FIGURE 1: Recommended immunization schedule for persons aged 0 through 6 years—United States, 2012 (for those who fall behind or start late, see the catch-up schedule [Figure 3])

Vaccine ▼ Age ►	Birth	1 month	2 months	4 months	6 months	9 months	12 months	15 months	18 months	19–23 months		4–6 years	
Hepatitis B ¹	Hep B	He	р <mark>В</mark>				HepB						Range of recommended ages for all
Rotavirus ²			RV	RV	RV ²								children
Diphtheria, tetanus, pertussis ³			DTaP	DTaP	DTaP		see footnote ³	D	[aP			DTaP	
Haemophilus influenzae type b4			Hib	Hib	Hib ⁴		Н	ib					Range of
Pneumococcal ⁵			PCV	PCV	PCV		PC	CV V			PF	PSV	recommended ages for certain
Inactivated poliovirus ⁶			IPV	IPV			IPV					IPV	high-risk groups
Influenza ⁷						Influenza (Yearly)				1111			
Measles, mumps, rubella ⁸							M	/IR		see footnote ^s		MMR	
Varicella9							Vario	cella		see footnote ⁹		Varicella	Range of recommended ages for all
Hepatitis A ¹⁰								Dos	e 1 ¹⁰		HepA	Series	children and certain high-
Meningococcal ¹¹						MCV4 — see footnote ¹¹			risk groups				

This schedule includes recommendations in effect as of December 23, 2011. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at http://www.cdc.gov/vaccines/pubs/acip-list.htm. Clinically significant adverse events that follow vaccination should be reported to the Vaccine Adverse Event Reporting System (VAERS) online (http://www.vaers.hhs.gov) or by telephone (800-822-7967)

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

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 receiving the last dose of the series.
- If mother's HBsAg status is unknown, within 12 hours of birth administer HepB vaccine for infants weighing ≥2,000 grams, and HepB vaccine plus HBIG for infants weighing <2,000 grams. Determine mother's HBsAg status as soon as possible and, if she is HBsAg-positive, administer HBIG for infants weighing ≥2,000 grams (no later than age 1 week).

Doses after the birth dose:

- The second dose should be administered at age 1 to 2 months. Monovalent HepB vaccine should be used for doses administered before age 6 weeks.
- Administration of a total of 4 doses of HepB vaccine 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 a HepB-
- containing vaccine starting as soon as feasible (Figure 3). The minimum interval between dose 1 and dose 2 is 4 weeks, and between dose 2 and 3 is 8 weeks. The final (third or fourth) dose in the HepB vaccine series should be administered no earlier than age 24 weeks and at least 16 weeks after the first dose
- 2. Rotavirus (RV) vaccines. (Minimum age: 6 weeks for both RV-1 [Rotarix] and RV-5 [Rota Teq])
 - The maximum age for the first dose in the series is 14 weeks, 6 days; and 8 months, 0 days for the final dose in the series. Vaccination should not be initiated for infants aged 15 weeks, 0 days or older.
 - If RV-1 (Rotarix) is administered at ages 2 and 4 months, a dose at 6 months 10. Hepatitis A (HepA) vaccine. (Minimum age: 12 months) is not indicated.
- 3. Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. (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.
 - Haemophilus influenzae type b (Hib) conjugate vaccine. (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 only be used for the booster (final) dose in children aged 12 months through 4 years.
- Pneumococcal vaccines. (Minimum age: 6 weeks for pneumococcal conjugate 5 vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPSV]) Administer 1 dose of PCV to all healthy children aged 24 through 59 months
 - who are not completely vaccinated for their age For children who have received an age-appropriate series of 7-valent PCV (PCV7), a single supplemental dose of 13-valent PCV (PCV13) is
 - recommended for:

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- All children aged 14 through 59 months
- Children aged 60 through 71 months with underlying medical conditions.
 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. See MMWR 2010:59(No. RR-11), available at http://www.cdc.gov/ mmwr/pdf/rr/rr5911.pdf.
- Inactivated poliovirus vaccine (IPV). (Minimum age: 6 weeks)
 - If 4 or more doses are administered before 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 after the previous dose.

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

- For most healthy children aged 2 years and older, either LAIV or TIV may be used. However, LAIV should not be administered to some children, including 1) children with asthma, 2) children 2 through 4 years who had wheezing in the past 12 months, or 3) children who have any other underlying medical conditions that predispose them to influenza complications. For all other contraindications to use of LAIV, see MMWR 2010;59(No. RR-8), available at http://www.cdc.gov/mmwr/pdf/rr/rr5908.pdf.
- For children aged 6 months through 8 years:
 - For the 2011–12 season, administer 2 doses (separated by at least 4 weeks) to those who did not receive at least 1 dose of the 2010-11 vaccine. Those who received at least 1 dose of the 2010-11 vaccine require 1 dose for the 2011-12 season.
- For the 2012–13 season, follow dosing guidelines in the 2012 ACIP influenza vaccine recommendations.

