2023 ACIP Schedule & Routine Vaccinations

with Archana Chatterjee, MD, PhD
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<table>
<thead>
<tr>
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<th>Role in Activity</th>
<th>Was there a relevant Financial Disclosure</th>
<th>List of Mitigated Disclosures</th>
</tr>
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<tbody>
<tr>
<td>Archana Chatterjee, MD, PhD</td>
<td>Faculty/Presenter</td>
<td>Yes</td>
<td>Consulting - Merck, Pfizer, Seqirus, Sanofi; Speakers Bureau - Sanofi</td>
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<tr>
<td>Craig Batterman MD</td>
<td>Planning Committee Member</td>
<td>No</td>
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<td>Shoji Samson, DO</td>
<td>Planning Committee Member, Content Reviewer, Abstract Reviewer</td>
<td>No</td>
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<tr>
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<td>Speakers Bureau -GSK, Merck</td>
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<td>Laura Buthod, MD</td>
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<tr>
<td>Sofia Shakir MD</td>
<td>Planning Committee Member</td>
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<td>N/A</td>
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<tr>
<td>Carissa Lee Holmes</td>
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<tr>
<td>Nina Alfieri MD MS</td>
<td>Planning Committee Member</td>
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<tr>
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<td>Content Reviewer/CME</td>
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<tr>
<td>Patrick Dolan, MD</td>
<td>Content Reviewer/CME</td>
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<tr>
<td>Shefali Parikh</td>
<td>Staff</td>
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<tr>
<td>Monica Del Ciello, MPH</td>
<td>Staff</td>
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<tr>
<td>Magale Avitia, MPH, CHES</td>
<td>Staff, Content Reviewer, Moderator/Facilitator</td>
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<td>Caroline Werenskjold, MPH</td>
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<td>Stephanie Atella</td>
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</table>
HELLO!

Archana Chatterjee

- M.D, Ph. D
- Dean, Chicago Medical School
- Vice President for Medical Affairs, Rosalind Franklin University
Disclosures

- Speakers’ Bureau
  - Sanofi Pasteur
- Advisory Board
  - Pfizer, Merck, Seqirus
In Memoriam

- Please take a moment to remember those whom we have lost to this pandemic, their family and friends
- Particularly, those heath professionals who take risks daily to care for others
Learning Objectives

- Review the routine US child and adolescent immunization schedule for 2023
- Discuss ACIP updates to the schedule
- Describe immunization in special circumstances
- Review vaccine safety
Changes in the 2023 Child and Adolescent Immunization Schedule

New or updated ACIP recommendations for:

- Influenza vaccine
- Pneumococcal conjugate vaccine
- Measles, mumps, and rubella vaccine (MMR)
- COVID-19 vaccine
Clarification of the recommendations for:

- Dengue vaccine
- Hepatitis A vaccine (HepA)
- Hepatitis B vaccine (HepB)
- Human papillomavirus vaccine (HPV)
- Meningococcal serogroups A, C, W, Y vaccine (MenACWY)
- Meningococcal serogroup B vaccine (MenB)
- Inactivated poliovirus vaccine (IPV)
- Varicella vaccine
# 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>Administration(s)</th>
<th>Trade name(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVID-19</td>
<td>One dose</td>
<td>Comvax* /Pfizer-BioNTech COVID-19 Vaccine</td>
</tr>
<tr>
<td>2x COVID-19</td>
<td>1 dose</td>
<td>SPIREXVAX / Moderna COVID-19 Vaccine</td>
</tr>
<tr>
<td>Diphtheria vaccine</td>
<td>One dose</td>
<td>Dipherix*</td>
</tr>
<tr>
<td>Diphtheria, tetanus, and acellular pertussis vaccine</td>
<td>Two doses</td>
<td>Diphtheria Pediatrix* / Infanrix*</td>
</tr>
<tr>
<td>Haemophilus influenzae type b vaccine</td>
<td>One dose</td>
<td>Hib (PRP-T) ActHIB*</td>
</tr>
<tr>
<td>Hepatitis A vaccine</td>
<td>Two doses</td>
<td>HepArix* / Havrix*</td>
</tr>
<tr>
<td>Hepatitis B vaccine</td>
<td>Three doses</td>
<td>Engerix-B* / Recombivax HB*</td>
</tr>
<tr>
<td>Human papillomavirus vaccine</td>
<td>Two doses</td>
<td>Gardasil 9*</td>
</tr>
<tr>
<td>Influenza vaccine (inactivated)</td>
<td>One dose</td>
<td>Flumist* Quadrivalent</td>
</tr>
<tr>
<td>Influenza vaccine (live, attenuated)</td>
<td>One dose</td>
<td>MMR M-MR* / Proplex*</td>
</tr>
<tr>
<td>Measles, mumps, and rubella vaccine</td>
<td>Two doses</td>
<td>Merck</td>
</tr>
<tr>
<td>Measles, mumps, and rubella vaccine</td>
<td>Three doses</td>
<td>Merck</td>
</tr>
<tr>
<td>Meningococcal serogroups A, C, W, Y vaccine</td>
<td>Two doses</td>
<td>MenACWY-D Menactra*</td>
</tr>
<tr>
<td>Meningococcal serogroup B vaccine</td>
<td>Two doses</td>
<td>MenB-4C Menaxim*</td>
</tr>
<tr>
<td>Pneumococcal conjugate vaccine</td>
<td>One dose</td>
<td>PCV13 Prevenar 13*</td>
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<tr>
<td>Pneumococcal polysaccharide vaccine</td>
<td>One dose</td>
<td>PPSV23 Pneumovax 23*</td>
</tr>
<tr>
<td>Poliovirus vaccine (inactivated)</td>
<td>Three doses</td>
<td>IPV</td>
</tr>
<tr>
<td>Poliovirus vaccine (inactivated)</td>
<td>Three doses</td>
<td>IPV</td>
</tr>
<tr>
<td>Tetanus, diphtheria, and acellular pertussis vaccine</td>
<td>One dose</td>
<td>Tetapertius* / Bopepxa*</td>
</tr>
<tr>
<td>Tetanus and diphtheria vaccine</td>
<td>One dose</td>
<td>Td</td>
</tr>
<tr>
<td>Varicella vaccine</td>
<td>One dose</td>
<td>VAR</td>
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</tbody>
</table>

*Combinations vaccines (free combination vaccines instead of separate injections when appropriate)*

