2019 Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger

Henry Bernstein, ACIP WG Chair
Candice Robinson, CDC Lead

ACIP Meeting
October 24-25, 2018

Photographs and images included in this presentation are licensed solely for CDC/NCIRD online and presentation use. No rights are implied or extended for use in printing or any use by other CDC CIOs or any external audiences.
Childhood/Adolescent Immunization Schedule Work Group 2017

ACIP Members
- Henry Bernstein (ACIP WG Chair)
- José R Romero
- Peter Szilagyi

Liaison Representatives
- Cody Meissner (AAP)
- Sarah Coles (AAFP)
- Jennie Yoost (ACOG)
- Patsy Stinchfield (NAPNAP)
- Amy Middleman (SAHM)
- Susan Lett (CSTE)

Consultants
- Diane Peterson

CDC Lead
- Candice Robinson
Acknowledgements

- ACIP Child/Adolescent Work Group — CDC Contributors:
  - Raymond Strikas
  - Andrew Kroger
  - Skip Wolfe
  - Ginger Redmon
  - JoEllen Wolicki
  - Suzanne Johnson-DeLeon
  - Tina Objio
  - Elissa Meites
  - David Kim
  - Akiko Wilson
  - Lauren Hughes
  - Jennifer Hamborsky
  - Mark Freedman
Reason Topic is Being Presented to ACIP

- ACIP approval of the proposed schedules necessary prior to publication in MMWR Jan/Feb 2019

- AAP, AAFP and ACOG also approve the proposed schedules prior to the 2019 publications.

- New policy is not established in the proposed schedules. – Annual schedules reflect recommendations already approved by ACIP.
Outline

- Harmonization between the child/adolescent and adult schedules
- Edits to all tables
- Content changes of the notes for:
  - Hepatitis A
  - Hepatitis B
  - IPV
  - MMR
  - Meningococcal
  - Tdap
- Discussion and Vote
Updates in ACIP Recommendations 2019 Child and Adolescent Immunization Schedule

- Influenza vaccination
  - Use of LAIV

- Hepatitis A vaccination
  - Homelessness as an indication

- Hepatitis B vaccination
  - Use of CpG-adjuvanted HepB

- Tdap vaccination
  - Vaccination of person who received Tdap at 7-10 years of age
Changes that impact multiple portions of the schedule
Harmonization between child/adolescent and adult schedules

- Adopted updated schedule graphics
- Harmonized “notes”
# Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger

## Vaccines in the Child and Adolescent Immunization Schedule*

<table>
<thead>
<tr>
<th>Antigens</th>
<th>Vaccines</th>
<th>Abbreviations</th>
<th>Trade names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus, diphtheria, and pertussis</td>
<td>Diphtheria, tetanus, and acellular pertussis vaccine</td>
<td>DTaP</td>
<td>Daptacel Intanrix</td>
</tr>
<tr>
<td>Tetanus and diphtheria</td>
<td>Diphtheria, tetanus vaccine</td>
<td>DT</td>
<td>No Trade Name</td>
</tr>
<tr>
<td>Haemophilus influenza type b</td>
<td>Haemophilus influenza type b vaccine</td>
<td>Hib (PRP-T)</td>
<td>ActHIB Hibrix</td>
</tr>
<tr>
<td></td>
<td>Haemophilus influenza type b vaccine</td>
<td>Hib (PRP-OMP)</td>
<td>Pentax HbIPV</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>Hepatitis A vaccine</td>
<td>HepA</td>
<td>Varivax</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Hepatitis B vaccine</td>
<td>HepB</td>
<td>Engerix B Recombivax HB</td>
</tr>
<tr>
<td>Human papillomavirus</td>
<td>Human papillomavirus vaccine</td>
<td>HPV</td>
<td>Gardasil G</td>
</tr>
<tr>
<td>Influenza</td>
<td>Influenza vaccine (inactivated)</td>
<td>IIV</td>
<td>Multiple</td>
</tr>
<tr>
<td></td>
<td>Influenza vaccine (live attenuated)</td>
<td>LAIV</td>
<td>Flumist</td>
</tr>
<tr>
<td>Measles, mumps, and rubella</td>
<td>Measles, mumps, and rubella vaccine</td>
<td>MMR</td>
<td>M-M-R II</td>
</tr>
<tr>
<td>Meningococcal</td>
<td>Meningococcal serogroups A, C, W, Y vaccine</td>
<td>MenACWY-D</td>
<td>Menactra</td>
</tr>
<tr>
<td></td>
<td>Meningococcal serogroup B vaccine</td>
<td>MenACWY-CRM</td>
<td>Menveo</td>
</tr>
<tr>
<td></td>
<td>Meningococcal serogroups B vaccine</td>
<td>MenB-4C</td>
<td>Bexsero</td>
</tr>
<tr>
<td></td>
<td>Meningococcal serogroups B vaccine</td>
<td>MenB-FHbp</td>
<td>Trumunea</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>Pneumococcal 13-valent conjugate vaccine</td>
<td>PCV13</td>
<td>Prevnar 13</td>
</tr>
<tr>
<td></td>
<td>Pneumococcal 23-valent polysaccharide vaccine</td>
<td>PPSV23</td>
<td>Pneumovax</td>
</tr>
<tr>
<td>Poliovirus</td>
<td>Poliovirus vaccine (inactivated)</td>
<td>IPV</td>
<td>IPOL</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>Rotavirus vaccines</td>
<td>RV1, RV5</td>
<td>Rotarix RotarixRIX</td>
</tr>
<tr>
<td>Tetanus, diphtheria, and pertussis</td>
<td>Tetanus, diphtheria, and acellular pertussis vaccine</td>
<td>Tdap</td>
<td>Adacel Boostrix</td>
</tr>
<tr>
<td>Tetanus and diphtheria</td>
<td>Tetanus and diphtheria vaccine</td>
<td>Td</td>
<td>Terrax TdVaccine</td>
</tr>
<tr>
<td>Varicella</td>
<td>Varicella vaccine</td>
<td>VAR</td>
<td>Varivax</td>
</tr>
</tbody>
</table>

