

2013 Immunization Schedules for Children 0 Through 18 Years of Age

Renée Jenkins, ACIP Chair
Iyabode (Yabo) Beysolow, CDC lead

ACIP Meeting
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Harmonized Schedule Work Group 2012

- Renée Jenkins (ACIP, chair - incoming)
- Cody Meissner (ACIP, chair - outgoing)
- Susan Lett (ACIP)
- Ruth Karron (ACIP)
- Lorry Rubin (AAP)
- Everett Schlam (AAFP)
- Patsy Stinchfield (NAPNAP)
- Rosemary Spence (AIM)
- Katie Brewer (ANA)
- Amy Middleman (SAHM)
- Chris Barry (AAPA)
- Diane Peterson (IAC)
- Yabo Akinsanya-Beysolow (CDC Lead)
- Andrew Kroger (CDC)
- Jennifer Hamborsky (CDC)
- Ex-officio members:
- Kris Ehresmann (ACIP)
- William Atkinson
- Consultants
- Skip Wolfe (CDC)
- JoEllen Wolicki (CDC)
- Donna Weaver (CDC)

Reason topic is being presented to ACIP

- ❑ ACIP approval of the proposed schedules necessary prior to publication in MMWR Feb 2013
- ❑ AAP and AAFP also approve the proposed schedules prior to Feb 2013 publications
- ❑ Annual schedules reflect recommendations already approved by ACIP. New policy is not established by the schedules

BACKGROUND

General Approach to the 2013 0 Through 18 Year Schedules

- Edits to the 2012 schedule made by *MMWR* were incorporated into the first draft of the 2013 schedules
- Numerous wording changes to improve clarity and readability

FIGURE 1. Recommended immunization schedule for persons aged 0 through 8 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	2–3 years	4–6 years
Hepatitis B	Hep B	Hep B		Hep B				Hep B					
Rotavirus ^a			RV	RV	RV	RV							
Diphtheria, tetanus, pertussis ^b			DTaP	DTaP	DTaP	DTaP			DTaP				DTaP
Haemophilus influenzae type b ^c			HiB	HiB	HiB	HiB							
Pneumococcal ^d			PCV	PCV	PCV								PPSV
Inactivated poliovirus ^e			IPV	IPV				IPV					IPV
Influenza ^f									Influenza (yearly)				
Measles, mumps, rubella ^g													MMR
Varicella ^h								Varicella					Varicella
Hepatitis A ⁱ													HepA Series

This schedule includes recommendations in effect as of December 20, 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 recent Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at <http://www.cdc.gov/vaccines/imz/advis/acip-atsm>. 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).

- 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) to HBsAg antibody (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 $\geq 2,000$ 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 $\geq 2,000$ grams (no later than age 1 week).
 - Doses after the first 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.
- Rotavirus (RV) vaccine.** (Minimum age: 6 weeks for both RV-1 [Rotarix] and RV-5 [RotaTeq])
 - 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 is not indicated.
- 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 (PedvaxHB or Comvax [HepB-HiB]) is administered at ages 2 and 4 months, a dose at age 6 months is not indicated.
 - HiBrix should only be used for the booster (final) dose in children aged 12 months through 4 years.
- Pneumococcal vaccine.** (Minimum age: 6 weeks for pneumococcal conjugate 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:
 - All children aged 54 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 2007;55\(No. RR-11\)](http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf), available at <http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.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 vaccine.** (Minimum age: 6 months for inactivated influenza vaccine [IIV]; 2 years for live, attenuated influenza vaccine [LAIV])
 - For most healthy children aged 2 years and older, either LAIV or IIV may be used. However, LAIV should not be administered to some children (including 1) children with asthma, 2) children 2 through 4 years old with 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 2007;55\(No. RR-5\)](http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf), available at <http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.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 revaccinated 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.
- Hepatitis A (HepA) vaccine.** (Minimum age: 12 months)
 - Administer the second (final) dose 6 to 18 months after the first.
 - Unvaccinated children 24 months and older at high risk should be vaccinated. See [MMWR 2006;55\(No. RR-7\)](http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf), available at <http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.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.
- Meningococcal conjugate vaccine, 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 9 months and 12 months or at least 4 weeks apart.
 - For children aged 24 months and older with 1) persistent complement component deficiency who have not been previously vaccinated; or 2) anatomical functional asplenia, administer 2 primary doses of either MCV4 at least 8 weeks apart.
 - For children with anatomical functional asplenia, MCV4-D (Menactra) is used, administer at a minimum age of 2 years and at least 4 weeks after completion of all PCV doses.
 - See [MMWR 2011;59\(7\)](http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf), available at <http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf>, and [Vaccines for Children Program Resolution No. S11-1](http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf), available at <http://www.cdc.gov/vaccines/imz/advis/programresolutions/resolutions108-11meringococcal.pdf>, and [MMWR 2011;60:1381–2](http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf), available at <http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf>, for further guidance, including revaccination guidelines.

This schedule is approved by the Advisory Committee on Immunization Practices (<http://www.cdc.gov/vaccines/imz/advis/>), 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.

This schedule is approved by the Advisory Committee on Immunization Practices (<http://www.cdc.gov/vaccines/imz/advis/>), 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.

9 years—United States, 2012 (for those who fall behind or start late, see the

Age	11–12 years	13–18 years
1 dose	1 dose (if indicated)	
3 doses	Complete 3-dose series	
Dose 1	Booster at 18 years old	
Influenza (yearly)		
See footnote ^a		
Complete 2-dose series		
Complete 3-dose series		
Complete 3-dose series		

not administered at the recommended age should be administered at a subsequent visit or separate injections of its equivalent component vaccines. Vaccination providers should consult the recent Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at <http://www.cdc.gov/vaccines/imz/advis/acip-atsm>. 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).

- 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.
- Pneumococcal vaccine, 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 anatomical functional asplenia, HIV infection or other immunocompromising condition, cochlear implant, or cerebral spinal fluid leak. See [MMWR 2010;59\(No. RR-11\)](http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf), available at <http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.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 anatomical functional asplenia or an immunocompromising condition.
- 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\(No. RR-7\)](http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf), available at <http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf>.
 - Administer 2 doses at least 6 months apart to unvaccinated persons.
- 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 aged 18 years or older.
- Measles, mumps, and rubella (MMR) vaccine.**
 - The minimum interval between the 2 doses of MMR vaccine is 4 weeks.
- Varicella (VAR) vaccine.**
 - For persons without evidence of immunity (see [MMWR 2007;55\(No. RR-4\)](http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.pdf), available at <http://www.cdc.gov/mmwr/pdf/mr/mmwr0705a1.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.

poliovirus vaccine (IPV). It is not necessary if the third dose was administered at age 4 years and at least 6 months after the previous dose. 5 months of life, minimum age and minimum intervals are only noted if the person is at risk for imminent exposure to circulating (i.e., travel to a polio-endemic region or during an outbreak), routinely recommended for U.S. residents aged 18 years or older. ^a Use recommended immunization schedule for persons aged 0 years (Figure 1) and Figure 2 (Recommended immunization schedule for persons aged 7 through 18 years) for further guidance. ^b Menactra (MCV4-D), 2 years for Menveo (MCV4-CRM) is 1. ^c Recommended immunization schedule for persons aged 0 years (Figure 1) and Figure 2 (Recommended immunization schedule for persons aged 7 through 18 years) for further guidance. ^d Menactra (MCV4-D), 2 years for Menveo (MCV4-CRM) is 1. ^e Recommended immunization schedule for persons aged 0 years (Figure 1) and Figure 2 (Recommended immunization schedule for persons aged 7 through 18 years) for further guidance. ^f Menactra (MCV4-D), 2 years for Menveo (MCV4-CRM) is 1. ^g Recommended immunization schedule for persons aged 0 years (Figure 1) and Figure 2 (Recommended immunization schedule for persons aged 7 through 18 years) for further guidance. ^h Menactra (MCV4-D), 2 years for Menveo (MCV4-CRM) is 1. ⁱ Recommended immunization schedule for persons aged 0 years (Figure 1) and Figure 2 (Recommended immunization schedule for persons aged 7 through 18 years) for further guidance.

