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

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

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Abbreviation(s)</th>
<th>Trade name(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dengue vaccine</td>
<td>DEN4CYD</td>
<td>Dengvaxia*</td>
</tr>
<tr>
<td>Diphtheria, tetanus, and acellular pertussis vaccine</td>
<td>DTaP</td>
<td>Daptacel® Infanrix*</td>
</tr>
<tr>
<td>Diphtheria, tetanus vaccine</td>
<td>DT</td>
<td>No trade name</td>
</tr>
<tr>
<td><em>Haemophilus influenza</em> type b vaccine</td>
<td>Hib (PRP-T)</td>
<td>ActHIB*</td>
</tr>
<tr>
<td></td>
<td>Hib (PRP-OMP)</td>
<td>Hibrix®</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PedvaxHIB*</td>
</tr>
<tr>
<td>Hepatitis A vaccine</td>
<td>HepA</td>
<td>Havrix®</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vaqta®</td>
</tr>
<tr>
<td>Hepatitis B vaccine</td>
<td>HepB</td>
<td>Engerix-B*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recombivax HB*</td>
</tr>
<tr>
<td>Human papillomavirus vaccine</td>
<td>HPV</td>
<td>Gardasil 9*</td>
</tr>
<tr>
<td>Influenza vaccine (inactivated)</td>
<td>IIV4</td>
<td>Multiple</td>
</tr>
<tr>
<td>Influenza vaccine (live, attenuated)</td>
<td>LAIV4</td>
<td>FluMist* Quadivalent</td>
</tr>
<tr>
<td>Measles, mumps, and rubella vaccine</td>
<td>MMR</td>
<td>M-M-R II*</td>
</tr>
<tr>
<td>Meningococcal serogroups A, C, W, Y vaccine</td>
<td>MenACWY-D</td>
<td>Menactra*</td>
</tr>
<tr>
<td></td>
<td>MenACWY-CRM</td>
<td>Menveo*</td>
</tr>
<tr>
<td></td>
<td>MenACWY-TT</td>
<td>MenQuadrifi*</td>
</tr>
<tr>
<td>Meningococcal serogroup B vaccine</td>
<td>MenB-4C</td>
<td>Bexsero*</td>
</tr>
<tr>
<td></td>
<td>MenB-FHbp</td>
<td>Trumenba*</td>
</tr>
<tr>
<td>Pneumococcal 13-valent conjugal vaccine</td>
<td>PCV13</td>
<td>Prevnar 13*</td>
</tr>
<tr>
<td>Pneumococcal 23-valent polysaccharide vaccine</td>
<td>PPV23</td>
<td>Pneumovax 23*</td>
</tr>
<tr>
<td>Poliovirus vaccine (inactivated)</td>
<td>IPV</td>
<td>iPOL*</td>
</tr>
<tr>
<td>Rotavirus vaccine</td>
<td>RV1</td>
<td>Rotarix® RotaTeq*</td>
</tr>
<tr>
<td></td>
<td>RV5</td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, and acellular pertussis vaccine</td>
<td>Tdap</td>
<td>Adacel® Boostrix*</td>
</tr>
<tr>
<td>Tetanus and diphtheria vaccine</td>
<td>Td</td>
<td>Tenvac® Tdvaq®</td>
</tr>
<tr>
<td>Varicella vaccine</td>
<td>VAR</td>
<td>Varivax®</td>
</tr>
</tbody>
</table>

### 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 *Haemophilus influenza* type b vaccine | DTaP-IPV/Hib | Pentacel®                           |
| DTaP and inactivated poliovirus vaccine             | DTaP-IPV      | Kinrix® Quadracel®                 |
| DTaP, inactivated poliovirus, *Haemophilus influenza* type 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)

**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

**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

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

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*UNITED STATES 2022*

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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).

