8 weeks)
* Age 16–18 years: 1 dose

Special situations

Anatomic or functional asplenia (including HIV infection, persistent complement inhibitor (e.g., eculizumab), or Menveo)

- Dose 1 at age 2 months: 4-dose series (minimum interval: 4 weeks and 12 months)
- Dose 1 at age 3–6 months: 3- or 4-dose series (3 if applicable) at least 8 weeks after age 2 months or older
- Dose 1 at age 7 months or older: 2-dose series (2 if applicable) at least 12 weeks after age 2 months or older
- Dose 1 at age 7–23 months: 2-dose series (2 if applicable) at least 12 weeks after age 2 months or older
- Dose 1 at age 24 months or older: 1 dose

Menactra

- Persistent complement component inhibitor use:

- Age 9–23 months: 2-dose series
- Age 24 months or older: 2-dose series

- **Anatomic or functional asplenia** (including HIV infection):

- Age 9–23 months: Not recommended
- Age 24 months or older: 2-dose series
- **Menactra*** must be administered with PCV13 series.

MenQuadfi*

- Dose 1 at age 24 months or older

Travel in countries with hyperendemic disease, including countries in the Hajj (www.cdc.gov/travel/):

* Children less than age 24 months:

- **Menveo*** (age 2–23 months):
- Dose 1 at age 2 months: 4-dose series (minimum interval: 4 weeks and 12 months)

- Dose 1 at age 3–6 months: 3- or 4-dose series (3 if applicable) at least 8 weeks after age 2 months or older

- Dose 1 at age 7–23 months: 2-dose series (2 if applicable) at least 12 weeks after age 2 months or older

- Dose 1 at age 24 months or older: 1 dose

* Children age 2 years or older: 1 dose

* **MenQuadfi**†

First-year college students who live in previously vaccinated at age 16 years

* 1 dose **Menveo***, **Menactra***, or 16

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 routine schedule.

Special situations

Underlying conditions below: When both PCV13 and PPSV23 are indicated, administer PCV13 first. PCV13 and PPSV23 should not be administered during same visit.

Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); **chronic lung disease** (including asthma treated with high-dose, oral corticosteroids); **diabetes mellitus**:

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/):

- **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.

International travel

* Persons traveling to or working in countries with high or intermediate endemic hepatitis A (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.

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- **Unvaccinated age 12 months or older**: Administer dose 1 as soon as travel is considered.

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- **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.

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- **Unvaccinated age 12 months or older**: Administer dose 1 as soon as travel is considered.

International travel

* Persons traveling to or working in countries with high or intermediate endemic hepatitis A (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.

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

* **Minimum age** for the final (3rd or 4th) dose

* **Minimum intervals**: dose 1 to dose 2: 4–8 weeks / dose 1 to dose 3: 16 weeks (with substitute "dose 4" for "dose 3" in these cases)

* **Special situations**

Underlying conditions below: When both PCV13 and PPSV23 are indicated, administer PCV13 first. PCV13 and PPSV23 should not be administered during same visit.

Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); **chronic lung disease** (including asthma treated with high-dose, oral corticosteroids); **diabetes mellitus**:

* **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 routine schedule.

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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.

Additional information

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.

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.

Consult relevant ACIP statements for detailed recommendations at 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.

Information on travel vaccination requirements and recommendations is available at 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, and *Immunization in Special Clinical Circumstances* (In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*. 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:67–111).

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 (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.

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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.

Information on travel vaccination requirements and recommendations is available at 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, and *Immunization in Special Clinical Circumstances* (In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*

Other Catch-up Vaccinations Needed

Appendix

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

Vaccine	Contraindications ¹	Precautions ²
Dengue (DEN4CYD)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 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) 	<ul style="list-style-type: none"> Pregnancy HIV infection without evidence of severe immunosuppression Moderate or severe acute illness with or without fever
Diphtheria, tetanus, pertussis (DTaP) Tetanus, diphtheria (DT)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 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 	<ul style="list-style-type: none"> G Guillain-Barré syndrome (GBS) within 6 weeks after previous dose of tetanus-toxoid-containing vaccine 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 For DTaP only: Progressive neurologic disorder, including infantile spasms, uncontrolled epilepsy, progressive encephalopathy; defer DTaP until neurologic status clarified and stabilized Moderate or severe acute illness with or without fever
Haemophilus influenzae type b (Hib)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ For Hibertix, ActHib, and PedvaxHIB only: History of severe allergic reaction to dry natural latex Less than age 6 weeks 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis A (HepA)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ including neomycin 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis B (HepB)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ including yeast For HepSiv-B only: Pregnancy 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Hepatitis A- Hepatitis B vaccine [HepA-HepB, (Twinrix [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ including neomycin and yeast 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Human papillomavirus (HPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Measles, mumps, rubella (MMR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 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) Pregnancy Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent 	<ul style="list-style-type: none"> Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product) History of thrombocytopenia or thrombocytopenic purpura Need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing Moderate or severe acute illness with or without fever
Meningococcal ACWY (MenACWY) [MenACWY-CRM (Menveo [®]); MenACWY-D (Menactra [®]); MenACWY-TT (MenQuadfi [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ For MenACWY-D and MenACWY-CRM only: severe allergic reaction to any diphtheria toxoid- or CRM197-containing vaccine For MenACWY-TT only: severe allergic reaction to a tetanus toxoid-containing vaccine 	<ul style="list-style-type: none"> For MenACWY-CRM only: Preterm birth if less than age 9 months Moderate or severe acute illness with or without fever
Meningococcal B (MenB) [MenB-4C (Bexsero [®]); MenB-FHbp (Trumenb [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 	<ul style="list-style-type: none"> Pregnancy For MenB-4C only: Latex sensitivity Moderate or severe acute illness with or without fever
Pneumococcal conjugate (PCV13)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid-containing vaccine or its component¹ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Pneumococcal polysaccharide (PPSV23)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 	<ul style="list-style-type: none"> Moderate or severe acute illness with or without fever
Poliovirus vaccine, inactivated (IPV)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 	<ul style="list-style-type: none"> Pregnancy Moderate or severe acute illness with or without fever
Rotavirus (RV) [RV1 (Rotarix [®]), RV5 (RotaTeq [®])]	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ Severe combined immunodeficiency (SCID) History of intussusception 	<ul style="list-style-type: none"> Altered immunocompetence other than SCID Chronic gastrointestinal disease RV1 only: Spina bifida or bladder exstrophy Moderate or severe acute illness with or without fever
Tetanus, diphtheria, and acellular pertussis (Tdap) Tetanus, diphtheria (Td)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 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 	<ul style="list-style-type: none"> G Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus-toxoid-containing vaccine 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 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 Moderate or severe acute illness with or without fever
Varicella (VAR)	<ul style="list-style-type: none"> Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹ 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) Pregnancy Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent 	<ul style="list-style-type: none"> Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product) Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination) Use of aspirin or aspirin-containing products Moderate or severe acute illness with or without fever

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
 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
 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.

