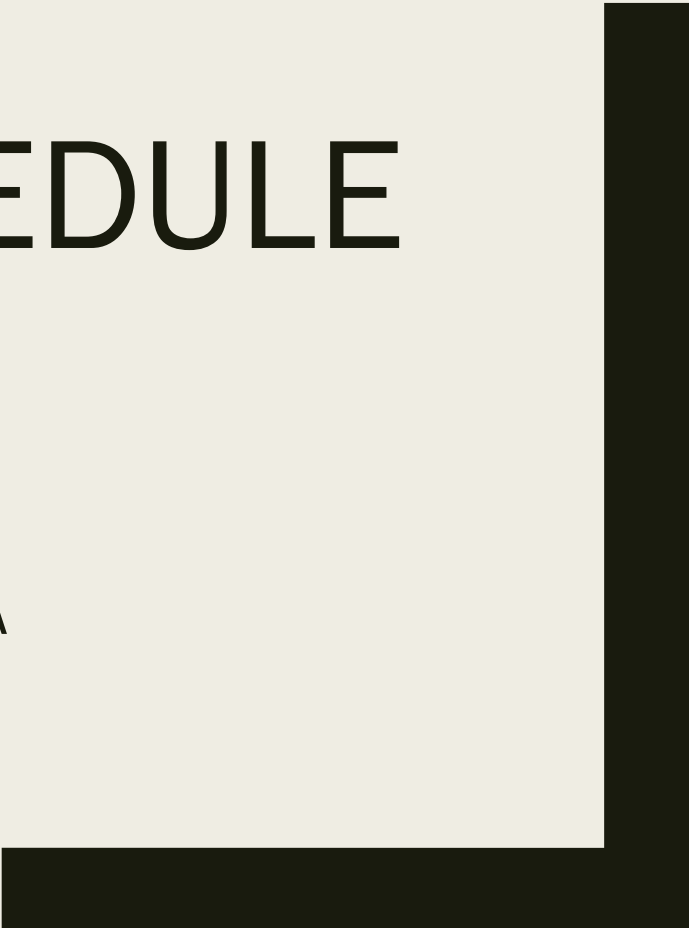


THE VACCINE SCHEDULE 1950-2018

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The first vaccine – Smallpox

- Invented by Edward Jenner in 1796
 - *Jenner noticed that milkmaids who were exposed to cowpox, a milder disease similar to smallpox, did not develop smallpox to the same extent as others*
 - *He developed method of arm-to-arm inoculation: a small amount of pus from one person's blisters was inoculated into the arm of another*

Late 1940's

- In the early part of the century, scientific progress had allowed for the development of new vaccines and large scale vaccine production
- Recommended vaccines:
 - *DTP (Diphtheria, Tetanus, Pertussis)*
 - *Smallpox*

Late 1950's

- Oral Polio Vaccine (OPV) – licensed in 1955
- Recommended vaccines:
 - *DTP (Diphtheria, Tetanus, Pertussis)*
 - *Smallpox*
 - *Polio (OPV)*

Late 1960's

- Vaccines against Measles (1963), Mumps (1967) and Rubella (1969) were developed
- Recommended vaccines:
 - *DTP (Diphtheria, Tetanus, Pertussis)*
 - *Smallpox*
 - *Polio (OPV)*
 - *Measles*
 - *Mumps*
 - *Rubella*

1970's

- Smallpox was declared eradicated and use of smallpox vaccine was discontinued in 1972
- Measles, Mumps, Rubella vaccine was combined into MMR
- Recommended vaccines:
 - *DTP (Diphtheria, Tetanus, Pertussis)*
 - *Polio (OPV)*
 - *MMR (Measles, Mumps, Rubella)*

1985-1994

- Hib vaccine developed and added to the schedule
- Recommended vaccines:
 - *DTP (Diphtheria, Tetanus, Pertussis)*
 - *Polio (OPV)*
 - *MMR (Measles, Mumps, Rubella)*
 - *Hib (Haemophilus influenzae Type B)*