## How to use the child/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 vaccine by medical condition and other indications (Table 3)
4. Review vaccine types, frequencies, and intervals, and considerations for special situations (Notes)

---

**Recommended by the Advisory Committee on Immunization Practices (ACIP) and approved by the Centers for Disease Control and Prevention (CDC), American Academy of Pediatrics (AAP), American Academy of Family Physicians (AAFP), and American College of Obstetricians and Gynecologists (ACOG).**

### 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).

### Helpful information
- Complete ACIP recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- General Best Practice Guidelines for Immunization: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Outbreak information (including case identification and outbreak response), see Manual for the Surveillance of Vaccine-preventable Diseases: www.cdc.gov/vaccines/pubs/surv-manual

---

**Combination Vaccines** *Use combination vaccines instead of separate injections when appropriate.*

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Trade names</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTaP-HepB-IPV</td>
<td>Pediatric</td>
</tr>
<tr>
<td>DTaP-IPV/Hib</td>
<td>Pentacel</td>
</tr>
<tr>
<td>DTaP-IPV</td>
<td>Kinerix Quadracel</td>
</tr>
<tr>
<td>MMRV</td>
<td>ProQuad</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 ACIP or CDC.
Table 1

Routine Immunization Schedule
### Table 1: Recommended Immunization Schedule for Children and Adolescents Ages 18 Years or Younger

- **United States, 2019**

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 in Table 1. To determine minimum intervals between doses, see the catch-up schedule (Table 2). School entry and adolescent vaccine age groups are shaded in gray.

<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>2nd dose</td>
<td>3rd dose</td>
<td>5th dose</td>
<td>4th dose</td>
<td>4th dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotavirus (RV) (2-dose series); RV (3-dose series)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphtheria, tetanus, &amp; acellular pertussis (DTaP; &lt;7 yrs)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenza type b (Hib)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal conjugate (PCV13)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inactivated poliovirus (IPV; &lt;18 yrs)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza (IIV)</td>
<td>Annual vaccination 1 or 2 doses</td>
<td>Annual vaccination 1 or 2 doses</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
<td>Annual vaccination 1 dose-only</td>
</tr>
<tr>
<td>Influenza (LAIV)</td>
<td>See Notes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella (MMR)</td>
<td>See Notes</td>
<td>1st dose</td>
<td>2nd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella (VAR)</td>
<td>See Notes</td>
<td>1st dose</td>
<td>2nd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A (HepA)</td>
<td>See Notes</td>
<td>2nd dose, See Notes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal (MenACWY-D) &gt;9 mos; MenACWY-CRM ≥2 mos)</td>
<td>See Notes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, &amp; acellular pertussis (Tdap; &gt;7 yrs)</td>
<td>See Notes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV)</td>
<td>See Notes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Range of recommended ages for all children**
- **Range of recommended ages for catch-up immunization**
- **Range of recommended ages for certain high-risk groups**
- **Range of recommended ages for non-high-risk group who are not recommended to receive vaccine, subject to individual clinical decisions**

10/19/18

Centers for Disease Control and Prevention | Recommended Immunization Schedule for Children and Adolescents Ages 18 Years or Younger, United States, 2019 | Page 2
Table 1

Recommended Immunization Schedule for Children and Adolescents Ages 18 Years or Younger
United States, 2019

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 in Table 1. To determine minimum intervals between doses, see the catch-up schedule (Table 2). School entry and adolescent vaccine age groups are shaded in gray.

