CD Summary

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THE 2015 CHILD AND ADOLESCENT IMMUNIZATION SCHEDULES

On January 26, CDC's Advisory Committee on Immunization Practices (ACIP) released its 2015 recommended schedules for Birth-to-18-years-of-age and "Catch-up" immunizations. This issue of the *CD Summary* presents the new tables, along with their footnotes, and highlights changes in recommendations since last year.

ROUTINE SCHEDULE:

- **Influenza:** In its recommendation for annual vaccination against influenza, the schedule now distinguishes among two groups of children 2–18 years of age, who may receive either inactivated influenza vaccine (IIV) or live, attenuated influenza vaccine (LAIV): 2–8 years old (who may need either 1 or 2 doses, depending upon receipt of vaccine in prior seasons); and 9–18 years old (who need but 1 dose). Antiviral medications are contraindicated for 48 hours prior to LAIV vaccination. Contraindications for LAIV have been clarified (see footnote 8).
- **Measles:** MMR vaccine is recommended for children 6–11 months of age before they embark on international travel. At this young age, the vaccine may protect the child from measles while abroad, but does not obviate the need for two doses given at the usually recommended time (at least 12 months of age, and separated by at least 4 weeks) (footnote 9).
- **Meningococcal conjugate:** The vaccination recommendations for persons with high-risk conditions and other persons at increased risk of disease are now listed by specific meningococcal conjugate vaccine. Recommendations for travelers are unchanged (see footnote 13).
  N.b., the vaccines referred to here are the serogroup A, C, Y, W-135 quadrivalent meningococcal vaccines; ACIP recommendations for the new serogroup B vaccines have yet to be published, but see *CD Summary* on Meningococcus Serogroup B (3/24/2015).
- **No changes** were made to the Hepatitis A or B, Rotavirus, Polio, Varicella, or HPV vaccine recommendations.

CATCH-UP SCHEDULE:

- ***Haemophilus influenzae* type b (Hib)**: The recommendations emphasize that catch up with the third and final dose of Hib should continue at 12–59 months of age and at least 8 weeks after the second dose if a child's first and second doses were PRP-OMP (PedvaxHIB® or COMVAX®), and were administered before the first birthday (footnote 5).
- **Pneumococcal:** For children 2–5 years of age with high-risk conditions, the recommendations were changed as follows (words in *italics* show additions in the 2015 schedule): Administer 1 dose of PCV13 if *any incomplete schedule* of 3 doses of PCV were received previously; administer 2 doses of PCV13 at least 8 weeks apart *if unvaccinated or any incomplete schedule* of <3 doses of PCV were received previously (see footnote 6).

FOR MORE INFORMATION

- Oregon Immunization Program *https://public.health.oregon.gov/PreventionWellness/VaccinesImmunization/Pages/index.aspx*
- CDC Birth-18 year and "Catch-up" Immunization Schedules *www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html*

Footnotes to Tables (*verso*)

1. **Hepatitis B (HepB) vaccine.** *(Minimum age: birth)*
   Routine vaccination:
   At birth
   - Administer monovalent HepB vaccine to all newborns before hospital discharge.
   - For infants born to hepatitis B surface antigen (HBsAg)–positive mothers, administer HepB vaccine and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) 1 to 2 months after completion of the HepB series at age 9–18 months (preferably at the next well-child visit).
   - If mother's HBsAg status is unknown, within 12 hours of birth administer HepB vaccine regardless of birth weight. For infants weighing <2,000 grams, administer HBIG in addition to HepB vaccine within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if mother is HBsAg-positive, also administer HBIG for infants weighing ≥2,000 grams as soon as possible, but no later than age 7 days.

   Doses following the birth dose:
   - The second dose should be administered at age 1 or 2 months. Monovalent HepB vaccine should be used for doses administered before age 6 weeks.
   - Infants who did not receive a birth dose should receive 3 doses of a HepB-containing vaccine on a schedule of 0, 1 to 2 months, and 6 months starting as soon as feasible. See Table 2.
   - 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. The final (third or fourth) dose in the HepB vaccine series should be administered **no earlier than age 24 weeks**.
   - Administration of a total of 4 doses of HepB vaccine is permitted when a combination vaccine containing HepB is administered after the birth dose.

