Figure 1. Recommended immunization schedule for persons aged 0 through 18 years – United States, 2016.

(For those who fall behind or start late, see the catch-up schedule [Figure 2]).

These recommendations must be read with the footnotes 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 Figure 1.

**NOTE:** The above recommendations must be read along with the footnotes of this schedule.

This schedule includes recommendations in effect as of January 1, 2016. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at [http://www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html).

Clinically significant adverse events that follow vaccination should be reported to the Vaccine Adverse Event Reporting System (VAERS) online ([http://www.vaers.hhs.gov](http://www.vaers.hhs.gov)) or by telephone (800-822-7967). Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for vaccination, is available from CDC online ([http://www.cdc.gov/vaccines/recs/vac-admin/contraindications.htm](http://www.cdc.gov/vaccines/recs/vac-admin/contraindications.htm)) or by telephone (800-CDC-INFO [800-232-4636]).

This schedule is approved by the Advisory Committee on Immunization Practices ([http://www.cdc.gov/vaccines/acip](http://www.cdc.gov/vaccines/acip)), the American Academy of Pediatrics ([http://www.aap.org](http://www.aap.org)), the American Academy of Family Physicians ([http://www.aafp.org](http://www.aafp.org)), and the American College of Obstetricians and Gynecologists ([http://www.acog.org](http://www.acog.org)).

<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>16–18 yrs</th>
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<tbody>
<tr>
<td>Hepatitis B (HepB)</td>
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<tr>
<td>Rotavirus (RV)</td>
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<td>2 (RV1; 2-dose series); RV5 (3-dose series)</td>
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<td>Diphtheria, tetanus, &amp; acellular pertussis</td>
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<td>Pneumococcal conjugate (PCV13)</td>
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<tr>
<td>Inactivated poliovirus (IPV: &lt;18 yrs)</td>
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<tr>
<td>Influenza (IIV; LAIV)</td>
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<td>Measles, mumps, rubella (MMR)</td>
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<td>Varicella (VAR)</td>
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<td>Hepatitis A (HepA)</td>
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<td>Meningococcal (Hib-MenCY, MenACWY-D, MenACWY-CRM)</td>
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<td>Tetanus, diphtheria, &amp; acellular pertussis</td>
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<tr>
<td>Human papillomavirus (2vHPV: females only; 4vHPV, 9vHPV: males and females)</td>
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<tr>
<td>Meningococcal B</td>
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<td>Pneumococcal polysaccharide (PPSV23)</td>
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For more information, see footnotes 1, 5, 11, 12, 13, 20.
The above recommendations must be read along with the footnotes of this schedule. Routine dosing intervals are recommended. If age 13 years or older.

### Varicella
- If younger than age 13 years: 8 weeks
- If first dose of DTaP/DT or Tdap/Td was administered at or after the 1st birthday: 6 months
- Minimum age for the final dose is 24 weeks.

### Hepatitis A
- Minimum age for the first dose is 1 year.

### Hepatitis B
- Minimum age for the first dose is 1 year.

### Human papillomavirus
- Children and adolescents age 7 through 18 years
  - Minimum age for the first dose is 9 years
  - Minimum age for the final dose is 2 years.
  - Minimum age for the second dose is 12 months

### Diphtheria, tetanus, and acellular pertussis
- Minimum age for the first dose is 6 months.

### Haemophilus influenzae

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age for</th>
<th>Minimum Interval Between Doses</th>
</tr>
</thead>
<tbody>
<tr>
<td>MenACWY-CRM</td>
<td>≥ 6 weeks</td>
<td>2 mos</td>
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<tr>
<td>MenACWY-D</td>
<td>≥ 6 weeks</td>
<td>2 mos</td>
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<tr>
<td>Hib-MenCY</td>
<td>≥ 6 weeks</td>
<td>2 mos</td>
</tr>
<tr>
<td>Haemophilus influenzae</td>
<td>≥ 6 weeks</td>
<td>2 mos</td>
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<tr>
<td>Inactivated poliovirus</td>
<td>≥ 6 weeks</td>
<td>2 mos</td>
</tr>
<tr>
<td>Measles, mumps, rubella</td>
<td>≥ 6 weeks</td>
<td>2 mos</td>
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<tr>
<td>Rotavirus</td>
<td>≥ 6 weeks</td>
<td>2 mos</td>
</tr>
<tr>
<td>Pneumococcal conjugate vaccine</td>
<td>≥ 6 weeks</td>
<td>2 mos</td>
</tr>
</tbody>
</table>

The above recommendations include catch-up immunization schedules for persons aged 4 months through 18 years who start late or who are more than 1 month behind. Always use this table in conjunction with Figure 1 and the footnotes that follow. The figure below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. This dose only necessary for children aged 12 months or older. Use the section appropriate for the child’s age.
Deaths from meningococcal disease can be prevented by vaccination. Children aged 11 through 15 years who are at increased risk for meningococcal disease, including chemotherapy for solid tumors, should receive 2 doses of the meningococcal conjugate vaccine (MenACWY) if they have not received a dose of the vaccine in the past 5 years. The second dose should be administered no earlier than age 24 weeks.