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]).

ACIP Harmonized Childhood Schedule Workgroup

❑ Concerns:

- Increasing complexity of the current schedules
- Lack of space and decreasing font size
- New vaccines

❑ Discussions:

- Survey of WG members:
 - Proposed format changes:
 - 0-18 schedule to replace existing 0-6 and 7-18 schedules
 - No changes to the existing catch-up table
 - Combined footnotes from all 3 current schedules
 - New high-risk indication table to serve as a resource for providers on ACIP recommendations for patients with certain conditions

Outline

- ❑ **Presentation of Field Testing**
 - Methodology
 - Results
 - Recommendations from ORISE
- ❑ **Working Group Recommendations**
- ❑ **Specific Footnote changes**
- ❑ **Discussion and Vote**

**FIELD TEST RESULTS OF
PROPOSED 2013
CHILDHOOD/ADOLESCENT
IMMUNIZATION SCHEDULE**

Field Study components

- ❑ **Pilot study conducted with 31 providers (Pediatricians, Family practice physicians, PA's, Public health nurses) – (By CDC Staff)**
 - Study conducted via Telephone and Live meeting August – September 2012

- ❑ **Formative Research – conducted by Oak Ridge Institute for Science and Education (ORISE) – 68 providers**
 - September 2012

Objectives

- Assess 2013 draft immunization schedules for factors such as ease of use, comprehensibility, and how providers would likely use schedules.**
- Explore opportunities to improve the draft 2013 immunization schedules.**

Formative Research Methods

- ❑ **Study conducted by ORISE**
- ❑ **45-minute individual interviews with physicians who provide childhood and/or adolescent immunizations**
 - 19 Pediatricians
 - 9 Family Practitioners
 - 1 Internist (adolescent patients)
- ❑ **Mini groups ($n \leq 6$) of other clinicians**
 - 3 Physicians' Assistants and 15 Nurse Practitioners
 - 13 Medical Assistants and 8 Nurses (RN, LPN, LVN)
 - One of each group in each city
- ❑ **Four Cities**
 - Baltimore, St. Louis, Houston, San Francisco

Demographics

Physicians (n=29)

Specialty

Pediatricians – 19

Family Practice – 9

Internists – 1

Type of Practice

Private Practice – 22

Clinics – 7

Gender

Male – 19

Female – 10

Race/Ethnicity

African-American – 4

Asian-American – 6

European-American – 18

Other – 1

Demographics

Nurse Practitioners (n=15) and Physician's Assistants (n=3)

Specialty Pediatrics – 11 Family Practice – 7	Type of Practice Private Practice – 11 Clinics – 7
Gender Male – 1 Female – 17	Race/Ethnicity African-American – 1 Asian-American – 3 European-American – 12 Hispanic-American – 2

Demographics

Nurses (n=13) and Medical Assistants (n=8)

Specialty

Pediatrics – 9

Family Practice – 12

Type of Practice

Private Practice – 10

Clinics – 11

Gender

Male – 2

Female – 19

Race/Ethnicity

African-American – 6

Asian-American – 2

European-American – 9

Hispanic-American – 3

Other – 1

Topics of Discussion

❑ Current 2012 Immunization Schedules

- Formats used and how obtained
- Frequency, circumstances of use
- Do you make copies of the schedules?

❑ Draft 2013 Schedules

- Improvements, challenges from
 - Combining 0-6 , 7-18 years (versions: v. 1, 2, 3 in four cities, v. 4 in last two cities)
 - Combining footnotes from 0-6, 7-18, and catch-up
 - Adding high-risk table (versions: v.1 in four cities, v. 2 in last two cities)

Findings: Current Schedule

- ❑ **Many respondents knew the recommended schedule by memory.**
 - Especially Pediatricians and Nurse Practitioners
 - Both in private practices and public health clinics
 - Less so for nurses and MAs in both private and public practices
- ❑ **Recommended schedule cited as important for:**
 - Training new clinicians
 - Education of parents

“Standard immunizations we know so well we don’t have to look.”

“That’s ingrained, you can do it in your sleep.”

“I like to show the parents.”

Findings: Current Schedule

- **Respondents consult the catch-up schedule most frequently.**
 - Missed vaccinations
 - Incomplete history of vaccination
 - Recent immigrants

“That’s about the only one I reference.”

“The only time we really refer to the ...schedule is catch-up.”

“Usually when they are behind....[or] come from other countries.”

Findings: Current Schedule

- **Multiple versions of schedules are in use.**
 - Almost all reported were based on CDC version.
 - Some received directly from CDC.
 - Referral to CDC imparts credibility to parents.
 - Other common sources
 - Professional organizations (AAP, AAFP), VFC, health departments, journals, EMR, pharmaceutical companies
 - Red Book (AAP) commonly cited in Baltimore, as well as other cities.
 - Fairly often the source of the version used was unknown.

“I just go to the Red Book...on-line and in print.”

“The VFC people send us these every year.”

“...on the computer.”

Findings: Current Schedule

- **Hard copy is frequently posted in the office.**
 - Sometimes in exam room for clinicians and parents
 - Sometimes near vaccine storage for clinicians only
 - Sometimes at clinician's desk

“We have a big poster...waiting room...exam room...”

“...on the wall at every nursing station.”

“Hard copy sitting right in front of me on the bulletin board.”

Findings: Current Schedule

- ❑ **Many standardized a schedule for their practice within CDC recommendations.**
 - Likelihood of missing a vaccine deemed less.
 - Physicians within a practice all doing the same.
- ❑ **Many reported use of CDC's schedule to validate recommendations to parents.**
- ❑ **Very few reported making copies.**

“I get something from the state, and I do my own.”

“We standardize...”

“I don't see any reason to copy this.”

Findings: Current Schedule

- **How are schedule-changes received?**
 - Redbook
 - Printed every 3 years, updated online annually
 - Email (e.g., from CDC, AAP)
 - Pharmaceutical companies
 - Colleagues
 - A vaccination expert (physician) within their practice
 - Immunization departments in hospitals, large practices
 - VFC/Health Department

“Usually the nurses will go to the VFC in-service.”

“Almost weekly e-mails [from AAP].”

“drug reps”

Proposed 2013 Schedule: 0-18 years Combination – Option 1

FIGURE 1. Recommended immunization schedule for persons aged 0 through 18 years - 2013.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2); FOR PERSONS WITH HIGH-RISK CONDITIONS OR FOR PERSONS WHO FALL INTO SPECIAL POPULATIONS, SEE THE HIGH-RISK INDICATION TABLE (FIGURE 3).)

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 below. To determine minimum intervals between doses, see xxxxxxxx (Figure x). For more detailed information on vaccination of children with special medical or other risk conditions, see xxxxxxxx (Figure x). Each check mark (✓) indicates a single dose of vaccine.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13–15 yrs	16–18 yrs
Hepatitis B ¹ (HepB)	✓	✓					✓									
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			✓	✓	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP: <7 yrs)		✓	✓	✓				✓				✓				
Tetanus, diphtheria & acellular pertussis ⁴ (Tdap: >7 yrs) (Tdap)													✓ (Tdap)			
Haemophilus influenzae type b ⁵ (Hib)		✓	✓	✓	See footnote 4		✓									
Pneumococcal ⁶ (PCV)		✓	✓	✓			✓									
Pneumococcal ⁶ (PPSV)																
Poliovirus ⁸ (IPV) (<18 years)		✓	✓				✓					✓				
Influenza ⁹ (TIV; LAIV)					Annual vaccination (TIV only)					Annual vaccination (TIV or LAIV)						
Measles, mumps, rubella ¹⁰ (MMR)							✓					✓				
Varicella ¹⁰ (VAR)							✓									
Hepatitis A ¹¹ (HepA)								✓✓ (2-dose series)								
Human Papillomavirus ¹² (HPV2: females only; HPV4: males and females)														3-dose series ✓✓✓		
Meningococcal ¹³ (MCV4-D >9 mos.; MCV4-CRM: >2 yrs.)														✓		✓

 For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection
 Catch-up vaccination recommended if prior dose(s) delayed
 Range of recommended ages for children with high-risk medical conditions (see figure x for detailed recommendations)
 Range of recommended ages for all children and certain high-risk groups

This schedule includes recommendations in effect as of (month) (day), 2012. 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). 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]).

