

Recommended Immunization Schedule for Persons Aged 0 Through 6 Years—United States • 2011

For those who fall behind or start late, see the catch-up schedule

Vaccine ▼	Age ►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B ¹		HepB	HepB			HepB						
Rotavirus ²			RV	RV	RV ²							
Diphtheria, Tetanus, Pertussis ³			DTaP	DTaP	DTaP	see footnote ³	DTaP					DTaP
<i>Haemophilus influenzae</i> type b ⁴			Hib	Hib	Hib ⁴		Hib					
Pneumococcal ⁵			PCV	PCV	PCV		PCV				PPSV	
Inactivated Poliovirus ⁶			IPV	IPV			IPV					IPV
Influenza ⁷							Influenza (Yearly)					
Measles, Mumps, Rubella ⁸							MMR			see footnote ⁸		MMR
Varicella ⁹							Varicella			see footnote ⁹		Varicella
Hepatitis A ¹⁰							HepA (2 doses)				HepA Series	
Meningococcal ¹¹												MCV4

Range of recommended ages for all children

Range of recommended ages for certain high-risk groups

This schedule includes recommendations in effect as of December 21, 2010. 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. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: <http://www.cdc.gov/vaccines/pubs/acip-list.htm>. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967. Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

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

At birth:

- Administer monovalent HepB to all newborns before hospital discharge.
- If mother is hepatitis B surface antigen (HBsAg)-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
- If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if HBsAg-positive, administer HBIG (no later than age 1 week).

Doses following the birth dose:

- The second dose should be administered at age 1 or 2 months. Monovalent HepB should be used for doses administered before age 6 weeks.
- Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg 1 to 2 months after completion of at least 3 doses of the HepB series, at age 9 through 18 months (generally at the next well-child visit).
- Administration of 4 doses of HepB to infants is permissible when a combination vaccine containing HepB is administered after the birth dose.
- Infants who did not receive a birth dose should receive 3 doses of HepB on a schedule of 0, 1, and 6 months.
- The final (3rd or 4th) dose in the HepB series should be administered no earlier than age 24 weeks.

2. Rotavirus vaccine (RV). (Minimum age: 6 weeks)

- Administer the first dose at age 6 through 14 weeks (maximum age: 14 weeks 6 days). Vaccination should not be initiated for infants aged 15 weeks 0 days or older.
- The maximum age for the final dose in the series is 8 months 0 days
- If Rotarix is administered at ages 2 and 4 months, a dose at 6 months is not indicated.

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

- The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib). (Minimum age: 6 weeks)

- If PRP-OMP (PedvaxHIB or Comvax [HepB-Hib]) is administered at ages 2 and 4 months, a dose at age 6 months is not indicated.
- Hiberix should not be used for doses at ages 2, 4, or 6 months for the primary series but can be used as the final dose in children aged 12 months through 4 years.

5. Pneumococcal vaccine. (Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPSV])

- PCV is recommended for all children aged younger than 5 years. Administer 1 dose of PCV to all healthy children aged 24 through 59 months who are not completely vaccinated for their age.
- A PCV series begun with 7-valent PCV (PCV7) should be completed with 13-valent PCV (PCV13).
- A single supplemental dose of PCV13 is recommended for all children aged 14 through 59 months who have received an age-appropriate series of PCV7.
- A single supplemental dose of PCV13 is recommended for all children aged 60 through 71 months with underlying medical conditions who have received an age-appropriate series of PCV7.

- The supplemental dose of PCV13 should be administered at least 8 weeks after the previous dose of PCV7. See *MMWR* 2010;59(No. RR-11).

- Administer PPSV at least 8 weeks after last dose of PCV to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant.

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

- If 4 or more doses are administered prior to age 4 years an additional dose should be administered at age 4 through 6 years.
- The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.

7. Influenza vaccine (seasonal). (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])

- For healthy children aged 2 years and older (i.e., those who do not have underlying medical conditions that predispose them to influenza complications), either LAIV or TIV may be used, except LAIV should not be given to children aged 2 through 4 years who have had wheezing in the past 12 months.
- Administer 2 doses (separated by at least 4 weeks) to children aged 6 months through 8 years who are receiving seasonal influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.
- Children aged 6 months through 8 years who received no doses of monovalent 2009 H1N1 vaccine should receive 2 doses of 2010–2011 seasonal influenza vaccine. See *MMWR* 2010;59(No. RR-8):33–34.

