

Appendix A

Recommended and minimum ages and intervals between vaccine doses^{(a),(b),(c),(d)}

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
DTaP-1 ^(e)	2 months	6 weeks	8 weeks	4 weeks
DTaP-2	4 months	10 weeks	8 weeks	4 weeks
DTaP-3	6 months	14 weeks	6-12 months ^(f)	6 months ^(f)
DTaP-4	15-18 months	15 months ^(f)	3 years	6 months
DTaP-5 ^(g)	4-6 years	4 years	—	—
HepA-1 ^(e)	12-23 months	12 months	6-18 months	6 months
HepA-2	≥18 months	18 months	—	—
HepB-1 ^(h)	Birth	Birth	4 weeks-4 months	4 weeks
HepB-2	1-2 months	4 weeks	8 weeks-17 months	8 weeks
HepB-3 ⁽ⁱ⁾	6-18 months	24 weeks	—	—
Hib-1 ^(j)	2 months	6 weeks	8 weeks	4 weeks
Hib-2	4 months	10 weeks	8 weeks	4 weeks
Hib-3 ^(k)	6 months	14 weeks	6-9 months	8 weeks
Hib-4	12-15 months	12 months	—	—
HPV-1 (Two-Dose Series) ^(l)	11-12 years	9 years	6 months	5 months
HPV-2	11-12 years (+6 months)	9 years +5 months ^(m)	—	—
HPV-1 ⁽ⁿ⁾ (Three-Dose Series)	11-12 years	9 years	1-2 months	4 weeks
HPV-2	11-12 years (+1-2 months)	9 years (+4 weeks)	4 months	12 weeks ⁽ⁿ⁾
HPV-3 ⁽ⁿ⁾	11-12 years (+6 months)	9 years (+5 months)	—	—
Influenza, inactivated ^(o)	≥6 months	6 months ^(p)	4 weeks	4 weeks
IPV-1 ^(e)	2 months	6 weeks	8 weeks	4 weeks
IPV-2	4 months	10 weeks	8 weeks-14 months	4 weeks
IPV-3	6-18 months	14 weeks	3-5 years	6 months
IPV-4 ^(q)	4-6 years	4 years	—	—
LAIV ^(o)	2-49 years	2 years	4 weeks	4 weeks
MenACWY-1 ^(r)	11-12 years	2 months ^(s)	4-5 years	8 weeks
MenACWY-2	16 years	11 years (+ 8 weeks) ^(t)	—	—
MenB-1	Healthy adolescents: 16-23 years	16 years	Bexsero: 4 weeks Trumenba: 6 months ^(c)	Bexsero: 4 weeks Trumenba: 6 months ^(c)
MenB-1	Persons at increased risk: ≥10 years	10 years	Bexsero: 4 weeks Trumenba: 1–2 months ^(c)	Bexsero: 4 weeks Trumenba: 1 month
MenB-2	Healthy adolescents: 16-23 years (+1 month)	16 years (+1 month)	—	—
MenB-2	Persons at increased risk: ≥10 years (+1 month)	10 years (+1 month)	Bexsero: — Trumenba: 4-5 month ^(c)	Bexsero: — Trumenba: 4 months ^(c)
MenB-3 ^(u)	Persons at increased risk: ≥10 years (+6 months ^(c))	10 years (+6 months ^(c))	—	—

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Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
MMR-1 ^(v)	12-15 months	12 months	3-5 years	4 weeks
MMR-2 ^(v)	4-6 years	13 months	—	—
PCV13-1 ⁽ⁱ⁾	2 months	6 weeks	8 weeks	4 weeks
PCV13-2	4 months	10 weeks	8 weeks	4 weeks
PCV13-3	6 months	14 weeks	6 months	8 weeks
PCV13-4	12-15 months	12 months	—	—
PPSV23-1	—	2 years	5 years	5 years
PPSV23-2 ^(w)	—	7 years	—	—
Rotavirus-1 ^(x)	2 months	6 weeks	8 weeks	4 weeks
Rotavirus-2	4 months	10 weeks	8 weeks	4 weeks
Rotavirus-3 ^(x)	6 months	14 weeks	—	—
Td	11-12 years	7 years	10 years	5 years
Tdap ^(y)	≥11 years	7 years	—	—
Varicella-1 ^(v)	12-15 months	12 months	3-5 years	12 weeks ^(z)
Varicella-2 ^(v)	4-6 years	15 months ^(aa)	—	—
RZV-1	≥50 years	50 years ^(bb)	2-6 months	4 weeks
RZV-2	≥50 years (+2-6months)	50 years	—	—