<table>
<thead>
<tr>
<th>Combination vaccine</th>
<th>Administration(s)</th>
<th>Trade name(s)</th>
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</thead>
<tbody>
<tr>
<td>DTaP, Hib, and inactivated poliovirus vaccine</td>
<td>Three doses</td>
<td>Pentacel*</td>
</tr>
<tr>
<td>DTaP, inactivated poliovirus and Haemophilus influenzae type b vaccine</td>
<td>Three doses</td>
<td>Pentacel*</td>
</tr>
<tr>
<td>DTaP and inactivated poliovirus vaccine</td>
<td>Two doses</td>
<td>Acenfocus*</td>
</tr>
<tr>
<td>DTaP, inactivated poliovirus, Haemophilus influenzae type b vaccine, and Hepatitis A vaccine</td>
<td>Three doses</td>
<td>Twinrix*</td>
</tr>
</tbody>
</table>

*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 ACP 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 1-800-822-7967

Questions or comments

Contact www.cdc.gov/cdc-info or 800-CDC-FREE (800-232-4636), in English or Spanish, 8 a.m. - 8 p.m. ET, Monday through Friday, excluding holidays.

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

Helpful information

- Complete Advisory Committee on Immunization Practices (ACIP) recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- General Best Practice Guidelines for Immunization (including contraindications and precautions): www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Vaccine information statements: www.cdc.gov/vaccines/hcp/vbhis/strv.html
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<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>
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</thead>
<tbody>
<tr>
<td>Hepatitis B (HepB)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
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<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>
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<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>
<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>
<td>Pneumococcal conjugate (PCV13, PCV15)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td>4th dose</td>
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<tr>
<td>COVID-19 (1st COVID-mRNA, 2nd COVID-mRNA, 3rd COVID-aS)</td>
<td>2- or 3- dose primary series and booster (See Notes)</td>
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<tr>
<td>Measles, mumps, rubella (MMR)</td>
<td>See Notes</td>
<td>1st dose</td>
<td>2nd dose</td>
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<td>Hepatitis A (HepA)</td>
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<td>2-dose series, See Notes</td>
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<td>Tetanus, diphtheria, acellular pertussis (Tdap&lt;7 yrs)</td>
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<tr>
<td>Human papillomavirus (HPV)</td>
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<tr>
<td>Meningococcal (MenACWY-D ≥9 mos, MenACWY-CRM ≥2 mos, MenACWY-TT ≥2 mos)</td>
<td>See Notes</td>
<td>1st dose</td>
<td>2nd dose</td>
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<tr>
<td>Meningococcal B (MenB-4C, MenB-FHbp)</td>
<td>See Notes</td>
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<tr>
<td>Pneumococcal polysaccharide (PPSV23)</td>
<td>See Notes</td>
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<tr>
<td>Dengue (DEN4CYD:9-16 yrs)</td>
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</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**

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

### Children age 4 months through 6 years

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for First Dose</th>
<th>Dose 1 to Dose 2</th>
<th>Minimum Interval Between Doses</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
</tr>
</thead>
<tbody>
<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>
<td></td>
</tr>
<tr>
<td>Rotavirus</td>
<td>6 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>Maximum age for final dose is 8 months, 8 days</td>
<td></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>
<td>6 months</td>
</tr>
<tr>
<td>Rubella</td>
<td>No further doses needed if first dose was administered at age 15 months or older</td>
<td>If first dose was administered before the 1st birthday, 8 weeks (as final dose)</td>
<td>8 weeks and at least 6 months, 6 months</td>
<td>8 weeks (as final dose)</td>
<td>This dose is only necessary for children age 12 through 59 months who received 3 doses before the 1st birthday</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 12 months or older</td>
<td>If current age is younger than 12 months and first dose was administered at younger than age 7 months, 8 weeks (as final dose)</td>
<td>8 weeks (as final dose)</td>
<td>This dose is only necessary for children age 12 through 59 months regardless of risk, or age 60 through 71 months with any risk, who received 3 doses before age 12 months</td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td>6 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>6 months</td>
<td>6 months (minimum age 4 years for final dose)</td>
</tr>
<tr>
<td>Meningococcal ACWY</td>
<td>12 months</td>
<td>6 weeks</td>
<td>See Notes</td>
<td>See Notes</td>
<td></td>
</tr>
</tbody>
</table>

### Children and adolescents age 7 through 18 years

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for First Dose</th>
<th>Dose 1 to Dose 2</th>
<th>Minimum Interval Between Doses</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meningococcal ACWY</td>
<td>Not applicable (N/A)</td>
<td>8 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>If first dose of DTaP+IPV was administered before the 1st birthday</td>
</tr>
<tr>
<td>Tetanus, diphtheria, tetanus, and acellular pertussis</td>
<td>7 years</td>
<td>4 weeks</td>
<td>4 weeks</td>
<td>If first dose of DTaP+IPV was administered before the 1st birthday</td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus</td>
<td>9 years</td>
<td>Routine dosing intervals are recommended.</td>
<td>See Notes</td>
<td>See Notes</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>N/A</td>
<td>6 months</td>
<td>6 months</td>
<td>6 months</td>
<td>If first dose of DTaP+IPV was administered before the 1st birthday</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>N/A</td>
<td>4 weeks</td>
<td>8 weeks and at least 16 weeks after first dose</td>
<td>4 weeks</td>
<td>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.</td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td>N/A</td>
<td>4 weeks</td>
<td>6 months</td>
<td>6 months</td>
<td>A fourth dose of IPV is indicated if all previous doses were administered at &lt;4 years or if the third dose was administered &gt;6 months after the second dose.</td>
</tr>
<tr>
<td>Measles, mumps, rubella</td>
<td>N/A</td>
<td>4 weeks</td>
<td>6 months</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td>N/A</td>
<td>3 months</td>
<td>4 weeks and at least 15 years</td>
<td>4 weeks</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Dengue</td>
<td>9 years</td>
<td>6 months</td>
<td>6 months</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>VACCINE</td>
<td>INDICATION</td>
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<td>----------------------------------------------------------------------------</td>
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<tr>
<td></td>
<td>Pregnancy</td>
<td>Immunosuppressed status (excluding HIV infection)</td>
<td>HIV Infection CD4+ counts</td>
<td>Kidney failure, end-stage renal disease, or on hemodialysis</td>
<td>Heart disease or chronic lung disease</td>
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<tr>
<td>Hepatitis B</td>
<td></td>
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<td></td>
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<tr>
<td>Rotavirus</td>
<td></td>
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<tr>
<td>Diphtheria, tetanus, and acellular pertussis (DTaP)</td>
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<tr>
<td>Haemophilus influenza type b</td>
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<tr>
<td>Pneumococcal conjugate</td>
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<tr>
<td>Inactivated poliovirus</td>
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<tr>
<td>COVID-19</td>
<td>See Notes</td>
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<tr>
<td>Influenza A (IV/IV)</td>
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<tr>
<td>Influenza (LAIV)</td>
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<tr>
<td>Measles, mumps, rubella</td>
<td>*</td>
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<tr>
<td>Varicella</td>
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<tr>
<td>Hepatitis A</td>
<td></td>
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<tr>
<td>Tetanus, diphtheria, and acellular pertussis (Tdap)</td>
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<tr>
<td>Human papillomavirus</td>
<td>*</td>
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<tr>
<td>Meningococcal ACWY</td>
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<tr>
<td>Meningococcal B</td>
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<tr>
<td>Pneumococcal polysaccharide</td>
<td></td>
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<tr>
<td>Dengue</td>
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</tbody>
</table>