8. Measles, mumps, and rubella vaccine (MMR). (Minimum age: 12 months)

- The second dose may be administered before age 4 years, provided at least 4 weeks have elapsed since the first dose.

9. Varicella vaccine. (Minimum age: 12 months)

- The second dose may be administered before age 4 years, provided at least 3 months have elapsed since the first dose.
- For children aged 12 months through 12 years the recommended minimum interval between doses is 3 months. However, if the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid.

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

- Administer 2 doses at least 6 months apart.
- HepA is recommended for children aged older than 23 months who live in areas where vaccination programs target older children, who are at increased risk for infection, or for whom immunity against hepatitis A is desired.

11. Meningococcal conjugate vaccine, quadrivalent (MCV4). (Minimum age: 2 years)

- Administer 2 doses of MCV4 at least 8 weeks apart to children aged 2 through 10 years with persistent complement component deficiency and anatomic or functional asplenia, and 1 dose every 5 years thereafter.
- Persons with human immunodeficiency virus (HIV) infection who are vaccinated with MCV4 should receive 2 doses at least 8 weeks apart.
- Administer 1 dose of MCV4 to children aged 2 through 10 years who travel to countries with highly endemic or epidemic disease and during outbreaks caused by a vaccine serogroup.
- Administer MCV4 to children at continued risk for meningococcal disease who were previously vaccinated with MCV4 or meningococcal polysaccharide vaccine after 3 years if the first dose was administered at age 2 through 6 years.

The Recommended Immunization Schedules for Persons Aged 0 Through 18 Years are approved by the Advisory Committee on Immunization Practices (<http://www.cdc.gov/vaccines/recs/acip>), the American Academy of Pediatrics (<http://www.aap.org>), and the American Academy of Family Physicians (<http://www.aafp.org>).

Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2011

For those who fall behind or start late, see the schedule below and the catch-up schedule

Vaccine ▼	Age ►	7–10 years	11–12 years	13–18 years	
Tetanus, Diphtheria, Pertussis ¹			Tdap	Tdap	Range of recommended ages for all children
Human Papillomavirus ²	see footnote ²		HPV (3 doses)(females)	HPV Series	
Meningococcal ³		MCV4	MCV4	MCV4	
Influenza ⁴			Influenza (Yearly)		Range of recommended ages for catch-up immunization
Pneumococcal ⁵			Pneumococcal		
Hepatitis A ⁶			HepA Series		Range of recommended ages for certain high-risk groups
Hepatitis B ⁷			Hep B Series		
Inactivated Poliovirus ⁸			IPV Series		
Measles, Mumps, Rubella ⁹			MMR Series		
Varicella ¹⁰			Varicella Series		

This schedule includes recommendations in effect as of December 21, 2010. 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. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: <http://www.cdc.gov/vaccines/pubs/acip-list.htm>. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).

(Minimum age: 10 years for Boostrix and 11 years for Adacel)

- Persons aged 11 through 18 years who have not received Tdap should receive a dose followed by Td booster doses every 10 years thereafter.
- Persons aged 7 through 10 years who are not fully immunized against pertussis (including those never vaccinated or with unknown pertussis vaccination status) should receive a single dose of Tdap. Refer to the catch-up schedule if additional doses of tetanus and diphtheria toxoid-containing vaccine are needed.
- Tdap can be administered regardless of the interval since the last tetanus and diphtheria toxoid-containing vaccine.

2. Human papillomavirus vaccine (HPV). (Minimum age: 9 years)

- Quadrivalent HPV vaccine (HPV4) or bivalent HPV vaccine (HPV2) is recommended for the prevention of cervical precancers and cancers in females.
- HPV4 is recommended for prevention of cervical precancers, cancers, and genital warts in females.
- HPV4 may be administered in a 3-dose series to males aged 9 through 18 years to reduce their likelihood of genital warts.
- Administer the second dose 1 to 2 months after the first dose and the third dose 6 months after the first dose (at least 24 weeks after the first dose).