Abbreviations: DTaP = diphtheria and tetanus toxoids and acellular pertussis; HepA = hepatitis A; HepB = hepatitis B; Hib = *Haemophilus influenzae* type b; HPV = human papillomavirus; IPV = inactivated poliovirus; LAIV = live, attenuated influenza vaccine; MenACWY = quadrivalent meningococcal conjugate vaccine; MenB = serogroup B meningococcal vaccine; MMR = measles, mumps, and rubella; MMRV = measles, mumps, rubella, and varicella; PCV13 = pneumococcal conjugate vaccine; PPSV23 = pneumococcal polysaccharide vaccine; PRP-OMP = polyribosylribitol phosphate-meningococcal outer membrane protein conjugate; RZV = recombinant zoster vaccine; Td = tetanus and diphtheria toxoids; Tdap = tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis.

^(a) Combination vaccines are available. Use of licensed combination vaccines is generally preferred to separate injections of their equivalent component vaccines. When administering combination vaccines, the minimum age for administration is the oldest age for any of the individual components. The minimum interval between doses is equal to the greatest interval of any of the individual components.

^(b) Information on travel vaccines, including typhoid, Japanese encephalitis, and yellow fever, is available at <https://www.cdc.gov/travel>. Information on other vaccines that are licensed in the United States but not distributed, including anthrax and smallpox, is available at <http://emergency.cdc.gov/bioterrorism/>.

^(c) "Months" refers to calendar months.

^(d) Within a number range, a hyphen (-) should be read as "through."

^(e) Combination vaccines containing the hepatitis B component are available (Twinrix and Pediarix). These vaccines should not be administered to infants aged <6 weeks because of the other vaccine components (i.e., Hib, DTaP, HepA, and IPV).

^(f) The minimum recommended age for DTaP-4 is 15 months, with a recommended 6 months from DTaP-3 (the recommended interval between DTaP-3 and DTaP-4 is 6 months). However, DTaP-4 need not be repeated if given on or after 12 months of age and at least 4 months after DTaP-3. The 4-day grace period can be applied when validating past doses and can be applied to the minimum age of 12 months and the minimum interval of 4 months between DTaP-3 and DTaP-4. The 4-day grace period can be used when planning doses ahead of time, but should be applied to the minimum age of 15 months and the minimum interval between DTaP-3 and DTaP-4 of 6 months.

^(g) If a fourth dose of DTaP is given on or after the fourth birthday, a fifth dose is not needed if the interval between the third dose and fourth dose is at least 6 months.

^(h) Adjuvanted Hepatitis B vaccine (HepB-CgG) can be administered to adults 18 years old and older on a two dose schedule, the first and second dose separated by 4 weeks.

⁽ⁱ⁾ HepB-3 should be administered at least 8 weeks after HepB-2 and at least 16 weeks after HepB-1 and should not be administered before age 24 weeks.

^(j) For Hib and PCV13, children receiving the first dose of vaccine at age ≥7 months require fewer doses to complete the series.

^(k) If PRP-OMP (Pedvax-Hib, Merck Vaccine Division) was administered at ages 2 and 4 months, a dose at age 6 months is not necessary. The final dose has a minimum age of 12 months.

^(l) A two-dose schedule of HPV vaccine is recommended for most persons beginning the series between 9 through 14 years of age. See HPV vaccine-specific recommendations for details. www.cdc.gov/mmwr/volumes/65/wr/pdfs/mm6549a5.pdf.

^(m) If a patient is eligible for a 2-dose HPV series, and the second dose is given less than four weeks after the first dose, it is an invalid dose. Administer another dose 6-12 months after the first dose. If the second dose is given less than five months after the first dose, but more than four weeks after the first dose, the next dose should be administered at least 12 weeks after the second dose, and at least 6-12 months after the first dose. The 4-day grace period may be used. If the third dose was administered before December 16, 2016, and was administered 12 weeks after the 2nd dose, and 16 weeks after the first dose, it is a valid dose. The 4-day grace period may be used. If the third dose was administered on or after December 16, 2016, and was administered 12 weeks after the 2nd dose and 5 months after the first dose, it is a valid dose. The 4-day grace period may be used.