**Recommended for persons with an additional risk factor for which the vaccine would be indicated.**

**Vaccination is recommended, and additional doses may be necessary based on medical condition or vaccine. See Notes.**

**Precaution-vaccine might be indicated if benefit of protection outweighs risk of adverse reaction.**

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

**No recommendation/Not applicable.**

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a. For additional information regarding HIV laboratory parameters and use of live vaccines, see the General Best Practice Guidelines for Immunization, “AIDS/Immunocompetence,” at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html and Table 4-1 (footnote i) at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.

b. Severe Combined Immunodeficiency

c. LAIV 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, 2023.

**Additional information**
- Consult relevant ACIP statements for detailed recommendations at www.cdc.gov/vaccines/hcp/acip-recs/index.html.
- For calculating intervals between doses, 4 weeks = 28 days. Intervals of ≥4 months are determined by calendar months.
- Within a number range (e.g., 12–18), a dash (–) should be read as “through.”
- Vaccine doses administered ≥4 days before the minimum age or interval are considered valid. Doses of any vaccine administered ≥5 days earlier than the minimum age or minimum interval should not be counted as valid and should be repeated as age appropriate.
- The repeat dose should be spaced after the invalid dose by the recommended minimum interval. For further details, see Table 3-2. Recommended and minimum ages and intervals between vaccine doses, in General Best Practice Guidelines for Immunization at www.cdc.gov/vaccines/hcp/adp-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 federal 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 vaccines included in the child and adolescent vaccine schedule are covered by VICP except dengue, PPV23, and COVID-19 vaccines. COVID-19 vaccines that are authorized or approved by the FDA are covered by the Countermeasures Injury Compensation Program (CICP). For more information, see www.hrsa.gov/vaccinecompensation or www.hrsa.gov/cicp.

**COVID-19 vaccination**
- Minimum age: 6 months (Moderna and Pfizer-BioNTech COVID-19 vaccines), 12 years (Novavax COVID-19 Vaccine)
- Routine vaccination
  - Primary series:
    - Age 6 months–4 years: 2-dose series at 0, 4–8 weeks (Moderna) or 3-dose series at 0, 3–8, 11–16 weeks (Pfizer-BioNTech)
    - Age 5–11 years: 2-dose series at 0, 4–8 weeks (Moderna) or 2-dose series at 0, 3–8 weeks (Pfizer-BioNTech)
    - Age 12–18 years: 2-dose series at 0, 4–8 weeks (Moderna) or 2-dose series at 0, 3–8 weeks (Novavax, Pfizer-BioNTech)
  - For booster dose recommendations see www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html
- Special situations
  - Persons who are moderately or severely immunocompromised
    - Primary series:
      - Age 6 months–4 years: 3-dose series at 0, 4, 8 weeks (Moderna) or 3-dose series at 0, 3, 11 weeks (Pfizer-BioNTech)
      - Age 5–11 years: 3-dose series at 0, 4, 8 weeks (Moderna) or 3-dose series at 0, 3, 7 weeks (Pfizer-BioNTech)
      - Age 12–18 years: 3-dose series at 0, 4, 8 weeks (Moderna) or 3-dose series at 0, 3, 7 weeks (Novavax) or 3-dose series at 0, 3, 7 weeks (Pfizer-BioNTech)
    - Booster dose: see www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html
    - Pre-exposure prophylaxis (monoclonal antibodies) may be considered to complement COVID-19 vaccination. See www.cdc.gov/vaccines/covid-19/cdber-considerations/interim-considerations-us.html#immunocompromised

**Dengue vaccination**
- Minimum age: 9 years
- Routine vaccination
  - Age 9–16 years living in areas with endemic dengue 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/mm/ r7006a1.htm?_cdu-r7006a1_w and www.cdc.gov/dengue/vaccine/hcp/index.html
  - Dengue vaccine should not be administered to children traveling to or visiting endemic dengue areas.

**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/mm/r6702a1.htm.

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

**Routine vaccination**
- AcrHIB*, Hibberix*, 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 age 12–15 months and at least 8 weeks after dose 2.
- 1 dose administered at age 15 months or older: No further doses needed.
- Unvaccinated at age 15–59 months: Administer 1 dose.
- Previously unvaccinated children age 60 months or older who are not considered high risk: Do not require catch-up vaccination.

**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.

**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.

**Elective splenectomy:**
- Unvaccinated persons age 5 years or older: 1 dose.
  - 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.

**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.

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

**Routine vaccination**
- 3-dose series at age 0, 1–2, 6–18 months (use monovalent HepB vaccine for doses administered before age 6 weeks):
  - Birth weight ≥2,000 grams: 1 dose within 24 hours of birth if medically stable.
  - Birth weight <2,000 grams: 1 dose at chronological age 1 month or hospital discharge (whichever is earlier and even if weight is still <2,000 grams).