This schedule is approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

Findings: Proposed 2013 Schedule

- **Combination of 0-6 and 7-18 schedule well received**
 - Continuity of age span (all on one page)
 - Bigger font/readability is better
 - Less busy is better

“I like that it’s a little bit bigger.”

“It’s all in one place.”

“That’s wonderful.”

Proposed 2013 Schedule: 0-18 years Combination – Option 1

Check marks were misunderstood by some.
Location of check mark suggested preferred
time.

FIGURE 1. Recommended immunization schedule for persons aged 0 through 18 years - 2013.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2); FOR PERSONS WITH HIGH-RISK CONDITIONS OR FOR PERSONS WHO FALL INTO SPECIAL POPULATIONS, SEE THE HIGH-RISK INDICATION TABLE (FIGURE 3).

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 below. To determine minimum intervals between doses, see xxxxxxxx (Figure x). For more detailed information on vaccination of children with special medical or other risk conditions, see xxxxxxxx (Figure x). Each check mark (✓) indicates a single dose of vaccine.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16-18 yrs
Hepatitis B ¹ (HepB)	✓	✓					✓									
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			✓	✓	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP: <7 yrs)		✓	✓	✓				✓				✓				
Tetanus, diphtheria & acellular pertussis ⁴ (Tdap: >7 yrs) (Tdap)													✓ (Tdap)			
Haemophilus influenzae type b ⁵ (Hib)		✓	✓	✓	See footnote 4		✓									
Pneumococcal ⁶ (PCV)		✓	✓	✓	✓		✓									
Pneumococcal ⁶ (PPSV)																
Poliovirus ⁸ (IPV) (<18 years)		✓	✓				✓					✓				
Influenza ⁹ (TIV; LAIV)					Annual vaccination (TIV only)						Annual vaccination (TIV or LAIV)					
Measles, mumps, rubella ¹⁰ (MMR)							✓					✓				
Varicella ¹⁰ (VAR)							✓									
Hepatitis A ¹¹ (HepA)							✓ (2-dose series)									
Human Papillomavirus ¹² (HPV2: females only; HPV4: males and females)														3-dose series ✓✓✓		
Meningococcal ¹³ (MCV4-D >9 mos.; MCV4-CRM: >2 yrs.)														✓		✓

 For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection
 Catch-up vaccination recommended if prior dose(s) delayed
 Range of recommended ages for children with high-risk medical conditions (see figure x for detailed recommendations)
 Range of recommended ages for all children and certain high-risk groups

This schedule includes recommendations in effect as of (month) (day), 2012. 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). 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]).

This schedule is approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

Some mentioned catch-up and high-risk information made chart look busy.

Findings: Proposed 2013 Schedule

- **Mixed response to including catch-up and high risk with recommended**
 - Some welcomed all information on one page.
 - Others:
 - Too busy
 - There are already separate charts for catch-up and high risk
 - More noted by nurses and medical assistants

“It’s nice to have it on the same page.”

“I’m wondering why catch-up is on this chart.”

“It’s too much...stick with the recommended.”

“I’m just trying to figure out what this check thing means.”

New Schedule: Option 2

FIGURE 1. Recommended immunization schedule for persons aged 0 through 18 years - 2013.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2); FOR PERSONS WITH HIGH-RISK CONDITIONS OR FOR PERSONS WHO FALL INTO SPECIAL POPULATIONS, SEE THE HIGH-RISK INDICATION TABLE (FIGURE 3).)

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 below. To determine minimum intervals between doses, see xxxxxxxx (Figure x). For more detailed information on vaccination of children with special medical or other risk conditions, see xxxxxx (Figure x). Each check mark (✓) indicates a single dose of vaccine.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16-18 yrs
Hepatitis B ¹ (HepB)	< 1 dose*	< 1 dose*					< 1 dose*									
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			< 1 dose*	< 1 dose*	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP: <7 yrs)			< 1 dose*	< 1 dose*	< 1 dose*			< 1 dose*				< 1 dose*				
Tetanus, diphtheria & acellular pertussis ³ (Tdap: >7 yrs) (Tdap)														(Tdap)		
Haemophilus influenzae type b ⁴ (Hib)			< 1 dose*	< 1 dose*	See footnote 5			< 1 dose*								
Pneumococcal ⁶ (PCV)			< 1 dose*	< 1 dose*	< 1 dose*			< 1 dose*								
Pneumococcal ⁶ (PPSV)																
Poliovirus ⁷ (IPV) (<18 years)			< 1 dose*	< 1 dose*			< 1 dose*					< 1 dose*				
Influenza ⁸ (TIV; LAIV)					Annual vaccination (TIV only)						Annual vaccination (TIV or LAIV)					
Measles, mumps, rubella ⁹ (MMR)							< 1 dose*					< 1 dose*				
Varicella ¹⁰ (VAR)							< 1 dose*					< 1 dose*				
Hepatitis A ¹¹ (HepA)							(2-dose series)									
Human Papillomavirus ¹² (HPV2: females only; HPV4: males and females)															(3-dose series)	
Meningococcal ¹³ (MCV4-D >9 mos.; MCV4-CRM: >2 yrs.)							(MCV4-D only)								< 1 dose*	< 1 dose*

Range of recommended ages for all children
Range of recommended ages for catch-up immunization
Range of recommended ages for certain high-risk groups
/ / / / /
Range of recommended ages for all children and certain high-risk groups
Not recommended

This schedule includes recommendations in effect as of (month) (day), 2012. 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). 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]).

This schedule is approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

NOTE: The above recommendations must be read along with the footnotes on pages 4-5 of this schedule.

New Schedule: Option 3

FIGURE 1. Recommended immunization schedule for persons aged 0 through 18 years - 2013.
(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2); FOR PERSONS WITH HIGH-RISK CONDITIONS OR FOR PERSONS WHO FALL INTO SPECIAL POPULATIONS, SEE THE HIGH-RISK INDICATION TABLE (FIGURE 3).)

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 below. To determine minimum intervals between doses, see xxxxxxxx (Figure x). For more detailed information on vaccination of children with special medical or other risk conditions, see xxxxxx (Figure x). Each check mark () indicates a single dose of vaccine.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16-18 yrs
Hepatitis B ¹ (HepB)	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			Yellow	Yellow	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP: <7 yrs)		Yellow	Yellow	Yellow	Green	Green	Green	Yellow	Green	Green	Green	Green				
Tetanus, diphtheria & acellular pertussis ⁴ (Tdap: >7 yrs) (Tdap)																
<i>Haemophilus influenzae</i> type b ⁵ (Hib)		Yellow	Yellow	Yellow	See footnote 5	Green	Green	Green	Green	Green	Green	Green				
Pneumococcal ⁶ (PCV)		Yellow	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green				
Pneumococcal ⁶ (PPSV)													Green	Green	Green	Green
Poliovirus ⁷ (IPV) (<18 years)		Yellow	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green				
Influenza ⁸ (TIV; LAIV)					Annual vaccination (TIV only)						Annual vaccination (TIV or LAIV)					
Measles, mumps, rubella ⁹ (MMR)							Green	Green	Green	Green	Green	Green				
Varicella ¹⁰ (VAR)							Green	Green	Green	Green	Green	Green				
Hepatitis A ¹¹ (HepA)																Yellow
Human Papillomavirus ¹² (HPV2: females only; HPV4: males and females)																Yellow
Meningococcal ¹³ (MCV4-D >9 mos.; MCV4-CRM: >2 yrs.)																Green

Range of recommended ages for all children
Range of recommended ages for catch-up immunization
Range of recommended ages for certain high-risk groups
Range of recommended ages for all children and certain high-risk groups
Not recommended

This schedule includes recommendations in effect as of (month) (day), 2012. 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). 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]).