1994-1995

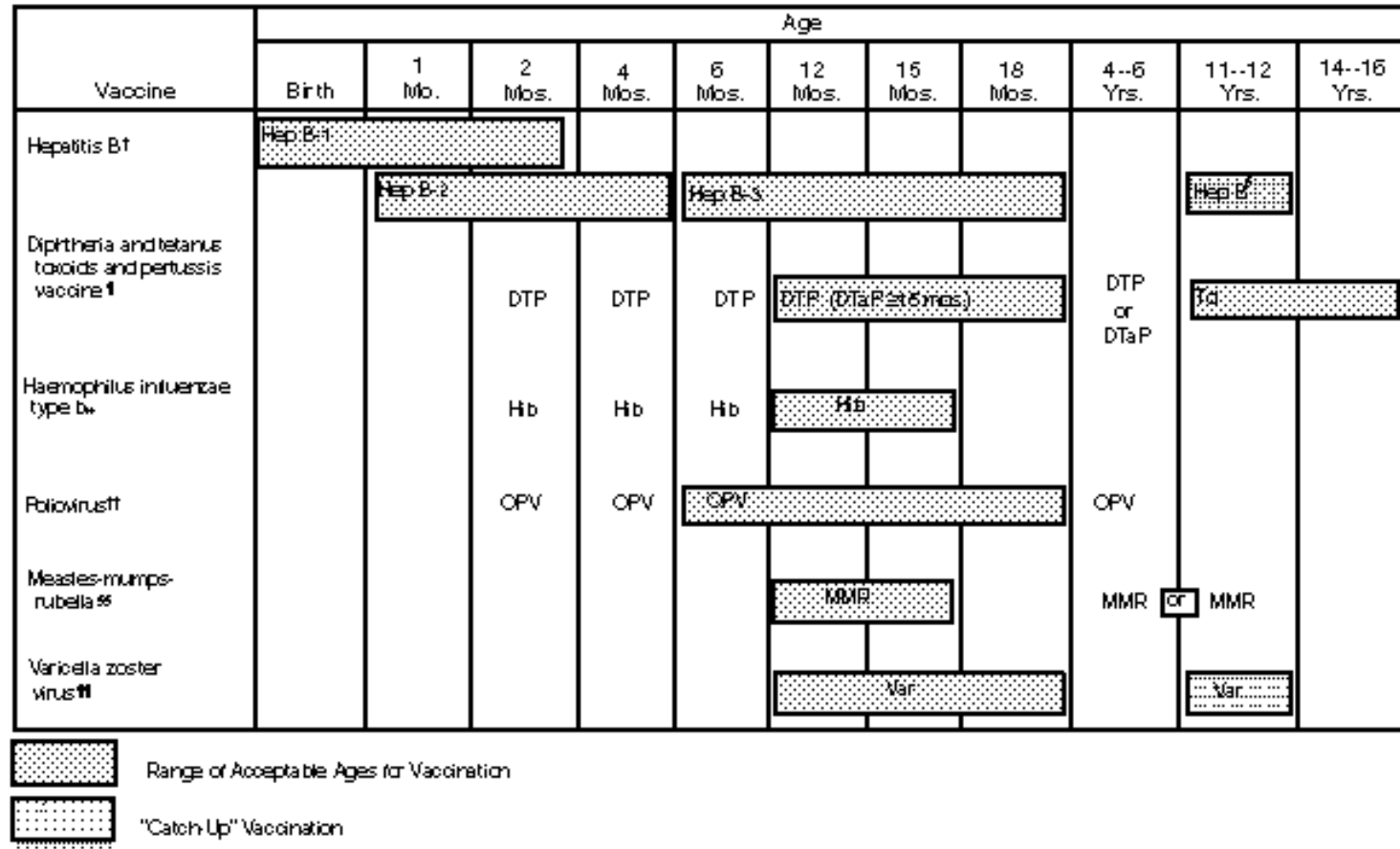
- Hepatitis B was added to the schedule as a routine vaccination instead of being used only for high risk groups
- Recommended vaccines:
 - *DTP (Diphtheria, Tetanus, Pertussis)*
 - *Polio (OPV)*
 - *MMR (Measles, Mumps, Rubella)*
 - *Hib (Haemophilus influenzae Type B)*
 - *Hepatitis B*

1995 Vaccine Schedule

Vaccine	Birth	2 Months	4 Months	6 Months	12 Months	15 Months	18 Months	4-6 Years	11-12 Years	14-16 Years
Hepatitis B	HB-1	HB-2		HB-3						
Diphtheria-Tetanus-Pertussis (DTP)		DTP	DTP	DTP	DTP or DTaP \geq at 15 months			DTP or DTaP	Td	
<i>Haemophilus influenzae</i> type b		Hib	Hib	Hib	Hib					
Poliovirus		OPV	OPV	OPV				OPV		
Measles-Mumps-Rubella					MMR			MMR or MMR		

1996 Vaccine Schedule




FIGURE 1. Recommended childhood immunization schedule* — United States, July–December 1996



1998 Vaccine Schedule

FIGURE 1. Recommended childhood immunization schedule* — United States, January–December 1999

Vaccine	Age										
	Birth	1 mo	2 mos	4 mos	6 mos	12 mos	15 mos	18 mos	4–6 yrs	11–12 yrs	14–16 yrs
Hepatitis B†	Hep B										
Diphtheria and tetanus toxoids and pertussis		Hep B			Hep B					Hep B	
<i>H. influenzae</i> type b†			DTaP	DTaP	DTaP		DTaP		DTaP	Td	
Poliovirus**			Hib	Hib	Hib	Hib					
Rotavirus††			IPV	IPV	Polio				Polio		
Measles-mumps-rubella‡§			Rv	Rv	Rv						
Varicella¶						MMR			MMR	MMR	
						Var				Var	

 Range of Acceptable Ages for vaccination
 Vaccines to be Assessed and Administered if Necessary
 Incorporation of this new vaccine into clinical practice may require additional time and resources from health-care providers.

2000 Vaccine Schedule

Rotavirus vaccine removed from the schedule



FIGURE 1. Recommended childhood immunization schedule* — United States, January–December 2000

Vaccine	Age											
	Birth	1 mo	2 mos	4 mos	6 mos	12 mos	15 mos	18 mos	24 mos	4–6 yrs	11–12 yrs	14–16 yrs
Hepatitis B [†]	Hep B											
Diphtheria and tetanus toxoids and pertussis [§]												
<i>H. influenzae</i> type b [§]												
Polio**												
Measles-mumps-rubella ^{††}												
Varicella ^{§§}												
Hepatitis A ^{††}												

Range of recommended ages for vaccination.
 Vaccines to be given if previously recommended doses were missed or were given earlier than the recommended minimum age.
 Recommended in selected states and/or regions.

