

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

UNITED STATES
2021

Vaccines in the Child and Adolescent Immunization Schedule*

Vaccines	Abbreviations	Trade names
Diphtheria, tetanus, and acellular pertussis vaccine	DTap	Daraxaph [®] Infanrix [®]
Diphtheria, tetanus vaccine	DT	No trade name
<i>Haemophilus influenzae</i> type b vaccine	Hib (PRP-T)	ActHib [®] Hiberix [®] PedvaxIB [®]
Hepatitis A vaccine	HepA	Hexax [®] Vaqta [®]
Hepatitis B vaccine	HepB	Engerix-B [®] Recombivax HB [®]
Human papillomavirus vaccine	HPV	Gardaasil 9 [®]
Influenza vaccine (inactivated)	IV	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 [®]
Meningococcal serogroup B vaccine	MenACWY-CRM	Menveo [®]
	MenACWY-TT	MenQuadfi [®]
	MenB-4C	Bexsero [®]
	MenB-FHbp	Trumenb [®]
Pneumococcal 13-valent conjugate vaccine	PCV13	Prenarim 13 [®]
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax 23 [®]
Poliovirus vaccine (inactivated)	IPV	IPO [®]
Rotavirus vaccine	RV1 RV5	Rotarix [®] RotaTeq [®]
Tetanus, diphtheria, and acellular pertussis vaccine	Tdap	Adacel [®] Boostrix [®]
Tetanus and diphtheria vaccine	Td	Tenivac [®] Tdapax [™]
Varicella vaccine	VAR	Varivax [®]

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

DTaP, hepatitis B, and inactivated poliovirus vaccine	DTaP-Heb-IPV	Pediaris [®]
DTaP, inactivated poliovirus, and <i>Haemophilus influenzae</i> type b vaccine	DTaP-IPV/Hib	Pentacel [®]
DTaP and inactivated poliovirus vaccine	DTaP-IPV	Kinrix [®] Quadriacel [®]
DTaP, inactivated poliovirus, <i>Haemophilus influenzae</i> type b, and hepatitis B vaccine	DTaP-IPV-Hib-Heb	Vaxelis [®]
Measles, mumps, rubella, and varicella vaccine	MMRV	ProQuad [®]

*Administer recommended vaccines if immunization history is incomplete or unknown. Do not restate 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/adolescent immunization schedule

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

Recommended by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip) and approved by the Centers for Disease Control and Prevention (www.cdc.gov), American 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



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

Helpful information

- Complete ACIP recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- General Best Practice Guidelines for Immunization: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Outbreak information (including case identification and outbreak response): see Manual for the Surveillance of Vaccine-Preventable Diseases: www.cdc.gov/vaccines/pubs/surv-manual
- ACIP Shared Clinical Decision-Making Recommendations: www.cdc.gov/vaccines/acip/acip-scdm-fdq.html



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

Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2021

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). School entry and adolescent vaccine age groups are shaded in gray.

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						
<i>Haemophilus influenzae</i> type b (Hib)			1 st dose	2 nd dose	3 rd dose	← 3 rd or 4 th doses, 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	← 3 rd dose →						4 th dose					
Influenza (IIV)										Annual vaccination 1 or 2 doses				Annual vaccination 1 dose only			
Influenza (LAIV4)														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)														Tdap			
Human papillomavirus (HPV)														See Notes			
Meningococcal (MenACWY: D ≥9 mos, MenACWY-CRM ≥2 mos, MenACWY-T ≥2 years)															1 st dose		2 nd dose
Meningococcal B																	See Notes
Pneumococcal polysaccharide (PPSV23)																	See Notes

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

Recommended based on shared clinical decision-making of *can be used in this age group

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, 2021

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.