Case study

	Vaccines Needed
Catch-up routine vaccinations needed	<ul style="list-style-type: none">• HepB: dose 3• IPV- dose 3• Tdap or Td -dose 4• MMR- dose 1 and 2• VAR- dose 1 and 2• HepA- dose 1 and 2• HPV- dose 1 and 2• MenACWY- dose 1 and 2
Other vaccinations	<ul style="list-style-type: none">• COVID-19 vaccine (Pfizer; dose 1, 2, and booster)

Medical and Vaccination History

- 14-year-old female (Date of birth-03/03/2008)
- Medical history: ~~none~~ HIV diagnosed 2020
- Immunization record shows only:
 - DTaP on 6/29/2008 and 4/20/2013
 - Tdap on 7/20/2019
 - IPV on 6/29/2008 and 4/20/2013
 - Hepatitis B vaccine on 3/03/2008 and 6/29/2008
- Parents report she received other vaccines and is up-to-date but have no records

Table 3 Recommended Child and Adolescent Immunization Schedule by Medical Indication, United States, 2021

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 ¹		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% and total CD4 cell count of <200/mm ³	≥15% and total CD4 cell count of ≥200/mm ³						
Hepatitis B										
Rotavirus		SCID ²								
Diphtheria, tetanus, and acellular pertussis (DTaP)										
<i>Haemophilus influenzae</i> type b										
Pneumococcal conjugate										
Inactivated poliovirus										
Influenza (IIV) —OR— Influenza (LAIV4)										
Measles, mumps, rubella	*									
Varicella	*									
Hepatitis A										
Tetanus, diphtheria, and acellular pertussis (Tdap)										
Human papillomavirus	*									
Meningococcal ACWY										
Meningococcal B										
Pneumococcal polysaccharide										

 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. See Notes.
 Not recommended/contraindicated—vaccine should not be administered.
 Precaution—vaccine might be indicated if benefit of protection outweighs risk of adverse reaction
 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 Immuno-competence," at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immuno-competence.html and Table 4-1 (footnote D) at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.

2 Severe Combined Immunodeficiency

3 LAIV4 contraindicated for children 2–4 years of age with asthma or wheezing during the preceding 12 months

Vaccine indicated due to medical condition (HIV)

- Hib
- PCV13
- PPSV23

Vaccine that MIGHT be contraindicated due to medical condition (HIV)

- MMR
- Varicella

Vaccine that requires additional dose due to medical condition (HIV)

- HPV
- MenACWY

	Vaccines Needed
Catch-up routine vaccinations needed	<ul style="list-style-type: none">• HepB: dose 3• IPV- dose 3• Tdap or -dose 4• MMR- dose 1 and 2 (only if CD4\geq15% <u>and</u> total CD4 cell count of \geq200/mm)• VAR- dose 1 and 2 (only if CD4\geq15% <u>and</u> total CD4 cell count of \geq200/mm)• HepA- dose 1 and 2• HPV- dose 1, 2, and 3• MenACWY- dose 1 and 2; and booster doses• Hib-dose 1 (final)• PCV13- dose 1 (final)• PPSV23- dose 1 and 2
Other vaccinations	<ul style="list-style-type: none">• COVID-19 vaccine (Pfizer; dose 1, 2, additional dose and booster)

Co-administration of Vaccines

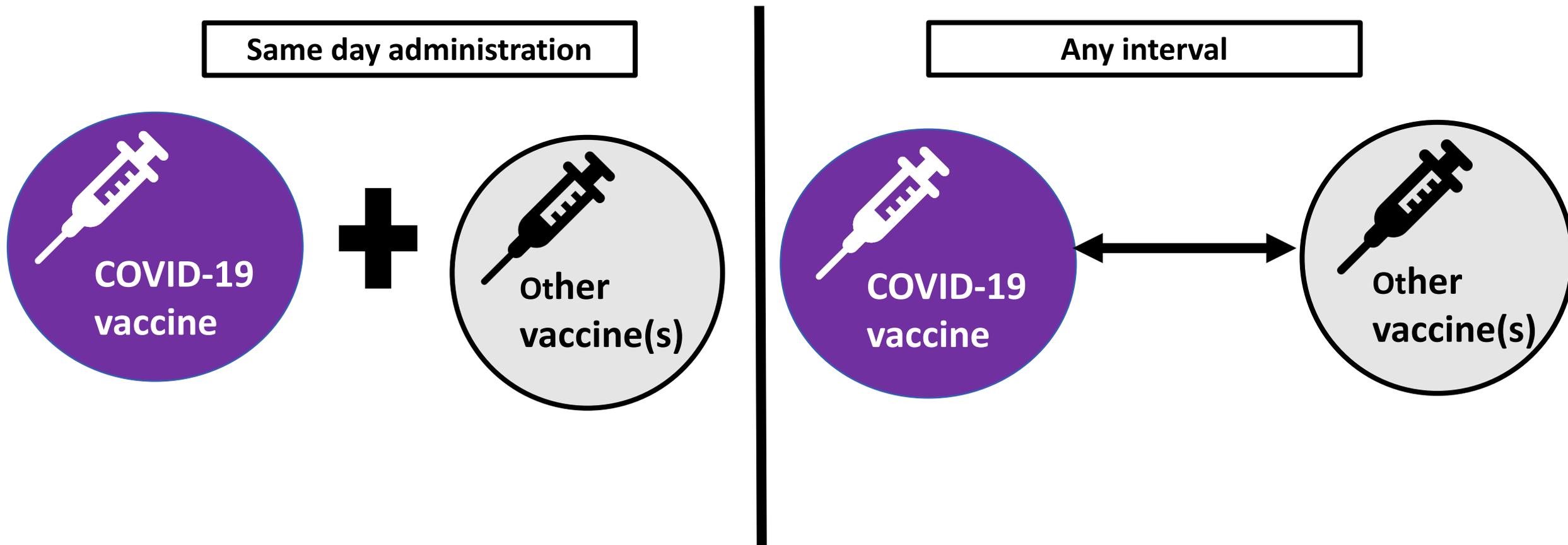
Co-administration of Vaccines

- 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

TABLE 3-4. Guidelines for spacing of live and non-live antigens	
Antigen combination	Recommended minimum interval between doses
Two or more non-live ^{(a),(b)}	May be administered simultaneously or at any interval between doses
Non-live and live ^(c)	May be administered simultaneously or at any interval between doses
Two or more live injectable ^(c)	28 days minimum interval, if not administered simultaneously
<p>Source: (83).</p> <p>^(a) 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.</p> <p>^(b) 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.</p> <p>^(c) 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.</p>	

Coadministration of COVID-19 vaccines with other vaccines

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



Vaccination resources for healthcare providers

CDC vaccination resources for healthcare providers

- **Schedules App**
 - <https://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html>
- **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>



Key Takeaways

- CDC's child and adolescent immunization schedule is updated and published annually
- The immunization schedule is a useful tool for healthcare providers to determine which vaccines are indicated for each child/adolescent
- Reviewing all sections of the schedule is important when determining which vaccines are needed for each child/adolescent
- Children/adolescents with certain medical conditions need additional vaccines not typically recommended for age, or additional doses of a recommended vaccine
- COVID-19 vaccines can be co-administered with other vaccines on the same day or at any interval from other vaccines

References

Centers for Disease Control and Prevention. (2021). ACIP Vaccine Recommendations and Guidelines. <https://www.cdc.gov/vaccines/hcp/acip-recs/index.html>

Centers for Disease Control and Prevention. (2021). Child and adolescent immunization schedule.