On October 22, 1999, the Advisory Committee on Immunization Practices (ACIP) recommended that Rotashield[®] (rhesus rotavirus vaccine-tetravalent [RRV-TV]), the only U.S.-licensed rotavirus vaccine, no longer be used in the United States (MMWR, Vol. 48, No. 43, November 5, 1999). Parents should be reassured that children who received rotavirus vaccine before July 1999 are not now at increased risk for intussusception.

* This schedule indicates the recommended ages for routine administration of licensed childhood vaccines as of November 1, 1999. Any dose not given at the recommended age should be given as a "catch-up" vaccination at any subsequent visit when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturers' package inserts for detailed recommendations. **Infants born to hepatitis B surface antigen (HBsAg)-negative mothers** should receive the first dose of hepatitis B vaccine (Hep B) by age 2 months. The second dose should be administered at least 1 month after the first dose. The third dose should be administered at least 4 months after the first dose and at least 2 months after the second dose, but not before age 6 months. **Infants born to HBsAg-positive mothers** should receive Hep B and 0.5 mL hepatitis B immune globulin (HBIG) within 12 hours of birth at separate sites. The second dose is recommended at age 1–2 months and the third dose at age 6 months. **Infants born to mothers whose HBsAg status is unknown** should receive Hep B within 12 hours of birth. Maternal blood should be drawn at delivery to determine the mother's HBsAg status; if the HBsAg test is positive, the infant should receive HBIG as soon as possible (no later than age 1 week). **All children and adolescents (through age 18 years)** who have not been vaccinated against hepatitis B may begin the series during any visit. Providers should make special efforts to vaccinate children who were born in or whose parents were born in areas of the world where hepatitis B virus infection is moderately or highly endemic.

[†] The fourth dose of diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP) can be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15–18 months. Tetanus and diphtheria toxoids (Td) is recommended at age 11–12 years if at least 5 years have elapsed since the last dose of diphtheria and tetanus toxoids and pertussis vaccine (DTP), DTaP, or diphtheria and tetanus toxoids (DT). Subsequent routine Td boosters are recommended every 10 years.

[§] Three *Haemophilus influenzae* type b (Hib) conjugate vaccines are licensed for infant use. If Hib conjugate vaccine (PRP-OMP) [PedvaxHIB[®] or ComVax[®] (Merck)] is administered at ages 2 months and 4 months, a dose at age 6 months is not required. Because clinical studies in infants have demonstrated that using some combination products may induce a lower immune response to the Hib vaccine component, DTaP/Hib combination products should not be used for primary vaccination in infants at ages 2, 4, or 6 months unless approved by the Food and Drug Administration for these ages.

^{**} To eliminate the risk for vaccine-associated paralytic poliomyelitis (VAPP), an all-inactivated poliovirus vaccine (IPV) schedule is now recommended for routine childhood polio vaccination in the United States. All children should receive four doses of IPV: at age 2 months, age 4 months, between ages 6 and 18 months, and between ages 4 and 6 years. Oral poliovirus vaccine (OPV) (if available) may be used only for the following special circumstances: 1) mass vaccination campaigns to control outbreaks of paralytic polio; 2) unvaccinated children who will be traveling in <4 weeks to areas where polio is endemic or epidemic; and 3) children of parents who do not accept the recommended number of vaccine injections. Children of parents who do not accept the recommended number of vaccine injections may receive OPV only for the third or fourth dose or both; in this situation, health-care providers should administer OPV only after discussing the risk for VAPP with parents for VAPP. During the transition to an all-IPV schedule, recommendations for the use of remaining OPV supplies in physicians' offices and clinics have been issued by the American Academy of Pediatrics (*Pediatrics*, Vol. 104, No. 6, December 1999).

^{††} The second dose of measles, mumps, and rubella vaccine (MMR) is recommended routinely at age 4–6 years but may be administered during any visit, provided at least 4 weeks have elapsed since receipt of the first dose and that both doses are administered beginning at or after age 12 months. Those who previously have not received the second dose should complete the schedule no later than the routine visit to a health-care provider at age 11–12 years. Varicella (Var) vaccine is recommended at any visit on or after the first birthday for susceptible children, i.e., those who lack a reliable history of chickenpox (as judged by a health-care provider) and who have not been vaccinated. Susceptible persons aged ≥13 years should receive two doses given at least 4 weeks apart.

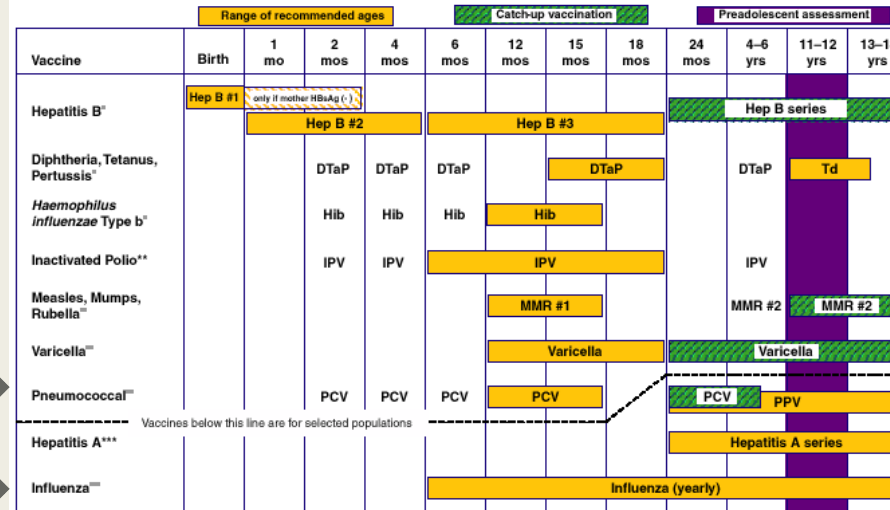
^{‡‡} Hepatitis A vaccine (Hep A) is recommended for use in selected states and regions. Information is available from local public health authorities and MMWR, Vol. 48, No. RR-12, October 1, 1999.