3. Meningococcal conjugate vaccine, quadrivalent (MCV4). (Minimum age: 2 years)

- Administer MCV4 at age 11 through 12 years with a booster dose at age 16 years.
- Administer 1 dose at age 13 through 18 years if not previously vaccinated.
- Persons who received their first dose at age 13 through 15 years should receive a booster dose at age 16 through 18 years.
- Administer 1 dose to previously unvaccinated college freshmen living in a dormitory.
- Administer 2 doses at least 8 weeks apart to children aged 2 through 10 years with persistent complement component deficiency and anatomic or functional asplenia, and 1 dose every 5 years thereafter.
- Persons with HIV infection who are vaccinated with MCV4 should receive 2 doses at least 8 weeks apart.
- Administer 1 dose of MCV4 to children aged 2 through 10 years who travel to countries with highly endemic or epidemic disease and during outbreaks caused by a vaccine serogroup.
- Administer MCV4 to children at continued risk for meningococcal disease who were previously vaccinated with MCV4 or meningococcal polysaccharide vaccine after 3 years (if first dose administered at age 2 through 6 years) or after 5 years (if first dose administered at age 7 years or older).

4. Influenza vaccine (seasonal).

- For healthy nonpregnant persons aged 7 through 18 years (i.e., those who do not have underlying medical conditions that predispose them to influenza complications), either LAIV or TIV may be used.
- Administer 2 doses (separated by at least 4 weeks) to children aged 6 months through 8 years who are receiving seasonal influenza vaccine for the first

time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.

- Children 6 months through 8 years of age who received no doses of monovalent 2009 H1N1 vaccine should receive 2 doses of 2010-2011 seasonal influenza vaccine. See *MMWR* 2010;59(No. RR-8):33–34.

5. Pneumococcal vaccines.

- A single dose of 13-valent pneumococcal conjugate vaccine (PCV13) may be administered to children aged 6 through 18 years who have functional or anatomic asplenia, HIV infection or other immunocompromising condition, cochlear implant or CSF leak. See *MMWR* 2010;59(No. RR-11).
- The dose of PCV13 should be administered at least 8 weeks after the previous dose of PCV7.
- Administer pneumococcal polysaccharide vaccine at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant. A single revaccination should be administered after 5 years to children with functional or anatomic asplenia or an immunocompromising condition.

6. Hepatitis A vaccine (HepA).

- Administer 2 doses at least 6 months apart.
- HepA is recommended for children aged older than 23 months who live in areas where vaccination programs target older children, or who are at increased risk for infection, or for whom immunity against hepatitis A is desired.

7. Hepatitis B vaccine (HepB).

- Administer the 3-dose series to those not previously vaccinated. For those with incomplete vaccination, follow the catch-up schedule.
- A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB is licensed for children aged 11 through 15 years.

8. Inactivated poliovirus vaccine (IPV).

- The final dose in the series should be administered on or after the fourth birthday and at least 6 months following 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.

9. Measles, mumps, and rubella vaccine (MMR).

- The minimum interval between the 2 doses of MMR is 4 weeks.

10. Varicella vaccine.

- For persons aged 7 through 18 years without evidence of immunity (see *MMWR* 2007;56[No. RR-4]), administer 2 doses if not previously vaccinated or the second dose if only 1 dose has been administered.
- For persons aged 7 through 12 years, the recommended minimum interval between doses is 3 months. However, 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 and older, the minimum interval between doses is 4 weeks.