- Infants who did not receive a birth dose should begin the series as soon as possible (see Table 2 for minimum intervals).
- Administration of 4 doses is permitted when a combination vaccine containing HepB is used after the birth dose.
- Minimum intervals (see Table 2): when 4 doses are administered, substitute “dose 4” for “dose 3” in these calculations.
- Final (3rd or 4th) dose: age 6–18 months (minimum age 24 weeks)
- Mother is HBsAg-positive:
  - Birth dose (monovalent HepB vaccine only): administer HepB vaccine and hepatitis B immune globulin (HBIG) in separate limbs within 12 hours of birth, regardless of birth weight.
  - Birth weight <2,000 grams: administer 3 additional doses of HepB vaccine beginning at age 1 month (total of 4 doses).
  - Final (3rd or 4th) dose: administer at age 6 months (minimum age 24 weeks).
  - Test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose. Do not test before age 9 months.

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

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

**Catch-up vaccination**
- Unvaccinated persons through age 18 years should complete a 2-dose series (minimum interval: 6 months).
- Persons who previously received 1 dose at age 12 months or older should receive dose 2 at least 6 months after dose 1.
Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2023

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, 6 months (minimum intervals: dose 1 to dose 2: 4–8 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 6 months; repeat dose if administered too soon)
  - Interrupted schedules: If vaccination schedule is interrupted, the series does not need to be restarted.

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

Special situations

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

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

Routine vaccination

- Use any influenza vaccine appropriate for age and health status annually:
  - 2 doses, separated by at least 4 weeks, for children age 6 months–8 years who have received fewer than 2 influenza vaccine doses before July 1, 2022, or whose influenza vaccination history is unknown (administer dose 2 even if the child turns 9 between receipt of dose 1 and dose 2)
  - 1 dose for children age 6 months–8 years who have received at least 2 influenza vaccine doses before July 1, 2022
  - 1 dose for all persons age 9 years or older

For the 2022–2023 season, see www.cdc.gov/mmwr/volumes/71/mm7101a1.htm.

For the 2023–24 season, see the 2023–24 ACIP influenza vaccine recommendations.

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

Notes

- Mother is HBSAg-unknown
  If other evidence suggestive of maternal hepatitis B infection exists (e.g., presence of HBV DNA, HBeAg-positive, or mother known to have chronic hepatitis B infection), manage infant as if mother is HBSAg-positive.
  - Birth dose (monovalent HepB vaccine only):
    - Birth weight ≥2,000 grams: administer HepB vaccine within 12 hours of birth. Determine mother’s HBSAg status as soon as possible. If mother is determined to be HBSAg-positive, administer HBIG as soon as possible (in separate limb), but no later than 7 days of age.
    - Birth weight <2,000 grams: administer HepB vaccine and HBIG (in separate limbs) within 12 hours of birth.
    - Administer 3 additional doses of HepB vaccine beginning at age 1 month (total of 4 doses)
  - Final (3rd or 4th) dose: administer at age 6 months (minimum age 24 weeks)
    - If mother is determined to be HBSAg-positive or if status remains unknown, test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose. Do not test before age 9 months.

Catch-up vaccination

- Unvaccinated persons should complete a 3-dose series at 0, 1–2, 6 months. See Table 2 for minimum intervals.
- 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:
  - Hepatitis B: 2-dose series at least 4 weeks apart
  - PreHeptivac®: 3-dose series at 0, 1, and 6 months
  - Combined HepA and HepB vaccine, Twinrix®: 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).

Special situations

- Revaccination is not generally recommended for persons with a normal immune status who were vaccinated as infants, children, adolescents, or adults.
- Post-vaccination serology testing and revaccination (if anti-HBs < 10mIU/mL) is recommended for certain populations, including:
  - Infants born to HBSAg-positive mothers
  - Persons who are predialysis or on maintenance dialysis
  - Other immunocompromised persons
  - For detailed revaccination recommendations, see www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb.html.

Note: Hepatitis B and PreHeptivac® are not recommended in pregnancy due to lack of safety data in pregnant persons.

- Egg allergy, hives only: Any influenza vaccine appropriate for age and health status annually
- Egg allergy with symptoms other than hives (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using egg-based IIV4 or LAIV, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions.
- Severe allergic reaction (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine: see Appendix listing contraindications and precautions.
- Close contacts (e.g., caregivers, healthcare personnel) of severely immunosuppressed persons who require a protected environment: these persons should not receive LAIV. If LAIV is given, they should avoid contact with/ caring for such immunosuppressed persons for 7 days after vaccination.

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

Routine vaccination

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

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

Catch-up vaccination

- Unvaccinated children and adolescents: 2-dose series at least 4 weeks apart.
- The maximum age for use of MMRV is 12 years.
- Minimum interval between MMRV doses: 3 months.
Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2023

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
  - In mumps outbreak settings, for information about additional doses of MMR (including 3rd dose of MMR), see www.cdc.gov/mmwr/volumes/67/wr/mm6701a7.htm
- Meningococcal serogroup A,C,W,Y vaccination (minimum age: 2 months [MenACWY-CRM: Menveo], 9 months [MenACWY-D: Menactra], 2 years [MenACWY-TT, MenQuadRI])

Routine vaccination
- 2-dose series at age 11–12 years; 16 years
- Age 13–15 years: 1 dose now and booster at age 16–18 years (minimum interval: 8 weeks)
- Men 16–18 years: 1 dose

Special situations
- Anatomical 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 PCV series.
- MenQuadRI*
  - Dose 1 at age 24 months or older: 2-dose series at least 8 weeks apart

Travel to countries with hyperendemic or epidemic meningococcal disease, including countries in the African meningitis belt or during the Hajj (www.cdc.gov/travel/
- Children less than age 24 months:
  - Menveo** (age 2–23 months)
    - Dose 1 at age 2 months: 4-dose series (additional 3 doses at age 4, 6, and 12 months)
    - Dose 1 at age 3–6 months: 3- or 4-dose series (dose 2 and dose 3 if applicable) at least 8 weeks after previous dose until a dose is received at age 7 months or older, followed by an additional dose at least 12 weeks later and after age 12 months
    - Dose 1 at age 7–23 months: 2-dose series (dose 2 at least 12 weeks after dose 1 and after age 12 months)
- Menactra** (age 9–23 months)
  - 2-dose series (dose 2 at least 12 weeks after dose 1; dose 2 may be administered as early as 8 weeks after dose 1 in travelers)
- Children age 2 years or older: 1 dose Menveo**, Menactra*, or MenQuadRI*
- 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 MenQuadRI*

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 component 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.