Use of trade names and commercial sources is for identification only and does not constitute or imply endorsement by CDC or the U.S. Department of Health and Human Services.

Source: Advisory Committee on Immunization Practices (ACIP), American Academy of Family Physicians (AAFP), and American Academy of Pediatrics (AAP).

2002 Vaccine Schedule

FIGURE 1. Recommended childhood immunization schedule* — United States, 2002



* Indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2001, for children through age 18 years. Any dose not given at the recommended age should be given at any subsequent visit when indicated and feasible. ■ Indicates age groups that warrant special effort to administer those vaccines not given previously. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturers' package inserts for detailed recommendations.

[†] **Hepatitis B vaccine (Hep B).** All infants should receive the first dose of hepatitis B vaccine soon after birth and before hospital discharge; the first dose also may be given by age 2 months if the infant's mother is HBsAg-negative. Only monovalent hepatitis B vaccine can be used for the birth dose. Monovalent or combination vaccine containing Hep B may be used to complete the series; 4 doses of vaccine may be administered if combination vaccine is used. The second dose should be given at least 4 weeks after the first dose except for Hib-containing vaccine, which cannot be administered before age 6 weeks. The third dose should be given at least 16 weeks after the first dose and at least 8 weeks after the second dose. The last dose in the vaccination series (third or fourth dose) should not be administered before age 6 months. Infants born to HBsAg-positive mothers should receive hepatitis B vaccine and 0.5 mL hepatitis B immune globulin (HBIG) within 12 hours of birth at separate sites. The second dose is recommended at age 1–2 months and the vaccination series should be completed (third or fourth dose) at age 6 months. Infants born to mothers whose HBsAg status is unknown should receive the first dose of the hepatitis B vaccine series within 12 hours of birth. Maternal blood should be drawn at the time of delivery to determine the mother's HBsAg status; if the HBsAg test is positive, the infant should receive HBIG as soon as possible (no later than age 1 week).

[‡] **Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).** The fourth dose of DTaP may be administered as early as age 12 months provided that 6 months have elapsed since the third dose and the child is unlikely to return at age 15–18 months. **Tetanus and diphtheria toxoids (Td)** is recommended at age 11–12 years if at least 5 years have elapsed since the last dose of tetanus and diphtheria toxoid-containing vaccine. Subsequent routine Td boosters are recommended every 10 years.

[§] ***Haemophilus influenzae* type b (Hib) conjugate vaccine.** Three Hib conjugate vaccines are licensed for infant use. If PRP-OMP (PedvaxHIB[®] or ComVax[®] [Merck]) is administered at age 2 and 4 months, a dose at age 6 months is not required. DTaP/Hib combination products should not be used for primary immunization in infants at age 2, 4 or 6 months but can be used as boosters following any Hib vaccine.

^{**} **Inactivated poliovirus vaccine (IPV).** An all-IPV schedule is recommended for routine childhood poliovirus vaccination in the United States. All children should receive 4 doses of IPV at age 2, 4, and 6–18 months, and 4–6 years.

^{††} **Measles, mumps, and rubella vaccine (MMR).** The second dose of MMR is recommended routinely at age 4–6 years but may be administered during any visit provided at least 4 weeks have elapsed since the first dose and that both doses are administered beginning at or after age 12 months. Those who have not previously received the second dose should complete the schedule by the visit at age 11–12 years.

^{‡‡} **Varicella vaccine.** Varicella vaccine is recommended at any visit, at or after age 12 months for susceptible children (i.e., those who lack a reliable history of chickenpox). Susceptible persons aged ≥13 years should receive 2 doses given at least 4 weeks apart.

^{¶¶} **Pneumococcal vaccine.** The heptavalent pneumococcal conjugate vaccine (PCV) is recommended for all children aged 2–23 months and for certain children aged 24–59 months. **Pneumococcal polysaccharide vaccine (PPV)** is recommended in addition to PCV for certain high-risk groups. See MMWR 2000;49(No. RR-9):1–37.

^{***} **Hepatitis A vaccine.** Hepatitis A vaccine is recommended for use in selected states and regions, and for certain high-risk groups. Consult local public health authority and MMWR 1999;48(No. RR-12):1–37.

^{†††} **Influenza vaccine.** Influenza vaccine is recommended annually for children aged ≥6 months with certain risk factors (including but not limited to asthma, cardiac disease, sickle cell disease, HIV, and diabetes; see MMWR 2001;50(No. RR-4):1–44), and can be administered to all others wishing to obtain immunity. Children aged ≥12 years should receive vaccine in a dosage appropriate for their age (0.25 mL if 6–35 months or 0.5 mL if ≥3 years). Children aged ≥9 years who are receiving influenza vaccine for the first time should receive 2 doses separated by at least 4 weeks.

Additional information about vaccines, vaccine supply, and contraindications for immunization is available at <http://www.cdc.gov/nip> or at the National Immunization hotline, 800-232-2522 (English), or 800-232-0233 (Spanish). Copies of the schedule can be obtained at <http://www.cdc.gov/nip/recs/child-schedule.htm>. Approved by the **Advisory Committee on Immunization Practices** (<http://www.cdc.gov/nip/acip>), the **American Academy of Pediatrics** (<http://www.aap.org>), and the **American Academy of Family Physicians** (<http://www.aafp.org>).