Vaccine	Minimum Age for Dose 1 to Dose 2	Dose 2 to Dose 3	Minimum Interval Between Doses		Dose 3 to Dose 4	Dose 4 to Dose 5
			Dose 2 to Dose 3	Dose 3 to Dose 4		
Hepatitis B	4 weeks	4 weeks and at least 16 weeks after first dose.	0 weeks and at least 16 weeks after first dose.			
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 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 Hib/T (ActHib, Pentacel, Hibentil) 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 Hib/OMP (RecombivaxB, Comvax) and were administered before the 1 st birthday.	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 Hib/T (ActHib, Pentacel, Hibentil) 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 Hib/OMP (RecombivaxB, Comvax) and were administered before the 1 st birthday.	6 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.	
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 of age); 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-CBM	8 weeks	See Notes		See Notes	
Meningococcal ACWY	9 months MenACWY-D 2 years MenACWY-TT					
Meningococcal ACWY	Not applicable (N/A)	8 weeks				
Tetanus, diphtheria, pertussis, and acellular pertussis	7 years	4 weeks 6 months (as final dose)	4 weeks If first dose of DTaP/DTd was administered before the 1 st birthday. 6 months (as final dose) If first dose of DTaP/DTd or Tdap/Td was administered at or after the 1 st birthday.			6 months (if first dose of DTaP/DTd was administered before the 1 st birthday).
Human papilloma virus	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 <4 years or if the third dose was administered <6 months after the previous 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.				

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 <15% and total CD4 cell count of <200/mm ³	HIV infection CD4+ count ¹ ≥15% and total CD4 cell count of ≥200/mm ³	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
Hepatitis B	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Rotavirus	Yellow	Red	Orange	Orange	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Diphtheria, tetanus, and acellular pertussis (DTaP)	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Haemophilus influenzae type b	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Pneumococcal conjugate	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Inactivated poliovirus	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Influenza (IV)	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Influenza (LAIV4)	Yellow	Yellow	Yellow	Yellow	Orange	Red	Red	Red	Red	Orange
Measles, mumps, rubella	*	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Varicella	*	Yellow	Yellow	Yellow	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	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Human papillomavirus	*	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Meningococcal ACWY	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Meningococcal B	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Pneumococcal polysaccharide vaccine according to the routine schedule recommended	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

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/imz/downloads/gen/gen-rcs/immunocompetence.html and Table 4-1 (footnote D) at www.cdc.gov/vaccines/imz/downloads/gen/gen-rcs/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.

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For vaccination recommendations for persons ages 19 years or older, see the Recommended Adult Immunization Schedule, 2021.

Additional information

COVID-19 Vaccination

ACIP recommends use of COVID-19 vaccines within the scope of the Emergency Use Authorization or Biologics License Application for the particular vaccine. Interim ACIP recommendations for the use of COVID-19 vaccines can be found at www.cdc.gov/vaccines/hcp/odp-rcvs/.

- Consult relevant ACIP statements for detailed recommendations at www.cdc.gov/vaccines/hcp/odp-rcvs/index.html.
- For information on contraindications and precautions for the use of a vaccine, consult the *General Best Practice Guidelines for Immunization* at www.cdc.gov/vaccines/hcp/gbpi-rcvs/gener-recs/contraindications.html and relevant ACIP statements at www.cdc.gov/vaccines/hcp/odp-rcvs/index.html.
- For calculating intervals between doses, 4 weeks = 28 days. Intervals of 24 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 ≥ 6 days after the minimum age or interval are considered valid. Doses administered later than the minimum age or interval should be considered valid if the age is 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/odp-rcvs/gener-recs/gener-recs/immunizing.html.
- Information on travel vaccination requirements and recommendations is available at www.cdc.gov/travel/.
- For vaccination of persons with immunodeficiencies, see Table 8-1, Vaccination of persons with primary and secondary immunodeficiencies, in *General Best Practice Guidelines for Immunization* at www.cdc.gov/vaccines/hcp/odp-rcvs/gener-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 (PP23C). For more information, see www.hrsa.gov/vaccinecompensation/index.html.

Diphtheria, tetanus, and pertussis (DTaP) vaccination (minimum age: 6 weeks (4 years for Kinrix or Quadriacel))

Routine vaccination

- 5-dose series at 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.
- 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/rr67a03a1.htm.

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

Routine vaccination

- **ActHib, Hibivax, or Pentacel:** 4-dose series at 2, 4, 6, 12–15 months
- **PedvaxHIB:** 3-dose series at 2, 4, 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) 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.

Special situations

- **Chemotherapy or radiation treatment:**
 - 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):**
 - 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:**
 - 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:**
 - 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

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

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

Routine vaccination

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

- **Mothers is HBsAg-negative:** 1 dose within 24 hours of birth for all medically stable infants $\geq 2,000$ grams. 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).