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

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
  - Trumena*: 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
- Anatomical or functional asplenia (including sickle cell disease), persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use:
  - Bexsero*: 2-dose series at least 1 month apart
- Trumena*: 3-dose series at 0, 1–2, 6 months (if dose 2 was administered at least 6 months after dose 1, dose 3 is not needed; if dose 3 is administered earlier than 4 months after dose 2, a 4th dose should be administered at least 4 months after dose 3)

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

For MenB booster dose recommendations for groups listed under “Special situations” and in an outbreak setting and additional meningococcal vaccination information, see www.cdc.gov/mmwr/volumes/69/rn/rr6909a1.htm.
Notes

Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2023

Pneumococcal vaccination
(minimum age: 6 weeks [PCV13], [PCV15], 2 years [PPSV23])

Routine vaccination with PCV
• 4-dose series at 2, 4, 6, 12–15 months

Catch-up vaccination with PCV
• Healthy children age 24–59 months with any incomplete* PCV series: 1 dose PCV
• For other catch-up guidance, see Table 2.
Note: PCV13 and PCV15 can be used interchangeably for children who are healthy or have underlying conditions.
PCV15 is not indicated for children who have received 4 doses of PCV13 or another age appropriate complete PCV13 series.

Special situations
Underlying conditions below: When both PCV and PPSV23 are indicated, administer PCV first. PCV and PPSV23 should not be administered during the 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 PCV doses: 1 dose PCV (at least 8 weeks after any prior PCV dose)
  - Less than 3 PCV doses: 2 doses PCV (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 PCV doses)

Age 6–18 years
• Any incomplete* series with PCV: no further PCV doses needed
• No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after completing all recommended PCV doses)

Cerebrospinal fluid leak, cochlear implant:

Age 2–5 years
• Any incomplete* series with:
  - 3 PCV doses: 1 dose PCV (at least 8 weeks after any prior PCV dose)
  - Less than 3 PCV doses: 2 doses PCV (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 PCV doses)

Age 6–18 years
• Any incomplete* series with:
  - 3 PCV doses: 1 dose PCV (at least 8 weeks after any prior PCV dose)
  - Less than 3 PCV doses: 2 doses PCV (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 PCV doses)

Age 6–18 years
• No history of either PCV or PPSV23: 1 dose PCV, 1 dose PPSV23 at least 8 weeks later
• Any PCV but no PPSV23: 1 dose PPSV23 at least 8 weeks after the most recent dose of PCV
• PPSV23 but no PCV: 1 dose PCV 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 PCV doses: 1 dose PCV (at least 8 weeks after any prior PCV dose)
  - Less than 3 PCV doses: 2 doses PCV (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 PCV doses) and a dose 2 of PPSV23 5 years later

Age 6–18 years
• Any incomplete* series with:
  - 3 PCV doses: 1 dose PCV (at least 8 weeks after any prior PCV dose)
  - Less than 3 PCV doses: 2 doses PCV (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 PCV doses)

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?s_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).
  - Doses of OPV administered on or after April 1, 2016, should not be counted.
  - For guidance to assess doses documented as “OPV” see www.cdc.gov/mmwr/volumes/66/wr/mm6606a7.htm?s_c id=mm6606a7_w.
• For other catch-up guidance, see Table 2.

Special situations
• Adolescents aged 18 years at increased risk of exposure to poliovirus with:
  - No evidence of a complete polio vaccination series (i.e., at least 3 doses); administer remaining doses (1, 2, or 3 doses) to complete a 3-dose series.
  - Evidence of completed polio vaccination series (i.e., at least 3 doses): may administer one lifetime IPV booster
For detailed information, see: www.cdc.gov/vaccines/vpd/polio/hcp/recommendations.html
**Rotavirus vaccination** (minimum age: 6 weeks)

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

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

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

**Routine vaccination**
- Adolescents age 11–12 years: 1 dose Tdap
- Pregnancy: 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36.
- Tdap may be administered regardless of the interval since the last 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](http://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm).
  *Fully vaccinated = 5 valid doses of DTaP OR 4 valid doses of DTaP if dose 4 was administered at age 4 years or older

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

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

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

**Catch-up vaccination**
- Ensure persons age 7–18 years without evidence of immunity (see MMRV at [www.cdc.gov/mmwr/pdf/rr/rr5604.pdf](http://www.cdc.gov/mmwr/pdf/rr/rr5604.pdf)) have a 2-dose series:
  - Age 7–12 years: Routine interval: 3 months (a dose inadvertently administered after at least 4 weeks may be counted as valid)
  - Age 13 years and older: Routine interval: 4–8 weeks (minimum interval: 4 weeks)
- The maximum age for use of MMRV is 12 years.
# Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2023

Guide to Contraindications and Precautions to Commonly Used Vaccines

Adapted from Table 4-1 in Advisory Committee on Immunization Practices (ACIP) General Best Practice Guidelines for Immunization: Contraindication and Precautions available at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html and ACIP’s Recommendations for the Prevention and Control of 2022-23 seasonal influenza with Vaccines available at www.cdc.gov/mmwr/volumes/71/rr/rr7101a1.htm.

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**For COVID-19 vaccine contraindications and precautions see** [www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html)

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Contraindicated or Not Recommended</th>
<th>Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza, egg-based, inactivated injectable (IV) (&lt;i&gt;includes&lt;/i&gt; Quadrivalent)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IV, cIIV, RIV, or LAIV of any valency) - Severe allergic reaction (e.g., anaphylaxis) to any vaccine component (excluding egg)</td>
<td>- Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine - Moderation or severe acute illness with or without fever</td>
</tr>
<tr>
<td>Influenza, cell culture-based inactivated injectable ([cIIV], Flucelvax&lt;sup&gt;a&lt;/sup&gt; Quadrivalent)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) to any cell of any valency, or to any component of cIIV4</td>
<td>- 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 IV, RIV, 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</td>
</tr>
<tr>
<td>Influenza, recombinant injectable (RIV4, Flublok&lt;sup&gt;b&lt;/sup&gt; Quadrivalent)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) to any RIV of any valency, or to any component of RIV4</td>
<td>- 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 IV, cIIV, 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</td>
</tr>
<tr>
<td>Influenza, live attenuated (LAI, Flumist&lt;sup&gt;c&lt;/sup&gt; Quadrivalent)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IV, cIIV, RIV, or LAIV of any valency) - Severe allergic reaction (e.g., anaphylaxis) to any vaccine component (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</td>
<td>- 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 underlying medical conditions (other than those listed under contraindications) that might predispose to complications after wild-type influenza virus infection (e.g., chronic pulmonary, cardiovascular (except isolated hypertension), renal, hepatic, neurologic, hematologic, or metabolic disorders (including diabetes mellitus)) - Moderate or severe acute illness with or without fever</td>
</tr>
</tbody>
</table>