Measles, mumps, and rubella (MMR) vaccine. (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.
- Administer MMR vaccine to infants aged 6 through 11 months who are traveling internationally. These children should be revacinated with 2 doses of MMR vaccine, the first at ages 12 through 15 months and at least 4 weeks after the previous dose, and the second at ages 4 through 6 years.
- Varicella (VAR) 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.
- Administer the second (final) dose 6 to18 months after the first.
- Unvaccinated children 24 months and older at high risk should be vaccinated. See MMWR 2006;55(No. RR-7), available at http://www.cdc.gov/ mmwr/pdf/rr/rr5507.pdf.
- A 2-dose HepA vaccine series is recommended for anyone aged 24 months and older, previously unvaccinated, for whom immunity against hepatitis A virus infection is desired.

11. Meningococcal conjugate vaccines, quadrivalent (MCV4). (Minimum age: 9 months for Menactra [MCV4-D], 2 years for Menveo [MCV4-CRM])

 For children aged 9 through 23 months 1) with persistent complement

- component deficiency; 2) who are residents of or travelers to countries with hyperendemic or epidemic disease; or 3) who are present during outbreaks caused by a vaccine serogroup, administer 2 primary doses of MCV4-D, ideally at ages 9 months and 12 months or at least 8 weeks apart.
- For children aged 24 months and older with 1) persistent complement component deficiency who have not been previously vaccinated; or 2) anatomic/functional asplenia, administer 2 primary doses of either MCV4 at least 8 weeks apart.
- For children with anatomic/functional asplenia, if MCV4-D (Menactra) is used, administer at a minimum age of 2 years and at least 4 weeks after completion of all PCV oses.
- See MMWR 2011;60:72-6, available at http://www.cdc.gov/mmwr/pdf/wk/ mm6003. pdf, and Vaccines for Children Program resolution No. 6/11-1, available at http://www.cdc.gov/vaccines/programs/vfc/downloads/ resolutions/06-11mening-mcv.pdf, and MMWR 2011;60:1391-2, available at http://www.cdc.gov/mmwr/pdf/wk/mm6040. pdf, for further guidance, including revaccination guidelines.

This schedule is 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) Department of Health and Human Services • Centers for Disease Control and Prevention FIGURE 2: Recommended immunization schedule for persons aged 7 through 18 years—United States, 2012 (for those who fall behind or start late, see the schedule below and the catch-up schedule [Figure 3])

Vaccine ▼ Age ►	7–10 years	11–12 years	13–18 years			
Tetanus, diphtheria, pertussis¹	1 dose (if indicated)	1 dose	1 dose (if indicated)			
Human papillomavirus ²	see footnote ²	3 doses	Complete 3-dose series	ages for all children		
Meningococcal ³	See footnote ³	Dose 1	Booster at 16 years old			
Influenza⁴	Influenza (yearly)					
Pneumococcal ⁵	See footnote ⁵					
Hepatitis A ⁶	Complete 2-dose series					
Hepatitis B ⁷		Complete 3-dose series				
Inactivated poliovirus ⁸	Complete 3-dose series					
Measles, mumps, rubella9	Complete 2-dose series					
Varicella ¹⁰	Complete 2-dose series					

This schedule includes recommendations in effect as of December 23, 2011. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at http://www.cdc.gov/vaccines/ pubs/acip-list.htm. Clinically significant adverse events that follow vaccination should be reported to the Vaccine Adverse Event Reporting System (VAERS) online (http://www.vaers.hhs.gov) or by telephone (800-822-7967).

- 1. Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine. (Minimum age: 10 years for Boostrix and 11 years for Adacel)
 - Persons aged 11 through 18 years who have not received Tdap vaccine should receive a dose followed by tetanus and diphtheria toxoids (Td) booster doses every 10 years thereafter.
 - Tdap vaccine should be substituted for a single dose of Td in the catchup series for children aged 7 through 10 years. Refer to the catch-up schedule if additional doses of tetanus and diphtheria toxoid–containing vaccine are needed.
 - Tdap vaccine can be administered regardless of the interval since the last tetanus and diphtheria toxoid-containing vaccine.
 - Human papillomavirus (HPV) vaccines (HPV4 [Gardasil] and HPV2
 [Cervarix]). (Minimum age: 9 years)
 Either HPV4 or HPV2 is recommended in a 3-dose series for females
 - Either HPV4 or HPV2 is recommended in a 3-dose series for females aged 11 or 12 years. HPV4 is recommended in a 3-dose series for males aged 11 or 12 years.
 - · The vaccine series can be started beginning at age 9 years.
 - 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).
 - See MMWR 2010;59:626–32, available at http://www.cdc.gov/mmwr/pdf/ wk/mm5920.pdf.