This schedule is approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

NOTE: The above recommendations must be read along with the footnotes on pages 4-5 of this schedule.

Proposed 2013 Schedule: Option 4

FIGURE 1. Recommended immunization schedule for persons aged 0 through 18 years - 2013.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2); FOR PERSONS WITH HIGH-RISK CONDITIONS OR FOR PERSONS WHO FALL INTO SPECIAL POPULATIONS, SEE THE HIGH-RISK INDICATION TABLE (FIGURE 3).)

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 below. To determine minimum intervals between doses, see xxxxxxxx (Figure x). For more detailed information on vaccination of children with special medical or other risk conditions, see xxxxxx (Figure x). Each check mark (✓) indicates a single dose of vaccine.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16-18 yrs
Hepatitis B ¹ (HepB)	<-1 st dose->	<-2 nd dose->			<-3 rd dose->											
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			<-1 st dose->	<-2 nd dose->	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP: <7 yrs)			<-1 st dose->	<-2 nd dose->	<-3 rd dose->			<-4 th dose->				<-5 th dose->				
Tetanus, diphtheria & acellular pertussis ⁴ (Tdap: >7 yrs) (Tdap)														(Tdap)		
<i>Haemophilus influenzae</i> type b ⁵ (Hib)			<-1 st dose->	<-2 nd dose->	See footnote 5		<-3 rd dose->									
Pneumococcal ⁶ (PCV)			<-1 st dose->	<-2 nd dose->	<-3 rd dose->		<-4 th dose->									
Pneumococcal ⁶ (PPSV)																
Poliovirus ⁷ (IPV) (<18 years)			<-1 st dose->	<-2 nd dose->	<-3 rd dose->							<-4 th dose->				
Influenza ⁸ (TIV, LAIV)					Annual vaccination (TIV only)						Annual vaccination (TIV or LAIV)					
Measles, mumps, rubella ⁹ (MMR)							<-1 st dose->					<-2 nd dose->				
Varicella ¹⁰ (VAR)							<-1 st dose->					<-2 nd dose->				
Hepatitis A ¹¹ (HepA)							(2-dose series)									
Human Papillomavirus ¹² (HPV2: females only; HPV4: males and females)														(3-dose series)		
Meningococcal ¹³ (MCV4-D >9 mos.; MCV4-CRM: >2 yrs.)							(MCV4-D only)							<-1 st dose->		<-2 nd dose->

Range of recommended ages for all children
Range of recommended ages for catch-up immunization
Range of recommended ages for certain high-risk groups
Range of recommended ages for all children and certain high-risk groups
Not recommended

This schedule includes recommendations in effect as of (month) (day), 2012. 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). 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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Findings: Proposed 2013 Schedule

- **Option 4, “1st dose, 2nd dose” version (with arrows) was preferred.**
 - Perceived as more self evident, helpful to new clinicians.
 - Provided more information than “1 dose” version.
 - Reaction to blank boxes varied– simple but information is lost.

“I like this a lot. It’s actually very helpful.”

“It’s less ambiguous,.”

New Schedule: 0-18 years Combination

FIGURE 1. Recommended immunization schedule for persons aged 0 through 18 years - 2013.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2); FOR PERSONS WITH HIGH-RISK CONDITIONS OR FOR PERSONS WHO FALL INTO SPECIAL POPULATIONS, SEE THE HIGH-RISK INDICATION TABLE (FIGURE 3).)

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 below. To determine minimum intervals between doses, see xxxxxxxx (Figure x). For more detailed information on vaccination of children with special medical or other risk conditions, see xxxxxx (Figure x). Each check mark (✓) indicates a single dose of vaccine.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16-18 yrs
Hepatitis B ¹ (HepB)	✓	✓					✓									
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			✓	✓	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP: <7 yrs)		✓	✓	✓				✓				✓				
Tetanus, diphtheria & acellular pertussis ⁴ (Tdap: >7 yrs) (Tdap)														✓ (Tdap)		
<i>Haemophilus influenzae</i> type b ⁵ (Hib)		✓	✓	✓	See footnote 4		✓									
Pneumococcal ⁶ (PCV)		✓	✓	✓			✓									
Pneumococcal ⁷ (PPSV)																
Poliovirus ⁸ (IPV) (<18 years)		✓	✓				✓					✓				
Influenza ⁹ (TIV; LAIV)					Annual vaccination (TIV only)			Annual vaccination (TIV or LAIV)								
Measles, mumps, rubella ¹⁰ (MMR)							✓					✓				
Varicella ¹⁰ (VAR)							✓									
Hepatitis A ¹¹ (HepA)								✓ ✓ (2-dose series)								
Human Papillomavirus ¹² (HPV2: females only; HPV4: males and females)														✓ ✓ ✓ (3-dose series)		
Meningococcal ¹³ (MCV4-D >9 mos.; MCV4-CRM: >2 yrs.)														✓		✓

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection

Catch-up vaccination recommended if prior dose(s) delayed

Range of recommended ages for children with high-risk medical conditions (see figure x for detailed recommendations)

Range of recommended ages for all children and certain high-risk groups

Hatch mark interpreted as timeframe not to vaccinate.

This schedule includes recommendations in effect as of (month) (day), 2012. 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). 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]).

This schedule is approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

Findings: New Schedule

- A few interpreted hatching of HepA box (2-18 years) as indication that vaccination was not recommended during that time.

*“I find the hatch marks kind of confusing
...where nothing is supposed to happen.”*

Footnotes — Recommended immunization schedule for persons aged 0 through 18 years—United States, 2013

For further guidance on the use of the vaccines mentioned below, see: <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm>.