<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</td>
<td>2nd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotavirus (RV) RV (2-dose series); RV (3-dose series)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphtheria, tetanus, &amp; acellular pertussis (DTaP; &lt;5 yrs)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td></td>
<td>3rd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenza type b (Hib)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal conjugate PCV13</td>
<td>1st dose</td>
<td>2nd dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza (IV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza (IAR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella (MMR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella (VAR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A (HepA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal (MenACWY-D) &gt;9 mos; MenACWY-CRM ≥2 mos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, &amp; acellular pertussis (Tdap; &gt;7 yrs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal polysaccharide (PPSV23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Range of recommended ages for all children
- Range of recommended ages for catch-up immunization
- Range of recommended ages for certain high-risk groups
- Range of recommended ages for non-high-risk groups who may receive vaccine, subject to individual clinical decisions
<p>| Table 2 | The Catch-Up Table |</p>
<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for Dose 1</th>
<th>Minimum Interval Between Doses</th>
<th>Children age 4 months through 6 years</th>
<th>Children and adolescents age 7 through 18 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td>Birth</td>
<td>Dose 1 to Dose 2: 4 weeks</td>
<td>Dose 2 to Dose 3: 8 weeks and at least 16 weeks after first dose. Minimum age for the final dose is 24 weeks.</td>
<td>Dose 3 to Dose 4: 6 months</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>6 weeks / Maximum age for first dose is 14 weeks, 6 days</td>
<td>4 weeks</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>Neisseria meningitidis (A, C, W135, X, Y)</td>
<td>6 weeks</td>
<td>No further doses needed if first dose was administered at age 15 months or older. 4 weeks if first dose was administered before the 1st birthday. 8 weeks (as final dose) if first dose was administered at age 12 through 14 months.</td>
<td>No further doses needed if previous dose was administered at age 15 months or older. 4 weeks if current age is younger than 12 months and first dose was administered at younger than age 7 months, and at least 1 previous dose was PRP-T (ActHib, Pentacel, Hiborix) or unknown. 8 weeks and age 12 through 59 months (as final dose) if current age is younger than 12 months and first dose was administered at age 7 through 11 months; OR if current age is between 12 and 59 months and first dose was administered before the 1st birthday; and second dose administered at younger than age 15 months; OR if both doses were PRP-O-MP (Pentacel, Comvax) and were administered before the 1st birthday.</td>
<td>8 weeks (as final dose) if current age is younger than 12 months and first dose was administered at age 7 through 11 months; OR if current age is between 12 and 59 months and first dose was administered before the 1st birthday; and second dose administered at younger than age 15 months; OR if both doses were PRP-O-MP (Pentacel, Comvax) and were administered 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 24 months or older. 4 weeks if first dose was administered before the 1st birthday. 8 weeks (as final dose for healthy children) if first dose was administered at the 1st birthday or after.</td>
<td>No further doses needed for healthy children if previous dose was administered at age 24 months or older. 4 weeks if current age is younger than 12 months and previous dose given at &lt;7 months old. 8 weeks (as final dose for healthy children) if previous dose given between 7-11 months/20 until at least 12 months old; OR if current age is 12 months or older and at least 1 dose was given before age 12 months.</td>
<td>8 weeks (as final dose) if current age is younger than 12 months and previous dose given at &lt;7 months old. 8 weeks (as final dose for healthy children) if previous dose given between 7-11 months/20 until at least 12 months old; OR if current age is 12 months or older and at least 1 dose was given before age 12 months.</td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td>6 weeks</td>
<td>4 weeks</td>
<td>4 weeks if current age is &lt; 4 years</td>
<td>6 months (minimum age 4 years for final dose).</td>
</tr>
<tr>
<td>Measles, mumps, rubella</td>
<td>12 months</td>
<td>4 weeks</td>
<td>4 weeks if current age is &lt; 4 years</td>
<td>6 months (minimum age 4 years for final dose).</td>
</tr>
<tr>
<td>Varicella</td>
<td>12 months</td>
<td>3 months</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>12 months</td>
<td>6 months</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>Meningooccal (MenA/CYW 029; MenA/CYW-2 meningococcal conjugate vaccine)</td>
<td>8 weeks</td>
<td>8 weeks</td>
<td>8 weeks</td>
<td>See Notes</td>
</tr>
</tbody>
</table>

**Children age 4 months through 6 years**

- **Hepatitis B**
  - Birth
  - Dose 1 to Dose 2: 4 weeks
  - Dose 2 to Dose 3: 8 weeks and at least 16 weeks after first dose. Minimum age for the final dose is 24 weeks.

- **Rotavirus**
  - 6 weeks / Maximum age for first dose is 14 weeks, 6 days
  - 4 weeks
  - 4 weeks
  - Maximum age for final dose is 8 months, 0 days.

- **Diphtheria, tetanus, and acellular pertussis**
  - 6 weeks
  - 4 weeks

- **Neisseria meningitidis (A, C, W135, X, Y)**
  - 6 weeks
  - No further doses needed if first dose was administered at age 15 months or older.
  - 4 weeks if first dose was administered before the 1st birthday.
  - 8 weeks (as final dose) if first dose was administered at age 12 through 14 months.

- **Pneumococcal conjugate**
  - 6 weeks
  - No further doses needed for healthy children if first dose was administered at age 24 months or older.
  - 4 weeks if first dose was administered before the 1st birthday.
  - 8 weeks (as final dose for healthy children) if first dose was administered at the 1st birthday or after.

- **Inactivated poliovirus**
  - 6 weeks
  - 4 weeks
  - 4 weeks if current age is < 4 years
  - 6 months (as final dose) if current age is 4 years or older

- **Measles, mumps, rubella**
  - 12 months
  - 4 weeks

- **Varicella**
  - 12 months
  - 3 months

- **Hepatitis A**
  - 12 months
  - 6 months

- **Meningococcal (MenA/CYW 029; MenA/CYW-2 meningococcal conjugate vaccine)**
  - 8 weeks

**Children and adolescents age 7 through 18 years**

- **Meningococcal (MenA/CYW 029; MenA/CYW-2 meningococcal conjugate vaccine)**
  - Not Applicable
  - N/A
  - 8 weeks

- **Tetanus, diphtheria, tetanus, diphtheria, and acellular pertussis**
  - 7 years
  - 4 weeks
  - 4 weeks
  - If first dose of DTaP/DT was administered before the 1st birthday.
  - 6 months (as final dose)
  - If first dose of DTaP/DT was administered before the 1st birthday.

- **Human papillomavirus**
  - 9 years
  - Routine dosing intervals are recommended.

- **Hepatitis B**
  - N/A
  - 6 months

- **Inactivated poliovirus**
  - N/A
  - 4 weeks
  - 8 weeks and at least 16 weeks after first dose.

- **Measles, mumps, rubella**
  - N/A
  - 6 months

- **Varicella**
  - N/A
  - 3 months if younger than age 13 years.
  - 4 weeks if age 13 years or older.

---

10/17/18
Centers for Disease Control and Prevention | Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, United States, 2019 | Page 3
## Table 2
Catch-up immunization schedule for persons aged 4 months–18 years who start late or who are more than 1 month behind, United States, 2019.