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Birth</th>
<th>1 mo</th>
<th>2 mos</th>
<th>4 mos</th>
<th>6 mos</th>
<th>9 mos</th>
<th>12 mos</th>
<th>15 mos</th>
<th>18 mos</th>
<th>19–23 mos</th>
<th>2–3 yrs</th>
<th>4–6 yrs</th>
<th>7–10 yrs</th>
<th>11–12 yrs</th>
<th>13–15 yrs</th>
<th>16 yrs</th>
<th>17–18 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B (HepB)</td>
<td>1st dose</td>
<td></td>
<td>2nd dose</td>
<td></td>
<td></td>
<td>3rd dose</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rotavirus (RV): RV1 (2-dose series), RV5 (3-dose series)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>See Notes</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Diphtheria, tetanus, acellular pertussis (DTaP &lt;7 yrs)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td>4th dose</td>
<td>5th dose</td>
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</tr>
<tr>
<td>Haemophilus influenzae type b (Hib)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>See Notes</td>
<td>3rd or 4th dose</td>
<td>See Notes</td>
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</tr>
<tr>
<td>Pneumococcal conjugate (PCV13)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td>4th dose</td>
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<tr>
<td>Inactivated poliovirus (IPV &lt;18 yrs)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td></td>
<td>3rd dose</td>
<td></td>
<td>4th dose</td>
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<tr>
<td>Influenza (IIV4)</td>
<td></td>
<td></td>
<td>Annual vaccination 1 or 2 doses</td>
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<tr>
<td>Influenza (LAIV4)</td>
<td></td>
<td></td>
<td>Annual vaccination 1 dose only</td>
<td></td>
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<tr>
<td>Measles, mumps, rubella (MMR)</td>
<td></td>
<td></td>
<td>Annual vaccination 1 or 2 doses</td>
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<tr>
<td>Varicella (VAR)</td>
<td></td>
<td></td>
<td>Annual vaccination 1 dose only</td>
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<tr>
<td>Hepatitis A (HepA)</td>
<td></td>
<td></td>
<td>2-dose series, See Notes</td>
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<tr>
<td>Tetanus, diphtheria, acellular pertussis (Tdap ≥7 yrs)</td>
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<tr>
<td>Human papillomavirus (HPV)</td>
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</tr>
<tr>
<td>Meningococcal (MenACWY-D ≥9 mos, MenACWY-CRM ≥2 mos, MenACWY-TT ≥2 years)</td>
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</tr>
<tr>
<td>Meningococcal B (MenB-4C, MenB-FHbp)</td>
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<tr>
<td>Pneumococcal polysaccharide (PPSV23)</td>
<td></td>
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</tr>
<tr>
<td>Dengue (DEN4CYD; 9-16 yrs)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Seropositive in endemic areas only (See Notes)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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

---

[Table 1: Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022]
# 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.**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for Dose 1</th>
<th>Children age 4 months through 6 years</th>
<th>Minimum Interval Between Doses</th>
<th>Children and adolescents age 7 through 18 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dose 1 to Dose 2</td>
<td>Dose 2 to Dose 3</td>
<td>Dose 3 to Dose 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dose 4 to Dose 5</td>
<td></td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Birth</td>
<td>4 weeks</td>
<td>8 weeks and at least 16 weeks after first dose</td>
<td>minimum age for the final dose is 24 weeks</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>6 weeks</td>
<td>Maximum age for first dose is 14 weeks, 6 days.</td>
<td>4 weeks</td>
<td>maximum age for final dose is 8 months, 0 days</td>
</tr>
<tr>
<td>Diphtheria, tetanus, and acellular pertussis</td>
<td>6 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>6 months</td>
</tr>
<tr>
<td>Haemophilus influenzae type b</td>
<td>6 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>6 months</td>
</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td>6 weeks</td>
<td>No further doses needed for healthy children if first dose was administered at age 24 months or older.</td>
<td>4 weeks if first dose was administered before the 1st birthday.</td>
<td>8 weeks (as final dose) for children age 12 through 59 months who received 3 doses before the 1st birthday.</td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td>6 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella</td>
<td>12 months</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td>12 months</td>
<td>3 months</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>12 months</td>
<td>6 months</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Meningococcal ACWY</td>
<td>2 months MenACWY-CRM 9 months MenACWY-Q 2 years MenACWY-TT</td>
<td>8 weeks</td>
<td>See Notes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal ACWY</td>
<td>Not applicable (N/A)</td>
<td>8 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria; tetanus, diphtheria, and acellular pertussis</td>
<td>7 years</td>
<td>4 weeks</td>
<td>6 months (as final dose) if first dose of DTaP/DT was administered before the 1st birthday</td>
<td>6 months if first dose of DTaP/DT was administered before the 1st birthday</td>
</tr>
<tr>
<td>Human papillomavirus</td>
<td>9 years</td>
<td>Routine dosing intervals are recommended.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>N/A</td>
<td>6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>N/A</td>
<td>4 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td>N/A</td>
<td>4 weeks</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella</td>
<td>N/A</td>
<td>4 weeks</td>
<td>4 weeks if younger than age 13 years. 4 weeks if age 13 years or older</td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td>N/A</td>
<td>3 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dengue</td>
<td>9 years</td>
<td>6 months</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 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.