- Hepatitis B (HepB) vaccine.** (Minimum age: birth)
Routine vaccination:
 - At birth.
 - Administer monovalent HepB to all newborns before hospital discharge.
 - For infants born to hepatitis B surface antigen (HBsAg)-positive mothers, administer HepB vaccine and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) 1 to 2 months after completion of the HepB series, at age 9 through 18 months (preferably at the next well-child visit).
 - If mother's HBsAg status is unknown, within 12 hours of birth administer HepB vaccine for all infants regardless of birth weight. For infants weighing < 2000 grams, administer HBIG in addition to HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if she is HBsAg-positive, also administer HBIG for infants weighing > 2000 grams (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 vaccine should be used for doses administered before age 6 weeks.
 - Infants who did not receive a birth dose should receive 3 doses of a HepB-containing vaccine on a schedule of 0, 1 to 2 months, and 6 months starting as soon as feasible. (See Figure 2.)
 - The minimum interval between dose 1 and dose 2 is 4 weeks and between dose 2 and 3 is 6 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.
 - Administration of a total of 4 doses of HepB vaccine is recommended when a combination vaccine containing HepB is administered after the birth dose.**Catch-up vaccination:**
 - Unvaccinated persons aged 7 years and older should complete a 3-dose series.
 - A 2-dose series (doses separated by at least 4 months) of adult formulation Recombivax HB is licensed for use in children aged 11 through 15 years.
 - For other catch-up issues, see Figure 2.
- Rotavirus (RV) vaccine.** (Minimum age: 6 weeks for both RV-1 (Rotarix) and RV-5 (RotaTeq))
Routine vaccination:
 - Administer a series of RV vaccine to all infants as follows:
 - 1. If RV-1 is used, administer a 2-dose series at 2 and 4 months of age.
 - 2. If RV-5 is used, administer a 3-dose series at ages 2, 4, and 6 months.
 - If any dose in series was RV5 or vaccine product is unknown for any dose in the series, a total of 3 doses of RV vaccine should be administered.**Catch-up vaccination:**
 - The maximum age for the first dose in the series is 14 weeks, 6 days.
 - Vaccination should not be initiated for infants aged 15 weeks, 0 days or older.
 - The maximum age for the final dose in the series is 8 months, 0 days.
 - If RV-1 (Rotarix) is administered for the first and second doses, a third dose is not indicated.
 - For other catch-up issues, see Figure 2.
- Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine.** (Minimum age: 6 weeks)
Routine vaccination:
 - Administer a series of DTaP vaccine at ages 2, 4, 6, and 15-18 months, with a booster at age 4-6 years. The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.**Catch-up vaccination:**
 - The fifth dose of DTaP is not necessary if the fourth dose was administered at age 4 years or older.
 - For other catch-up issues, see Figure 2.
- Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine.**
Routine vaccination:
 - Administer 1 dose of Tdap vaccine to all adolescents aged 11-12 years.
 - Tdap can be administered regardless of the interval since the last tetanus and diphtheria toxoid-containing vaccine.**Catch-up vaccination:**
 - Persons aged 7 through 10 years who are not fully immunized with the childhood DTaP vaccine series, should receive Tdap vaccine as the first dose in the catch-up series; if additional doses are needed, use Td vaccine. For these children, an adolescent Tdap vaccine should not be given.
 - 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.
 - An inadvertent dose of Tdap vaccine administered to children ages 7 through 10 years can count as part of the catch-up series. This dose can count as the adolescent Tdap dose, or the child can later receive a Tdap booster dose at age 11-12 years.
 - For other catch-up issues, see Figure 2.
- Haemophilus influenzae type b (Hib) conjugate vaccine.** (Minimum age: 6 weeks)
Routine vaccination:
 - Administer 3 Hib vaccine primary series and a booster dose to all infants. The primary series should be administered at 2, 4, and 6 months of age; however, if PRP-OMP (PedvaxHib or Comvax) is administered at 2 and 4 months of age, a dose at age 6 months is not indicated. One booster dose should be administered at age 12 through 15 months.
 - Hibert (PRP-T) should only be used for the booster (final) dose in children aged 12 months through 4 years, who have received at least one dose of Hib.**Catch-up vaccination:**
 - If dose 1 was administered at ages 12-14 months, administer booster (as final dose) at least 8 weeks after dose 1.
 - If the first 2 doses were PRP-OMP (PedvaxHib or Comvax), and were 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, regardless of Hib vaccine (PRP-T or PRP-OMP) used for first dose.
 - For unvaccinated children ages 15 months or older, administer only 1 dose.
 - For other catch-up issues, see Figure 2.**Vaccination of Persons with high-risk conditions:**
 - Hib vaccine is not routinely recommended for patients over 5 years of age. However one dose of Hib vaccine should be administered to unvaccinated or partially vaccinated persons aged 5 years or older who have sickle cell disease, leukemia, malignant neoplasms, anatomic/functional asplenia, human immunodeficiency virus (HIV) infection, or other immunocompromising conditions.
- Pneumococcal conjugate vaccine.** (Minimum age: 6 weeks)
Routine vaccination:
 - Administer a series of PCV13 vaccine at ages 2, 4, 6 months with a booster at age 12-15 months.
 - For children ages 14 through 59 months who have received an age-appropriate series of 7-valent PCV (PCV7), administer a single supplemental dose of 13-valent PCV (PCV13).**Catch-up vaccination:**
 - Administer 1 dose of PCV13 to all healthy children aged 24 through 59 months who are not completely vaccinated for their age.
 - For other catch-up issues, see Figure 2.**Vaccination of Persons with high-risk conditions:**
 - For children aged 24 through 71 months with certain underlying medical conditions (see footnote 6c), 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 may be administered to previously unvaccinated 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), available at <http://www.cdc.gov/mmwr/pdf/mm5911.pdf>.
 - Administer PPSV23 at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions (see footnotes 6b and 6c).
- Pneumococcal polysaccharide vaccine (PPSV23).** (Minimum age: 2 years)
Vaccination of Persons with high-risk conditions:
 - Administer PPSV23 at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions (see footnote 6c). A single re-vaccination with PPSV23 should be administered after 5 years to children with anatomic/functional asplenia or an immunocompromising condition.
- Medical conditions for which PPSV23 would be indicated in children aged 2 years and older and for use of PCV13 in children < 6 years of age:**
 - Immunocompromised children with: Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), Chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy), Diabetes mellitus, 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.

For further guidance on the use of the vaccines mentioned below, see: <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm>.

- Inactivated poliovirus vaccine (IPV).** (Minimum age: 6 weeks)
Routine vaccination:
 - Administer a series of IPV at ages 2, 4, 6-18 months, with a booster at age 4-6 years. The final dose in the series should be administered on or after the fourth birthday and at least 6 months after the previous dose.**Catch-up vaccination:**
 - In the first 6 months of life, minimum age and minimum intervals are only recommended if the person is at risk for imminent exposure to circulating poliovirus (i.e., travel to a polio-endemic region or during an outbreak).
 - If 4 or more doses are administered before age 4 years, an additional dose should be administered at age 4 through 6 years.
 - A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.
 - If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.
 - IPV is not routinely recommended for U.S. residents aged 18 years or older.
 - For other catch-up issues, see Figure 2.
- Influenza vaccine.** (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])
Routine vaccination:
 - Administer influenza vaccine annually to all children beginning at age 6 months. For most healthy, nonpregnant persons aged 2 through 49 years, either LAIV or TIV may be used. However, LAIV should NOT be administered to some persons, including 1) those with asthma, 2) children 2 through 4 years who had wheezing in the past 12 months, or 3) those 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).
 - For children aged 6 months through 8 years:
 - For the 2012-13 season, administer 2 doses (separated by at least 4 weeks) to children who are receiving influenza vaccine for the first time.
 - For additional guidance, follow dosing guidelines in the 2012 ACIP influenza vaccine recommendations, MMWR 2012; 61: 613-618 (RR-32), available at <http://www.cdc.gov/mmwr/pdf/mm6132.pdf>.
 - For the 2013-14 season, follow dosing guidelines in the 2013 ACIP influenza vaccine recommendations.
 - Administer 1 dose to persons aged 9 years and older.
- Measles, mumps, and rubella (MMR) vaccine.** (Minimum age: 12 months)
Routine vaccination:
 - Administer the first dose of MMR vaccine at age 12 through 15 months, and the second dose at age 4-6 years. The second dose may be administered before age 4 years, provided at least 4 weeks have elapsed since the first dose.
 - Administer one dose of MMR vaccine to infants aged 6 through 11 months before departure from the United States for international travel. These children should be re-vaccinated with 2 doses of MMR vaccine, the first at age 12 through 15 months (12 months if the child remains in an area where disease risk is high) and the second dose at least 4 weeks later.
 - Administer two doses of MMR vaccine to children aged ≥12 months, before departure from the United States for international travel. The first dose should be administered on or after age 12 months and the second dose at least 4 weeks later.**Catch-up vaccination:**
 - Ensure that all school-aged children and adolescents have had 2 doses of MMR vaccine; the minimum interval between the 2 doses is 4 weeks.
- Varicella (VAR) vaccine.** (Minimum age: 12 months)
Routine vaccination:
 - Administer the first dose of VAR vaccine at age 12 through 15 months, and the second dose at age 4 through 6 years. The second dose may be administered before age 4 years, provided at least 3 months have elapsed since the first dose. If the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid.**Catch-up vaccination:**
 - 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 children aged 7 years 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.
- Hepatitis A vaccine (HepA).** (Minimum age: 12 months)
Routine vaccination:
 - Initiate the 2-dose HepA vaccine series to children between ages 12 through 23 months; separate the 2 doses by 6 to 18 months.
 - Children who have received one dose of HepA vaccine prior to 24 months of age, should receive a second dose 6 to 18 months after the first dose.
 - For any person 2 years and older who has not already received the complete HepA vaccine series, 2 doses of HepA vaccine separated by 6 to 18 months may be administered if immunity against hepatitis A virus infection is desired.**Catch-up vaccination:**
 - The minimum interval between the two doses is 6 months.**Special populations:**
 - Administer 2 doses of Hep A vaccine to persons older than 23 months who live in areas where vaccination programs target older children, or who are at increased risk for infection. See MMWR 2006;55(No. RR-7), available at <http://www.cdc.gov/mmwr/pdf/mm5507.pdf>.
- Human papillomavirus (HPV) vaccines.** (Gardasil and HPV2 [Cervarix]). (Minimum age: 9 years)
Routine vaccination:
 - Administer 3-3-dose series of HPV vaccine to all adolescents aged 11-12 years. Either HPV4 or HPV2 may be used with females, and only HPV4 may be used with males.
 - 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).**Catch-up vaccination:**
 - Administer the vaccine series to females (either HPV2 or HPV4) and males (HPV4) at age 13 through 18 years if not previously vaccinated.
 - Use recommended routine dosing intervals (see above) for vaccine series catch-up.
- Meningococcal conjugate vaccines, quadrivalent (MCV4).** Minimum age: 2 months for HibMenCY, 9 months for MenaCIV (MCV4-D), 2 years for Menveo (MCV4-CRM).
Routine vaccination:
 - Administer MCV4 vaccine at age 11-12 years, with a booster dose at age 16 years.
 - 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: 1018-1019 (RR-30) available at: <http://www.cdc.gov/mmwr/pdf/mm6030.pdf>.
 - For children aged 9 months through 10 years with high-risk conditions, see below.**Catch-up vaccination:**
 - Administer MCV4 vaccine at age 13 through 18 years if 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 from the preceding dose.
 - If the first dose is administered at age 16 years or older, a booster dose is not needed.
 - For other catch-up issues, see Figure 2.**Vaccination of Persons with high-risk conditions:**
 - For children <18 months with persistent complement component deficiency or anatomic/functional asplenia, administer an infant series of HibMenCY at 2, 4, 6, and 12-15 months.
 - For children 19 through 23 months with persistent complement component deficiency, administer 2 primary doses of MCV4-D, at least 8 weeks apart.
 - For children >= 24 months with persistent complement component deficiency or functional/anatomic asplenia, who have not received a complete series of HibMenCY or MCV4-D, administer 2 primary doses of either MCV4. If MCV4-D (MenaCIV) is administered to a child with asplenia, do not administer MCV4-D until at least 4 weeks after the completion of all PCV13 doses. See MMWR 2011; 60: 1391-1392 (RR-40), available at <http://www.cdc.gov/mmwr/pdf/mm6040.pdf>.
 - For children >= 9 months old who are residents of or travelers to countries in the Meningitis Belt or the Hajj, administer an age appropriate formulation and series of MCV4 for protection against serogroups A and W-135. Prior receipt of HibMenCY is NOT sufficient for children traveling to the Meningitis Belt or the Hajj. See MMWR 2011; 60: 1391-1392 (RR-40), available at <http://www.cdc.gov/mmwr/pdf/mm6040.pdf>.
 - For children who are present during outbreaks caused by a vaccine serogroup, administer or complete an age and formulation appropriate series of HibMenCY or MCV4.
 - For booster doses among persons with high-risk conditions refer to <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm#mening>.