The figure 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>Minimum Interval Between Doses</th>
<th>Children age 4 months through 6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hepatitis B</strong></td>
<td>Birth</td>
<td>Dose 1 to Dose 2: 4 weeks</td>
<td>Dose 2 to Dose 3: 8 weeks and at least 16 weeks after first dose. Minimum age for the final dose is 24 weeks.</td>
</tr>
<tr>
<td><strong>Rotavirus</strong></td>
<td>6 weeks</td>
<td>4 weeks</td>
<td>4 weeks</td>
</tr>
<tr>
<td><strong>Diphtheria, tetanus, and acellular pertussis</strong></td>
<td>6 weeks</td>
<td>4 weeks</td>
<td>6 months</td>
</tr>
<tr>
<td><strong>Neomycin (Streptomycin Type B)</strong></td>
<td>6 weeks</td>
<td>No further doses needed if first dose was administered at 16 weeks or older.</td>
<td>8 weeks as final dose. This dose only necessary for children aged 12 through 59 months who received 3 doses before the 1st birthday.</td>
</tr>
<tr>
<td><strong>Pneumococcal conjugate</strong></td>
<td>6 weeks</td>
<td>No further doses needed for healthy children if first dose was administered at 16 weeks or older.</td>
<td>8 weeks as final dose. This dose only necessary for children aged 12 through 59 months who received 3 doses before the 1st birthday.</td>
</tr>
<tr>
<td><strong>Inactivated poliovirus</strong></td>
<td>6 weeks</td>
<td>4 weeks</td>
<td>6 months (minimum age 4 years for final dose).</td>
</tr>
<tr>
<td><strong>Measles, mumps, rubella</strong></td>
<td>12 months</td>
<td>4 weeks</td>
<td>6 months (minimum age 4 years for final dose).</td>
</tr>
<tr>
<td><strong>Varicella</strong></td>
<td>12 months</td>
<td>4 weeks</td>
<td>6 months</td>
</tr>
<tr>
<td><strong>Hepatitis A</strong></td>
<td>12 months</td>
<td>4 weeks</td>
<td>6 months</td>
</tr>
<tr>
<td><strong>Meningococcal</strong> (MenA/W135, MenACYW135)</td>
<td>8 weeks</td>
<td>See Notes</td>
<td>See Notes</td>
</tr>
<tr>
<td><strong>Human papillomavirus</strong></td>
<td>9 years</td>
<td>Routine dosing intervals are recommended.</td>
<td>8 weeks and at least 16 weeks after first dose.</td>
</tr>
<tr>
<td><strong>Hepatitis B</strong></td>
<td>N/A</td>
<td>4 weeks</td>
<td>6 months</td>
</tr>
<tr>
<td><strong>Inactivated poliovirus</strong></td>
<td>N/A</td>
<td>4 weeks</td>
<td>6 months</td>
</tr>
<tr>
<td><strong>Measles, mumps, rubella</strong></td>
<td>N/A</td>
<td>4 weeks</td>
<td>6 months</td>
</tr>
<tr>
<td><strong>Varicella</strong></td>
<td>N/A</td>
<td>3 months</td>
<td>6 months</td>
</tr>
</tbody>
</table>

**Children and adolescents age 7 through 18 years**

**Meningococcal** (MenA/W135, MenACYW135) | 8 weeks | Not Applicable | N/A | 8 weeks |

**Tetanus, diphtheria, tetanus, diphtheria, and acellular pertussis** | 7 years | 4 weeks | 4 weeks if first dose of DTaP/DT was administered before the 1st birthday. | 6 months if first dose of DTaP/DT was administered before the 1st birthday. |

**Human papillomavirus** | 9 years | Routine dosing intervals are recommended. | 8 weeks and at least 16 weeks after first dose. |

**Hepatitis B** | N/A | 4 weeks | 6 months |

**Inactivated poliovirus** | N/A | 4 weeks | 6 months |

**Measles, mumps, rubella** | N/A | 3 months if younger than age 13 years | 4 weeks if 13 years or older. |
Table 3

The Vaccination by Medical Indication Table
<table>
<thead>
<tr>
<th>VACCINE</th>
<th>INDICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Immunocompromised status (excluding HIV infection)</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td></td>
</tr>
<tr>
<td>Rotavirus</td>
<td></td>
</tr>
<tr>
<td>Diphtheria, tetanus, &amp; acellular pertussis (DTaP)</td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td></td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td></td>
</tr>
<tr>
<td>Influenza (IIV)</td>
<td></td>
</tr>
<tr>
<td>Influenza (LAIV)</td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella</td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td></td>
</tr>
<tr>
<td>Meningococcal ACWY</td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, &amp; acellular pertussis (Tdap)</td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus</td>
<td></td>
</tr>
<tr>
<td>Meningococcal B</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal polysaccharide</td>
<td></td>
</tr>
</tbody>
</table>

* Severe Combined Immunodeficiency

For additional information regarding HIV laboratory parameters and use of live vaccines, see the General Best Practice Guidelines for Immunization "Altered Immunocompetence" at: [https://www.cdc.gov/vaccines/recs/general-recs/immune-comp.html](https://www.cdc.gov/vaccines/recs/general-recs/immune-comp.html) and Table 4-1 (footnote D) at: [https://www.cdc.gov/vaccines/recs/appendix/rct/appendix-rct-contraindications.html](https://www.cdc.gov/vaccines/recs/appendix/rct/appendix-rct-contraindications.html).
### Table 3: Vaccines that might be indicated for children and adolescents aged 18 years or younger based on medical indications