2006 Vaccine Schedule

FIGURE. Recommended childhood and adolescent immunization schedule, by vaccine and age — United States, 2006

Vaccine ▼	Age ►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	24 months	4–6 years	11–12 years	13–14 years	15 years	16–18 years
Hepatitis B ¹		HepB	HepB	HepB ¹		HepB						HepB Series			
Diphtheria, Tetanus, Pertussis ²			DTaP	DTaP	DTaP		DTaP				DTaP	Tdap		Tdap	
<i>Haemophilus influenzae</i> type b ³			Hib	Hib	Hib ³		Hib								
Inactivated Poliovirus			IPV	IPV		IPV					IPV				
Measles, Mumps, Rubella ⁴							MMR				MMR			MMR	
Varicella ⁵							Varicella					Varicella			
Meningococcal ⁶								Vaccines with broken line are for selected populations				MCV4		MCV4	
Pneumococcal ⁷			PCV	PCV	PCV		PCV				PCV		PPV		
Influenza ⁸							Influenza (yearly)					Influenza (yearly)			
Hepatitis A ⁹							HepA series					HepA series			

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2005, for children through age 18 years. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Range of recommended ages Indicates age groups that warrant special effort to administer those vaccines not previously administered. Additional vaccines might be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination

are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult respective Advisory Committee on Immunization Practices (ACIP) statements for detailed recommendations. Clinically significant adverse events that follow vaccination should be reported through the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

Range of recommended ages

Catch-up immunization

Assessment at age 11–12 years

- Hepatitis B vaccine (HepB).** *AT BIRTH:* All newborns should receive monovalent HepB soon after birth and before hospital discharge. Infants born to mothers who are hepatitis B surface antigen (HBsAg)-positive should receive HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. Infants born to mothers whose HBsAg status is unknown should receive HepB within 12 hours of birth. The mother should have blood drawn as soon as possible to determine her HBsAg status; if HBsAg-positive, the infant should receive HBIG as soon as possible (no later than age 1 week). For infants born to HBsAg-negative mothers, the birth dose can be delayed in rare circumstances but only if a physician's order to withhold the vaccine and a copy of the mother's original HBsAg-negative laboratory report are documented in the infant's medical record. *FOLLOWING THE BIRTH DOSE:* The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1–2 months. The final dose should be administered at age ≥24 weeks. Administering four doses of HepB is permissible (e.g., when combination vaccines are administered after the birth dose); however, if monovalent HepB is used, a dose at age 4 months is not needed. Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg after completion of the HepB series at age 9–18 months (generally at the next well-child visit after completion of the vaccine series).
- Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).** The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15–18 months. The final dose in the series should be administered at age ≥4 years. Tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap adolescent preparation) is recommended at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoids (Td) booster dose. Adolescents aged 13–18 years who missed the age 11–12-year Tdap booster dose should also receive a single dose of Tdap if they have completed the recommended childhood DTP/DTaP vaccination series. Subsequent Td boosters are recommended every 10 years.
- Haemophilus influenzae* type b conjugate vaccine (Hib).** Three Hib conjugate vaccines are licensed for infant use: PRP-OMP (PedvaxiB® or ComVax® [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required. DTaP/Hib combination products should not be used for primary immunization in infants at ages 2, 4, or 6 months but may be used as boosters after any Hib vaccine. The final dose in the series should be administered at age ≥12 months.
- Measles, mumps, and rubella vaccine (MMR).** The second dose of MMR is recommended routinely at age 4–6 years but may be administered during any visit, provided at least 4 weeks have elapsed since the first dose and both doses are administered at or after age 12 months. Children who have not previously received the second dose should complete the schedule by age 11–12 years.

- Varicella vaccine.** Varicella vaccine is recommended at any visit at or after age 12 months for susceptible children (i.e., those who lack a reliable history of varicella). Susceptible persons aged ≥13 years should receive 2 doses administered at least 4 weeks apart.
- Meningococcal vaccine (MCV4).** Meningococcal conjugate vaccine (MCV4) should be administered to all children at age 11–12 years as well as to unvaccinated adolescents at high school entry (age 15 years). Other adolescents who wish to decrease their risk for meningococcal disease may also be vaccinated. All college freshmen living in dormitories should also be vaccinated, preferably with MCV4, although meningococcal polysaccharide vaccine (MPSV4) is an acceptable alternative. Vaccination against invasive meningococcal disease is recommended for children and adolescents aged ≥2 years with terminal complement deficiencies or anatomic or functional asplenia and for certain other high risk groups (see *MMWR* 2005;54[No. RR-7]); use MPSV4 for children aged 2–10 years and MCV4 for older children, although MPSV4 is an acceptable alternative.
- Pneumococcal vaccine.** The heptavalent pneumococcal conjugate vaccine (PCV) is recommended for all children aged 2–23 months and for certain children aged 24–59 months. The final dose in the series should be administered at age ≥12 months. Pneumococcal polysaccharide vaccine (PPV) is recommended in addition to PCV for certain high-risk groups. See *MMWR* 2000;49[No. RR-9].
- Influenza vaccine.** Influenza vaccine is recommended annually for children aged ≥6 months with certain risk factors (including, but not limited to, asthma, cardiac disease, sickle cell disease, human immunodeficiency virus infection, diabetes, and conditions that can compromise respiratory function or handling of respiratory secretions or that can increase the risk for aspiration), health-care workers, and other persons (including household members) in close contact with persons in groups at high risk (see *MMWR* 2005;54[No. RR-8]). In addition, healthy children aged 6–23 months and close contacts of healthy children aged 0–5 months are recommended to receive influenza vaccine because children in this age group are at substantially increased risk for influenza-related hospitalizations. For healthy nonpregnant persons aged 5–49 years, the intranasally administered, live, attenuated influenza vaccine (LAIV) is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine (TIV). See *MMWR* 2005;54[No. RR-8]. Children receiving TIV should be administered an age-appropriate dosage (0.25 mL for children aged 6–35 months or 0.5 mL for children aged ≥3 years). Children aged ≤8 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by at least 4 weeks for TIV and at least 6 weeks for LAIV).
- Hepatitis A vaccine (HepA).** HepA is recommended for all children at age 1 year (i.e., 12–23 months). The 2 doses in the series should be administered at least 6 months apart. States, counties, and communities with existing HepA vaccination programs for children aged 2–18 years are encouraged to maintain these programs. In these areas, new efforts focused on routine vaccination of children aged 1 year should enhance, not replace, ongoing programs directed at a broader population of children. HepA is also recommended for certain high risk groups (see *MMWR* 1999;48[No. RR-12]).