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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](http://www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states)
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<td>Diphtheria (DTPAC)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component&lt;br&gt;- Severe immunoallergy (e.g., histamino-rhinoconjunctivitis)</td>
<td>- Pregnancy&lt;br&gt;- HIV infection with evidence of severe immunosuppression&lt;br&gt;- Moderate or severe acute illness with or without fever</td>
</tr>
<tr>
<td>Tetanus, diphtheria, and pertussis (DTPa)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component&lt;br&gt;- For DTP only: hypersensitivity (e.g., cough, decreased level of consciousness, prolonged sedation) not attributable to another identifiable cause within 7 days of administration of previous dose of DTP or DTPa&lt;br&gt;- History of severe allergic reaction to any diphtheria, tetanus, or pertussis vaccine&lt;br&gt;- Lack of laboratory confirmation of a previous Diphtheria infection</td>
<td>- Guillain-Barré syndrome (GBS) within 6 weeks after previous dose of tetanus toxoid–containing vaccine&lt;br&gt;- History of severe allergic reaction to tetanus toxoid–containing vaccine&lt;br&gt;- Diphtheria&lt;br&gt;- For DTP only: progression of neurological disease, including infantile spasms, uncontrolled epilepsy, progressive neurotoxicity after DTP with neurologic status stabilized and stabilized&lt;br&gt;- Moderate or severe acute illness with or without fever</td>
</tr>
<tr>
<td>Measles, mumps, and rubella (MMR)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component&lt;br&gt;- Severe immunoallergy (e.g., histamino-rhinoconjunctivitis)</td>
<td>- Recent (&lt;1 month) receipt of antibody-containing blood product (specific interval depends on product)&lt;br&gt;- History of thrombocytopenia or other thrombocytopenic purpura, anaphylactic or severe systemic reaction to MMR&lt;br&gt;- Need for tuberculosis skin testing or interferon gamma release assay (IGRA) testing&lt;br&gt;- Moderate or severe acute illness with or without fever&lt;br&gt;- For MMR only: People of any age (i.e., siblings or parent) history of seizures of any etiology</td>
</tr>
<tr>
<td>Meningococcal ACWY (MenACWY)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component&lt;br&gt;- Severe imunoallergy (e.g., histamino-rhinoconjunctivitis)</td>
<td>- For MenACWY only: Protein B with less than 6-months&lt;br&gt;- Moderate or severe acute illness with or without fever</td>
</tr>
<tr>
<td>Pneumococcal conjugate (PCV)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component&lt;br&gt;- Severe imunoallergy (e.g., histamino-rhinoconjunctivitis)</td>
<td>- Moderate or severe acute illness with or without fever</td>
</tr>
<tr>
<td>Poliovirus vaccine, inactivated (IPV)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</td>
<td>- Moderate or severe acute illness with or without fever</td>
</tr>
<tr>
<td>Rotavirus (RV) (Rotavirus)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component&lt;br&gt;- Severe combined immunodeficiency (SCID)&lt;br&gt;- History of intussusception</td>
<td>- Altered immunocompetence other than SCID&lt;br&gt;- Chronic gastrointestinal disease&lt;br&gt;- RV only: Spina bifida or other spinal anomaly&lt;br&gt;- Moderate or severe acute illness with or without fever</td>
</tr>
<tr>
<td>Tetanus, diphtheria, and acellular pertussis (Tdap)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component&lt;br&gt;- For Tdap only: Encephalopathy (e.g., coma, decreased level of consciousness, prolonged sedation) not attributable to another identifiable cause within 7 days of administration of previous dose of DTP, DTPa, or Tdap</td>
<td>- Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus toxoid–containing vaccine&lt;br&gt;- History of severe allergic reaction to tetanus toxoid–containing vaccine&lt;br&gt;- Tdap&lt;br&gt;- For Tdap only: Progression of neurological disease, including infantile spasms, uncontrolled epilepsy, progressive neurotoxicity after Tdap with neurologic status stabilized and stabilized&lt;br&gt;- Moderate or severe acute illness with or without fever</td>
</tr>
<tr>
<td>Varicella (V)</td>
<td>- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component&lt;br&gt;- Severe immunoallergy (e.g., histamino-rhinoconjunctivitis)</td>
<td>- Recombinant (&gt;1 month) receipt of antibody-containing blood product (specific interval depends on product)&lt;br&gt;- Receipt of specific antiviral drug (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination&lt;br&gt;- Use of aseptic or aspergillus-containing products&lt;br&gt;- Moderate or severe acute illness with or without fever&lt;br&gt;- If using MMRV, use MMR/MMRV for additional precautions</td>
</tr>
</tbody>
</table>
Influenza

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

**Routine vaccination**
- Use any influenza vaccine appropriate for age and health status annually:
  - 2 doses, separated by at least 4 weeks, for children age 6 months–8 years who have received fewer than 2 influenza vaccine doses before July 1, 2022, or whose influenza vaccination history is unknown (administer dose 2 even if the child turns 9 between receipt of dose 1 and dose 2)
  - 1 dose for children age 6 months–8 years who have received at least 2 influenza vaccine doses before July 1, 2022
  - 1 dose for all persons age 9 years or older

**Special situations**
- **Egg allergy, hives only:** Any influenza vaccine appropriate for age and health status annually
- **Egg allergy with symptoms other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using egg-based IIV4 or LAIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions.
- **Severe allergic reaction (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine:** see Appendix listing contraindications and precautions
- **Close contacts (e.g., caregivers, healthcare personnel) of severely immunosuppressed persons who require a protected environment:** these persons should not receive LAIV4. If LAIV4 is given, they should avoid contact with/caring for such immunosuppressed persons for 7 days after vaccination.
Pneumococcal

Pneumococcal vaccination (minimum age: 6 weeks [PCV13], [PCV15], 2 years [PPSV23])

**Routine vaccination with PCV**
- 4-dose series at 2, 4, 6, 12–15 months

**Catch-up vaccination with PCV**
- Healthy children age 24–59 months with any incomplete* PCV series: 1 dose PCV
- For other catch-up guidance, see Table 2.