<table>
<thead>
<tr>
<th>VACCINE</th>
<th>Pregnancy</th>
<th>Immunocompromised status (excluding HIV infection)</th>
<th>HIV infection CD4+ count</th>
<th>Kidney failure, end-stage renal disease, or hemodialysis</th>
<th>Heart disease, chronic lung disease</th>
<th>CSF leaks/ cochlear implants</th>
<th>Asplenia and persistent complement deficiencies</th>
<th>Chronic liver disease</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotavirus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphtheria, tetanus, &amp; acellular pertussis (DTaP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza (IV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza (LAIV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal ACYW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, &amp; acellular pertussis (TdYa)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal polysaccharide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Delay vaccination until after pregnancy if vaccine indicated

---

*Severe Combined Immunodeficiency

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/altered-immunocompetence.html; and Table 4-1 (footnote D) at: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.
For vaccine recommendations for persons 19 years of age and older, see the Adult Immunization Schedule.

**Additional information**
- Consult relevant ACIP statements for detailed recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html.
- For information on contraindications and precautions for the use of a vaccine, consult the General Best Practice Guidelines for Immunization and relevant ACIP statements, 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 ≤2 days earlier than the minimum interval or minimum age should not be counted as valid and should be repeated as age-appropriate. The repeat dose should be spaced after the invalid dose by the recommended minimum interval. For further details, see Table 3.1. Recommended and minimum ages and intervals between vaccine doses, in General Best Practice Guidelines for Immunization at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/timing.html.
- Information on travel vaccine requirements and recommendations is available at www.wmv.cdc.gov/travel/.
- The National Vaccine Injury Compensation Program (VICP) is a no-fault alternative to the traditional legal system for resolving vaccine injury claims. All routine child and adolescent vaccines are covered by VICP except for pneumococcal polysaccharide vaccine (PPSV23). For more information: see www.hrsa.gov/vaccinecompensation/index.html.

**Diphtheria, tetanus, and pertussis (DTaP) vaccination (minimum age: 6 weeks [4 years for Kinrix or Quadracel])**

**Routine vaccination:**
- 5-dose series at 2, 4, 6, 15–18 months, 4–6 years
  - **Prospectively:** Dose 4 may be given as early as age 12 months if at least 6 months have elapsed since dose 3.
  - **Retrospectively:** A 4th dose that was inadvertently given as early as 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.
- For other catch-up guidance, see Table 2.

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

**Routine vaccination**
- A Hib, Hibrix, or Pentacel: 4-dose series at 2, 2, 4, 6, 12–15 months
- PedvaxHIB: 3-dose series at 2, 4, 12–15 months

**Catch-up vaccination**
- **Dose 1 at 7–11 months:** Administer dose 2 at least 4 weeks later and dose 3 (final dose) at 12–15 months or 8 weeks after dose 2 (whichever is later).
- **Dose 1 at 12–14 months:** Administer dose 2 (final dose) at least 8 weeks after dose 1.
- **Dose 1 before 12 months and dose 2 before 15 months:** Administer dose 3 (final dose) 8 weeks after dose 2.
- **2 doses of PedvaxHIB before 12 months:** Administer dose 3 (final dose) at 12–15 months and at least 8 weeks after dose 2.
- **Unvaccinated at 15–59 months:** 1 dose
- For other catch-up guidance, see Table 2.

**Special situations**
- **Chemotherapy or radiation treatment:**
  - 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):**
  - 12–59 months
  - Unvaccinated or only 1 dose before 12 months: 2 doses, 8 weeks apart
  - 2 or more doses before 12 months: 1 dose at least 8 weeks after previous dose
  - Unvaccinated persons age 5 years or older: 1 dose
- **Elective splenectomy:**
  - Unvaccinated persons age 15 months or older: 1 dose (preferably at least 14 days before procedure)
- **HIV infection:**
  - 12–59 months
  - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
  - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose
  - Unvaccinated persons age 5–18 years: 1 dose
- **Immunoglobulin deficiency, early component complement deficiency:**
  - 12–59 months
  - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
  - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose
  - *Unvaccinated* = Less than routine series (through 14 months) OR no doses (14 months or older)

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

**Routine vaccination**
- 2-dose series (Havrix 6–12 months apart or Vaqta 6–18 months apart, minimum interval 6 months); a series begun before the 2nd birthday should be completed even if the child turns 2 before the second dose is administered.

**Catch-up vaccination**
- Anyone 2 years or older who did not receive a series of Hep A vaccine is desired. Minimum interval between doses: 6 months.
Use of combined HepA-HepB vaccine

**Beginning age: 10 months**
- Determine mother’s HBsAg status as soon as possible.
- If mother is HBsAg-positive, administer 0.5 mL of HBIG to infants >2,000 grams as soon as possible, but no later than 7 days of age.

**Routine Series**
- 3-dose series at 0, 1–2, 6–18 months (use monovalent HepB vaccine for doses administered before age 6 weeks).
- Infants who did not receive a birth dose should begin the series as soon as feasible (see Table 2).
- Administration of 4 doses is permitted when a combination vaccine containing HepB is used after the birth dose.
- Minimum age for the first (3rd or 4th) dose: 24 weeks.
- Minimum intervals: dose 1 to dose 2: 24 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 11–15 years may use an alternative 2-dose schedule, with at least 4 months between doses (adult formulation recommended for adolescents 11–13 years only).
- Adolescents 16 years and older may receive a 2-dose series of HepB (Hepatitis B) at least 4 weeks apart.
- Adolescents 18 years and older may receive the combined HepA and HepB vaccine, Twinrix, as a 3-dose series (0, 1, and 6 months) or 4-dose series (0, 7, and 21–30 days, followed by a dose at 12 months).
- For other catch-up guidance, see Table 2.