<https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html>

Centers for Disease Control and Prevention. (2021). Interim Clinical Considerations for Use of COVID-19 Vaccines.

<https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html>

Kroger, A., Bahta, L., Hunter, P. General Best Practice Guidelines for Immunization. Best Practices Guidance of the Advisory Committee on Immunization

Practices (ACIP). (2021). <https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/timing.html>

Wodi, A.P., Ault, K., Hunter, P., McNally, V., Szilagyi, P.G., Bernstein, H. (2021). Advisory Committee on Immunization Practices Recommended Immunization

Schedule for Children and Adolescents Aged 18 Years or Younger — United States, 2021. *Morbidity and Mortality Weekly Report*, 70:189–192.

doi: <http://dx.doi.org/10.15585/mmwr.mm7006a1external icon>

For more information

For more information, contact CDC

1-800-CDC-INFO (232-4636)

TTY: 1-888-232-6348 www.cdc.gov

<https://www.cdc.gov/cdc-info/index.html>

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.

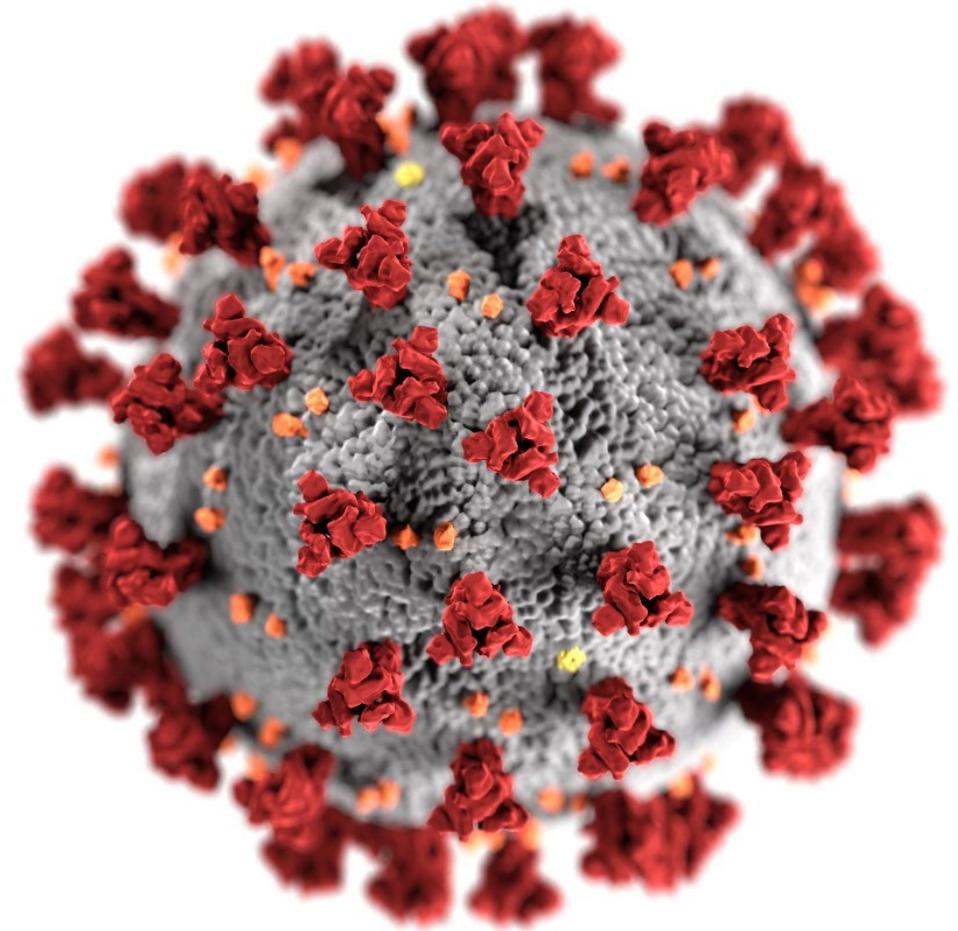
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Pediatric COVID-19 Vaccination

Elisha Hall, PhD, RD
Clinical Guidelines Lead
Vaccine Task Force

Clinical Communities Speaker Series
April 28, 2022



cdc.gov/coronavirus

Learning Objectives

At the conclusion of this session participants will be able to:

1. Describe COVID-19 vaccination recommendations for children ages 5–11 years and adolescents ages 12–17 years of age.
2. Review COVID-19 vaccine formulations for the pediatric population.

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 Vaccination Coverage¹



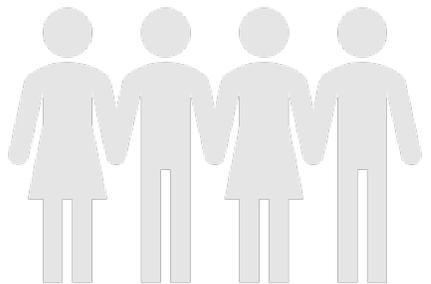
Children ages
5–11 years

34.5%

At least 1 dose

27.8%

Fully vaccinated



Adolescents ages
12–17 years

68.5%

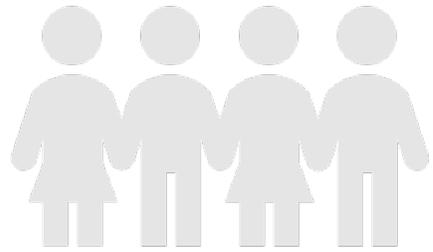
At least 1 dose

58.5%

Fully vaccinated

¹Data as of March 31, 2022, <https://covid.cdc.gov/covid-data-tracker/#vaccinations-cases-trends>

COVID-19 Vaccination Coverage¹



Children ages
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At least 1 dose

