Diphtheria, tetanus, and pertussis (DTaP) vaccination

(minimum age: 6 weeks [4 years for Kinrix or Quadracell]

Routine vaccination:

- 5 dose series at 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 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.

----------**END OF VACCINE**----------

Haemophilus influenza type b vaccination

(minimum age: 6 weeks)

Routine vaccination:

- **ActHIB, Hiberix, or Pentacel**: 4-dose series at 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 12-59 months and at least 8 weeks after dose 2
- **Unvaccinated at 15-59 months**: 1 dose
- **Previously unvaccinated children age 60 months or older**: who are not considered high risk do not require catch-up vaccination
- 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 age 12 months: 2 doses, 8 weeks apart
  - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

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

  Unvaccinated* persons age 15 months or older
  - 1 dose (preferably at least 14 days before procedure)
- **HIV infection: 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 (15 months or older)

----------**END OF VACCINE**----------

Hepatitis A vaccination

(minimum age: 12 months for routine vaccination)

Routine vaccination:

- 2-dose series (minimum interval: 6 months) beginning at age 12 months

Catch-up vaccination:

- Unvaccinated persons through 18 years old 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 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)

International travel:

- Persons traveling to or working in countries with high or intermediate endemic hepatitis A:
    - **Infants age 6-11 months**: 1 dose before departure; revaccinate with 2 doses, separated by at least 6 months, between 12 and 23 months of age
    - **Unvaccinated age 12 months and older**: Administer 1 dose as soon as travel is considered

----------**END OF VACCINE**----------

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 **hepatitis B immune globulin (HBIG)** (in separate limbs) within 12 hours of birth, regardless of birth weight. For infants <2,000 grams, administer 3 additional doses of vaccine (total of 4 doses) beginning at age 1 month
  - Test for HBsAg and anti-HBs at age 9-12 months. If HepB series is delayed, test 1-2 months after final dose
- **Mother's HBsAg status is unknown**:
  - Administer **HepB vaccine** within 12 hours of birth, regardless of birth weight
  - For infants <2,000 grams, administer **HBIG** in addition to HepB vaccine (in separate limbs) within 12 hours of birth. Administer 3 additional doses of vaccine (total of 4 does) beginning at age 1 month
  - Determine mother's HBsAg status as soon as possible. If mother is HBsAg-positive, administer **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: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks (when 4 doses are administered, substitute "dose 4" for "dose 3" in these calculations)

Catch-up vaccination:

- Unvaccinated persons should complete a 3-dose series at 0, 1-2, 6 months
- Adolescents age 11-15 years may use an alternative 2-dose schedule with at least 4 months between doses (adult formulation **Recombivax HB** only)
- Adolescents 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

Special situations:

- Revaccination is not generally recommended for persons with a normal immune status who were vaccinated as infants, children, adolescents, or adults
- **Revaccination** may be recommended for certain populations, including:
  - **Infants born to HBsAg-positive mothers**
  - **Hemodialysis patients**
  - **Other immunocompromised persons**
- For detailed revaccination recommendations, please see the HepB *MMWR* publications

----------END OF VACCINE----------

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 age 18 years if not 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)
    - **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)
- If completed valid vaccination series with any HPV vaccine, no additional doses needed

Special situations:

- **Immunocompromising conditions, including HIV infections**: 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

----------**END OF VACCINE**----------

Influenza vaccination

(minimum age: 6 months [IIV], 2 years [LAIV], 18 years [recombinant influenza vaccine, RIV]

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, 2019, 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 vaccines doses before July 1, 2019
    - 1 dose for **all persons age 9 years and older**
- For the 2020-21 season, see the 2020-21 ACIP influenza vaccine recommendations

Special situations:

- **Egg allergy**, **hive only**: Any influenza vaccine appropriate for age and health status annually
- **Egg allergy with symptoms other than hives** (e.g., angioedema, respiratory distress, need for emergency medical services or epinephrine): Any influenza vaccine appropriate for age and health status annually in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions
- **LAIV should not be used** in persons with the following conditions or situations:
    - History of severe allergic reaction to a previous dose of any influenza vaccine or to any vaccine component (excluding egg, see details above)
    - Receiving aspirin or salicylate-containing medications
    - Age 2-4 years with history of asthma or wheezing
    - Immunocompromised due to any cause (including medications and HIV infection)
    - Anatomic or functional asplenia
    - Cochlear implant
    - Cerebrospinal fluid-oropharyngeal communication
    - Close contacts or caregivers of severely immunosuppressed persons who require a protected environment
    - Pregnancy
    - Received influenza antiviral medications within the previous 48 hours

----------**END OF VACCINE**----------

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-dose series at least 4 weeks apart
- The maximum age for use of MMRV is 12 years

Special situations:

International travel

- **Infants age 6-11 months**: 1 dose before departure; revaccinate with 2-dose series with dose 1 at 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 and older**: 2-dose series at least 4 weeks apart before departure

----------**END OF VACCINE**----------

Meningococcal serogroup A, C, W, Y vaccination

(minimum age: 2 months [MenACWY – CRM, Menveo], 9 months [MenACWY – D, Menactra])

Routine vaccination:

- 2-dose series at 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, complement inhibitor (e.g., eculizumab, ravulizumab) use:

- **Menveo**
  - Dose 1 at age 8 weeks: 4-dose series at 2, 4, 6, 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: Not recommended
    - 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 PCV13 series

Travel in countries with hyperendemic or epidemic meningococcal disease, including countries in the African meningitis belt or during the Hajj:

- Children less than age 24 months:
  - **Menveo (age 2-23 months)**:
    - Dose 1 at 8 weeks: 4-dose series at 2, 4, 6. 12 months
    - Dose 1 at 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** or **Menactra**

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** or **Menactra**

Adolescent vaccination of children who received MenACWY prior to age 10 years:

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

Note: Menactra should be administered either before or at the same time as DTaP. For MenACWY **booster dose recommendations** for groups listed under "Special situations" and in an outbreak setting and for additional meningococcal vaccination information, see meningococcal MMWR publications

----------**END OF VACCINE**----------

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

Bexsero and **Trumenba** 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 for additional meningococcal vaccination information, see ACIP Recommendations

----------**END OF VACCINE**----------

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 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:
  - 2 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 dose)
  - Less than 3 PCV13 doses: 2 doses PCV13 (8 weeks after the most recent dose and administered 8 weeks apart)
- No history of PPSC23: 1 dose PPSC23 (at least 8 weeks after any prior PCV13 dose)

Age 6-18 years:

- No history of either PCV13 or PPSV23: 1 dose PCV13, 1 dose PPSV23 at least 8 weeks later
- Any PCV13 but no PPSV23: 1 dose PPSV23 at least 8 weeks after the most recent dose of PCV13
- PPSV23 but not PCV13: 1 dose PCV13 at least 8 weeks after the most recent dose of PPSV23

Sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; congenital or acquired immunodeficiency; HIV infection; chronic renal failure; nephrotic syndrome; malignant neoplasms, leukemias, lymphomas, Hodgkin disease, and other diseases associated with treatment with immunosuppressive drugs or radiation therapy; solid organ transplantation; multiple myeloma:

Age 2-5 years:

- Any incomplete* series with:
  - 3 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 doses)
  - Less than 3 PCV13 doses: 2 doses PCV13 (8 weeks after the most recent dose and administered 8 weeks apart)
- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after any prior PCV13 dose) and a 2nd dose of PPSV23 5 years later

Age 6-18 years:

- No history of either PCV13 or PPSV23: 1 dose PCV13, 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after PCV13 and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23)
- Any PCV13 but no PPSV23: 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after the most recent dose of PCV13 and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23)

- PPSV23 but no PCV13: 1 dose PCV13 at least 8 weeks after the most recent PPSV23 dose and a 2nd dose of PPSV23 administered 5 years after dose 1 of PPSV23 and at least 8 weeks after a dose of PCV13

Chronic live disease, alcoholism:

Age 6-18 years:

- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after any prior PCV13 dose)

*Incomplete series = Not having received all doses in either the recommended series or an age-appropriate catch-up series. See Tables 8, 9, and 11 in the ACIP pneumococcal vaccine recommendations [24 pages] for complete schedule details

----------**END OF VACCINE**----------

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 at 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 at 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 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 the recommended for the U.S. IPV schedule. See Guidance for Assessment of Poliovirus Vaccination Status and Vaccination of Children Who Have Received Poliovirus Vaccine Outside the United States.
- Only trivalent OPV (tOPV) counts towards 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 Errata: Vol. 66, No. 1
- For other catch-up guidance, see Table 2.

----------**END OF VACCINE**----------

Rotavirus vaccination

(minimum age: 6 weeks)

Routine vaccination:

- **Rotarix**: 2-dose series at 2 and 4 months
- **RotaTeq**: 3-dose series at 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.

----------**END OF VACCINE**----------

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, us Td or Tdap
- **Tdap administered at 7-10 years:**
    - **Children ages 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 to receive the routine Tdap dose at age 11-12 years
- **DTaP inadvertently administered at or after age 7 years:**
    - **Children age 7-9 years:** DTaP may count as part of catch-up series. Routine Tdap dose at age 11-12 years should be administered
    - **Children age 10-18 years:** Count dose of DTaP as the adolescent Tdap booster
- For other catch-up guidance, see Table 2.
- For information on use of Tdap or Td as tetanus prophylaxis in wound management, see Prevention of Pertussis, Tetanus, Diphtheria with Vaccines in the United States: Recommendations of the Advisory Committee on Immunization Practices (ACIP).

*Fully vaccinated = 5 valid doses of DTaP OR 4 valid doses of DTaP if dose 4 was administered at age 4 years or older

----------**END OF VACCINE**----------

Varicella vaccination
(minimum age: 12 months)

Routine vaccination:

- 2-dose series at 12-15 months, 4-6 years
- Dose 2 may be administered as early as 3 months after dose 1 (a dose administered after a 4-week interval may be counted)

Catch-up vaccination:

- Ensure persons age 7-18 years without evidence of immunity (see *MMWR [48 pages]*) have 2-dose series:
    - **Ages 7-12 years**: routine interval: 3 months (a dose administered after a 4-week interval may be counted)
    - **Ages 13 years and older**: routine interval: 4-8 weeks (minimum interval: 4 weeks)
    - The maximum age for use of MMRV is 12 years

----------**END OF VACCINE**----------

NOTES:

This schedule is recommended by the Advisory Committee on Immunization Practices (ACIP) and approved by the Centers for Disease Control and Prevention (CDC), American Academy of Pediatrics (AAPexternal), American Academy of Family Physicians (AAFPexternal), American College of Obstetricians and Gynecologists (ACOGexternal), and American College of Nurse-Midwives (ACNMexternal).

The comprehensive summary of the ACIP recommended changes made to the child and adolescent immunization schedule can be found in the February 6, 2020 *MMWR*.

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)