2007 Vaccine Schedule

FIGURE 1. Recommended immunization schedule for persons aged 0–6 years — United States, 2007

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	See footnote 1		HepB					HepB Series	
Rotavirus ²	Rota		Rota	Rota	Rota							
Diphtheria, Tetanus, Pertussis ³	DTaP		DTaP	DTaP	DTaP			DTaP				DTaP
<i>Haemophilus influenzae</i> type b ⁴	Hib		Hib	Hib		Hib					Hib	
Pneumococcal ⁵	PCV		PCV	PCV	PCV						PCV PPV	
Inactivated Poliovirus	IPV		IPV	IPV		IPV						IPV
Influenza ⁶							Influenza (Yearly)					
Measles, Mumps, Rubella ⁷	MMR					MMR						MMR
Varicella ⁸	Varicella					Varicella						Varicella
Hepatitis A ⁹	HepA (2 doses)										HepA Series	
Meningococcal ¹⁰	MPSV4											MPSV4

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children aged 0–6 years. Additional information is available at <http://www.cdc.gov/nip/npcss/child-schedule.htm>. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components

of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

- 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 the HBsAg status as soon as possible and if HBsAg-positive, administer HBIG (no later than age 1 week).
 - If mother is HBsAg-negative, the birth dose can only be delayed with physician's order and mother's negative HBsAg laboratory report documented in the infant's medical record.
 - After the birth dose:
 - The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1–2 months. The final dose should be administered at age ≥24 weeks. Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg after completion of ≥3 doses of a licensed HepB series, at age 9–18 months (generally at the next well-child visit).
 - 4-month dose:
 - It is permissible to administer 4 doses of HepB when combination vaccines are administered after the birth dose. If monovalent HepB is used for doses after the birth dose, a dose at age 4 months is not needed.
- Rotavirus vaccine (Rota).** (Minimum age: 6 weeks)
 - Administer the first dose at age 6–12 weeks. Do not start the series later than age 12 weeks.
 - Administer the final dose in the series by age 32 weeks. Do not administer a dose later than age 32 weeks.
 - Data on safety and efficacy outside of these age ranges are insufficient.
- Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).** (Minimum age: 6 weeks)
 - The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose.
 - Administer the final dose in the series at age 4–6 years.
- Haemophilus influenzae* type b conjugate vaccine (Hib).** (Minimum age: 6 weeks)
 - If PRP-OMP (Prevenar[®] or Comvax[®] [Pentacel]) is administered at ages 2 and 4 months, a dose at age 6 months is not required.
 - TriHib[®] (DTaP/Hib) combination products should not be used for primary immunization but can be used as boosters following any Hib vaccine in children aged ≥12 months.
- Pneumococcal vaccine.** (Minimum age: 6 months for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPV])
 - Administer PCV at ages 24–59 months in certain high-risk groups. Administer PPV to children aged ≥2 years in certain high-risk groups. See MMWR 2000;49(No. RR-9):1–35.
- Influenza vaccine.** (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 5 years for live, attenuated influenza vaccine [LAIV])
 - All children aged 6–59 months and close contacts of all children aged 0–59 months are recommended to receive influenza vaccine.
 - Influenza vaccine is recommended annually for children aged ≥6 months with certain risk factors, health-care workers, and other persons (including household members) in close contact with persons in groups at high risk. See MMWR 2006;55(No. RR-10):1–41.
 - For healthy persons aged 5–49 years, LAIV may be used as an alternative to TIV.
 - Children receiving TIV should receive 0.25 mL if aged 6–35 months or 0.5 mL if aged ≥3 years.
 - Children aged <9 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by ≥4 weeks for TIV and ≥6 weeks for LAIV).
- Measles, mumps, and rubella vaccine (MMR).** (Minimum age: 12 months)
 - Administer the second dose of MMR at age 4–6 years. MMR may be administered before age 4–6 years, provided ≥2 weeks have elapsed since the first dose and both doses are administered at age ≥12 months.
- Varicella vaccine.** (Minimum age: 12 months)
 - Administer the second dose of varicella vaccine at age 4–6 years. Varicella vaccine may be administered before age 4–6 years, provided that ≥2 months have elapsed since the first dose and both doses are administered at age ≥12 months. If second dose was administered ≥28 days following the first dose, the second dose does not need to be repeated.
- Hepatitis A vaccine (HepA).** (Minimum age: 12 months)
 - HepA is recommended for all children aged 1 year (i.e., age 12–23 months).
 - The 2 doses in the series should be administered at least 6 months apart.
 - Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits.
 - HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children. See MMWR 2006;55(No. RR-7):1–23.
- Meningococcal polysaccharide vaccine (MPSV4).** (Minimum age: 2 years)
 - Administer MPSV4 to children aged 2–10 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high-risk groups. See MMWR 2005;54(No. RR-7):1–21.