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Fully vaccinated



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12–17 years

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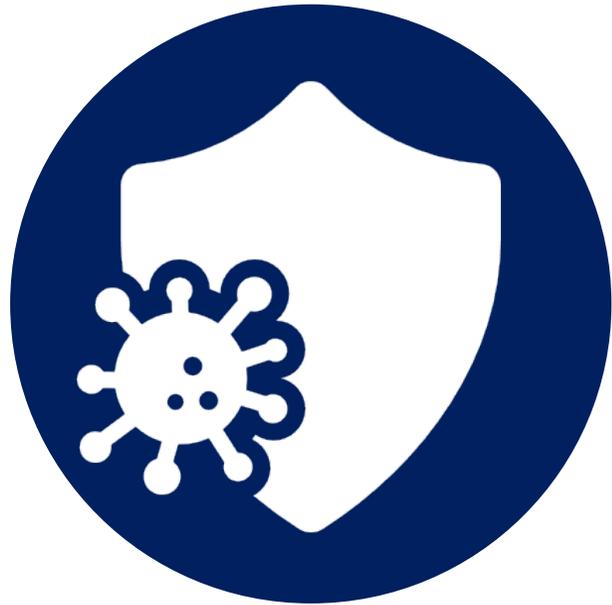
At least 1 dose

58.5%

Fully vaccinated

¹Data as of March 31, 2022, <https://covid.cdc.gov/covid-data-tracker/#vaccinations-cases-trends>

Pediatric COVID-19 Vaccination Recommendations



**Degree of immune
suppression**



Age group

Pediatric 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

People Who Are Moderately or Severely Immunocompromised

- Active treatment for solid tumor and hematologic malignancies
- Receipt of solid-organ transplant and taking immunosuppressive therapy
- Receipt of CAR-T-cell or hematopoietic stem cell transplant (HCT) (within 2 years of transplantation or taking immunosuppression therapy)
- Moderate or severe primary immunodeficiency (e.g., DiGeorge, Wiskott-Aldrich syndromes)
- Advanced or untreated HIV infection
- Active treatment with high-dose corticosteroids (i.e., ≥ 20 mg prednisone or equivalent per day), alkylating agents, antimetabolites, transplant-related immunosuppressive drugs, cancer chemotherapeutic agents classified as severely immunosuppressive, TNF blockers, and other biologic agents that are immunosuppressive or immunomodulatory

<https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html#vaccination-people-immunocompromised>

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: o Polyethylene glycol (PEG), which is found in some medications, such as laxatives and preparations for colonoscopy procedures o 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)			
Form reviewed by _____ <small>Adapted with appreciation from the Immunization Action Coalition (IAC) screening checklists</small>	Date _____		

Pediatric COVID-19 Vaccination Recommendations



Ages 4 years and
younger



Ages 5–11 years



Ages 12–17 years

Recommendations for Children Ages 4 Years and 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



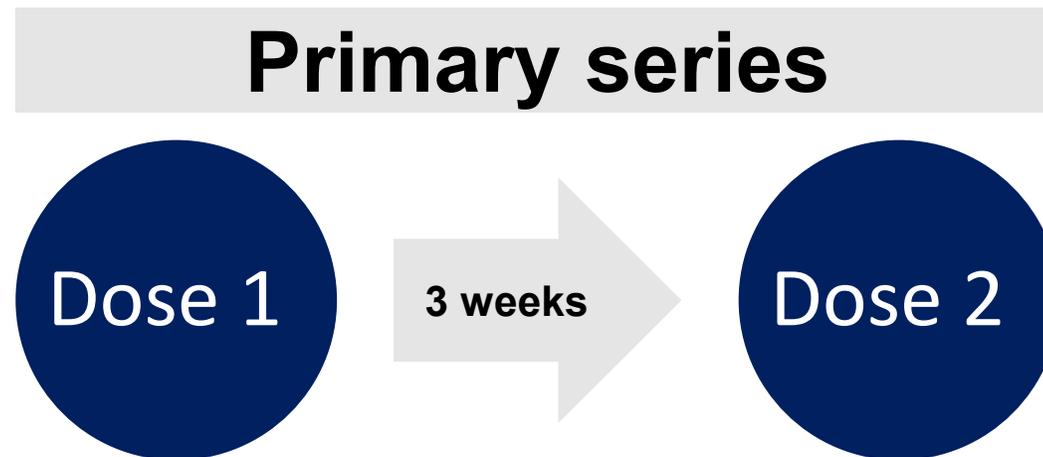
Recommendations for Children Ages 5–11 Years

- Children in this age group
 - Should receive a **total of 2 or 3 doses**, based on their degree of immune suppression
 - Should only receive Pfizer-BioNTech COVID-19 Vaccine



Recommendations for Children Ages 5–11 Years

- Children who are **NOT** moderately or severely immunocompromised should receive a **total of 2 doses**.



Recommendations for Children Ages 5–11 Years Who Are Moderately or Severely Immunocompromised

- Children who **ARE** moderately or severely immunocompromised **should** receive a **total of 3 doses**.



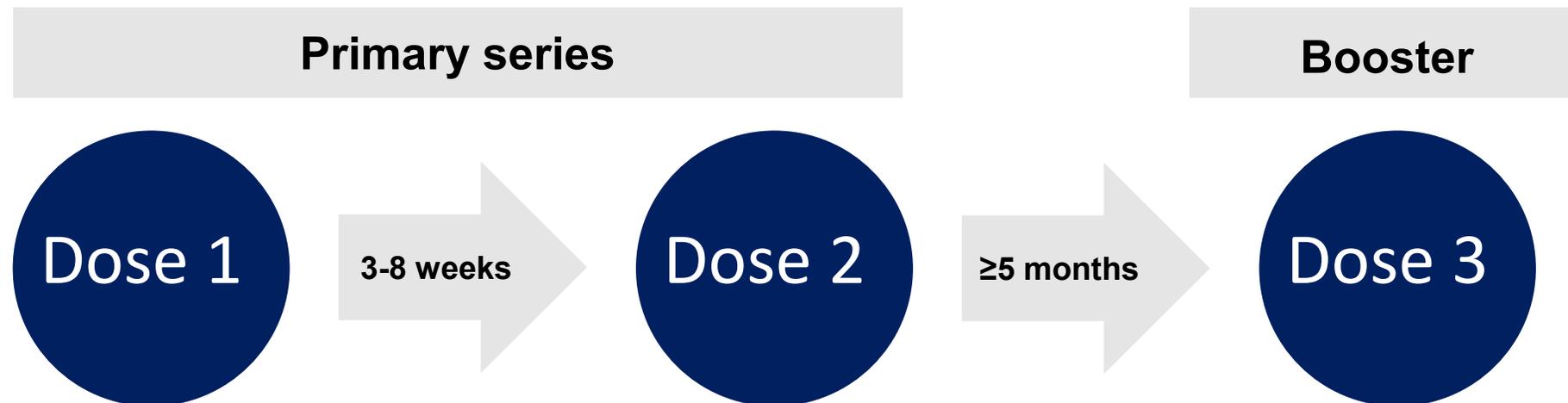
Recommendations for Adolescents Ages 12–17 Years

- Adolescents in this age group
 - **Should** receive a **total of 3 or 4 doses** based on their degree of immune suppression
 - Should only receive Pfizer-BioNTech COVID-19 Vaccine