• Mothers 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 not completed, complete the routine dose.

• Mothers'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 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, substitute "dose 4" for "dose 3" in these calculations)

Catch-up vaccination

- Unvaccinated persons should complete a 3-dose series at 0, 1–2, 6 months.
- Adolescents age 11–15 years may use an alternative 2-dose schedule with at least 4 months between doses (adult formulation, **Recombivax HB** only).
- Adolescents age 18 years or older may receive a 2-dose series of **HepB (HepBisav-B)** at least 4 weeks apart.
- Adolescents age 18 years or older may receive the combined HepB and HepA vaccine 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.
- **Recombination** may be recommended for certain populations, including:
 - **Infants born to HBsAg-positive mothers**
 - **Other immunocompromised persons**
- For detailed revaccination recommendations, see www.cdc.gov/vaccines/hgp/acip/revs/vacc-specific/hepb.html.

Human papillomavirus vaccination (minimum age: 9 years)

Routine and catch-up vaccination

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

Special situations

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

Influenza vaccination

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

Routine vaccination

- Use any influenza vaccine appropriate for age and health status annually:
 - **Unvaccinated** persons appropriate for age and health status annually.
 - **2-doses**, separated by at least 4 weeks, for **children age 6 months–8 years** who have received fewer than 2 influenza vaccine doses before July 1, 2020, 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–5 years** who have received at least 1 influenza vaccine dose before July 1, 2020
 - 1 dose for **all persons age 5 years or older**
- For the 2021–22 season, see the 2021–22 ACIP influenza vaccine recommendations.

Special situations

- **Egg allergy, HIV only:** Any influenza vaccine appropriate for age and health status annually
- **Egg allergy with symptoms other than hives** (e.g., angioedema, respiratory distress, need for emergency medical services or epinephrine): Any influenza vaccine appropriate for age and health status annually. If using an influenza vaccine other than Flublok or Flucelex, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions.
- Severe allergic reactions to vaccines can occur even in the absence of a history of previous allergic reaction. All vaccination providers should be familiar with the office emergency plan and certified in cardiopulmonary resuscitation.
- A previous severe allergic reaction to influenza vaccine is a contraindication to future receipt of any influenza vaccine.
- **LAIV4 should not be used** in persons with the following conditions or situations:
 - History of severe allergic reaction to a previous dose of any influenza vaccine or to any vaccine component (excluding egg, see details above)
 - Receiving aspirin or salicylate-containing medications
 - Age 2–4 years with history of asthma, or having an immunocompromised due to any cause (including medications and HIV infection)
 - Anatomic or functional asplenia
 - Close contacts or caregivers of severely immunosuppressed persons who require a protected environment
- Pregnancy
- Cochlear implant
- Cerebrospinal fluid-occluding communication
- Children less than age 2 years
- 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)

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

Routine vaccination

- 2-dose series at 12–15 months, 4–6 years
- Dose 2 may be administered as early as 4 weeks after dose 1.

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.

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

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 11–12 years, 16 years

Catch-up vaccination

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

Special situations

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

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

Menactra

Persistent complement component deficiency or complement inhibitor use:

- Age 9–23 months; 2-dose series at least 12 weeks apart
 - Age 24 months or older; 2-dose series at least 8 weeks apart
- Infectious or functional asplenia, sickle cell disease, or HIV infection:**
- Age 9–23 months: Not recommended
 - Age 24 months or older; 2-dose series at least 8 weeks apart
- Menactra** must be administered at least 4 weeks after completion of PCV13 series.

MenQuadfi

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

Travel in countries with hyperendemic or epidemic meningococcal disease, including countries in the African meningitis belt (see www.cdc.gov/travel/):

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

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

- 1 dose Menveo, Menactra, or MenQuadfi
- Adolescent vaccination of children who received MenACWY prior to age 10 years:
 - Children for whom boosters are recommended because of those who are in high risk of meningococcal disease (e.g., those with complement deficiency, HIV, or asplenia): Follow the booster schedule for persons at increased risk.
 - Children for whom boosters are not recommended (e.g., a healthy child who received a single dose for travel to a country where meningococcal disease is endemic): Administer MenACWY according to the recommended adolescent schedule with dose 1 at age 11–12 years and dose 2 at age 16 years.
- **Note:** Menactra should be administered either before or at the same time as DTaP. For MenACWY booster dose recommendations for groups listed under "Special situations" and in an outbreak setting and additional meningococcal vaccination information, see www.cdc.gov/mmwr/volumes/69/rr/r6909a1.htm.