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

FIGURE 2. Recommended immunization schedule for persons aged 7–18 years — United States, 2007

Vaccine ▼	Age ►	7–10 years	11–12 YEARS	13–14 years	15 years	16–18 years
Tetanus, Diphtheria, Pertussis ¹	See footnote 1		Tdap		Tdap	
Human Papillomavirus ²	See footnote 2		HPV (3 doses)		HPV Series	
Meningococcal ³	MPSV4		MCV4		MCV4 ⁴	
Pneumococcal ⁵			PPV			
Influenza ⁶			Influenza (Yearly)			
Hepatitis A ⁷			HepA Series			
Hepatitis B ⁸			HepB Series			
Inactivated Poliovirus ⁹			IPV Series			
Measles, Mumps, Rubella ¹⁰			MMR Series			
Varicella ¹¹			Varicella Series			

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children aged 7–18 years. Additional information is available at <http://www.cdc.gov/nip/npcss/child-schedule.htm>. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components

of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

- Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).** (Minimum age: 10 years for BOOSTRIX[®] and 11 years for ADACEL[™])
 - Administer at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoids vaccine (Td) booster dose.
 - Adolescents aged 13–18 years who missed the 11–12 year Td/Tdap booster dose should also receive a single dose of Tdap if they have completed the recommended childhood DTP/DTaP vaccination series.
- Human papillomavirus vaccine (HPV).** (Minimum age: 9 years)
 - Administer the first dose of the HPV vaccine series to females at age 11–12 years.
 - Administer the second dose 2 months after the first dose and the third dose 6 months after the first dose.
 - Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.
- Meningococcal vaccine.** (Minimum age: 11 years for meningococcal conjugate vaccine [MCV4]; 2 years for meningococcal polysaccharide vaccine [MPSV4])
 - Administer MCV4 at age 11–12 years and to previously unvaccinated adolescents at high school entry (at approximately age 15 years).
 - Administer MPSV4 to previously unvaccinated college freshmen living in dormitories; MPSV4 is an acceptable alternative.
 - Vaccination against invasive meningococcal disease is recommended for children and adolescents aged ≥2 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high-risk groups. See MMWR 2005;54(No. RR-7):1–21. Use MPSV4 for children aged 2–10 years and MCV4 or MPSV4 for older children.
- Pneumococcal polysaccharide vaccine (PPV).** (Minimum age: 2 years)
 - Administer for certain high-risk groups. See MMWR 1997;46(No. RR-8):1–24, and MMWR 2000;49(No. RR-9):1–35.
- Influenza vaccine.** (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 5 years for live, attenuated influenza vaccine [LAIV])
 - Influenza vaccine is recommended annually for persons with certain risk factors, health-care workers, and other persons (including household members) in close contact with persons in groups at high risk. See MMWR 2006;55(No. RR-10):1–41.
 - For healthy persons aged 5–49 years, LAIV may be used as an alternative to TIV.
 - Children aged <9 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by ≥4 weeks for TIV and ≥6 weeks for LAIV).
- Hepatitis A vaccine (HepA).** (Minimum age: 12 months)
 - The 2 doses in the series should be administered at least 6 months apart.
 - HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children. See MMWR 2006;55(No. RR-7):1–23.
- Hepatitis B vaccine (HepB).** (Minimum age: birth)
 - Administer the 3-dose series to those who were not previously vaccinated.
 - A 2-dose series of Recombivax HB[®] is licensed for children aged 11–15 years.
 - For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if the third dose was administered at age ≥24 years.
 - 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.
- Measles, mumps, and rubella vaccine (MMR).** (Minimum age: 12 months)
 - If not previously vaccinated, administer 2 doses of MMR during any visit, with ≥4 weeks between the doses.
- Varicella vaccine.** (Minimum age: 12 months)
 - Administer 2 doses of varicella vaccine to persons without evidence of immunity.
 - Administer 2 doses of varicella vaccine to persons aged ≥13 years at least 3 months apart. Do not repeat the second dose, if administered ≥28 days after the first dose.
 - Administer 2 doses of varicella vaccine to persons aged ≥13 years at least 4 weeks apart.