   Catch-up vaccination:
   - Unvaccinated persons should complete a 3-dose series.
   - A 2-dose series (doses separated by at least 4 months) of adult formulation Recombivax HB is licensed for use in children aged 11–15 years.
   - For other catch-up guidance, see Table 2.
2. **Rotavirus (RV) vaccines.** *(Minimum age: 6 weeks for both RV-1 [Rotarix] and RV-5 [RotaTeq]).*
   Routine vaccination:
   Administer a series of RV vaccine to all infants as follows:
   1. If Rotarix is used, administer a 2-dose series at 2 and 4 months of age.
   2. If RotaTeq is used, administer a 3-dose series at ages 2, 4, and 6 months.
   3. If any dose in the series was RotaTeq or vaccine product is unknown for any dose in the series, a total of 3 doses of RV vaccine should be administered.

   Catch-up vaccination:
   - The maximum age for the first dose in the series is 14 weeks, 6 days; vaccination should not be initiated for infants aged ≥15 weeks.
   - The maximum age for the final dose in the series is 8 months, 0 days.
   - For other catch-up guidance, see Table 2.
3. **Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine.** *(Minimum age: 6 weeks.* Exception: DTaP-IPV [Kinrix]: 4 years)
   Routine vaccination:
   - Administer a 5-dose series of DTaP vaccine at ages 2, 4, 6, 15–18 months, and 4–6 years. The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose. However, the fourth dose of DTaP need not be repeated if it was administered at least 4 months after the third dose of DTaP.

   Catch-up vaccination:
   - The fifth dose of DTaP vaccine is not necessary if the fourth dose was administered at age ≥4 years.
   - For other catch-up guidance, see Table 2.
4. **Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine.** *(Minimum age: 10 years* for both Boostrix and Adacel*).*
   Routine vaccination:
   - Administer 1 dose of Tdap vaccine to all adolescents aged 11–12 years.

4. Tdap continued

- Tdap may be administered regardless of the interval since the last tetanus and diphtheria toxoid-containing vaccine.
- Administer 1 dose of Tdap vaccine to pregnant adolescents during each pregnancy (preferred during 27–36 weeks' gestation) regardless of time since prior Td or Tdap vaccination.

Catch-up vaccination:

- Persons aged ≥7 years who are not fully immunized with DTaP vaccine should receive Tdap vaccine as 1 dose (preferably the first) in the catch-up series; if additional doses are needed, use Td vaccine. For children 7–10 years who receive a dose of Tdap as part of the catch-up series, an adolescent Tdap vaccine dose at age 11–12 years should NOT be administered. Td should be administered instead 10 years after the Tdap dose.
- Persons aged 11–18 years who have not received Tdap vaccine should receive a dose followed by tetanus and diphtheria toxoid (Td) booster doses every 10 years thereafter.
- Inadvertent doses of DTaP vaccine:
  - If administered inadvertently to a child aged 7–10 years may count as part of the catch-up series. This dose may count as the adolescent Tdap dose, or the child can later receive a Tdap booster dose at age 11–12 years.
  - If administered inadvertently to an adolescent aged 11–18 years, the dose should be counted as the adolescent Tdap booster.
- For other catch-up guidance, see Table 2.

5. *Haemophilus influenzae* type b (Hib) conjugate vaccine. (*Minimum age: 6 weeks* for PRP-T [ACTHIB, DTaP-IPV/Hib (Pentacel) and Hib-MenCY (MenHibrix)], PRP-OMP [PedvaxHIB or COMVAX], *12 months* for PRP-T [Hiberix])

Routine vaccination:

- Administer a 2- or 3-dose Hib vaccine primary series and a booster dose (dose 3 or 4 depending on vaccine used in primary series) at age 12–15 months to complete a full Hib vaccine series.
- The primary series with ActHIB, MenHibrix, or Pentacel consists of 3 doses and should be administered at 2, 4, and 6 months of age. The primary series with PedvaxHib or COMVAX consists of 2 doses and should be administered at 2 and 4 months of age; a dose at age 6 months is not indicated.
- One booster dose (dose 3 or 4 depending on vaccine used in primary series) of any Hib vaccine should be administered at age 12–15 months. An exception is Hiberix vaccine. Hiberix should only be used for the booster (final) dose in children aged 12 months–4 years who have received at least 1 prior dose of Hib-containing vaccine.
- For recommendations on the use of MenHibrix in patients at increased risk for meningococcal disease, please refer to the meningococcal vaccine footnotes and also to *MMWR* February 28, 2014 / 63(RR01);1–13, available at *www.cdc.gov/mmwr/PDF/rr/rr6301.pdf*

Catch-up vaccination:

- If dose 1 was administered at ages 12–14 months, administer a second (final) dose at least 8 weeks after dose 1, regardless of Hib vaccine used in the primary series.
- If both doses were PRP-OMP (PedvaxHIB or COMVAX), and were administered before the first birthday, the third (and final) dose should be administered at age 12–59 months and at least 8 weeks after the second dose.
- If the first dose was administered at age 7–11 months, administer the second dose at least 4 weeks later and a third (and final) dose at age 12–15 months or 8 weeks after second dose, whichever is later.
- If first dose is administered before the first birthday and second dose administered at <15 months, a third (and final) dose should be given 8 weeks later.
- For unvaccinated children aged ≥15 months, administer only 1 dose.
- For other catch-up guidance, see Table 2. For catch-up guidance related to MenHibrix, please see the meningococcal vaccine footnotes and also *MMWR* February 28, 2014 / 63(RR01);1-13, available at *www.cdc.gov/mmwr/PDF/rr/rr6301.pdf*

Vaccination of persons with high-risk conditions:

- Children aged 12–59 months who are at increased risk for Hib disease, including chemotherapy recipients and those with anatomic or functional asplenia (including sickle cell disease), human immunodeficiency virus (HIV) infection, immunoglobulin deficiency, or early component complement deficiency, who have received either no doses or only 1 dose of Hib vaccine <12 months of age, should receive 2 additional doses of Hib vaccine 8 weeks apart; children who received 2 or more doses of HIB vaccine <12 months of age should receive 1 additional dose.
- For patients <5 years of age undergoing chemotherapy or radiation treatment who received a Hib vaccine dose(s) within 14 days of starting therapy or during therapy, repeat the dose(s) at least 3 months following therapy completion.
- Recipients of hematopoietic stem cell transplant (HSCT) should be revaccinated with a 3-dose regimen of Hib vaccine starting 6 to 12 months after successful transplant, regardless of vaccination history; doses should be administered at least 4 weeks apart.
- A single dose of any Hib-containing vaccine should be administered to unimmunized* children and adolescents ≥15 months of age undergoing an elective splenectomy; if possible, vaccine should be administered at least 14 days before procedure.
- Hib vaccine is not routinely recommended for patients ≥5 years. However, 1 dose of Hib vaccine should be administered to unimmunized* persons aged ≥5 years who have anatomic or functional asplenia (including sickle cell disease) and unvaccinated persons 5–18 years of age with human immunodeficiency virus (HIV) infection.

  * *Patients who have not received a primary series and booster dose or at least 1 dose of Hib vaccine after 14 months of age are considered unimmunized.*

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

Routine vaccination with PCV13:

- Administer a 4-dose series of PCV13 vaccine at ages 2, 4, and 6 months and at age 12–15 months.
- For children aged 14–59 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 with PCV13:

- Administer 1 dose of PCV13 to all healthy children aged 24–59 months who are not completely vaccinated for their age.
- For other catch-up guidance, see Table 2.

Vaccination of persons with high-risk conditions with PCV13 and PPSV23:

- All recommended PCV13 doses should be administered prior to PPSV23 vaccination if possible.
- For children 2–5 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 if treated with high-dose oral corticosteroid therapy); diabetes mellitus; cerebrospinal fluid leak; cochlear implant; sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin's disease; solid organ transplantation; or congenital immunodeficiency:
  1. Administer 1 dose of PCV13 if any incomplete schedule of 3 doses of PCV (PCV7 and/or PCV13) were received previously.
  2. Administer 2 doses of PCV13 at least 8 weeks apart if unvaccinated or any incomplete schedule <3 doses of PCV (PCV7 and/or PCV13) were received previously.
  3. Administer 1 supplemental dose of PCV13 if 4 doses of PCV7 or other age-appropriate complete PCV7 series was received previously.
  4. The minimum interval between doses of PCV (PCV7 or PCV13) is 8 weeks.
  5. For children with no history of PPSV23 vaccination, administer PPSV23 at least 8 weeks after the most recent dose of PCV13.
- For children aged 6–18 years who have cerebrospinal fluid leak; cochlear implant; sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; congenital or acquired immunodeficiencies; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin's disease; generalized malignancy; solid organ transplantation; or multiple myeloma:
  1. If neither PCV13 nor PPSV23 has been received previously, administer 1 dose of PCV13 now and 1 dose of PPSV23 at least 8 weeks later.
  2. If PCV13 has been received previously but PPSV23 has not, administer 1 dose of PPSV23 at least 8 weeks after the most recent dose of PCV13.
  3. If PPSV23 has been received but PCV13 has not, administer 1 dose of PCV13 at least 8 weeks after the most recent dose of PPSV23.
- For children aged 6–18 years with chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy), diabetes mellitus, alcoholism, or chronic liver disease, who have not received PPSV23, administer 1 dose of PPSV23. If PCV13 has been received previously, then PPSV23 should be administered at least 8 weeks after any prior PCV13 dose.
- A single revaccination with PPSV23 should be administered 5 years after the first dose to children with sickle cell disease or other hemoglobinopathies; anatomic

or functional asplenia; congenital or acquired immunodeficiencies; HIV infection; chronic renal failure; nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin's disease; generalized malignancy; solid organ transplantation; or multiple myeloma.