8. Meningococcal conjugate vaccines, quadrivalent (MCV4).

- Administer MCV4 at age 11 through 12 years with a booster dose at age 16 years.
- Administer MCV4 at age 13 through 18 years if patient is not previously vaccinated.
- If the first dose is administered at age 13 through 15 years, a booster dose should be administered at age 16 through 18 years with a minimum interval of at least 8 weeks after the preceding dose.
- If the first dose is administered at age 16 years or older, a booster dose is not needed.
- Administer 2 primary doses at least 8 weeks apart to previously unvaccinated persons with persistent complement component deficiency or anatomic/functional asplenia, and 1 dose every 5 years thereafter.
- Adolescents aged 11 through 18 years with human immunodeficiency virus (HIV) infection should receive a 2-dose primary series of MCV4, at least 8 weeks apart.
- See *MMWR* 2011;60:72–76, available at http://www.cdc.gov/mmwr/ pdf/wk/mm6003.pdf, and Vaccines for Children Program resolution No. 6/11-1, available at http://www.cdc.gov/vaccines/programs/vfc/downloads/ **9.** resolutions/06-11mening-mcv.pdf, for further guidelines.

4. Influenza vaccines (trivalent inactivated influenza vaccine [TIV] and live, attenuated influenza vaccine [LAIV]).

- For most healthy, nonpregnant persons, either LAIV or TIV may be used, except LAIV should not be used for some persons, including those with asthma or any other underlying medical conditions that predispose them to influenza complications. For all other contraindications to use of LAIV, see MMWR 2010;59(No.RR-8), available at http://www.cdc.gov/mmwr/ pdf/rr/rr5908.pdf.
- · Administer 1 dose to persons aged 9 years and older.

- · For children aged 6 months through 8 years:
 - For the 2011–12 season, administer 2 doses (separated by at least 4 weeks) to those who did not receive at least 1 dose of the 2010–11 vaccine. Those who received at least 1 dose of the 2010–11 vaccine require 1 dose for the 2011–12 season.
 - For the 2012–13 season, follow dosing guidelines in the 2012 ACIP influenza vaccine recommendations.

5. Pneumococcal vaccines (pneumococcal conjugate vaccine [PCV] and pneumococcal polysaccharide vaccine [PPSV]).

- A single dose of PCV may be administered to children aged 6 through 18 years who have anatomic/functional asplenia, HIV infection or other immunocompromising condition, cochlear implant, or cerebral spinal fluid leak. See *MMWR* 2010:59(No. RR-11), available at http://www.cdc.gov/ mmwr/pdf/rr/rr5911.pdf.
- Administer PPSV 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 anatomic/functional asplenia or an immunocompromising condition.

6. Hepatitis A (HepA) vaccine.

- HepA vaccine is recommended for children 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 virus infection is desired. See MMWR 2006;55(No. RR-7), available at http:// www.cdc.gov/mmwr/pdf/rr/rr5507.pdf.
- · Administer 2 doses at least 6 months apart to unvaccinated persons.

7. Hepatitis B (HepB) vaccine.

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

Inactivated poliovirus vaccine (IPV).

- The final dose in the series should be administered 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 aged18 years or older.

Measles, mumps, and rubella (MMR) vaccine.

• The minimum interval between the 2 doses of MMR vaccine is 4 weeks. 10. Varicella (VAR) vaccine.

- For persons without evidence of immunity (see MMWR 2007;56[No. RR-4], available at http://www.cdc.gov/mmwr/pdf/rr/rr5604.pdf), 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.

This schedule is 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). Department of Health and Human Services • Centers for Disease Control and Prevention

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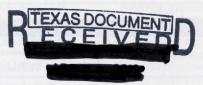
FIGURE 3. Catch-up immunization schedule for persons aged 4 months through 18 years who start late or who are more than 1 month behind -United States • 2012 The figure below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. Always use this table in conjunction with the accompanying childhood and adolescent immunization schedules (Figures 1 and 2) and their respective footnotes.