<table>
<thead>
<tr>
<th>VACCINE</th>
<th>Pregnancy</th>
<th>Immunocompromised status (excluding HIV infection)</th>
<th>HIV infection CD4+ count</th>
<th>INDICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td></td>
<td></td>
<td></td>
<td>CD4+ count of ≥200/mm³</td>
</tr>
<tr>
<td>Rotavirus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphtheria, tetanus, and acellular pertussis (DTaP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Haemophilus influenzae type b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza (IIV4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Influenza (LAIV4)</td>
<td></td>
<td></td>
<td></td>
<td>Asthma, wheezing: 2–4yrs³</td>
</tr>
<tr>
<td>Measles, mumps, rubella</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, and acellular pertussis (Tdap)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal ACWY</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Meningococcal B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal polysaccharide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dengue</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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.
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 clin-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 repeated 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 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 childhood 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/nr/7006a1.htm

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/rr6702a1.htm.

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

Routine vaccination
- ActHIB®, Hibercen®, 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 further details, 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/ww/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)
**Hepatitis A vaccination** (minimum age: 12 months for routine vaccination)

- **Administration of 4 doses** is permitted when a combination vaccine containing HepA 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 (Heplisav-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).

**International travel**

- Persons traveling to or working in countries with high or intermediate endemic hepatitis A (www.cdc.gov/travel/):
  - Infants: 0–6 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)

- **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 ≥2000 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).

**Notes**

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

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

- HPV vaccination routinely recommended at age 11–12 years (can start at age 9 years) and start-up HPV vaccination recommended for all persons through age 18 years if not adequately vaccinated

- 2- or 3-dose series depending on age at initial vaccination:
  - Age 9–14 years at initial vaccination: 2-dose series at 0, 6–12 months (minimum interval: 5 months; repeat dose if administered too soon)
  - Age 15 years or older at initial vaccination: 3-dose series at 0, 1–2 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 5 months; repeat dose if administered too soon)

- **Interrupted schedules**: If vaccination schedule is interrupted, the series does not need to be restarted.

- No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.

**Special situations**

- Immunocompromising conditions, including HIV infection:
  - 3-dose series, even for those who initiate vaccination at age 9 through 14 years.

- History of sexual assault or assault: Start at age 9 years.

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

- **Routine vaccination**
  - Use any influenza vaccine appropriate for age and health status annually.

- **Catch-up vaccination**
  - 1 dose for children age 6–8 months who have received at least 2 influenza vaccine doses before July 1, 2021.

- **Other situations**:
  - For doses administered before age 6 weeks (if anti-HBs < 10mIU/mL) is recommended for certain populations, including:
    - Infants born to HBsAg-positive mothers
    - Hemodialysis patients
    - Other immunocompromised persons

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

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

- **MMR or MMRV may be administered**

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

**Catch-up vaccination**

- Unvaccinated children and adolescents: 2-dose series at least 4 weeks apart

- The maximum age for use of MMRV is 12 years.