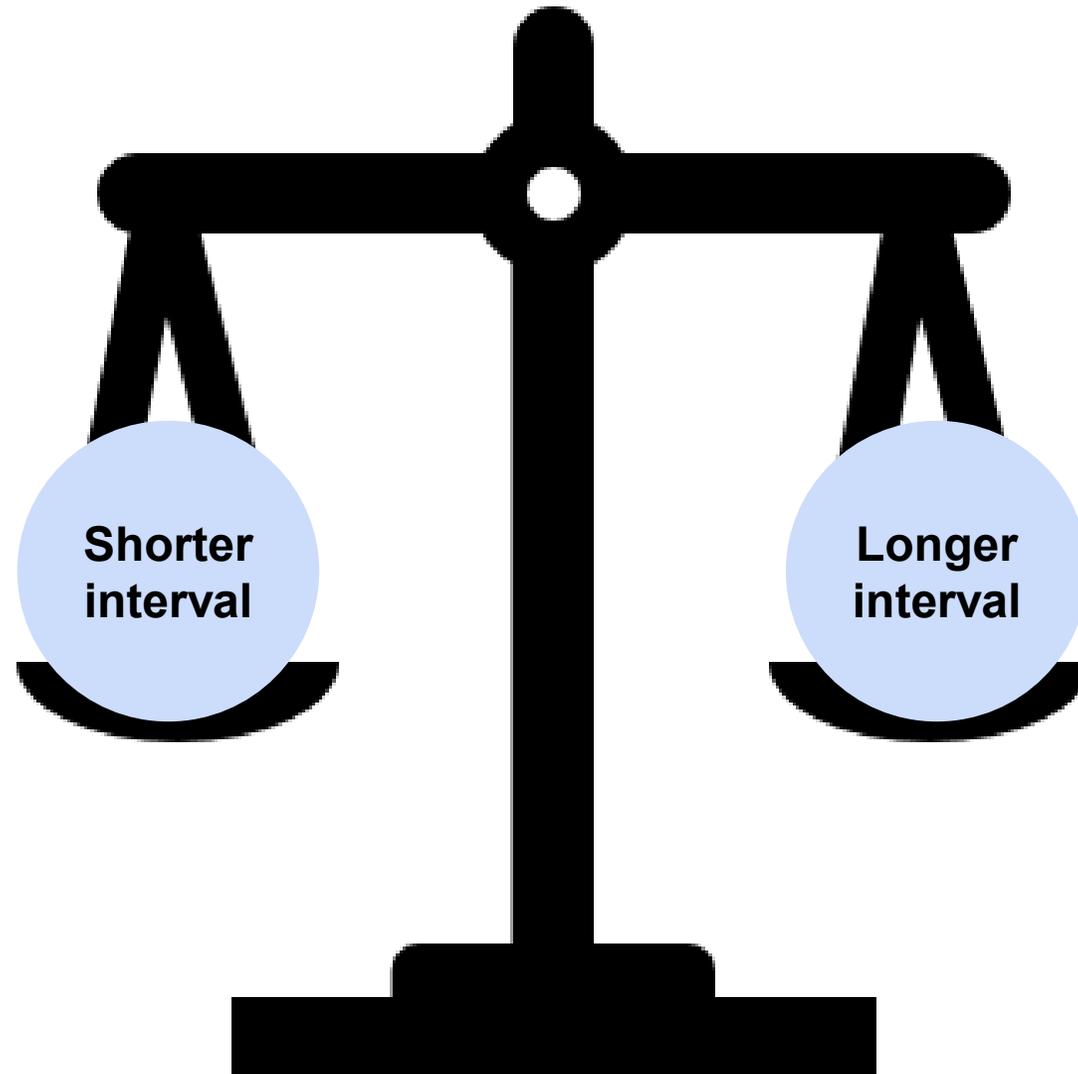


Recommendations for Adolescents Ages 12–17 Years

- Adolescents who are NOT moderately or severely immunocompromised should receive a **total of 3 doses**.