**Special situations**
Underlying conditions below: When both PCV and PPSV23 are indicated, administer PCV first. PCV and PPSV23 should not be administered during the 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:
- 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:
Measles, mumps, and rubella vaccination
(minimum age: 12 months for routine vaccination)

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

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

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

**Special situations**
- **International travel**
  - *Infants age 6–11 months:* 1 dose before departure; revaccinate with 2-dose series at age 12–15 months (12 months for children in high-risk areas) and dose 2 as early as 4 weeks later.
  - *Unvaccinated children age 12 months or older:* 2-dose series at least 4 weeks apart before departure
COVID-19 vaccination
(minimum age: 6 months [Moderna and Pfizer-BioNTech COVID-19 vaccines], 12 years [Novavax COVID-19 Vaccine])

Routine vaccination

• Primary series:
  - **Age 6 months–4 years:** 2-dose series at 0, 4-8 weeks (Moderna) or 3-dose series at 0, 3-8, 11-16 weeks (Pfizer-BioNTech)
  - **Age 5–11 years:** 2-dose series at 0, 4-8 weeks (Moderna) or 2-dose series at 0, 3-8 weeks (Pfizer-BioNTech)
  - **Age 12–18 years:** 2-dose series at 0, 4-8 weeks (Moderna) or 2-dose series at 0, 3-8 weeks (Novavax, Pfizer-BioNTech)

• For **booster dose recommendations** see [www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html](http://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html)

**Special situations**

Persons who are moderately or severely immunocompromised

• Primary series
  - **Age 6 months–4 years:** 3-dose series at 0, 4, 8 weeks (Moderna) or 3-dose series at 0, 3, 11 weeks (Pfizer-BioNTech)
  - **Age 5–11 years:** 3-dose series at 0, 4, 8 weeks (Moderna) or 3-dose series at 0, 3, 7 weeks (Pfizer-BioNTech)
  - **Age 12–18 years:** 3-dose series at 0, 4, 8 weeks (Moderna) or 2-dose series at 0, 3 weeks (Novavax) or 3-dose series at 0, 3, 7 weeks (Pfizer-BioNTech)
Dengue vaccination
(minimum age: 9 years)

Routine vaccination

- Age 9–16 years living in areas with endemic dengue AND have laboratory confirmation of previous dengue infection
  - 3-dose series administered at 0, 6, and 12 months
- Endemic areas include Puerto Rico, American Samoa, US Virgin Islands, Federated States of Micronesia, Republic of Marshall Islands, and the Republic of Palau. For updated guidance on dengue endemic areas and pre-vaccination laboratory testing see [www.cdc.gov/mmwr/volumes/70/rr/rr7006a1.htm?_s_cid=rr7006a1_w](http://www.cdc.gov/mmwr/volumes/70/rr/rr7006a1.htm?_s_cid=rr7006a1_w) and [www.cdc.gov/dengue/vaccine/hcp/index.html](http://www.cdc.gov/dengue/vaccine/hcp/index.html)
- Dengue vaccine should not be administered to children traveling to or visiting endemic dengue areas.
Hep A

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

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

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

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

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

**Routine vaccination**

- **3-dose series at age 0, 1–2, 6–18 months** *(use monovalent HepB vaccine for doses administered before age 6 weeks)*
  - Birth weight ≥2,000 grams: 1 dose within 24 hours of birth if medically stable
  - Birth weight <2,000 grams: 1 dose at chronological age 1 month or hospital discharge (whichever is earlier and even if weight is still <2,000 grams).

- **Infants who did not receive a birth dose** should begin the series as soon as possible (see Table 2 for minimum intervals).

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

- **Minimum intervals** *(see Table 2)*: when 4 doses are administered, substitute “dose 4” for “dose 3” in these calculations

- **Final (3rd or 4th) dose**: age 6–18 months *(minimum age 24 weeks)*

- **Mother is HBsAg-positive**
  - **Birth dose** *(monovalent HepB vaccine only)*: administer HepB vaccine and hepatitis B immune globulin (HBIG) (in separate limbs) within 12 hours of birth, regardless of birth weight.
  - **Birth weight <2000 grams**: administer 3 additional doses of HepB vaccine beginning at age 1 month (total of 4 doses)
  - **Final (3rd or 4th) dose**: administer at age 6 months *(minimum age 24 weeks)*
  - Test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose. Do not test before age 9 months.
Hep B (cont.)

- **Mother is HBsAg-unknown**
  
  If other evidence suggestive of maternal hepatitis B infection exists (e.g., presence of HBV DNA, HBeAg-positive, or mother known to have chronic hepatitis B infection), manage infant as if mother is HBsAg-positive
  
  - **Birth dose (monovalent HepB vaccine only):**
    - Birth weight ≥2,000 grams: administer HepB vaccine within 12 hours of birth. Determine mother's HBsAg status as soon as possible. If mother is determined to be HBsAg-positive, administer HBIG as soon as possible (in separate limb), but no later than 7 days of age.
    - Birth weight <2,000 grams: administer HepB vaccine and HBIG (in separate limbs) within 12 hours of birth. Administer 3 additional doses of HepB vaccine beginning at age 1 month (total of 4 doses)
  
  - **Final (3rd or 4th) dose:** administer at age 6 months (minimum age 24 weeks)
    - If mother is determined to be HBsAg-positive or if status remains unknown, test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose. Do not test before age 9 months.

**Catch-up vaccination**

- Unvaccinated persons should complete a 3-dose series at 0, 1–2, 6 months. See Table 2 for minimum intervals
- 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:
  - **Heplisav-B®**: 2-dose series at least 4 weeks apart
  - **PreHevBrio®**: 3-dose series at 0, 1, and 6 months
  - Combined HepA and HepB vaccine, **Twinrix®**: 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).

**Special situations**

- Revaccination is not generally recommended for persons with a normal immune status who were vaccinated as infants, children, adolescents, or adults.
- **Post-vaccination serology testing and revaccination** (if anti-HBs < 10mIU/mL) is recommended for certain populations, including:
  - Infants born to HBsAg-positive mothers
  - Persons who are predialysis or on maintenance dialysis
  - Other immunocompromised persons
Human papillomavirus vaccination (minimum age: 9 years)

Routine and catch-up vaccination

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

Special situations

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

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

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

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

- **Menactra**
  - Persistent complement component deficiency or complement inhibitor use:
    - Age 9–23 months: 2-dose series at least 12 weeks apart
    - Age 24 months or older: 2-dose series at least 8 weeks apart
  - Anatomic or functional asplenia, sickle cell disease, or HIV infection:
    - Age 9–23 months: Not recommended
    - Age 24 months or older: 2-dose series at least 8 weeks apart
    - Menactra must be administered at least 4 weeks after completion of PCV series.