Meningococcal serogroup B vaccination

(minimum age: 10 years [MenB-4C, Bexsero; MenB-FHbp, Trumenb])

Shared clinical decision-making

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

Special situations

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

- **Bexsero and Trumenb** are not interchangeable; the same product should be used for all doses in a series. Under the same circumstances, recommendations listed under "Special situations" for meningococcal serogroup D and additional meningococcal vaccination information, see www.cdc.gov/mmwr/volumes/69/rr/r6909a1.htm.

Pneumococcal vaccination

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

Routine vaccination with PCV13

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

Catch-up vaccination with PCV13

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

Special situations

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

- Age 2–5 years:
 - Any incomplete* series with:
 - 3 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 dose)
 - Less than 3 PCV13 doses: 2 doses PCV13 (8 weeks after the most recent dose and administered 8 weeks apart)
 - No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after completing all recommended PCV13 doses)
- Age 6–18 years:
 - Any incomplete* series with:
 - 3 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 dose)
 - 1 dose PCV13 (at least 8 weeks after the most recent dose and administered 8 weeks apart)
 - No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after completing all recommended PCV13 doses)

Cerebrospinal fluid leak, cochlear implant:

- Any incomplete* series with:
 - 3 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 dose)
 - 1 dose PCV13 (at least 8 weeks after the most recent dose and administered 8 weeks apart)
- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after any prior PCV13 dose)
- Age 6–18 years:
 - No history of either PCV13 or PPSV23: 1 dose PCV13, 1 dose PPSV23 at least 8 weeks later
 - Any PCV13 but no PPSV23: 1 dose PPSV23 at least 8 weeks after the most recent dose of PCV13
 - PPSV23 but no PCV13: 1 dose PCV13 at least 8 weeks after the most recent dose of PPSV23

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

Age: 2-5 years

- Any “incomplete” series with:
 - 3 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 dose)
 - Less than 3 PCV13 doses: 2 doses PCV13 (8 weeks after the most recent dose and administered 8 weeks apart)
- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after any prior PCV13 dose) and a 2nd dose of PPSV23 5 years later
- Age 6-18 years
 - No history of either PCV13 or PPSV23: 1 dose PCV13, 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after PCV13 and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23)
 - Any PCV13 but no PPSV23: 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after the most recent dose of PCV13 and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23)
 - PPSV23 but no PCV13: 1 dose PCV13 at least 8 weeks after the most recent PPSV23 dose and a 2nd dose of PPSV23 administered 5 years after dose 1 of PPSV23, and at least 8 weeks after a dose of PCV13
- **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 ACIP pneumococcal vaccine recommendations (www.cdc.gov/mmwr/pdf/rm5911.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#_cid=mm6601a6_w.
- Only trivalent OPV (TOPV) 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).
- Dose 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.

Rotavirus vaccination (minimum age: 6 weeks)

Routine vaccination

- **Rotarix:** 2-dose series at 2 and 4 months
- **Rotarix-3:** 3-dose series at 2, 4, and 6 months
- If any dose in the series is either **Rotarix** 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 (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 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

Vaccella vaccination (minimum age: 12 months)

Routine vaccination

- 2-dose series at 12-15 months, 4-6 years
- Dose 2 may be administered as early as 3 months after dose 1 (a dose administered after a 4-week interval may be counted).

Catch-up vaccination

- Ensure persons age 7-18 years without evidence of immunity (see MMWRat.cdc.gov/mmwr/pdf/rm5906a4.pdf) have a 2-dose series:
 - Age 7-12 years: routine interval: 3 months (a dose administered after a 4-week interval may be counted)
 - Age 13 years and older: routine interval: 4-8 weeks (minimum interval: 4 weeks)
 - The maximum age for use of MMWR is 12 years.