Additional Information

- For contraindications and precautions to use of a vaccine and for additional information regarding that vaccine, vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement available online at <http://www.cdc.gov/vaccines/pubs/acip-list.htm>.
- For the purposes of calculating intervals between doses, 4 weeks = 28 days. Intervals of 4 months or greater are determined by calendar months.
- Information on travel vaccine requirements and recommendations is available at <http://www.cdc.gov/travel/page/vaccinations.htm>.
- For vaccination of persons with primary and secondary immunodeficiencies, see Table 13. Vaccination of persons with primary and secondary immunodeficiencies, General Recommendations on Immunization (ACIP), available at http://www.cdc.gov/mmwr/preview/mmwrmm6002a1.htm?ts_cd=r6002a1_e, and American Academy of Pediatrics. Passive Immunization. In: Pickering LK, Baker CJ, Kimberlin DW, Long SS eds. Red book: 2012 report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics.

Findings: Proposed 2013 Schedule

- ❑ **Footnotes being separate was not an issue.**
 - Bigger perceived as better, more easily read.
 - Hard copy typically posted so can have one near the other.
 - No strong preference for alphabetized v. order in table
 - Some discussion, confusion: 28 days v. a month

“Both the table and the footnotes are larger.”

“Easier to read...understand.”

“I think I’d rather have it on two separate pages.”

Findings: Proposed 2013 Schedule

- **High risk table was well received.**
 - Important information in a new, convenient format
- **Version 2 of high risk table was typically preferred.**
 - Vertical lines and brighter colors made reading easier

“This is actually very helpful.”

“[Version 2 is]...less busy. I like that.”

“I like the bright yellow better.”

High Risk Chart Version 1

Version 1 shown in Baltimore and St. Louis.

The shaded box within the row for each vaccine seemed busy for participants.

Figure 3. Vaccines that might be indicated for persons aged 0 through 18 years based on medical and other indications.
All Vaccines that are universally or routinely recommended should be given to patients in these categories (if not contraindicated). Please consult Figures 1 and 2 for age and dosing recommendations. See detailed vaccine specific ACIP recommendations at <http://www.cdc.gov/vaccines/pubs/ACIP-18a.htm>.

INDICATION ▶	Immunocompromising Conditions (For primary immunodeficiency syndromes, for example, X-linked agammaglobulinemia, DiGeorge syndrome, please see footnotes)			Asplenia	CSF leaks, cochlear implants	Heart disease, chronic lung, renal and liver disease, diabetes mellitus	Pregnancy
	Complement component deficiencies	HIV/AIDS	Malignant neoplasm, solid organ transplant, immunosuppressive or radiation therapy (For HSCT patients, see footnotes)				
Hepatitis B							
Rotavirus ¹			See footnote 1				
DTaP							
Hb ²						See footnote 2	
PCV13 ³						See footnote 3	
PPSV23 ³						2 years and older see footnote 3	
IPV ⁴							See footnote 4
Influenza ⁵					TIV annually LAIV contraindicated		TIV LAIV contraindicated
MMR & Varicella ⁶					See footnote 6		
Hepatitis A ⁷						12 months through 23 months 24 months and older (see footnote 7)	See footnote 7
Tdap ⁸						8 months and older previously unvaccinated	2 years and older
HPV ⁹							Preferably at > 20 weeks gestation (See footnote 10)

Abbreviations: AIDS = acquired immunodeficiency syndrome; Hb = Hemophilus influenzae type b; HIV = human immunodeficiency virus; IG = immunoglobulin; LAIV = live, attenuated influenza vaccine; MMR = measles, mumps, and rubella; PPSV = pneumococcal polysaccharide vaccine; TIV = trivalent inactivated influenza vaccine.
Source: Adapted from Table 13. Vaccination of persons with primary and secondary immunodeficiencies. General Recommendations on Immunization (ACIP). <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5002a1.htm>, <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5002a1.htm>, and American Academy of Pediatrics. *Pediatric Immunization*. In: Pickering GK, Baker CL, Kimmeln DW, Long SS, eds. *Red book: 2012 report of the Committee on Infectious Diseases*. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics.

General guidelines on immunodeficiency and use of live virus vaccines are available in the 2012 Red Book, Table XXX and in the General Recommendations on Immunization at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5002.pdf>. *Vaccination of Hematopoietic Stem Cell Transplant (HSCT) recipients: HCT recipients should be revaccinated routinely after HCT, regardless of the source of the transplanted stem cells. Most inactivated vaccines should be initiated 6 months after the HCT. See <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5002.pdf>.