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

2011 Vaccination 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

Vaccine ▼	Age ►	7-10 years	11-12 years	13-18 years
Tetanus, Diphtheria, Pertussis ¹			Tdap	Tdap
Human Papillomavirus ²		see footnote ²	HPV (3 doses)(females)	HPV series
Meningococcal ³		MCV4	MCV4	MCV4
Influenza ⁴		Influenza (Yearly)		
Pneumococcal ⁵		Pneumococcal		
Hepatitis A ⁶		HepA Series		
Hepatitis B ⁷		Hep B Series		
Inactivated Poliovirus ⁸		IPV Series		
Measles, Mumps, Rubella ⁹		MMR Series		
Varicella ¹⁰		Varicella Series		

Range of recommended ages for all children

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

2012 Vaccine Schedule

Vaccine ▼	Age ►	Birth	1 month	2 months	4 months	6 months	9 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years	
Hepatitis B ¹		HepB	HepB			HepB		HepB						Range of recommended ages for all children
Rotavirus ²				RV	RV	RV ²								
Diphtheria, tetanus, pertussis ³				DTaP	DTaP	DTaP	See footnote ²	DTaP					DTaP	Range of recommended ages for certain high-risk groups
<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					IPV	
Influenza ⁷						Influenza (yearly)								
Measles, mumps, rubella ⁸								MMR		See footnote ⁸			MMR	Range of recommended ages for all children and certain high-risk groups
Varicella ⁹								VAR		See footnote ⁹			VAR	
Hepatitis A ¹⁰								Dose 1 ¹⁰				HepA series		
Meningococcal ¹¹								MCV4 — See footnote ¹¹						

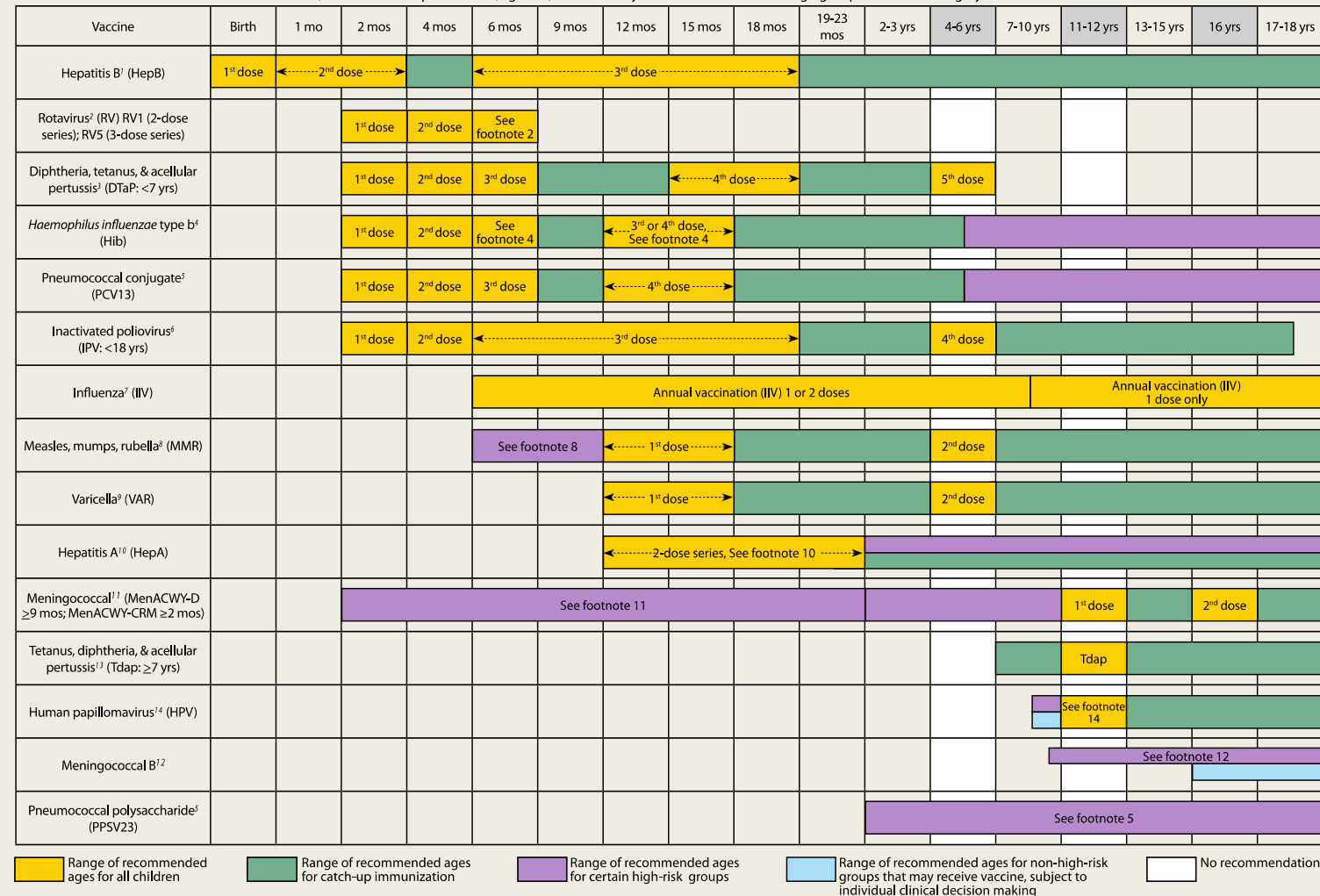
Vaccine ▼	Age ►	7–10 years	11–12 years	13–18 years	
Tetanus, diphtheria, pertussis ¹		1 dose (if indicated)	1 dose	1 dose (if indicated)	Range of recommended ages for all children
Human papillomavirus ²		See footnote ²	3 doses	Complete 3-dose series	
Meningococcal ³		See footnote ³	Dose 1	Booster at age 16 years	
Influenza ⁴		Influenza (yearly)			Range of recommended ages for catch-up immunization
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			Range of recommended ages for certain high-risk groups
Measles, mumps, rubella ⁹		Complete 2-dose series			
Varicella ¹⁰		Complete 2-dose series			

2018 Vaccine Schedule

Figure 1. Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger—United States, 2018.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE [FIGURE 2]).

These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are shaded in gray.



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