7. **Inactivated poliovirus vaccine (IPV)**. (*Minimum age: 6 weeks*)

Routine vaccination:

- Administer a 4-dose series of IPV at ages 2, 4, 6–18 months, and 4–6 years. The final dose in the series should be administered on or after the fourth birthday and at least 6 months after the previous dose.

Catch-up vaccination:

- In the first 6 months of life, minimum age and minimum intervals are only recommended if the person is at risk of imminent exposure to circulating poliovirus (i.e., travel to a polio-endemic region or during an outbreak).
- If ≥4 doses are administered age <4 years, an additional dose should be administered at age 4–6 years and at least 6 months after the previous dose.
- A fourth dose is not necessary if the third dose was administered at age ≥4 years and at least 6 months after the previous dose.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age. IPV is not routinely recommended for U.S. residents aged ≥18 years.
- For other catch-up guidance, see Table 2.

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

Routine vaccination:

- Administer influenza vaccine annually to all children beginning at age 6 months. For most healthy, nonpregnant persons aged 2–49 years, either LAIV or IIV may be used. However, LAIV should NOT be administered to some persons, including 1) persons who have experienced severe allergic reactions to LAIV, any of its components, or to a previous dose of any other influenza vaccine; 2) children 2–17 years receiving aspirin or aspirin-containing products; 3) persons who are allergic to eggs; 4) pregnant women; 5) immunosuppressed persons; 6) children 2–4 years of age with asthma or who had wheezing in the past 12 months; or 7) persons who have taken influenza antiviral medications in the previous 48 hours. For all other contraindications and precautions to use of LAIV, see *MMWR* August 15, 2014 / 63(32);691-697 [40 pages] available at *www.cdc.gov/mmwr/pdf/wk/mm6332.pdf*.

For children aged 6 months–8 years:

- For the 2014-15 season, administer 2 doses (separated by at least 4 weeks) to children who are receiving influenza vaccine for the first time. Some children in this age group who have been vaccinated previously will also need 2 doses. For additional guidance, follow dosing guidelines in the 2014-15 ACIP influenza vaccine recommendations, *MMWR* August 15, 2014 / 63(32);691-697 [40 pages] available at *www.cdc.gov/mmwr/pdf/wk/mm6332.pdf*.
- For the 2015–16 season, follow dosing guidelines in the 2015 ACIP influenza vaccine recommendations.

For children aged ≥9 years

- Administer 1 dose.

9. **Measles, mumps, and rubella (MMR) vaccine.** (*Minimum age: 12 months* for routine vaccination)

Routine vaccination:

- Administer a 2-dose series of MMR vaccine at ages 12–15 months and 4–6 years. The second dose may be administered age <4 years, provided at least 4 weeks have elapsed since the first dose.
- Administer 1 dose of MMR vaccine to infants aged 6–11 months before departure from the United States for international travel. These children should be revaccinated with 2 doses of MMR vaccine, the first at age 12–15 months (12 months if the child remains in an area where disease risk is high), and the second dose at least 4 weeks later.
- Administer 2 doses of MMR vaccine to children aged ≥12 months before departure from the United States for international travel. The first dose should be administered on or after age 12 months and the second dose at least 4 weeks later.

Catch-up vaccination:

- Ensure that all school-aged children and adolescents have had 2 doses of MMR vaccine; the minimum interval between the 2 doses is 4 weeks.

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

Routine vaccination:

- Administer a 2-dose series of VAR vaccine at ages 12–15 months and 4–6 years. The second dose may be administered at age <4 years, provided at least 3 months have elapsed since the first dose. If the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid.

Catch-up vaccination:

- Ensure that all persons aged 7–18 years without evidence of immunity (see *MMWR* 2007 / 56 [No. RR-4], available at *www.cdc.gov/mmwr/pdf/rr/rr5604.pdf*) have 2 doses of varicella vaccine. For children aged 7–12 years, the recommended minimum interval between doses is 3 months (if the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid); for persons aged ≥13 years, the minimum interval between doses is 4 weeks.