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

PERSONS AGED 4 MONTHS THROUGH 6 YEARS					
Vaccine	Minimum 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
Hepatitis B ¹	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Rotavirus ²	6 wks	4 weeks	4 weeks ⁵		
Diphtheria, Tetanus, Pertussis ³	6 wks	4 weeks	4 weeks	6 months	6 months ³
<i>Haemophilus influenzae</i> type b ⁴	6 wks	4 weeks if first dose administered at younger than age 12 months 8 weeks (as final dose) if first dose administered at age 12–14 months No further doses needed if first dose administered at age 15 months or older	4 weeks ⁴ if current age is younger than 12 months 8 weeks (as final dose) ⁴ if current age is 12 months or older and first dose administered at younger than age 12 months and second dose administered at younger than 15 months No further doses needed if previous dose administered at age 15 months or older	8 weeks (as final dose) This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months	
Pneumococcal ⁵	6 wks	4 weeks if first dose administered at younger than age 12 months 8 weeks (as final dose for healthy children) if first dose administered at age 12 months or older or current age 24 through 59 months No further doses needed for healthy children if first dose administered at age 24 months or older	4 weeks if current age is younger than 12 months 8 weeks (as final dose for healthy children) if current age is 12 months or older No further doses needed for healthy children if previous dose administered at age 24 months or older	8 weeks (as final dose) This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age	
Inactivated Poliovirus ⁶	6 wks	4 weeks	4 weeks	6 months ⁵	
Measles, Mumps, Rubella ⁷	12 mos	4 weeks			
Varicella ⁸	12 mos	3 months			
Hepatitis A ⁹	12 mos	6 months			
PERSONS AGED 7 THROUGH 18 YEARS					
Tetanus, Diphtheria/ Tetanus, Diphtheria, Pertussis ¹⁰	7 yrs ¹⁰	4 weeks	4 weeks if first dose administered at younger than age 12 months 6 months if first dose administered at 12 months or older	6 months if first dose administered at younger than age 12 months	
Human Papillomavirus ¹¹	9 yrs	Routine dosing intervals are recommended (females) ¹¹			
Hepatitis A ⁹	12 mos	6 months			
Hepatitis B ¹	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Inactivated Poliovirus ⁶	6 wks	4 weeks	4 weeks ⁵	6 months ⁵	
Measles, Mumps, Rubella ⁷	12 mos	4 weeks			
Varicella ⁸	12 mos	3 months if person is younger than age 13 years 4 weeks if person is aged 13 years or older			

1. Hepatitis B vaccine (HepB).

- Administer the 3-dose series to those not previously vaccinated.
- The minimum age for the third dose of HepB is 24 weeks.
- A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB is licensed for children aged 11 through 15 years.

2. Rotavirus vaccine (RV).

- The maximum age for the first dose is 14 weeks 6 days. Vaccination should not be initiated for infants aged 15 weeks 0 days or older.
- The maximum age for the final dose in the series is 8 months 0 days.
- If Rotarix was administered for the first and second doses, a third dose is not indicated.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).

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

4. *Haemophilus influenzae* type b conjugate vaccine (Hib).

- 1 dose of Hib vaccine should be considered for unvaccinated persons aged 5 years or older who have sickle cell disease, leukemia, or HIV infection, or who have had a splenectomy.
- If the first 2 doses were PRP-OMP (PedvaxHIB or Comvax), and administered at age 11 months or younger, the third (and final) dose should be administered at age 12 through 15 months and at least 8 weeks after the second dose.
- If the first dose was administered at age 7 through 11 months, administer the second dose at least 4 weeks later and a final dose at age 12 through 15 months.

5. Pneumococcal vaccine.

- Administer 1 dose of 13-valent pneumococcal conjugate vaccine (PCV13) to all healthy children aged 24 through 59 months with any incomplete PCV schedule (PCV7 or PCV13).
- For children aged 24 through 71 months with underlying medical conditions, administer 1 dose of PCV13 if 3 doses of PCV were received previously or administer 2 doses of PCV13 at least 8 weeks apart if fewer than 3 doses of PCV were received previously.
- A single dose of PCV13 is recommended for certain children with underlying medical conditions through 18 years of age. See age-specific schedules for details.
- Administer pneumococcal polysaccharide vaccine (PPSV) to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant, at least 8 weeks after the last dose of PCV. A single revaccination should be administered after 5 years to children with functional or anatomic asplenia or an immunocompromising condition. See *MMWR* 2010;59(No. RR-11).

6. Inactivated poliovirus vaccine (IPV).

- The final dose in the series should be administered on or after the fourth birthday and at least 6 months following 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 following the previous dose.
- In the first 6 months of life, minimum age and minimum intervals are only recommended if the person is at risk for imminent exposure to circulating poliovirus (i.e., travel to a polio-endemic region or during an outbreak).

7. Measles, mumps, and rubella vaccine (MMR).

- Administer the second dose routinely at age 4 through 6 years. The minimum interval between the 2 doses of MMR is 4 weeks.