- Minimum interval between MMRV doses: 3 months

**Special situations**

- International travel:
  - Infants age 6–11 months: 1 dose before departure; revaccinate with 2 doses 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 age 11–12 years; 16 years

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

Special situations
Anatomical or functional asplenia (including sickle cell disease), HIV infection, persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use:
- Menveo
  - Dose 1 at age 2 months: 4-dose series (additional 3 doses at age 4, 6 and 12 months)
  - Dose 1 at age 3–6 months: 3- or 4- dose series (dose 2 [and dose 3 if applicable] at least 8 weeks after previous dose until a dose is received at age 7 months or older, followed by an additional dose at least 12 weeks later and after age 12 months)
  - Dose 1 at age 7–23 months: 2-dose series (dose 2 at least 12 weeks after dose 1 and after age 12 months)
  - Dose 1 at age 24 months or older: 2-dose series at least 8 weeks apart

- Menactra
  - Persistent complement component deficiency or complement inhibitor use:
    - Age 9–23 months: 2-dose series at least 12 weeks apart
    - Age 24 months or older: 2-dose series at least 8 weeks apart

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

Adolescent vaccination of children who received MenACWY prior to age 10 years:
- Children for whom boosters are recommended because of an ongoing increased risk of meningococcal disease (e.g., those with complement deficiency, HIV, or asplenia): Follow the booster schedule for persons at increased risk.
- Children for whom boosters are not recommended (e.g., a healthy child who received a single dose for travel to a country where meningococcal disease is endemic): Administer MenACWY according to the recommended adolescent schedule with dose 1 at age 11–12 years and dose 2 at age 16 years.

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

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

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

Routine vaccination with PCV13
- 4-dose series at age 2, 4, 6, 12–15 months

Catch-up vaccination with PCV13
- 1 dose for healthy children age 24–59 months with any incomplete* 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
  - No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after completing all recommended PCV13 doses)

Cerebrospinal fluid leak, cochlear implant:
- 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)

- Age 6–18 years
  - No history of any of PCV13 or PPSV23: 1 dose PCV13, 1 dose PPSV23 at least 8 weeks later
  - Any PCV13 but no PPSV23: 1 dose PCV13 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 dose 2 of PPSV23 5 years later

- 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 PCV13 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

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®
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/rr/rr5911.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/rr/mm6601a6.htm?s_cid=mm6601a6_w.
- Only trivalent OPV (OPV) 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/66/rr/mm6606a7.htm?s_cid=mm6606a7_w.
- 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
- Rotarix*: 3-dose series at age 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
(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 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.
- DTP 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.

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
* Note: For dose 1 in children age 12–14 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

Catch-up vaccination
- Ensure persons age 7–18 years without evidence of immunity (see MMWR at www.cdc.gov/mmwr/pdf/rr/rr5604.pdf) have a 2-dose series:
  - Age 7–12 years: routine interval: 3 months (a dose inadvertently administered 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.

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/vr/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
**Appendix**

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

*Guide to Contraindications and Precautions to Commonly Used Vaccines*

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

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

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Contraindications¹</th>
<th>Precautions²</th>
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| Influenza, egg-based, inactivated injectable (IIV4) | - 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) | - 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] | - Severe allergic reaction (e.g., anaphylaxis) to any cclIV of any valency, or to any component³ of cclIV | - 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 cclIV4, 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] | - Severe allergic reaction (e.g., anaphylaxis) to any RIV of any valency, or to any component³ of RIV4 | - 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] | - 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 | - 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, hemotologic, or metabolic disorders (including diabetes mellitus))  
- 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](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html)
2. When a precaution is present, vaccination should generally be deferred but might be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html)
3. Vaccination providers should check FDA-approved prescribing information for the most complete and updated information, including contraindications, warnings, and precautions. Package inserts for U.S.-licensed vaccines are available at [www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states](http://www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states)
### Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

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<tr>
<th>Vaccine</th>
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<th>Precautions</th>
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</thead>
<tbody>
<tr>
<td>Dengue (DEN4CYD)</td>
<td>• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹</td>
<td>• Pregnancy</td>
</tr>
<tr>
<td>Tetanus, diphtheria (DT)</td>
<td>• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹</td>
<td>• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus-toxoid–containing vaccine</td>
</tr>
<tr>
<td>Varicella (VAR)</td>
<td>• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component¹</td>
<td>• Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product)</td>
</tr>
</tbody>
</table>

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