- Rotavirus (RV) vaccines.**
 - Consultation with an immunologist or infectious disease specialist is advised for infants with known or suspected altered immunocompetence before rotavirus vaccine is administered. Contraindications to use of Rotavirus vaccine include a prior history of intussusception in the patient and infants with severe combined immunodeficiency syndrome (SCID). See <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5802.pdf> and <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5922a3.htm>.
- Hemophilus influenzae type b (Hib) conjugate vaccine.**
 - Hb vaccine is not routinely recommended for patients over 5 years of age. However one dose of Hib vaccine should be administered to unvaccinated or partially vaccinated persons ages 5 years or older who have sickle cell disease, leukemia, malignant neoplasms, anatomical functional asplenia, human immunodeficiency virus (HIV) infection, or other immunocompromising conditions.
- Pneumococcal vaccines.**
 - For children aged 24 through 71 months with underlying medical conditions*, administer 1 dose of PCV if 3 doses of PCV were received previously, or administer 2 doses of PCV if at least 8 weeks apart if fewer than 3 doses of PCV were received previously.
 - A single dose of PCV may be administered to certain children aged 6 through 18 years who have functional or anatomical asplenia, HIV infection or other immunocompromising condition, cochlear implant or CSF leak. See MMWR 2010:59 (No. RR-11).
 - 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 with PPSV should be administered after 5 years to children with anatomical functional asplenia or an immunocompromising condition. See MMWR 2010:59 (No. RR-11).
 - Immunocompetent children with chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy), diabetes mellitus, cerebrospinal fluid leaks, cochlear implant, children with functional or anatomical 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.
- Inactivated poliovirus vaccine (IPV).**
 - Pregnancy: May be administered if needed.
- Influenza vaccine(s).**
 - LAIV should not be administered to some persons, including 1) persons with asthma, 2) children 2 through 4 years who had wheezing in the past 12 months, or 3) persons 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-6), available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5906.pdf>.
- Measles, mumps, and rubella (MMR) vaccine and Varicella (VAR) vaccine.**
 - HIV-infected children should receive IG after exposure to measles. HIV-infected children 0 through 12 years of age may receive measles vaccine if CD4+ T-lymphocyte percentage is ≥ 15%. HIV-infected adolescents 13 years and older may receive measles vaccine if CD4+ T-lymphocyte percentage is ≥ 14%. HIV-infected children 0 through 9 years of age with CD4+ T-lymphocyte percentage > 15% may receive the single antigen varicella vaccine. HIV-infected persons aged 9 years and older with CD4+ T-lymphocytes count > 200 cells/μl may receive the single antigen varicella vaccine. MMRV vaccine should not be used in HIV-infected persons. For more details see: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5005391.htm> and <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5604.pdf>.
- Hepatitis A vaccine (HepA).**
 - Administer 2 doses of HepA vaccine to persons 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/preview/mmwrhtml/mm5507.pdf>. Persons at increased risk for infection include: 1) Persons Traveling to or Working in Countries That Have High or Intermediate Endemicity of Infection, 2) MSM, 3) Users of Injection and Noninjection Drugs, 4) Persons Who Have Occupational Risk for Infection, 5) Persons with Crohn-Disease Disorders, 6) Persons with Chronic Liver Disease.
 - Pregnancy: May be used if benefit outweighs risk.
- Hemophilus influenzae type b conjugate vaccine, quadrivalent (MCV4).**
 - 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 5 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) anatomical functional asplenia, administer 2 primary doses of either MCV4 at least 8 weeks apart. For children with anatomical functional asplenia, if MCV4-D late clinical is used, administer at a minimum age of 2 years and at least 4 weeks after completion of all PCV doses. Adolescents aged 11 through 18 years with human immunodeficiency virus (HIV) infection should receive a 2-dose primary/secondary series of MCV4, at least 8 weeks apart.
 - See MMWR 2011:50:72-6, available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5003.pdf>, and Vaccines for Children Program resolution No.5111-1, available at <http://www.cdc.gov/vaccines/imz/downloads/resolutions/5111-1/mmwr-mcv.pdf>, and MMWR 2011:50:1391-2, available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5013.pdf>, for further guidance, including vaccination guidelines.
- Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine.**
 - Pregnancy: Administer Tdap during pregnancy, preferably during the third or late second trimester (after 20 weeks' gestation). If not administered during pregnancy, Tdap should be administered immediately postpartum.
- Human papillomavirus (HPV) vaccine(s).**
 - Pregnancy: Not recommended.

Participants commented on making vertical lines solid in order to follow illness vertically down the page.

High Risk Chart Version 2

Figure 3. Vaccines that might be indicated for persons aged 0 through 18 years based on medical and other indications.
 All vaccines that are universally or routinely recommended should be given to patients in these categories (if not contraindicated). Please consult Figures 1 and 2, for age and dosing recommendations. See detailed vaccine specific ACIP recommendations at <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm>.

INDICATION ▶	Immunocompromising Conditions (For primary immunodeficiency syndromes, for example, X-linked agammaglobulinemia, DiGeorge syndrome, please see footnotes)			Asplenia	CSF leaks, cochlear implants	Heart disease, chronic lung, renal and liver disease, diabetes mellitus	Pregnancy
	Complement component deficiencies	HIV/AIDS	Malignant neoplasm, solid organ transplantation, immunosuppressive or radiation therapy (For HSCT patients, see footnotes)				
Hepatitis B							
Rotavirus ¹	See footnote 1						
DTaP							
Hib ²	See footnote 2						
PCV13 ³	See footnote 3						
PPSV23 ⁴	2 years and older see footnote 3						
IPV ⁵	TIV annually						See footnote 4
Influenza ⁶	LAIV contraindicated						LAIV contraindicated
MMR & Varicella ⁷	See footnote 8						
Hepatitis A ⁸	12 months through 23 months 24 months and older (see footnote 7)						See footnote 7
MCV4 ⁹	9 months and older previously unvaccinated						
Tdap ¹⁰							Preferably at > 20 weeks gestation
HPV ¹¹							See footnote 10

 Administer as per routine schedule based on patient's age, (Figure 1)
 Administer under certain circumstances
 Not Indicated
 Contraindicated
 Precaution, see footnote

Abbreviations: AIDS = acquired immunodeficiency syndrome; Hib = Haemophilus influenzae type b; HIV = human immunodeficiency virus; IG = immunoglobulin; LAIV = live, attenuated influenza vaccine; MMR = measles, mumps, and rubella; PPSV = pneumococcal polysaccharide vaccine; TIV = trivalent inactivated influenza vaccine.

Source: Adapted from Table 13. Vaccination of persons with primary and secondary immunodeficiencies. General Recommendations on Immunization (ACIP). http://www.cdc.gov/mmwr/preview/mmwrhtml/mm502a1.htm?_id=502a1_1, and American Academy of Pediatrics. Passive Immunization. In: Pickering LK, Kotlerkin DW, Long SS eds. Red book: 2012 report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics.

General guidelines on immunodeficiency and use of live virus vaccines are available in the 2012 Red Book, Table XXX and in the General Recommendations on Immunization at <http://www.cdc.gov/mmwr/pdf/mm5002.pdf>. **Vaccination of Hematopoietic Stem Cell Transplant (HSCT) recipients should be initiated routinely after HCT, regardless of the source of the transplanted stem cells. Most inactivated vaccines should be initiated 6 months after the HCT. See <http://www.cdc.gov/mmwr/pdf/mm5002.pdf>.