8. Varicella vaccine.

- Administer the second dose routinely at age 4 through 6 years.
- If the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid.

9. Hepatitis A vaccine (HepA).

- HepA is recommended for children aged older than age 23 months who live in areas where vaccination programs target older children, or who are at increased risk for infection, or for whom immunity against hepatitis A is desired.

10. Tetanus and diphtheria toxoids (Td) and tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).

- Doses of DTaP are counted as part of the Td/Tdap series.
- Tdap should be substituted for a single dose of Td in the catch-up series for children aged 7 through 10 years or as a booster for children aged 11 through 18 years; use Td for other doses.

11. Human papillomavirus vaccine (HPV).

- Administer the series to females at age 13 through 18 years if not previously vaccinated or have not completed the vaccine series.
- Quadrivalent HPV vaccine (HPV4) may be administered in a 3-dose series to males aged 9 through 18 years to reduce their likelihood of genital warts.
- Use recommended routine dosing intervals for series catch-up (i.e., the second and third doses should be administered at 1 to 2 and 6 months after the first dose). The minimum interval between the first and second doses is 4 weeks. The minimum interval between the second and third doses is 12 weeks, and the third dose should be administered at least 24 weeks after the first dose.

Information about reporting reactions after immunization is available online at <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 immunization, is available from the National Center for Immunization and Respiratory Diseases at <http://www.cdc.gov/vaccines> or telephone, 800-CDC-INFO (800-232-4636).

Recommended PCV13 schedules for administering doses to children < 24 months of age, by PCV vaccination history and age

Age at Exam (months)	Vaccination history: Total Number of PCV7 and/or PCV13 Doses Received Previously	Recommended PCV13 Regimen ¹
2-6 months	0 doses	3 doses, 8 weeks apart; fourth dose at age 12-15 months
	1 dose	2 doses, 8 weeks apart; fourth dose at age 12-15 months
	2 doses	1 dose; 8 weeks after the most recent dose; fourth dose at age 12-15 months
7-11 months	0 doses	2 doses, 8 weeks apart; third dose at 12-15 mos.
	1 or 2 doses before age 7 months	1 dose at age 7-11 mos, with a second dose at 12-15 mos, ≥ 8 weeks later
12-23 months	0 doses	2 doses, ≥ 8 weeks apart
	1 dose before age 12 months	2 doses, ≥ 8 weeks apart
	1 dose at ≥ 12 months	1 dose, ≥ 8 weeks after the most recent dose ²
	2 or 3 doses before age 12 months	1 dose, ≥ 8 weeks after the most recent dose ²
	4 doses of PCV7 or other age-appropriate, complete PCV7 schedule	1 supplemental dose, ≥ 8 weeks after the most recent dose ³

- ¹ Minimum interval between doses is 8 weeks, except for children vaccinated at age <1 year, for whom minimum interval between doses is 4 weeks.
- ² No additional PCV13 doses are indicated for children 12 through 23 months of age who have received 2 or 3 doses of PCV7 before age 12 months and at least 1 dose of PCV13 at age 12 months or older.
- ³ For children who have underlying medical conditions, a supplemental PCV13 dose is recommended through 71 months of age. See below for conditions.

Recommended PCV13 schedules for children ≥ 24 months of age, by PCV vaccination history and age

Age at Exam (months)	Vaccination history: Total Number of PCV7 and/or PCV13 Doses Received Previously	Recommended PCV13 Regimen ¹
Healthy children 24-59 months	Unvaccinated or any incomplete schedule	1 dose, ≥ 8 weeks after the most recent dose
	4 doses of PCV7 or other age-appropriate, complete PCV7 schedule	1 supplemental dose, ≥ 8 weeks after the most recent dose ²
Children 24-71 months with underlying medical conditions	Unvaccinated or any incomplete schedule of < 3 doses	2 doses, one ≥ 8 weeks after the most recent dose and another dose ≥ 8 weeks later
	Any incomplete schedule of 3 doses	1 dose, ≥ 8 weeks after the most recent dose
	4 doses of PCV7 or other age-appropriate, complete PCV7 schedule	1 supplemental dose, ≥ 8 weeks after the most recent dose ²

- ¹ Minimum interval between doses is 8 weeks.
- ² For children who have underlying medical conditions, a supplemental PCV13 dose is recommended through 71 months of age. See below for conditions.