### Inactivated 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 the 4th birthday and at least 6 months after the previous dose.
- If or more doses of IPV can be administered before the 4th birthday when a combination vaccine containing IPV is used. However, a dose is still required after the 4th birthday 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 18 years and older.

**Series containing oral polio vaccine (OPV), either mixed OPV-IPV or IPV-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/mm6601a6h1.htm#cid-mm6601a6_w.
- Only trivalent OPV (OPV) counts toward the U.S. vaccination requirements. For guidance to assess doses documented as “OPV” see www.cdc.gov/mmwr/volumes/66/wr/mm6601a6h1.htm#cid-mm6601a6_w.
- For other catch-up guidance, see Table 2.
Use of CpG-adjuvanted HepB vaccine

- Adolescents 18 years and older may receive the combined HepA and HepB vaccine, Twinrix, as a 3-dose series (0, 1, and 6 months) or 4-dose series (0, 1, 2, and 6–12 months), followed by a dose at 12 months.

International travel:
- Infants age 6–11 months: 1 dose before departure; revaccinate with 2 doses, separated by 6–18 months, between the 1st and 2nd birthdays.
- Unvaccinated age 12 months and older: 1st dose as soon as travel considered for persons traveling to or working in countries with high or intermediate endemic hepatitis A.

Special situations:
- At risk for hepatitis A infection: 2-dose series as above.
- Chronic liver disease.
- Clotting factor disorder.
- Men who have sex with men.
- Injection or non-injection drug use.
- Homelessness.
- Work with hepatitis A virus in research laboratory or nonhuman primates with hepatitis A infection.
- Travel in countries with high or intermediate endemic hepatitis A.
- Close, personal contact with international adoptee (e.g., household or regular babysitting) in first 60 days after arrival from country with high or intermediate endemic hepatitis A (administer dose 1 as soon as adoption is planned, at least 2 weeks before adoptee’s arrival).

Hepatitis B vaccination (minimum age: birth)

Birth Dose (monovalent HepB vaccine only)
- Mother is HBsAg-negative: 1 dose within 24 hours of birth.
- Mother is HBsAg-positive: Administer HepB vaccine and 0.5 mL of HBIG (at separate anatomic site) 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 0.5 mL of HBIG in addition to HepB vaccine 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 0.5 mL of HBIG to infants <2,000 grams as soon as possible, but no later than 7 days of age.

Routine Series
- 3-dose series at 0, 1–2, 6–18 months (use monovalent HepB vaccine for doses administered before age 6 weeks).
- Infants who did not receive a birth dose should begin the series as soon as feasible (see Table 2).
- Administration of 4 doses is permitted when a combination vaccine containing HepB is used after the birth dose.

Minimum age: for the final (3rd or 4th) dose: 24 weeks.

Minimum intervals: dose 1 to dose 2: 2–4 weeks / dose 2 to dose 3: 2–8 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 hepatitis A vaccine).

- Adolescents 18 years and older may receive a 2-dose series of HepB (Heplisav-B) at least 4 weeks apart.
- Adolescents 18 years and older may receive the combined HepA and HepB vaccine, Twinrix, as a 3-dose series (0, 1, and 6 months) or 4-dose series (0, 7, and 21–30 days, followed by a dose at 12 months).

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

Human papillomavirus vaccination (minimum age: 9 years)

Routine and Catch-up vaccination:
- HPV vaccination routinely recommended for all adolescents age 11–12 years (can start at age 9 years) and through age 18 years if not previously adequately vaccinated.
- 2 or 3-dose series depending on age at initial vaccination:
  - Age 9 years through 14 years at initial vaccination: 2-dose series at 0, 6–12 months (minimum interval: 5 months; repeat dose if administered too soon).
  - Age 15 years or older at initial vaccination: 3-dose series at 0, 1–2 months, 6 months (minimum interval: dose 1 to dose 2: 2–4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 3 months; repeat dose if administered too soon).
- If completed valid vaccination series with any HPV vaccine, no additional doses needed.

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

Inactivated 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 the 4th birthday and at least 6 months after the previous dose.
- 4 or more doses of IPV can be administered before the 4th birthday when a combination vaccine containing IPV is used. However, a dose is still required after the 4th birthday and at least 6 months after the previous dose.

- 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/mm6605a6.htm#h1, cid-mm6601a6_w.
- Only trivalent OPV (TOPV) counts toward the U.S. vaccination requirements. For guidance to assess doses documented as “OPV” see www.cdc.gov/mmwr/volumes/66/wr/mm6605a6.htm, cid-mm6601a6_w.
- For other catch-up guidance, see Table 2.

NOT APPROVED FOR PUBLIC DISTRIBUTION
Use of combination vaccines that contain IPV

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

**Birth Dose (monovalent HepB vaccine only)**
- **Mother is HBsAg-negative**: 1 dose within 24 hours of birth for all medically stable infants >2,000 grams. Infants <2,000 grams: administer 1 dose at chronological age 1 month or hospital discharge.
- **Mother is HBsAg-positive**: Administer HepB vaccine and 0.5 mL of HBIG (at separate anatomic sites) 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.