11. **Hepatitis A (HepA) vaccine.** (*Minimum age: 12 months)*

Routine vaccination:

- Initiate the 2-dose HepA vaccine series at 12–23 months; separate the 2 doses by 6 to 18 months.
- Children who have received 1 dose of HepA vaccine at age <24 months should receive a second dose 6 to 18 months after the first dose.
- For any person aged ≥2 years, who has not already received the HepA vaccine series, 2 doses of HepA vaccine separated by 6 to 18 months may be administered if immunity against hepatitis A virus infection is desired.

Catch-up vaccination:

- The minimum interval between the 2 doses is 6 months.

Special populations:

- Administer 2 doses of HepA vaccine at least 6 months apart to previously unvaccinated persons who live in areas where vaccination programs target older children, or who are at increased risk for infection. This includes persons traveling to or working in countries that have high or intermediate endemicity of infection; men having sex with men; users of injection and non-injection illicit drugs; persons who work with HAV-infected primates or with HAV in a research laboratory; persons with clotting-factor disorders; persons with chronic liver disease; and persons who anticipate close personal contact (e.g., household or regular babysitting) with an international adoptee during the first 60 days after arrival in the United States from a country with high or intermediate endemicity. The first dose should be administered as soon as the adoption is planned, ideally 2 or more weeks before the arrival of the adoptee.

12. **Human papillomavirus (HPV) vaccines.** (*Minimum age: 9 years* for HPV2 [Cervarix] and HPV4 [Gardasil])

Routine vaccination:

- Administer a 3-dose series of HPV vaccine on a schedule of 0, 1–2, and 6 months to all adolescents aged 11–12 years. Either HPV4 or HPV2 may be used for females, and only HPV4 may be used for males.
- The vaccine series may be started at age 9 years.
- Administer the second dose 1 to 2 months after the first dose (minimum interval of 4 weeks); administer the third dose 24 weeks after the first dose and 16 weeks after the second dose (minimum interval of 12 weeks).

Catch-up vaccination:

- Administer the vaccine series to females (either HPV2 or HPV4) and males (HPV4) at age 13–18 years if not previously vaccinated.
- Use recommended routine dosing intervals (see Routine vaccination above) for vaccine series catch-up.

13. **Meningococcal conjugate vaccines.** (*Minimum age: 6 weeks* for Hib-MenCY [MenHibrix], *9 months* for MenACWY-D [Menactra], *2 months* for MenACWY-CRM [Menveo])

Routine vaccination:

- Administer a single dose of Menactra or Menveo vaccine at age 11–12 years, with a booster dose at age 16 years.
- Adolescents aged 11–18 years with human immunodeficiency virus (HIV) infection should receive a 2-dose primary series of Menactra or Menveo with at least 8 weeks between doses.
- For children aged 2 months–18 years with high-risk conditions, see below.

Catch-up vaccination:

- Administer Menactra or Menveo vaccine at age 13–18 years if not previously vaccinated.
- If the first dose is administered at age 13–15 years, a booster dose should be administered at age 16–18 years with a minimum interval of at least 8 weeks between doses.
- If the first dose is administered at age ≥16, a booster dose is not needed.
- For other catch-up guidance, see Table 2.

Vaccination of persons with high-risk conditions and other persons at increased risk of disease:

- Children with anatomic or functional asplenia (including sickle cell disease):