For infants born to hepatitis B surface antigen (HBsAg)-positive mothers, administer HepB vaccine and Hepatitis B Immune Globulin (HBIG) at birth. Administer the second dose 1 to 2 months after the first dose (minimum interval of 4 weeks), administer the third dose at least 8 weeks after the second dose AND at least 16 weeks after the first dose. Administration of HBIG at the time of vaccination may also be considered if the child is at increased risk for infection or if the first dose was given at age 2 months or before and the second dose was not given until after age 2 months. For purposes of calculating intervals between doses, 4 weeks = 28 days. Intervals of 4 months or greater are determined by calendar months.

If any dose in the series was RotaTeq or vaccine product is unknown for any dose in the series, a total of 2 doses of rotavirus vaccine is recommended if the child has been fully vaccinated in the series. Two doses of rotavirus vaccine may be administered within a 3-month interval if the first dose is administered after age 6 weeks. If RotaTeq is used, administer a 3-dose series at ages 2, 4, and 6 months. If Rotarix is used, administer a 2-dose series at 2 and 4 months of age. For other catch-up guidance, see Figure 2.

Vaccination of persons with high-risk conditions:

A 2-dose series (doses separated by at least 4 months) of adult formulation Recombivax HB is licensed for use in children aged 11 through 15 years. Unvaccinated persons should complete a 3-dose series.

Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. (Minimum age: 6 weeks.

If first dose is administered before the first birthday and second dose administered at younger than 15 weeks, a third (and final) dose should be administered 8 weeks later. If first dose is administered at age 15 weeks orolder and second dose administered at age 16 weeks or older, a fourth (and final) dose should be administered 8 weeks later. The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose. A single dose of any Hib-containing vaccine should be administered to unimmunized* children and should be administered at least 4 weeks apart. One booster dose (dose 3 or 4 depending on vaccine used in primary series) of any Hib vaccine should be administered at least 14 days before procedure.

Footnotes — Recommended immunization schedule for persons aged 0 through 18 years—United States, 2016

Additional recommendations for persons 19 years of age and older see the adult immunization schedule.

For further guidance on the use of the vaccines mentioned below, see:

http://www.cdc.gov/vaccines/hcp/acip-recs/index.html

http://www.cdc.gov/mmwr/PDF/rr/rr6301.pdf

http://wwwnc.cdc.gov/travel/destinations/list

Elk Grove Village, IL: American Academy of Pediatrics. Book: 2015 report of the Committee on Infectious Diseases. 30th ed. For contraindications and precautions to use of a vaccine and for additional information regarding that vaccine, vaccination providers should consult the relevant ACIP statement available online at

http://www.cdc.gov/mmwr/preview/)

Recommended and minimum ages and intervals between vaccine doses

For contraindications and precautions to use of a vaccine and for additional information regarding that vaccine, vaccination providers should consult the relevant ACIP statement available online at

http://www.cdc.gov/mmwr/preview/

Information on travel vaccine requirements and recommendations is available at

http://www.cdc.gov/travel/destinations/list

MMWR, General Recommendations

The primary series with ActHIB, MenHibrix, or Pentacel consists of 3 doses and should be administered at

Recommended testing occur at age 9 through 12 months; see

For recommendations on the use of MenHibrix in patients at increased risk for meningococcal disease,

For infants born to hepatitis B surface antigen (HBsAg)-positive mothers, administer HepB vaccine and

Hepatitis B (HepB) vaccine. (Minimum age: birth)

Hib vaccine before 12 months of age should receive 1 additional dose.

The maximum age for the final dose in the series is 8 months, 0 days.

The maximum age for the first dose in the series is 14 weeks, 6 days; vaccination should not be initiated for

Except: DTaP-IPV [Kinrix, Quadracel]: 4 years)

Routine vaccination:

Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. (Minimum age: 6 weeks.

Hib vaccine before 12 months of age should receive 1 additional dose.

The fifth dose of DTaP vaccine is not necessary if the fourth dose was administered at age 4 years or older.

Routine vaccination:

A single dose of any Hib-containing vaccine should be administered to unimmunized* children and

should be administered at least 4 weeks apart.