**Routine vaccination**
- 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; 2–4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 3.5 months; repeat dose if administered too soon)
- If completed valid vaccination series with any HPV vaccine, no additional doses needed

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

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

**Routine and Catch-up vaccination**
- HPV vaccination routinely recommended for all adolescents age 11–12 years (start at age 9 years) and through age 18 years if not previously adequately vaccinated.
- 2- or 3-dose series depending on age at initial vaccination:
  - Age 9 through 14 years at initial vaccination: 2-dose series at 0, 6–12 months (minimum interval: 5 months; repeat dose if administered too soon)

**Inactivated 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 the 4th birthday and at least 6 months after the previous dose.
- 4 or more doses of IPV can be administered before the 4th birthday when a combination vaccine containing IPV is used. However, a dose is still required after the 4th birthday 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 18 years and 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#:~:text=clinical.,ipv50.pdf
- Only trivalent OPV (TOPV) counts toward the U.S. vaccination requirements. For guidance to assess doses documented as “OPV” see www.cdc.gov/mmwr/volumes/66/wr/mm6601a6.htm#:~:text=clinical.,ipv50.pdf
- For other catch-up guidelines, see Table 2.
**Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, United States, 2019**

For further guidance on the use of the vaccines mentioned below, see: [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html)

### Influenza vaccination (minimum age: 6 months)

**Routine vaccination**
- 1 dose IV, RV, or LAIV appropriate for age and health status annually (2 doses separated by at least 4 weeks for children 6 months–8 years who did not receive at least 2 doses of influenza vaccine before July 1, 2018).
- For additional guidance, see [www.cdc.gov/flu/professionals/index.htm](http://www.cdc.gov/flu/professionals/index.htm).

**Special situations**
- Egg allergy, hives only: 1 dose IV, RV, or LAIV appropriate for age and health status annually
- Egg allergy more severe than hives (e.g., angioedema, respiratory distress): 1 dose IV, RV, or LAIV appropriate for age and health status annually in medical setting under supervision of health care provider who can recognize and manage severe allergic conditions
- Pregnancy, immunocompromising conditions including HIV infection, anticoagulant or functional asplenia, or use of influenza antiviral medications in previous 48 hours, or concomitant aspirin- or salicylate-containing therapy: 1 dose IV or RV (LAIV not recommended)

### Vaccination of persons with egg allergy

**When not to use LAIV**
- Dose 1 at age 8 weeks: 4-dose series at 2, 4, 6, 12 months
- Dose 1 at age 7–13 months: 2-dose series (dose 2 at least 12 weeks after dose 1 and before the 1st birthday)

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

**Clinical discretion**
- MenB vaccine may be administered based on individual patient or household characteristics not at increased risk age 16–18 years: last 1 month apart
- Trumennab: 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

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

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

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

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

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

**Catch-up vaccination**
- Unvaccinated children and adolescents: 2 doses at least 4 weeks apart

**Special situations**
- International travel
- Infants age 6–11 months: 1 dose before departure, revaccinate with 2 doses at 12–15 months (for children in high-risk areas) and dose 2 as early as 4 weeks later.
- Unvaccinated children age 12 months and older: 2-dose series at least 4 weeks apart before departure

---

*MenB vaccine should be administered either before or at the same time as DTaP. For MenACWY booster dose recommendations for groups listed under “Special situations” above and additional meningococcal vaccination information, see meningococcal MMWR publications at: [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html).
### Influenza vaccination (minimum age: 6 months)

**Routine vaccination**
- 1 dose IV, RI, or LAIV appropriate for age and health status annually (2 doses separated by at least 4 weeks for children 6 months-8 years who did not receive at least 2 doses of influenza vaccine before July 1, 2018).
- For additional guidance, see [www.cdc.gov/flurprofessionals/index.htm](http://www.cdc.gov/flurprofessionals/index.htm).

**Special situations**
- Egg allergy: hives only: 1 dose IV, RI, or LAIV appropriate for age and health status annually
- Egg allergy: more severe than hives (e.g., respiratory distress): 1 dose IV, RI, or LAIV appropriate for age and health status annually in medical supervision of health care provider who can manage severe allergic conditions
- Pregnancy, immunocompromising condition, HIV infection, anatomic or functional asplenia, or use of influenza antiviral medications in previous 48 hours or concomitant aspirin- or salicylate-containing therapy: 1 dose IV or RI (LAIV not recommended)

### Meningococcal serogroup A,C,W,Y vaccination (minimum age: 2 months; MenACWY-CRM, Menveo, 9 months; MenACWY-D, Menactra)

**Routine vaccination**
- 2-dose series: 11-12 years, 16 years

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

**Special situations**
Anatomic or functional asplenia (including sickle cell disease). HIV infection, persistent complement component deficiency:

- Menactra:
  - Persistent complement component deficiency:
    - Age 9-23 months: 2 doses at least 12 weeks apart
    - Age 24 months or older: 2 doses at least 8 weeks apart
- Menomune:
  - Anatomic or functional asplenia, sickle cell disease, or HIV infection:
    - 24 months or older: 2 doses at least 8 weeks apart
- Menactra must be administered at least 4 weeks after completion of PCV13 series

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

**Routine vaccination**
- 2-dose series at 12-15 months, 4-6 years
- 2 doses may be administered as early as 4 weeks after dose 1.

**Catch-up vaccination**
- Unvaccinated children and adolescents: 2 doses at least 4 weeks apart

**Special situations**

- **International travel**
  - Infants age 6-11 months: 1 dose before departure; revaccinate with 2 doses at 12-15 months for children in high-risk areas and dose 2 as early as 4 weeks later.
  - Unvaccinated children age 12 months and older: 2 dose series at least 4 weeks apart before departure

- Menactra should be administered either before or at the same time as DTaP. For MenACWY booster dose recommendations for groups listed under “Special situations” above and additional meningococcal vaccination information, see meningococcal MMWR publications at: [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/medieng.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/medieng.html).