		Persons aged 4 mont	ns through 6 years				
Vaccine	Minimum Age	Minimum Interval Between Doses					
Vaccine	for Dose 1	Dose 1 to dose 2	Dose 2 to dose 3	Dose 3 to dose 4	Dose 4 to dose 5		
Hepatitis B	Birth	4 weeks	8 weeks and at least 16 weeks after first dose; minimum age for the final dose is 24 weeks				
Rotavirus ¹	6 weeks	4 weeks	4 weeks1				
Diphtheria, tetanus, pertussis ²	6 weeks	4 weeks	4 weeks	6 months	6 months ²		
Haemophilus influenzae type b³	6 weeks	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 ³ if current age is younger than 12 months 8 weeks (as final dose) ³ 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 ^a	6 weeks	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 ⁵	6 weeks	4 weeks	4 weeks	6 months ⁵ minimum age 4 years for final dose			
Meningococcal ⁶	9 months	8 weeks ⁶					
Measles, mumps, rubella ⁷	12 months	4 weeks					
Varicella [®]	12 months	3 months					
Hepatitis A	12 months	6 months	VERICE				
		Persons aged 7 th	rough 18 years				
Tetanus, diphtheria/ tetanus, diphtheria, pertussis ⁹	7 years9	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 ¹⁰	9 years		Routine dosing intervals are recommended ¹⁰				
Hepatitis A	12 months	6 months					
Hepatitis B	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)				
Inactivated poliovirus ⁵	6 weeks	4 weeks	4 weeks ⁵	6 months ⁵			
Meningococcal ⁶	9 months	8 weeks ⁶			and the states		
Measles, mumps, rubella ⁷	12 months	4 weeks					
Varicella ⁸	12 months	3 months if person is younger than age 13 years 4 weeks if person is aged 13 years or older					
 The maximum age 8 months, 0 days i initiated for infants If RV-1 was admin indicated. Diphtheria and teta The fifth dose is m years or older. Haemophilus influe Hib vaccine should older who have sid (HIV) infection, or If the first 2 doses administered at age be administered at age be administer at age administer 1 dose administer 1 dose administer 2 dose PCV were receive A single dose of PC years with underlyin 	e for the first doa for the final dos aged 15 weeks istered for the finance nus toxoids ar ot necessary if the anatomic/functive were PRP-OMI use 11 months or t age 12 through t least 4 weeks cines. (Minimun res for pneumoco 24 through 71 r of PCV if 3 dos s of PCV at leas d previously. V may be admin g medical cond	se in the series is 14 weeks, 6 days; and e in the series. Vaccination should not be s, 0 days or older. irst and second doses, a third dose is not nd acellular pertussis (DTaP) vaccine. the fourth dose was administered at age 4 lib) conjugate vaccine. If for unvaccinated persons aged 5 years or a, leukemia, human immunodeficiency virus onal asplenia. P (PedvaxHIB or Comvax) and were	 Inactivated poliovirus vaccine (IPV) A fourth dose is not necessary if the years or older and at least 6 months In the first 6 months of life, minimum recommended if the person is at rish poliovirus (i.e., travel to a polio-ende IPV is not routinely recommended for the person is at rish poliovirus (i.e., travel to a polio-ende IPV is not routinely recommended for the person is at rish poliovirus (i.e., travel to a polio-ende IPV is not routinely recommended for the persons 9 months for Menactra [MCV4-D]; 2 ye See Figure 1 ("Recommended immethrough 6 years") and Figure 2 ("Repersons aged 7 through 18 years") f Measles, mumps, and rubella (MMR Administer the second dose routinel second dose was administered at le accepted as valid. Tetanus and diphtheria toxoids (Td) and acellular pertussis (Tdap) vacci For children aged 7 through 10 year childhood DTaP vaccine series, Tda a single dose of Td vaccine in the can eeded, use Td vaccine. For these of dose should not be given. An inadvertent dose of DTaP vaccin through 10 years can count as the adolescent Tdap dose, booster dose at age 11–12 years. 	third dose was admin after the previous dox i age and minimum int for imminent exposu mic region or during a or U.S. residents aged quadrivalent (MCV ars for Menveo [MCV unization schedule for commended immunization or further guidance.) vaccine.) vaccine.) vat age 4 through 6 y ast 4 weeks after the f and tetanus and dip nes. s who are not fully imm p vaccine should be s atch-up series; if additi children, an adolescer e administered to chilk of the catch-up series.	se. tervals are only re to circulating in outbreak). 18 years or older (Minimum age: 4-CRM]) persons aged 0 ation schedule for dation schedule for rears. tears. If the first dose, it can b ohtheria toxoids munized with the ubstituted for onal doses are it Tdap vaccine then aged 7 This dose can		

Administer the vaccine series to females (either HPV2 or HPV4) and males

(HPV4) at age 13 through 18 years if patient is not previously vaccinated. Use recommended routine dosing intervals for vaccine series catch-up; see Figure 2 ("Recommended immunization schedule for persons aged 7 through 18 years").

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



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