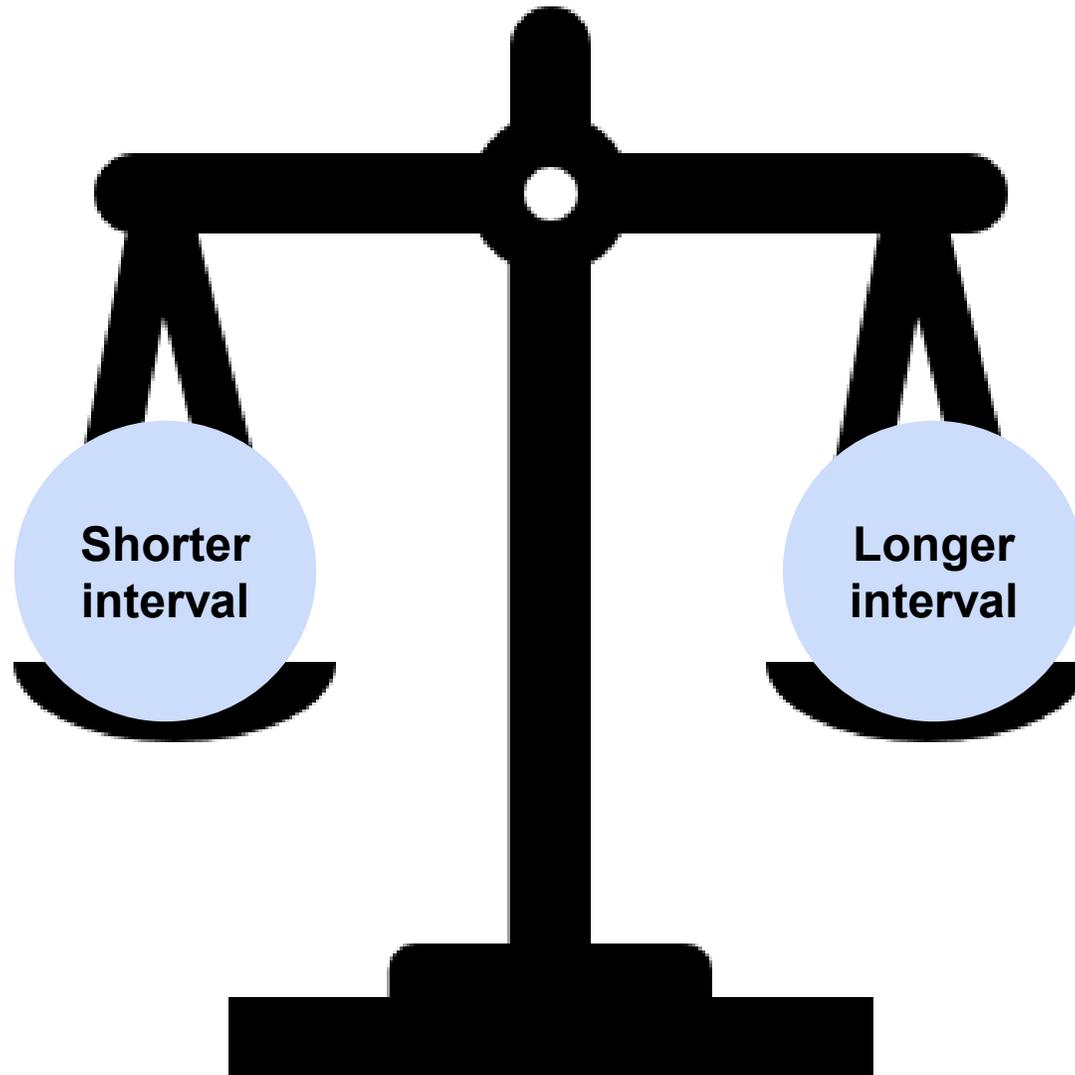


Primary Series Interval of 3-8 Weeks



Primary Series Interval

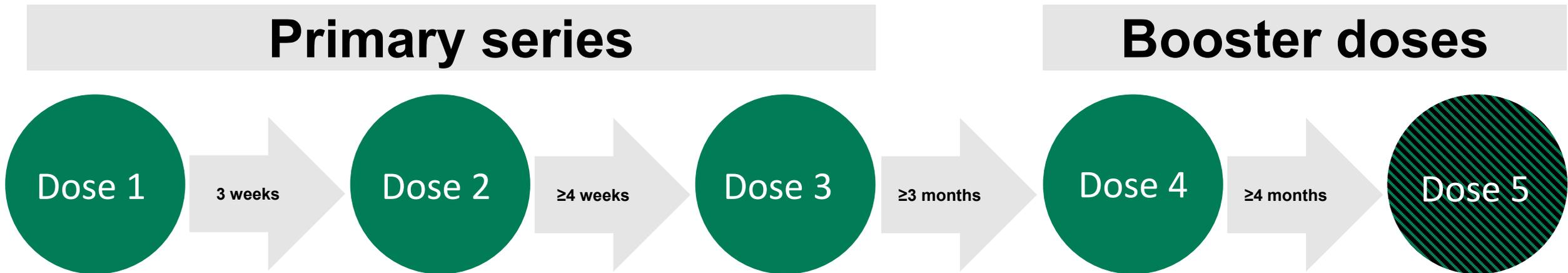
- Immunocompromised
- High COVID-19 community levels
- Higher risk for severe disease



- Reduced myocarditis risk
- Optimize vaccine effectiveness

Recommendations for Adolescents Ages 12–17 Years Who are Moderately or Severely Immunocompromised

- Adolescents who are moderately or severely immunocompromised **should** receive a **total of 4 doses**.
- They **may** receive a second booster dose for a total of 5 doses.



Second Booster Dose

- New recommendation
- Only three groups of people MAY receive a second booster

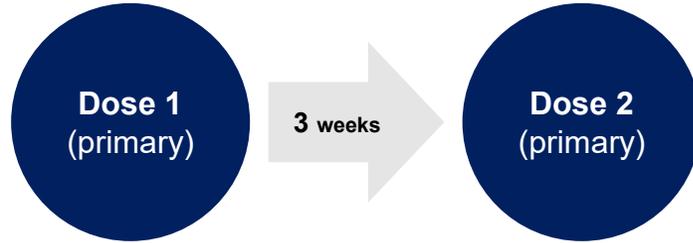
People 12 years and older who are moderately or severely immunocompromised

People 50 years and older

People 18 years and older who received both a primary and booster dose of Janssen COVID-19 vaccine

Summary of Recommendations by Age and Immune Status

Ages 5–11 years



Ages 5–11 years, immunocompromised



Ages 12–17 years,



Ages 12–17 years, immunocompromised



Knowledge Check

How should vaccinators verify that a patient is moderately or severely immunocompromised?



Knowledge Check

A 15-year-old patient with severe immune compromise has the following vaccination history:

Dose 1 (primary): 6/01/21

Dose 2 (primary): 6/22/21

Dose 3 (primary): 8/14/21

Dose 4 (booster): 1/14/22

True/false: They **may** get a 2nd booster today?



Staying Up to Date

- CDC recommends everyone get up to date with their COVID-19 vaccinations.
- Being up to date means a person has received all recommended doses in their primary vaccine series, and a booster dose, when eligible. Receipt of a second booster dose is not necessary to be considered up to date at this time.

Pfizer-BioNTech COVID-19 Vaccine Formulations

Orange cap



Purple cap



Gray cap



Age indications	5 through 11 years	12 years and older	12 years and older
Doses per vial	10	6	6
Dilution required	Yes—1.3 mL	Yes—1.8 mL	No
Dose	10 mcg	30 mcg	30 mcg
Dose volume	0.2 mL	0.3 mL	0.3 mL

Pfizer-BioNTech COVID-19 Vaccine Formulations

Orange cap



Purple cap



Gray cap



	Orange cap	Purple cap	Gray cap
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Dose	10 mcg	30 mcg	30 mcg
Dose volume	0.2 mL	0.3 mL	0.3 mL

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.

Dosing and Formulation

- Children ages 5–11 years should receive the **10 µg Pfizer-BioNTech COVID-19 Vaccine (orange cap vial)** formulation.
- Adolescents ages 12 years and older should receive the **30 µg Pfizer-BioNTech COVID-19 Vaccine (purple or gray cap vial)** formulation.
- If a child turns 12 years old between their first and second dose, they should receive the age-appropriate 30 µg Pfizer-BioNTech COVID-19 Vaccine (**purple or gray cap vial**) formulation for their second dose.

Vaccine Dosage and Schedule

- Vaccine dosage is based on age and not size or weight
- Work differently than other medications
- Clinical trials determine the best dosage and schedule

Common Errors for COVID-19 Pediatric Vaccination

Error	Recommended action
Unauthorized age group (recipients ages 4 years and younger)	Do not give another dose at this time.
Unauthorized age group (recipients ages 5–11 years)	If Moderna vaccine administered: Do not repeat the dose (Moderna dose “counts”). Give Pfizer-BioNTech for the next dose in the schedule, if applicable.
If ages 5–11 years and Pfizer-BioNTech purple or gray cap inadvertently administered	Do not repeat dose.
If ages 12–17 years and Pfizer-BioNTech orange cap inadvertently administered	Do not repeat dose. However, based on clinical judgement, a repeat dose of Pfizer-BioNTech vaccine ≥12 years formulation (30 µg, purple or gray cap) may be administered at an interval 3-8 weeks after the dose given in error.

<https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html#appendix-c>

Coadministration

- COVID-19 vaccines may be administered without regard to timing of other vaccines.
- Providers are encouraged to offer all vaccines at the same visit.
- Best practices for multiple injections include:
 - Label each syringe
 - Separate injection sites by 1 inch or more, if possible.
 - Administer the COVID-19 vaccine and vaccines that may be more likely to cause a local reaction in different limbs, if possible.