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- ⁽ⁿ⁾ The minimum age for HPV-3 is based on the baseline minimum age for the first dose (i.e., 9 years) and the minimum interval of 5 months between the first and third dose. If the third dose was administered before December 16, 2016, and was administered 12 weeks after the 2nd dose, and 16 weeks after the first dose, it is a valid dose. The 4-day grace period may be used. If the third dose was administered on or after December 16, 2016, and was administered 12 weeks after the 2nd dose and 5 months after the first dose, it is a valid dose. The 4-day grace period may be used.
- ^(o) One dose of influenza vaccine per season is recommended for most persons. To determine which children younger than 9 years should receive 2 doses in a single season, please see influenza vaccine-specific recommendations <https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/flu.html>.
- ^(p) The minimum age for inactivated influenza vaccine varies by vaccine manufacturer. See package insert for vaccine-specific minimum ages.
- ^(q) A fourth dose is not needed if the third dose was administered at ≥ 4 years and at least 6 months after the previous dose.
- ^(r) Revaccination with meningococcal vaccine is recommended for previously vaccinated persons who remain at high risk for meningococcal disease. Cohn AC, MacNeil JR, Clark TA, et al. Prevention and control of meningococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep*. 2013;62(RR-2):1-28.
- ^(s) MenACWY-D (Menactra) can be given as young as 9 months for high-risk persons. MenACWY-CRM (Menveo) can be given as young as 2 months for high-risk persons. Hib-MenCY can be given as young as 6 weeks for high-risk persons. Hib-MenCY is given as a 4-dose series at 2 months, 4 months, 6 months and 12-18 months. MenACWY-TT (MenQuadfi) can be given as young as 2 years for high-risk persons.
- ^(t) For routine non-high risk adolescent vaccination, the minimum age for the booster dose is 16 years.
- ^(u) This dose is not necessary if Bexsero is correctly administered, or if Trumenba is correctly administered to healthy adolescents.
- ^(v) Combination MMRV vaccine can be used for children aged 12 months-12 years.
- ^(w) A second dose of PPSV23 5 years after the first dose is recommended for persons aged ≤ 65 years at highest risk for serious pneumococcal infection and those who are likely to have a rapid decline in pneumococcal antibody concentration. See <https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm>.
- ^(x) The first dose of rotavirus must be administered at age 6 weeks through 14 weeks and 6 days. The vaccine series should not be started for infants aged ≥ 15 weeks, 0 days. Rotavirus should not be administered to children older than 8 months, 0 days of age regardless of the number of doses received between 6 weeks and 8 months, 0 days of age. If 2 doses of Rotarix (GlaxoSmithKline) are administered as age appropriate, a third dose is not necessary.
- ^(y) Only 1 dose of Tdap is recommended. Subsequent doses should be given as Td or Tdap. For management of a tetanus-prone wound in persons who have received a primary series of tetanus-toxoid-containing vaccine, the minimum interval after a previous dose of any tetanus-containing vaccine is 5 years.
- ^(z) A special grace period of 2 months, based on expert opinion, can be applied to the minimum interval of 3 months, when evaluating records retrospectively, which results in an acceptable minimum interval of 4 weeks. An additional 4 days should not be added on to this grace period.
- ^(aa) A special grace period of 2 months, based on expert opinion, can be applied to the minimum age of 15 months when evaluating records retrospectively, which results in an acceptable minimum age of 13 months. An additional 4 days should not be added on to this grace period.
- ^(bb) If a 1st dose of recombinant zoster vaccine is administered to someone 18-49 years of age, the dose does not need to be repeated. A 4 day grace period can be added to the absolute minimum age of 18 years when evaluating records retrospectively.

Adapted from Table 3-1, ACIP General Best Practice Guidelines for Immunization.

January 2021

Grace Period: Vaccine doses administered ≤ 4 days before the minimum interval or age are considered valid; however, local or state mandates might supersede this 4-day guideline.