### Meningococcal serogroup B vaccination (minimum age: 10 years; MenB-4C, Bexsero; MenB-FHbp, Trumena)

**Clinical discretion**
- MenB vaccine may be administered based on individual clinical decision in adolescents not at increased risk age 16 years and older

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

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

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

**Special situations**
- High-risk 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 (structurally or functionally significant congenital heart disease and cardiac failure or heart lung
Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, United States, 2019
For further guidance on the use of the vaccines mentioned below, see: www.cdc.gov/vaccines/hcp/acip-recs/index.html.

- Added information regarding use of Tdap/Td for wound prophylaxis
- Adolescent age 11–18 years: Count dose of DTaP as the adolescent Td booster.
- For information on use of Tdap or Td as tetanus prophylaxis in wound management, see www.cdc.gov/mmwr/volumes/67/nrr/nrr5022a1.htm.

**Notes**

**Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, United States, 2019**

For further guidance on the use of the vaccines mentioned below, see: www.cdc.gov/vaccines/hcp/acip-recs/index.html.

**Tetanus, diphtheria, and pertussis (Tdap) vaccination**

(continuous text)
Immunization Schedule Web Pages

- Redesign of the CDC immunization web pages
  - Enhance usability for health care providers and the public
  - Improve layout to improve usability across all formats
  - Improve promotion of related immunization resources
Schedule Products

- Improve on-line schedule usability by allowing users to tab between schedule tables
- Prioritize the adult vaccine assessment tool and eliminate the adult “easy-to-read” tool.
- Streamlined childhood assessment tools
### Vaccines in the Child and Adolescent Immunization Schedule*  

<table>
<thead>
<tr>
<th>Antigens</th>
<th>Vaccines</th>
<th>Abbreviations</th>
<th>Trade names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus, diphtheria, and pertussis</td>
<td>Diphtheria, tetanus, and acellular pertussis vaccine</td>
<td>DTaP</td>
<td>Daptacel Infanrix</td>
</tr>
<tr>
<td>Tetanus and diphtheria</td>
<td>Diphtheria, tetanus vaccine</td>
<td>DT</td>
<td>No Trade Name</td>
</tr>
<tr>
<td>Haemophilus influenza type b</td>
<td>Haemophilus influenza type b vaccine</td>
<td>Hib (PRP-T)</td>
<td>ActHIB Hibero Pentrax HIB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hib (PRP-OMP)</td>
<td>Hibero Pentrax HIB</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>Hepatitis A vaccine</td>
<td>HepA</td>
<td>Havrix Vaqta</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Hepatitis B vaccine</td>
<td>HepB</td>
<td>Engerix-B Recombivax HB</td>
</tr>
<tr>
<td>Human papillomavirus</td>
<td>Human papillomavirus vaccine</td>
<td>HPV</td>
<td>Gardasil 9</td>
</tr>
<tr>
<td>Influenza</td>
<td>Influenza vaccine (inactivated)</td>
<td>IV</td>
<td>Multiple</td>
</tr>
<tr>
<td></td>
<td>Influenza vaccine (live attenuated)</td>
<td>LAIV</td>
<td>Flumist</td>
</tr>
<tr>
<td>Measles, mumps, and rubella</td>
<td>Measles, mumps, and rubella vaccine</td>
<td>MMR</td>
<td>M-M-R II</td>
</tr>
<tr>
<td>Meningococcal</td>
<td>Meningococcal serogroups A, C, W, Y vaccine</td>
<td>MenACWY-O</td>
<td>Menactra</td>
</tr>
<tr>
<td></td>
<td>Meningococcal serogroup B vaccine</td>
<td>MenACWY-CRM</td>
<td>Menevo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MenB-4C</td>
<td>Bexsero</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MenB-FHbp</td>
<td>Trumenda</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>Pneumococcal 13-valent conjugate vaccine</td>
<td>PCV13</td>
<td>Prevenar 13</td>
</tr>
<tr>
<td></td>
<td>Pneumococcal 23-valent polysaccharide vaccine</td>
<td>PPSV23</td>
<td>Pneumovax</td>
</tr>
<tr>
<td>Poliovirus</td>
<td>Poliovirus vaccine (inactivated)</td>
<td>IPV</td>
<td>IPOL</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>Rotavirus vaccines</td>
<td>RV1</td>
<td>Rotarix Rotarix RotaTeq</td>
</tr>
<tr>
<td>Tetanus, diphtheria, and pertussis</td>
<td>Tetanus, diphtheria, and acellular pertussis vaccine</td>
<td>Tdap</td>
<td>Adacel Boostrix</td>
</tr>
<tr>
<td>Tetanus and diphtheria</td>
<td>Tetanus and diphtheria vaccine</td>
<td>Td</td>
<td>Td Vaccine</td>
</tr>
<tr>
<td>Varicella</td>
<td>Varicella vaccine</td>
<td>VAR</td>
<td>Varivax</td>
</tr>
</tbody>
</table>

#### How to use the child/adolescent immunization schedule

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


#### 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).

#### Helpful information
- Complete ACIP recommendations: [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html)
- General Best Practice Guidelines for Immunization: [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html)

Download the CDC Vaccine Schedules App for providers at [www.cdc.gov/vaccines/schedules/hcp/schedules-app.html](http://www.cdc.gov/vaccines/schedules/hcp/schedules-app.html)

---

*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.
Vote on Immunization Schedules

Recommend the proposed edits to the 2019 adult and child and adolescent immunization schedules.