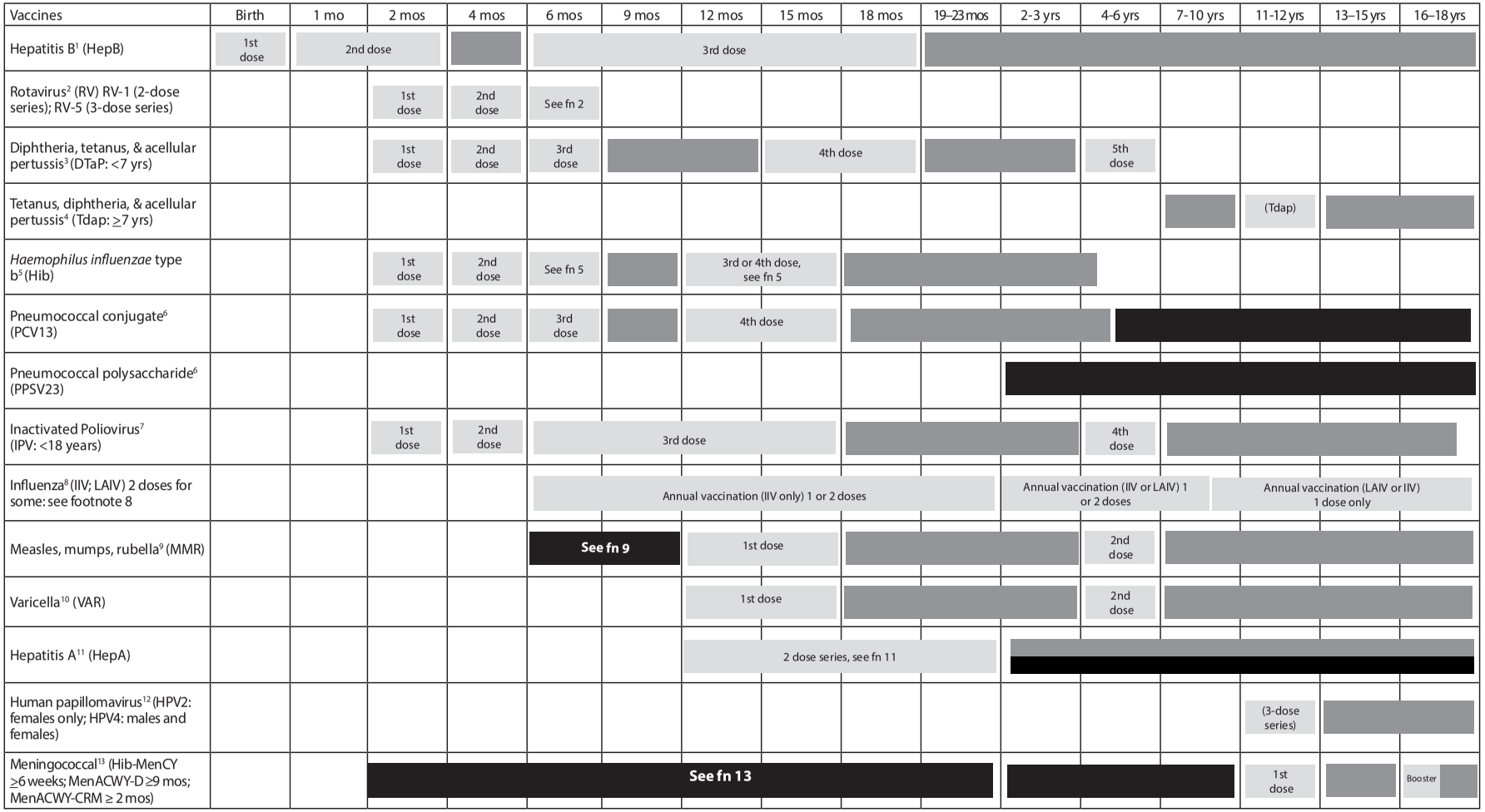
4. Menveo
   - o *Children who initiate vaccination at 8 weeks through 6 months:* Administer doses at 2, 4, 6, and 12 months of age.
   - o *Unvaccinated children 7–23 months*: Administer 2 doses, with the second dose at least 12 weeks after the first dose AND after the first birthday.
   - o *Children ≥24 months who have not received a complete series*: Administer 2 primary doses at least 8 weeks apart.
5. MenHibrix
   - o *Children 6 weeks–18 months*: Administer doses at 2, 4, 6, and 12–15 months of age.

Table 1

Recommended Immunization Schedule for Persons Aged 0 Through 18 Years
United States, 2015

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE [TABLE 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 schedule. To determine minimum intervals between doses, see the catch-up schedule (Table 2). School entry and adolescent vaccine age groups are shaded.



Recommended ages of all children

Recommended ages for catch-up

Recommended ages for certain high-risk groups

Recommended ages during which catch-up is encouraged and for certain high-risk groups

Not routinely recommended

This schedule includes recommendations in effect as of January 1, 2015. 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 www.cdc.gov/vaccines/pub/acip-list.htm. Clinically significant adverse events that follow vaccination should be reported to the Vaccine Adverse Event Reporting System (VAERS) online (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 (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 (www.cdc.gov/vaccines/acip/index.html), the American Academy of Pediatrics (www.aap.org), the American Academy of Family Physicians (www.aafp.org), and the American College of Obstetricians and Gynecologists (www.acog.org).