The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed
after the previous dose. A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months of imminent exposure to circulating poliovirus (i.e., travel to a polio-endemic region or during an outbreak).

**Catch-up vaccination**

HepA vaccine separated by 6 to 18 months may be administered if immunity against hepatitis A virus is needed. Inactivated poliovirus vaccine (IPV). (Minimum age: 6 weeks)

**Routine vaccination**

Children who have received 1 dose of HepA vaccine before age 24 months should receive a second dose 6 to 18 months later. Inactivated poliovirus vaccine (IPV). (Minimum age: 6 weeks)

For other catch-up guidance, see Figure 2.

6.

**Inactivated poliovirus vaccine (IPV)** (Minimum age: 2 months)

The minimum interval between the 2 doses is 6 months.

**Routine vaccination**

- Measles, mumps, and rubella (MMR) vaccine. (Minimum age: 12 months)
- Varicella (VAR) vaccine. (Minimum age: 12 months)
- Inactivated poliovirus vaccine (IPV). (Minimum age: 6 weeks)

**Catch-up vaccination**

- For children aged 6 through 18 years with chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma and chronic obstructive pulmonary disease); congenital malformations of the heart; primary immune deficiencies; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms,
- For children 2 through 5 years of age with any of the following conditions: chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma and chronic obstructive pulmonary disease); congenital malformations of the heart; primary immune deficiencies; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms,
- For children aged 6 months through 8 years who have received 1 dose of IPV before age 4 years, 1 dose of IPV should be given at 12 through 15 months or at age 4 years or older, at least 4 weeks after the last OPV dose.
- For children 2 through 5 years of age who have received all doses of IPV prior to age 4 years, 1 dose of IPV should be given at age 4 years or older, at least 4 weeks after the last OPV dose.
- For children aged 6 months through 8 years who have received all doses of IPV prior to age 4 years, 1 dose of IPV should be given at age 4 years or older, at least 4 weeks after the last OPV dose.

**Varicella (VAR) vaccine** (Minimum age: 12 months)

- For children aged 14 through 59 months who have received an age-appropriate series of 7-valent PCV (PCV7), administer a single supplemental dose of 13-valent PCV (PCV13).
- If PCV13 has been received previously but PPSV23 has not, administer 1 dose of PPSV23 at least 8 weeks after the last dose of PCV13.
- If PPSV23 has been received previously but PCV13 has not, administer 1 dose of PCV13 at least 6 weeks after the most recent dose of PPSV23.

**Influenza vaccines.** (Minimum age: 6 months for inactivated influenza vaccine [IIV], 2 years for live influenza vaccine [LAIV])

Administer influenza vaccine annually to all children beginning at age 6 months. For most healthy, nonpregnant persons aged 2 through 49 years, either LAIV or IIV may be used. However, LAIV should NOT be used in persons with certain medical conditions (i.e., anatomic or functional asplenia, chronic lung disease [including asthma and chronic obstructive pulmonary disease], congenital heart disease, chronic renal failure, nephrotic syndrome, HIV infection, diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms, multiple myeloma, leukemias, lymphomas, and Hodgkin disease; generalized malignancy; solid organ transplantation; or congenital immunodeficiency). For children aged 2 through 49 years with these conditions, IIV should be administered. For persons aged 9 years and older:

- Administer 1 dose.
- For persons aged 9 years and older:
  - Measles, mumps, and rubella (MMR) vaccine. (Minimum age: 12 months)
  - Varicella (VAR) vaccine. (Minimum age: 12 months)

For children aged 14 through 59 months who have received an age-appropriate series of 7-valent PCV (PCV7), administer a single supplemental dose of 13-valent PCV (PCV13).

If PCV13 has been received previously but PPSV23 has not, administer 1 dose of PPSV23 at least 8 weeks after the last dose of PCV13.

If PPSV23 has been received previously but PCV13 has not, administer 1 dose of PCV13 at least 6 weeks after the most recent dose of PPSV23.

**Pneumococcal vaccines.** (Minimum age: 6 weeks for PCV13, 2 years for PPSV23)

For children aged 2 through 5 years of age who have received all doses of IPV prior to age 4 years, 1 dose of IPV should be given at age 4 years or older, at least 4 weeks after the last OPV dose.