Recommended transition schedule from PCV7 to PCV13 vaccination among infants and children, according to number of previous PCV7 doses received

Infant Series		Booster Dose	Supplemental PCV13 Dose
2 months	4 months	12 months ¹	14-59 months ²
PCV7	PCV13	PCV13	--
PCV7	PCV7	PCV13	--
PCV7	PCV7	PCV7	--
PCV7	PCV7	PCV7	PCV13

- ¹ No additional PCV13 doses are indicated for children age 12-23 months who have received 2 or 3 doses of PCV before age 12 months and at least 1 dose of PCV13 at age ≥ 12 months.
- ² For children with underlying medical conditions (see above), a single supplemental PCV13 dose is recommended through age 71 months.

Underlying medical conditions that are indications for pneumococcal vaccination among children, by risk group

Risk Group	Condition
Immunocompetent children	chronic heart disease ¹ , chronic lung disease ² , diabetes mellitus, cerebrospinal fluid leaks, cochlear implant
Children with functional or anatomic asplenia	sickle cell disease and other hemoglobinopathies, congenital or acquired asplenia, or splenic dysfunction
Children with immunocompromising conditions	HIV infection; chronic renal failure and nephrotic syndrome; diseases associated with treatment with immunosuppressive drugs or radiation therapy, including malignant neoplasms, leukemias, lymphomas, and Hodgkin disease; or solid organ transplantation; congenital immunodeficiency ³

- ¹ Particularly cyanotic congenital heart disease and cardiac failure.
- ² Including asthma if treated with prolonged high-dose oral corticosteroids.
- ³ Includes B- (humoral) or T-lymphocyte deficiency; complement deficiencies, particularly C1, C2, C3, and C4 deficiency; and phagocytic disorders (excluding chronic granulomatous disease).

Immunization Best Practices

1. Vaccinate staff.

Vaccinate all personnel who have contact with patients with all recommended vaccines.

2. Assess at every visit.

Review immunization status and administer **all** immunizations due at **all** types of visits (e.g., acute care and well child).

3. Schedule optimally.

- Hepatitis B: Give first dose at birth.
- Give any dose of vaccine not given at the recommended age at any following visit when indicated and feasible.
- Schedule immunizations prior to the maximum ACIP recommended age to ensure that children have received all of the recommended antigens by age 24 months.
- No research indicates “alternative schedules” or delaying vaccines is safer than the recommended schedule. Experts decide the best time to give immunizations to ensure infants are protected as soon as possible. For information on talking to parents about vaccine concerns see this article by Ari Brown, MD: <http://www.immunize.org/catg.d/p2068.pdf>

4. Adhere to correct intervals and ages.

(a) Minimum intervals:

- Do **not** give vaccines before the recommended minimum age or interval for that antigen.
- Consider doses administered before the minimum age and/or minimum interval invalid.
- If an invalid dose has been given, count from the last (invalid) dose in order to determine when to give the next **valid** dose.

(b) Maximum intervals:

- There are no maximum intervals; it is **not** necessary to restart the series of any vaccine due to extended intervals between doses.

5. Follow only true contraindications.

Do not defer vaccination for children who present with a mild acute illness, with or without fever. Follow only true contraindications as outlined by the ACIP.

6. Use Vaccine Information Statements (VIS).

Provide patient, parent, or legal representative with a copy of the VIS with **each** dose of vaccine administered, and answer questions regarding vaccine risks and benefits. It is the provider’s responsibility to maintain copies of the most up to date VISs in their office. Subscribe to CDC’s e-mail update for VISs at <http://www.cdc.gov/vaccines/pubs/vis/default.htm>, click on “Get E-Mail Updates,” and enter your e-mail address. Many other resources are available to help address questions about vaccine safety (see box below).

7. Give all vaccines due.

There are **no** contraindications to simultaneous administration of any of the recommended childhood vaccines.