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

Table 2

Catch-up Immunization Schedule, Ages 4 Months Through 18 Years
starting late or more than one month behind—United States, 2015

Vaccine	Min. Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
CHILDREN AGED 4 MONTHS THROUGH 6 YEARS					
Hepatitis B[1]	Birth	**4 weeks**	**8 weeks** *and* at least 16 weeks after first dose; Minimum age for the final dose is 24 weeks		
Rotavirus[2]	6 wks	**4 weeks**	**4 weeks**[2]		
Diphtheria, tetanus, and	6 wks	**4 weeks**	**4 weeks**	**6 months**	**6 months**[3]
Haemophilus influenzae type b[5]	6 wks	**4 weeks** if first dose was administered before the 1st birthday. **8 weeks** (as final dose) if first dose was administered at age 12–14 months. **No further doses** needed if first dose was administered at age ≥15 months	**4 weeks**[5] if current age is <12 months and first dose was administered at age <7 months, **and** at least 1 previous dose was PRP-T (ActHib, Pentacel) or unknown. **8 weeks and** age 12–59 months (as final dose)[5] if current age <12 months **and** first dose was administered at age 7–11 months; **OR** if current age is 12–59 months and first dose was administered before the 1st birthday, and second dose administered at age <15 months; **OR** if both doses were PRP-OMP (PedvaxHIB; Comvax) and were administered before the 1st birthday. **No further doses** needed if previous dose administered at age ≥15 months	**8 weeks (as final dose)** This dose only necessary for children age 12–59 months who received 3 doses before the 1st birthday.	
Pneumococcal[6]	6 wks	**4 weeks** if first dose administered before the 1st birthday. **8 weeks** (as final dose for healthy children) if first dose administered at the 1st birthday or after. **No further doses needed** for healthy children if first dose administered at age ≥24 months.	**4 weeks** if current age is <12 months and previous dose given at <7months old. **8 weeks** (as final dose for healthy children) **if** previous dose given between 7-11 months (wait until at least 12 months old); **OR if current age is ≥12 months *and* a**t least 1 dose was given at age <12 months. **No further doses** needed for healthy children if previous dose administered at age ≥24 months.	**8 weeks (as final dose)** This dose only necessary for children aged 12 –59 months who received 3 doses age <12 months or high risk children who received 3 doses at any age.	
Inactivated poliovirus[7]	6 wks	**4 weeks**	**4 weeks**[7]	**6 months**[7] Minimum age 4 years for final dose	
Meningococcal[13]	6 wks	**8 weeks**[13]	see footnote 13	see footnote 13	
Measles, mumps, rubella[9]	12 mos	**4 weeks**			
Varicella[10]	12 mos	**3 months**			
Hepatitis A[11]	12 mos	**6 months**			
CHILDREN AND ADOLESCENTS AGED 7 THROUGH 18 YEARS					
Tetanus, diphtheria; tetanus, diphtheria, pertussis[4]	7 yrs[4]	**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 at or after the 1st birthday.	**6 months** if first dose of DTaP/DT was administered before the 1st birthday.	
Human papillomavirus[12]	9 yrs	Routine dosing intervals are recommended[12]			
Hepatitis A[11]	NA*	**6 months**			
Hepatitis B[1]	NA	**4 weeks**	**8 weeks** and at least 16 weeks after first dose		
Inactivated poliovirus[7]	NA	**4 weeks**	**4 weeks**[7]	**6 months**[7]	
Meningococcal[13]	NA	**8 weeks**[13]			
Measles, mumps, rubella[9]	NA	**4 weeks**			
Varicella[10]	NA	**3 months** if <13 years of age **4 weeks** if ≥13 years of age			

*NA= Not applicable

The above table 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 footnotes that follow.

CD Summary
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- o If the first dose of MenHibrix is given at ≥12 months of age, a total of 2 doses should be given at least 8 weeks apart to ensure protection against serogroups C and Y meningococcal disease.

6. Menactra
- o Children ≥24 months who have not received a complete series: Administer 2 primary doses at least 8 weeks apart. If Menactra is administered to a child with asplenia (including sickle cell disease), do not administer Menactra until 2 years of age and at least 4 weeks after the completion of all PCV13 doses.