Knowledge Check

A 12-year-old patient (DOB 03/01/2010) received 2 primary doses at age 11 years.

Dose 1: 11/03/2021 (Pfizer orange cap)

Dose 2: 11/24/2021 (Moderna, error)

She is due for her booster dose 4/24/2021. What should she receive?

Key Takeaways

- COVID-19 vaccines are safe and effective.
- COVID-19 vaccination recommended for everyone ages 5 years and older in the United States for the prevention of COVID-19.
 - Between 2 to 5 doses depending on the age and immune status
- Children should receive the formulation based on their age on the day of vaccination.
- Children and adolescents should get up to date as soon as possible.

Resources

- Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Approved or Authorized in the United States <https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html>
- U.S. COVID-19 Vaccine Product Information <https://www.cdc.gov/vaccines/covid-19/info-by-product/index.html>
- Stay Up to Date with Your COVID-19 Vaccines <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/stay-up-to-date.html>
- Comfort and Restraint Techniques <https://www.youtube.com/watch?v=r1dGpTCgerE>
- Before, During, and After Shots: <www.cdc.gov/vaccines/parents/visit/before-during-after-shots.html>
- Fainting (Syncope) after Vaccination: <www.cdc.gov/vaccinesafety/concerns/fainting.html>
- Vaccine Administration: Needle Gauge and Length: <www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-needle-length.pdf>
- Vaccine Administration: Intramuscular (IM) Injection Children 3 through 6 years of age: <https://www.cdc.gov/vaccines/hcp/admin/downloads/IM-Injection-3-6-Years.pdf>
- Vaccine Administration: Intramuscular (IM) Injection Children 7 through 18 years of age: <www.cdc.gov/vaccines/hcp/admin/downloads/IM-Injection-children.pdf>
- Vaccinate with Confidence communication materials
 - Routinely recommended vaccines: <www.cdc.gov/vaccines/partners/vaccinate-with-confidence.html>
 - COVID-19 vaccine: <www.cdc.gov/vaccines/covid-19/vaccinate-with-confidence.html>
- *Epidemiology and Prevention of Vaccine-Preventable Diseases*, Vaccine Administration Chapter: <www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html>
- You Call the Shots Vaccine Administration: <www2.cdc.gov/vaccines/ed/vaxadmin/va/ce.asp>
- General Best Practice Guidelines for Immunization: <www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html>

References

Centers for Disease Control and Prevention. (2021). COVID-19 vaccine. www.cdc.gov/vaccines/covid-19/vaccinate-with-confidence.html

Centers for Disease Control and Prevention. (2021). *Epidemiology and Prevention of Vaccine-Preventable Diseases*, Vaccine Administration Chapter.

www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html

Centers for Disease Control and Prevention. (2021). Routinely recommended vaccines.

<https://www.cdc.gov/vaccines/partners/vaccinate-with-confidence.html>

Centers for Disease Control and Prevention. (2021). U.S. COVID-19 Vaccine Product Information.

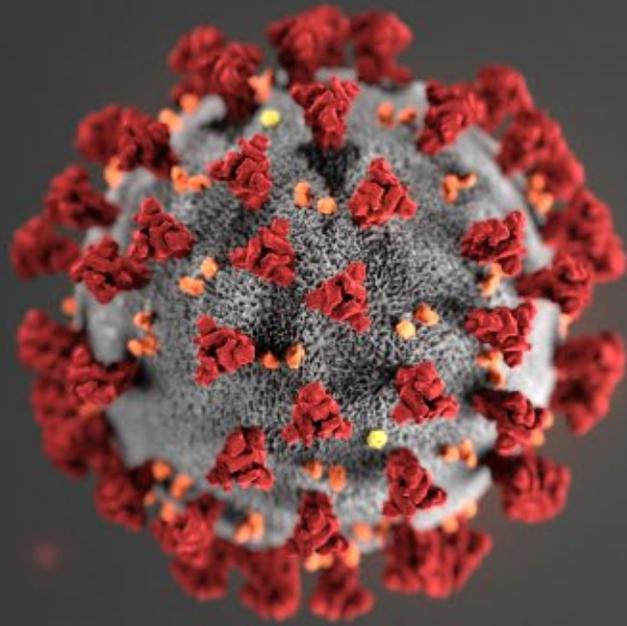
<https://www.cdc.gov/vaccines/covid-19/info-by-product/index.html>

Centers for Disease Control and Prevention. (2021). Vaccine Administration: Intramuscular (IM) Injection Children 3 through 6 years of age.

<https://www.cdc.gov/vaccines/hcp/admin/downloads/IM-Injection-3-6-Years.pdf>

Centers for Disease Control and Prevention. (2021). Vaccine Administration: Intramuscular (IM) Injection Children 7 through 18 years of age.

www.cdc.gov/vaccines/hcp/admin/downloads/IM-Injection-children.pdf



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

Thank you

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.



DHA Childhood Catchup Immunization Efforts

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Defense Health Agency Memo on Childhood Catch-Up Immunizations



Medical Affairs

DEFENSE HEALTH AGENCY
7700 ARLINGTON BOULEVARD, SUITE 5101
FALLS CHURCH, VIRGINIA 22042-5101

30 JUL 2021

MEMORANDUM FOR DIRECTOR, COASTAL MISSISSIPPI MARKET
DIRECTOR, JACKSONVILLE MARKET
DIRECTOR, NATIONAL CAPITAL REGION MARKET
DIRECTOR, CENTRAL NORTH CAROLINA MARKET
DIRECTOR, TIDEWATER MARKET
DIRECTOR, COLORADO MARKET
DIRECTOR, SAN ANTONIO MARKET
DIRECTOR, PUGET SOUND MARKET
DIRECTOR, SAN DIEGO MARKET
DIRECTOR, HAWAII MARKET
DIRECTOR, AUGUSTA MARKET
DIRECTOR, CENTRAL TEXAS MARKET
DIRECTOR, COASTAL NORTH CAROLINA MARKET
DIRECTOR, LOW COUNTRY MARKET
DIRECTOR, SACRAMENTO MARKET
DIRECTOR, SOUTHWEST GEORGIA MARKET
DIRECTOR, SOUTHWEST KENTUCKY MARKET
DIRECTOR, SMALL MARKET AND STAND-ALONE MILITARY
MEDICAL TREATMENT FACILITY ORGANIZATION
LEAD, DIRECT SUPPORT ORGANIZATION, ARMY
LEAD, DIRECT SUPPORT ORGANIZATION, NAVY
LEAD, DIRECT SUPPORT ORGANIZATION, AIR FORCE