8. Document.

- Document in the patient’s chart the date a patient moves or goes elsewhere for care (MOGE).
- Document chickenpox disease on the immunization record.
- Document contraindications to vaccines.
- Document parent refusal or deferral of any vaccine.
- Provide the patient or parent/legal guardian with an immunization card documenting the vaccines given and the date the next doses are due.

9. Carry out reminder/recall.

- Identify children who are due or overdue for immunizations (e.g., computer billing system, other electronic tracking systems, tickler system, stickers on charts).
- Send out reminder or recall notices **at least twice a year**
- Verify patient’s address and telephone number at each encounter; obtain a second contact number for back-up.

10. Develop a systematic approach.

- Designate an *Immunization Coordinator* to coordinate and monitor all immunization activities. The *Immunization Coordinator* keeps current with information about immunization, and communicates current schedules, guidelines, and policies to all staff.
- Have all providers in a practice formally agree to adhere to a common immunization schedule (based on ACIP guidelines).
- Post agreed upon common schedule throughout the practice.

11. Follow appropriate procedures for vaccine storage and handling.

- Formally designate one staff member to monitor vaccine ordering, receiving and storage.
- Consult the DPH document *Vaccine Management Checklist* for detailed instructions on proper vaccine storage and handling.
- Maintain up-to-date, written protocols for vaccine storage and handling procedures and share with all staff who handle vaccine.

12. Report adverse events.

Report clinically significant adverse events that follow immunization to the Vaccine Adverse Event Reporting System (VAERS). Find guidance on obtaining and completing a VAERS form at: www.vaers.hhs.gov or by calling 1-800-822-7967.

13. Report cases.

Report suspect cases of vaccine-preventable diseases to your local board of health and to the DPH Immunization Program, 617-983-6800 or toll free 888-658-2850. For information regarding disease reporting and control measures see the *Guide to Surveillance and Reporting* (www.mass.gov/dph/epi).

Adapted from: National Vaccine Advisory Committee. *Standards for Child and Adolescent Immunization Practices*. Pediatrics. 2003;112:958-963.

Resources:

Massachusetts Department of Public Health (DPH): www.mass.gov/dph/imm, 888-658-2850 or 617-983-6800

National Immunization Information Hotline: 1-800-232-4636 (1-800-CDC-INFO) and 1-888-232-6348 (TTY)

National Immunization Program: www.cdc.gov/vaccines **Immunization Action Coalition:** www.immunize.org

Children’s Hospital of Philadelphia Vaccine Education Center: <http://www.chop.edu/service/vaccine-education-center>

American Academy of Pediatrics: www.aap.org

Massachusetts School Immunization Requirements for School Year 2011 - 2012*

	Child Care/Preschool ¹	Kindergarten	Grades 1-6	Grades 7-12	College ²
Hepatitis B³	3 doses	3 doses	3 doses	3 doses	3 doses for all health science students and full-time undergraduate and graduate students
DTaP/DTP/DT/Td/Tdap⁴	≥4 doses DTaP/DTP	5 doses DTaP/DTP	≥4 doses DTaP/DTP or ≥ 3 doses Td	4 doses DTaP/DTP or ≥3 doses Td; plus 1 dose Tdap (See Phase-In Schedule)	1 dose Tdap (See Phase-In Schedule)
Polio⁵	≥3 doses	4 doses	≥3 doses	≥3 doses	NA
Hib⁶	1 to 4 doses ⁶	NA	NA	NA	NA
MMR⁷	1 dose	2 doses	2 doses measles, 1 mumps, 1 rubella (See Phase-In Schedule)	2 doses (See Phase-In Schedule)	2 doses (See Phase-In Schedule)
Varicella⁸	1 dose	2 doses	1 dose (See Phase-In Schedule)	2 doses (See Phase-In Schedule)	2 doses (See Phase-In Schedule)
Meningococcal^{9,10}	NA	NA	NA ¹⁰	1 dose for new full-time residential students ⁹	1 dose for full-time residential students ⁹

*These requirements also apply to all new “enterers.” NA = no vaccine requirement for the grades indicated.

¹**Child Care/Preschool:** Minimum requirements by 24 months; immunize younger children according to their age.

²**College:** Requirements apply to: 1) all full-time undergraduate and graduate students; 2) all full-time and part-time health science students; and 3) any full-time or part-time student attending any postsecondary institution while on a student or other visa, including foreign students attending or visiting classes as part of a formal academic visitation or exchange program.