- Children with persistent complement component deficiency:
  1. Menveo
  - o *Children who initiate vaccination at 8 weeks through 6 months:* Administer doses at 2, 4, 6, and 12 months of age.
  - o *Unvaccinated children 7–23 months:* Administer 2 doses, with the second dose at least 12 weeks after the first dose AND after the first birthday.
  - o *Children ≥24 monthsr who have not received a complete series:* Administer 2 primary doses at least 8 weeks apart.
  2. MenHibrix
  - o *Children 6 weeks through 18 months:* Administer doses at 2, 4, 6, and 12–15 months of age.
  - o If the first dose of MenHibrix is given at ≥12 months of age, a total of 2 doses should be given at least 8 weeks apart to ensure protection against serogroups C and Y meningococcal disease.
  3. Menactra
  - o *Children 9–23 months:* Administer 2 primary doses at least 12 weeks apart.
  - o *Children ≥24 month who have not received a complete series:* Administer 2 primary doses at least 8 weeks apart.
- For children who travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic, including countries in the African meningitis belt or the Hajj, administer an age-appropriate formulation and series of Menactra or Menveo for protection against serogroups A and W meningococcal disease. Prior receipt of MenHibrix is not sufficient for children 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 or complete an age- and formulation-appropriate series of MenHibrix, Menactra, or Menveo.
- For booster doses among persons with high-risk conditions, refer to *MMWR* 2013 / 62(RR02);1-22, available at *www.cdc.gov/mmwr/preview/mmwrhtml/rr6201a1.htm*.

For other catch-up recommendations for these persons, and complete information on use of meningococcal vaccines, including guidance related to vaccination of persons at increased risk of infection, see MMWR March 22, 2013 / 62(RR02);1-22, available at *www.cdc.gov/mmwr/pdf/rr/rr6202.pdf*.

ADDITIONAL INFORMATION

- For further guidance on the use of the vaccines mentioned above see: *www.cdc.gov/vaccines/hcp/acip-recs/index.html.*
- For vaccine recommendations for persons ≥19 years of age, see the Adult Immunization Schedule. 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 *www.cdc.gov/vaccines/hcp/acip-recs/index.html*.
- For purposes of calculating intervals between doses, 4 weeks = 28 days. Intervals of ≥4 months are determined by calendar months.
- Vaccine doses administered ≤4 days before the minimum interval are considered valid. Doses of any vaccine administered ≥5 days earlier than the minimum interval or minimum age should not be counted as valid doses 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 MMWR, General Recommendations on Immunization and Reports / Vol. 60 / No. 2; Table 1.
- Recommended and minimum ages and intervals between vaccine doses available online at *ww.cdc.gov/mmwr/pdf/rr/rr6002.pdf.*
- Information on travel vaccine requirements and recommendations is available at *wwwnc.cdc.gov/travel/destinations/list*.
- For vaccination of persons with primary and secondary immunodeficiencies, see Table 13, "Vaccination of persons with primary and secondary immunodeficiencies," in General Recommendations on Immunization (ACIP), available at *www.cdc.gov/mmwr/pdf/rr/rr6002.pdf.*; and American Academy of Pediatrics. "Immunization in Special Clinical Circumstances," in Pickering LK, Baker CJ, Kimberlin DW, Long SS eds. Red Book: 2012 report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics.
- 13, "Vaccination of persons with primary and secondary immunodeficiencies," in

2014–2015 Flu Season Update

The 2014–2015 influenza season is drawing to a close. This season was the busiest one on record, with >750 hospitalized, lab-confirmed cases reported in the Portland tri-county area. Sixty-eight percent of those were aged ≥65 years, and most (97%) flu-positive specimens tested at the Oregon State Public Health Lab were confirmed as influenza A(H3) virus. H3 viruses typically cause more severe illness in the elderly, but this season was particularly severe with CDC reporting a hospitalization rate of 284/100,000 persons ≥65 years of age — the highest recorded since such record-keeping began in 2005.

Part of the reason for the increased hospitalization rate is likely that the seasonal flu vaccine was poorly matched to the predominant circulating flu strain, thereby reducing the protection offered by the vaccine. The predominant strain this season (known as influenza A/Switzerland/9715293/2013) was an "antigenically drifted" version of influenza A H3N2, meaning that minor changes in the proteins on the surface of the virus rendered it sufficiently different from the virus used in the vaccine that antibodies induced by the latter bound poorly to the former.

CDC data show that the flu peaked in the U.S. this season during December 14, 2014–January 3, 2015. In Oregon, the peak of flu season followed a few weeks later during the first 3 weeks (January 4–24) of 2015. To date, no influenza-associated pediatric deaths have been reported in Oregon for the 2014–2015 season, but 107 such deaths have been reported thus far in the rest of the U.S.

Though the weekly flu case count is decreasing as we head into spring, providers are encouraged to keep flu in their differential diagnosis of respiratory illness. Influenza B has of late been responsible for an increasing proportion of flu illnesses; fortunately, most circulating influenza B viruses have been close antigenic relatives of the virus used to create this year's flu vaccine.

FOR MORE INFORMATION

- Oregon's Flu Bites: *http://bit.ly/flubites*
- CDC's website: *www.cdc.gov/flu/*