SUBJECT: Interim Guidance for Childhood Immunization Catch-Up

This memorandum establishes interim guidance for improving childhood immunization rates. Military Health System (MHS) childhood immunization rates have fallen from 85-95% to 70-80% in the setting of the COVID-19 pandemic. For measles, the population vaccine rate needs to be >90% to level the MHS population exposure to the pandemic, to reduce the risk of

Champions for each Market

Expanded use of Immunization Registry to identify and contact children for catch-up immunizations

Scripts incorporating best practices to communicate with parents and guardians

Training for population health managers and champions

Suggested innovative means to deliver immunizations

Central tracking and reporting by Market

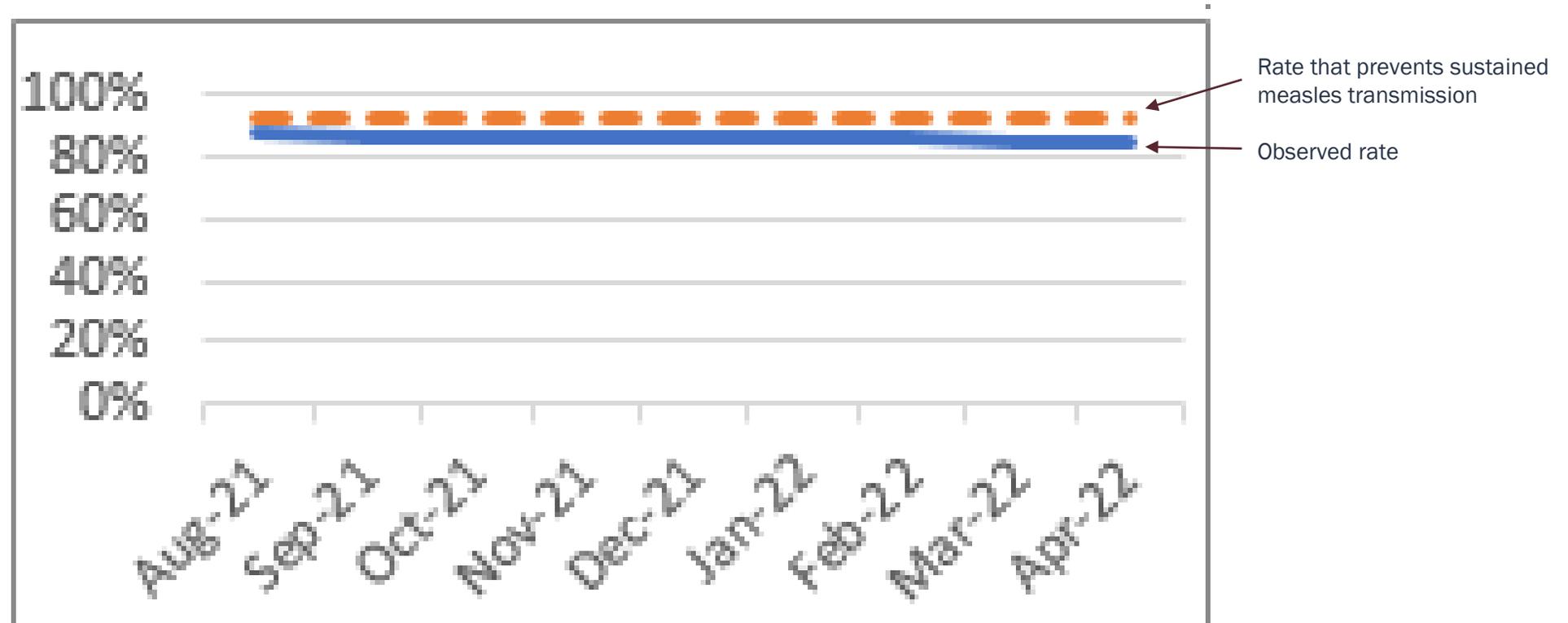


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MMR # 1 Immunization Rates of 16-18 month old Children Enrolled in Military Treatment Facilities, Aug 2021 – April 2022



The enrolled population ranged from ~5800-6900 during the time period.



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Best Practices to Catch-up Child Immunizations:

Examples from the 2021 Winners of the Health Resources & Services Administration's Promoting Pediatric Primary Prevention (P4) Challenge

Text & Chat-bots

(Chicago, IL; Alexandria, VA)

Partnerships with schools

(Urbana, IL; Jefferson County, AL)

Partnerships with Dentistry

(Denver, CO; Vista, CA)

Partnerships with local departments of health

(Manassas, VA)

Registries to better identify patients

(Bronx, NY; Denver, CO; Chicago, IL)

Targeting at-risk populations

(Virginia; Baltimore, MD)

Mobile clinics

(Manassas, VA; Columbus, OH;
Peoria, IL; Bremerton, WA;
Logan County, WV)

Resources to overcome barriers

(Baltimore, MD; Nashville, TN;
Alexandria, VA)

Off-hours Clinics

(Vista, CA)

Partnerships with churches

(Memphis, TN)

Offering incentives

(San Fernando Valley, CA)

Full list and complete description of funded programs at

<https://mchb.hrsa.gov/funding/challenge-competitions/p4challenge/our-20-final-winners/winners-showcase>



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References

Department of Defense Memorandum. (2021). Interim Guidance for Childhood Immunization Catch-up.

Department of Defense Memorandum, Deputy Assistant of Medical Affairs, Defense Health Agency.

Health Resources and Services Administration.(2022). P4 challenge winners showcase.

<https://mchb.hrsa.gov/funding/challenge-competitions/p4challenge/our-20-final-winners/winners-showcase>

Morbidity and Mortality Weekly Report. (2022). # 1 Immunization Rates of 16-18 month old Children

Enrolled in Military Treatment Facilities. <https://www.cdc.gov/mmwr/volumes/71/wr/mm7116a1.htm>



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Questions



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How to Obtain CE/CME Credits

To receive CE/CME credit, you must register by 0800 on 29 APR 2022 to qualify for the receipt of CE/CME credit or a certificate of attendance. You must complete the program posttest and evaluation before collecting your certificate. The posttest and evaluation will be available through 12 MAY 2022 at 2359 ET. Please complete the following steps to obtain CE/CME credit:

1. Go to URL: <https://www.dhaj7-cepo.com/content/apr-2022-ccss-military-children-and-youth>
2. Search for your course using the **Catalog, Calendar, or Find a course search tool.**
3. Click on the **REGISTER/TAKE COURSE** tab.
 - a. If you have previously used the CEPO CMS, click login.
 - b. If you have not previously used the CEPO CMS click register to create a new account.
4. Follow the onscreen prompts to complete the post-activity assessments:
 - a. Read the Accreditation Statement
 - b. Complete the Evaluation
 - c. Take the Posttest
5. After completing the posttest at 80% or above, your certificate will be available for print or download.
6. You can return to the site at any time in the future to print your certificate and transcripts at: <https://www.dhaj7-cepo.com/>
7. If you require further support, please contact us at: dha.ncr.j7.mbx.cepo-cms-support@mail.mil



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