³**Hepatitis B:** 3 doses required for child care attendance and preschool entry, kindergarten-12th grade, and college (see footnote 2 above). Laboratory proof of immunity is acceptable.

⁴**DTaP/DTP/DT/Td/Tdap:** ≥4 doses required for child care attendance and preschool entry; 5 doses of DTaP/DTP required for school entry unless the 4th dose is given ≥ the 4th birthday. DT is only acceptable with a letter stating a medical contraindication to DTaP/DTP. **One dose of Tdap is required for all students entering grade 7, full-time college freshmen and all health science students.** If it has been <5 years since the last dose of DTaP/DTP/DT/Td, Tdap is not required but is recommended regardless of the interval since the last tetanus-containing vaccine. See Phase-In Schedule below.

⁵**Polio:** ≥3 doses required for child care attendance and entry into preschool. 4 doses required for school entry, unless the 3rd dose is given on or after the 4th birthday, and ≥ 6 months following the previous dose, in which case only 3 doses are needed. Administer the final dose in the series on or after the 4th birthday and ≥ 6 months following the previous dose. If 4 doses are administered before age 4 years, a 5th dose is recommended at age 4 - 6 years.

⁶**Hib:** Required for child care attendance and preschool entry. The number of doses is determined by vaccine product and age the series begins.

⁷**MMR:** 1 dose of MMR is required for child care attendance and preschool entry; **2 doses are required for kindergarten, grade 7, college freshmen and all health science students.** Laboratory proof of immunity is acceptable. **For college students, except health science students, birth before 1957 in the U.S. is also acceptable.** See Phase-In Schedule below.

⁸**Varicella:** 1 dose required for child care attendance and preschool entry; **2 doses required for kindergarten, grade 7, and college freshmen and all health science students, unless they have a reliable history of chickenpox.** A reliable history includes a diagnosis of chickenpox, or interpretation of parent/guardian description of chickenpox, by a physician, nurse practitioner, physician assistant or designee; or 2) laboratory proof of immunity. **Birth before 1980 in U.S. is acceptable for college students, except health science students.** See Phase-In Schedule below.

⁹**Meningococcal:** 1 dose MCV4, or a dose of MPSV4 in the last 5 years, is required for 1) newly enrolled full-time students attending a secondary school with grades 9-12 (in ungraded classrooms, those with students ≥ 13 years) who will live in a dormitory or comparable congregate living arrangement approved by the secondary school; and 2) newly enrolled full-time undergraduate and graduate students in a degree program at a postsecondary institution (e.g., college) who will live in a dormitory or comparable congregate living arrangement approved by the institution.

Students may decline the vaccine after they have read and signed the MDPH Meningococcal Information and Waiver Form provided by their institution. These requirements apply to newly-enrolled full-time residential students, regardless of grade and year of study.

¹⁰**At residential schools with lower grades:** The requirements apply to residential students in grades pre-K through 8 only if the school combines these grades in the same school with students in grades 9-12.

Phase-In Schedule for MMR, Varicella, and Tdap Vaccines 2011 - 2017

	2011	2012	2013	2014	2015	2016	2017
2 MMR and 2 Varicella	K and Grade 7 College: full-time freshmen; all health science	K-1 and 7-8 College: full-time freshmen-sophomores; all health science	K-2 and 7-9 College: full-time freshmen-juniors; all health science	K-3 and 7-10 College: full-time freshmen-seniors; all health science	K-4 and 7-11 College: full-time freshmen-graduates; all health science	K-5 and 7-12 College: full-time freshmen-graduates; all health science	K-12 College: full-time freshmen-graduates; all health science
Tdap	Grade 7 College: full-time freshmen; all health science	Grades 7-8 College: full-time freshmen-sophomores; all health science	Grades 7-9 College: full-time freshmen-juniors; all health science	Grades 7-10 College: full-time freshmen-seniors; all health science	Grades 7-11 College: full-time freshmen-graduates; all health science	Grades 7-12 College: full-time freshmen-graduates; all health science	Grades 7-12 College: full-time freshmen-graduates; all health science