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

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

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

**Shared clinical decision-making**

- **Adolescents not at increased risk** age 16–23 years (preferred age 16–18 years) based on shared clinical decision-making:
  - **Bexsero®**: 2-dose series at least 1 month apart
  - **Trumenba®**: 2-dose series at least 6 months apart (if dose 2 is administered earlier than 6 months, administer a 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®**: 2-dose series at least 1 month apart
- **Trumenba®**: 3-dose series at 0, 1–2, 6 months (if dose 2 was administered at least 6 months after dose 1, dose 3 not needed; if dose 3 is administered earlier than 4 months after dose 2, a 4th dose should be administered at least 4 months after dose 3)
Polio

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.

Special situations
- Adolescents aged 18 years at increased risk of exposure to poliovirus with:
  - No evidence of a complete polio vaccination series (i.e., at least 3 doses): administer remaining doses (1, 2, or 3 doses) to complete a 3-dose series
  - Evidence of completed polio vaccination series (i.e., at least 3 doses): may administer one lifetime IPV booster
Varicella

Varicella vaccination
(minimum age: 12 months)

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

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

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

Child Vaccination Across America

Vaccines are important for the health of individual children and teens as well as entire communities. Some communities in the United States have experienced disease outbreaks because of lower immunization rates in their area. Higher immunization rates protect vulnerable children who are too young to be vaccinated or who cannot be vaccinated for medical reasons, making immunizations an essential response to COVID-19 and other diseases.

You can use this interactive map to explore your state’s immunization rates and compare them with national rates. These data come from the CDC National Immunization Survey and are

How safe are vaccines?

- Worldwide, more than 30,000 vaccine doses are delivered per second through routine immunization programs, which, in turn, prevent an estimated 2-3 million deaths annually.

- Serious adverse events are rare (e.g., <1 adverse event occurs per 10 million doses for tetanus toxoid vaccines, 1-2 adverse events per 1 million doses for inactivated influenza vaccine, and none for hepatitis A.)
Robust infrastructure ensures vaccine safety after licensure

by Larry K. Pickering, M.D., FAAP,
and Joseph A. Bocchini Jr., M.D.,
FAAP

Several steps must occur before a vaccine becomes part of routine clinical practice, including licensure by the Food and Drug Administration (FDA) and establishment of recommendations for its use by the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC) and the AAP Committee on Infectious Diseases (CIDD). Safety issues are of paramount consideration in each step. Pre-licensure phases 1–3 clinical trials will detect common adverse events. After vaccine licensure, monitoring for rare adverse events continues for some vaccines through formal phase 4 trials conducted by the FDA and manufacturer.

To help ensure safety of all vaccines following licensure, a robust vaccine safety infrastructure is in place. This multi-system infrastructure was stimulated by passage of the National Childhood Vaccine Injury Act of 1986. The act also created a compensation program for families.

Revolution in primary care?

Patient-centered medical homes enhance the quality of care. Soon they also could boost a practice’s bottom line.

by Kristy Kennedy • Correspondent

When Gina Pola Money’s son was a youngster, it took three weeks to take him to the pediatrician. One to carry Tyson,
Immunization Safety
Office of the CDC

- VAERS
- VSD
- CISA
- EPVS
Vaccine Adverse Event Reporting System (VAERS)

- National reporting system
- Inception in 1990
- Jointly administered by CDC and FDA
- Monitored Continuously
- Passive (depends on healthcare providers and others to report)
- Receives ~15,000 reports per year
- Report of ANY medical condition occurring after vaccine (no time limit)
- Anyone can report
Vaccine Adverse Event Reporting System (VAERS)

- Detects:
  - new or rare events
  - increases in rates of known side effects
  - patient risk factors
- Additional studies required to confirm VAERS signals
- Not all reports of adverse events are causally related to vaccine
- Cannot be used to prove a hypothesis, but to generate one
Vaccine Safety Datalink (VSD)

- Large-linked database estd. 1990
- Links vaccination and health records
- “Active surveillance”
  - 8 HMOs
  - ~2.5% of the U.S. population
- Powerful tool for monitoring vaccine safety concerns and hypotheses
Joint effort of CDC, 6 medical research centers and America’s Health Insurance Plans – estd. 2001

Goals

- Develop protocols and validate case definitions for immunization reactions
- Understand pathophysiology and immunology of adverse events
- Identify risk factors, including genetic predisposition, for high-risk groups
- Clarify valid contraindications
- Provide expert advice for supervised (re)immunization
- Serve as a regional referral center for public and provider vaccine safety inquiries
Emergency Preparedness and Vaccine Safety

- Ensures robust systems in place to rapidly monitor vaccine safety in the event of an emergency vaccination program.

- Vaccine Safety Coordinators positioned in 62 health departments in states, territories, large urban areas and freely associated states carry out vaccine safety and emergency preparedness activities while coordinating with CDC.

  - Uses text messaging and web surveys from CDC to check in with vaccine.
  - Also provides vaccine dose reminders if needed, and telephone follow up to anyone who reports medically significant adverse events.
The best part of getting vaccinated isn’t the lollipop. It’s the part where you don’t get sick and die.
Summary

- US Child & Adolescent Immunization schedule is reviewed continuously and updated annually
- There have been rising concerns about vaccine safety – NOT based on scientific evidence
- Robust vaccine safeguards exist in the US and across the world
Helpful Resources

- Centers for Disease Control and Prevention
  - https://www.cdc.gov/vaccines/hcp/acip-recs/index.html
  - https://www.cdc.gov/vaccinesafety/iso.html

- American Academy of Pediatrics

- Immunize.org
  - http://www.immunize.org

- National Foundation for Infectious Diseases
  - https://www.nfid.org/immunization/
From Baby to Doctor!
Questions?
Upcoming Webinars

▸ Illinois Vaccinates Against COVID-19 (I-VAC): Vaccine Bootcamp
  ▪ Thursday, April 13th from 8AM – 12:30PM

▸ Preparing for Summer Vacations – Travel Vaccinations
  ▪ Tuesday, May 16th from 12:00PM – 1:00PM

Register at illinoisaap.org/events