**For children 2 through 5 years of age with any of the following conditions:**

- Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma and chronic obstructive pulmonary disease); congenital malformations of the heart; primary immune deficiencies; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms,
- For children aged 6 months through 8 years who have received 1 dose of IPV before age 4 years, 1 dose of IPV should be given at 12 through 15 months or at age 4 years or older, at least 4 weeks after the last OPV dose.
- For children aged 14 through 59 months who have received an age-appropriate series of 7-valent PCV (PCV7), administer a single supplemental dose of 13-valent PCV (PCV13).
- **Catch-up vaccination**
  - For children 2 through 5 years of age with any of the following conditions:
    - Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma and chronic obstructive pulmonary disease); congenital malformations of the heart; primary immune deficiencies; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms,
    - For children aged 6 months through 8 years who have received 1 dose of IPV before age 4 years, 1 dose of IPV should be given at 12 through 15 months or at age 4 years or older, at least 4 weeks after the last OPV dose.
    - For children aged 14 through 59 months who have received an age-appropriate series of 7-valent PCV (PCV7), administer a single supplemental dose of 13-valent PCV (PCV13).
    - **Catch-up vaccination**
      - For children 2 through 5 years of age with any of the following conditions:
        - Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma and chronic obstructive pulmonary disease); congenital malformations of the heart; primary immune deficiencies; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms,
Children who initiate vaccination at age 6 weeks:
- Administer doses at 2, 4, 6, and 12 months of age.

Children 24 months and older who have not received a complete series:
- Catch-up vaccination:
  - Meningococcal conjugate ACWY vaccines:
    - For other catch-up guidance, see Figure 2.
  - Meningococcal B vaccines:
    - Administer a single dose of Menactra or Menveo vaccine at age 11 through 12 years, with a booster dose at age 16 years.
  - Meningococcal conjugate (acyl carrier protein [ACY], C-polysaccharide [CPS]) vaccines:
    - Administer doses at 2, 4, 6, and 12 through 15 months of age.
  - Meningococcal conjugate (acyl carrier protein [ACY], C-polysaccharide [CPS]) vaccines:
    - Administer 2 primary doses at least 6 months apart.

Children who initiate vaccination at age 8 weeks:
- Administer 2 doses, with the second dose at least 1 month apart. Or a 3-dose series of Trumenba, with the second dose at least 2 months after the first dose.

MenB-4C [Bexsero] and MenB-FHbp [Trumenba]
- Vaccination of persons with high-risk conditions and other persons at increased risk of disease
- Administration in conjunction with regular clinical encounters
- See http://www.cdc.gov/mmwr/pdf/wk/mm6441.pdf

Adolescents aged 11 through 18 years with human immunodeficiency virus (HIV) infection should receive a dose followed by a booster dose at age 16 years.

For children who travel to or reside in countries in which meningococcal disease is hyperendemic or endemic:
- Administer an age-appropriate formulation and series of Menactra or Menveo for protection against meningococcal disease. Prior receipt of MenHibrix is not sufficient for protection against serogroups A, C, W, and X meningococcal disease. Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine. (Minimum age: 10 years)
- Traveling to the meningitis belt or the Hajj because it does not contain serogroups A or W.

For children at risk during a community outbreak attributable to a vaccine serogroup
- Administer 2 doses, with the second dose at least 8 weeks apart to ensure protection against serogroups C and Y meningococcal disease.

For children 7 through 10 years who receive a dose of Tdap as part of the catch-up series, an adolescent dose at age 11 through 12 years.

MenHibrix:
- A single dose of MenHibrix is followed by a booster dose at age 16 years.
- For children 9 through 23 months:
  - Administer a single dose of MenHibrix at age 9 through 15 months, with a booster dose at age 4 through 6 years.
  - Administer 2 doses of HepA vaccine at least 6 months apart to previously unvaccinated persons who live in areas with endemic hepatitis A, older children and adults who are at increased risk for disease, and persons who are about to travel to areas with endemic hepatitis A.

For children at risk of meningococcal disease:
- Administer prophylaxis or vaccine to persons who have been exposed to meningococcal disease and have been notified by a public health professional to receive prophylaxis or vaccination.
- Persons aged 11 through 18 years who have not received Tdap vaccine should receive a dose followed by a booster dose at age 16 years.

For children who initiate vaccination at age 6 weeks:
- Administer 2 doses of Hib-MenCY [MenHibrix], 2 months for MenACWY-D [Menactra], 2 months for MenACWY-CRM [Menveo], 10 years for serogroup B meningococcal disease. Prior receipt of MenHibrix is not sufficient for protection against serogroups A, C, W, and X meningococcal disease. Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine. (Minimum age: 10 years)

Clinical discretion:
- Based on the severity of the meningitis risk factor.
- Catch-up vaccination: To ensure protection against serogroups C and Y meningococcal disease.
- Routine vaccination: To prevent disease in persons without a meningococcal disease risk factor.