- Rotavirus (RV) vaccines.**
 - Consultation with an immunologist or infectious disease specialist is advised for infants with known or suspected altered immunocompetence before rotavirus vaccine is administered. Contraindications to use of Rotavirus vaccine include a prior history of intussusception in the patient and infants with severe combined immunodeficiency syndrome (SCID). See <http://www.cdc.gov/mmwr/PDF/mm5002.pdf> and http://www.cdc.gov/mmwr/preview/mmwrhtml/mm522a3.htm?_id=mm522a3_e10d9d9a.
- Haemophilus influenzae type b (Hib) conjugate vaccine.**
 - Hib vaccine is not routinely recommended for patients over 5 years of age. However one dose of Hib vaccine should be administered to unvaccinated or partially vaccinated persons aged 5 years or older who have sickle cell disease, leukemia, malignant neoplasms, anatomic/functional asplenia, human immunodeficiency virus (HIV) infection, or other immunocompromising conditions.
- Pneumococcal vaccines.**
 - For children aged 24 through 71 months with underlying medical conditions¹, administer 1 dose of PCV if 3 doses of PCV were received previously, or administer 2 doses of PCV at least 8 weeks apart if fewer than 3 doses of PCV were received previously.
 - A single dose of PCV may be administered to certain 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;58 (No. RR-11).
 - 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 with PPSV should be administered after 5 years to children with anatomic/functional asplenia or an immunocompromising condition. See MMWR 2010;58 (No. RR-11).
 - Immunocompetent children with Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), Chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy), Diabetes mellitus, Cerebrospinal fluid leaks, Cochlear implant, Children with functional or anatomic asplenia (Sickle cell disease and other hemoglobinopathies, congenital or acquired 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.
- Inactivated poliovirus vaccine (IPV).**
 - Pregnancy: May be administered if needed.
- Influenza vaccines.**
 - LAIV should not be administered to some persons, including 1) persons with asthma, 2) children 2 through 4 years who had wheezing in the past 12 months, or 3) persons who have any other underlying medical conditions that predispose them to influenza complications. For all other contraindications to use of LAIV, see MMWR 2010;58 (No. RR-8), available at <http://www.cdc.gov/mmwr/pdf/mm5008.pdf>.
- Measles, mumps, and rubella (MMR) vaccine and Varicella (VAR) vaccine.**
 - HIV-infected children should receive IG after exposure to measles. HIV-infected children 0 through 12 years of age may receive measles vaccine if CD4+ T-lymphocyte percentage is ≥15%. HIV-infected adolescents 13 years and older may receive measles vaccine if CD4+ T-lymphocyte percentage is ≥14%. HIV-infected children 0 through 8 years of age with CD4+ T-lymphocyte percentage ≥15% may receive the single antigen varicella vaccine. HIV-infected persons aged 9 years and older with CD4+ T-lymphocytes count >200 cells/μL may receive the single antigen varicella vaccine.
 - MMRV vaccine should not be used in HIV-infected persons. For more details see: <http://www.cdc.gov/mmwr/preview/mmwrhtml/00053391.htm?00003185.htm> and <http://www.cdc.gov/mmwr/pdf/mm5004.pdf>.
- Hepatitis A vaccine (HepA).**
 - Administer 2 doses of Hep A vaccine to persons 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/mm5007.pdf>. Persons at increased risk for infection include: 1) Persons traveling to or working in Countries That Have High or Intermediate Endemicity of Infection, 2) MSM, 3) Users of Injection and Noninjection Drugs, 4) Persons Who Have Occupational Risk for Infection, 5) Persons with Clotting-Factor Disorders, 6) Persons with Chronic Liver Disease.
 - Pregnancy: May be used if benefit outweighs risk.
- Meningococcal conjugate vaccines, quadrivalent (MCV4).**
 - 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, MCV4-D (Menactra) is used, administer at a minimum age of 2 years and at least 4 weeks after completion of all PCV doses. 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;50:72-6, available at <http://www.cdc.gov/mmwr/pdf/mm50073.pdf>, and Vaccines for Children Program resolution No.0111-1, available at <http://www.cdc.gov/vaccines/programs/vc/downloads/resolutions/06-11mening.pdf>, and MMWR 2011;50:1391-2, available at <http://www.cdc.gov/mmwr/pdf/mm50139.pdf>, for further guidance on vaccination resolution guidelines.
- Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine.**
 - Pregnancy: Administer Tdap during pregnancy, preferably during the third or late second trimester (after 20 weeks' gestation). If not administered during pregnancy, Tdap should be administered immediately postpartum.
- Human papillomavirus (HPV) vaccines.**
 - Pregnancy: Not recommended.

Participants suggested adding an example of sickle cell under asplenia for consistency.

Findings: New Schedule

- **Primary care physicians feel responsible for vaccinating high-risk patients.**
 - Typically consult specialist.
 - Need for caution with live-virus vaccines widely recognized.
 - Some more confident with administering certain vaccines (e.g., tetanus) without consulting specialist.
 - Some defer to specialist for vaccines not covered by VFC(e.g., pneumococcal polysaccharide).

“I would never make that decision on my own.”

“My responsibility...not upon the disease specialist.”

“The specialist always sends them back to their primary.”

Recommendations from ORISE – 0-18 years Recommended Schedule

- ❑ **Use “1st dose, 2nd dose” version with arrows.**
- ❑ **Remove catch-up and high risk information from this 0-18 year schedule.**

Proposed 2013 Schedule: Option 4

FIGURE 1. Recommended immunization schedule for persons aged 0 through 18 years - 2013.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2); FOR PERSONS WITH HIGH-RISK CONDITIONS OR FOR PERSONS WHO FALL INTO SPECIAL POPULATIONS, SEE THE HIGH-RISK INDICATION TABLE (FIGURE 3).

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 below. To determine minimum intervals between doses, see xxxxxxxx (Figure x). For more detailed information on vaccination of children with special medical or other risk conditions, see xxxxxx (Figure x). Each check mark (✓) indicates a single dose of vaccine.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16-18 yrs
Hepatitis B ¹ (HepB)	<-1 st dose->	<-2 nd dose->			<-3 rd dose->											
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			<-1 st dose->	<-2 nd dose->	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP: <7 yrs)			<-1 st dose->	<-2 nd dose->	<-3 rd dose->			<-4 th dose->				<-5 th dose->				
Tetanus, diphtheria & acellular pertussis ⁴ (Tdap: >7 yrs) (Tdap)														(Tdap)		
<i>Haemophilus influenzae</i> type b ⁵ (Hib)			<-1 st dose->	<-2 nd dose->	See footnote 5		<-3 rd dose->									
Pneumococcal ⁶ (PCV)			<-1 st dose->	<-2 nd dose->	<-3 rd dose->		<-4 th dose->									
Pneumococcal ⁶ (PPSV)																
Poliovirus ⁷ (IPV) (<18 years)			<-1 st dose->	<-2 nd dose->	<-3 rd dose->							<-4 th dose->				
Influenza ⁸ (TIV, LAIV)					Annual vaccination (TIV only)						Annual vaccination (TIV or LAIV)					
Measles, mumps, rubella ⁹ (MMR)							<-1 st dose->					<-2 nd dose->				
Varicella ¹⁰ (VAR)							<-1 st dose->					<-2 nd dose->				
Hepatitis A ¹¹ (HepA)							(2-dose series)									
Human Papillomavirus ¹² (HPV2: females only; HPV4: males and females)														(3-dose series)		
Meningococcal ¹³ (MCV4-D >9 mos.; MCV4-CRM: >2 yrs.)							(MCV4-D only)							<-1 st dose->		<-2 nd dose->

Range of recommended ages for all children
Range of recommended ages for catch-up immunization
Range of recommended ages for certain high-risk groups
Range of recommended ages for all children and certain high-risk groups
Not recommended

This schedule includes recommendations in effect as of (month) (day), 2012. 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). 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]).

This schedule is approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

Recommendations from ORISE – High Risk Chart

- ❑ **Use version 2 – with vertical lines and bright colors.**
- ❑ **Move footnotes to separate page to increase readability.**
- ❑ **Provide example under asplenia.**
 - Sickle cell disease?
- ❑ **Eliminate abbreviations.**

Recommendations from ORISE: Hyperlinks

- ❑ **Ensure that important information is included in footnotes.**
 - Majority are using hard copy.
- ❑ **Hyperlink footnotes to figures for ease of navigability.**

WG Proposal to ACIP

- ❑ **0-18 schedule to replace current 0-6 and 7-18 schedules:**
 - Version with 1st dose, 2nd dose
 - Highlight 4-6 and 11-12 year old columns
 - Hyperlink to footnotes
 - Replace the hatch bar on HepA row
 - Keep the green catch-up bars and purple high-risk bars
- ❑ **Combined footnotes – 2 pages**
- ❑ **No changes to the catch-up table for 2013**
- ❑ **Defer recommendation of high-risk indication table until 2014 pending further discussion on format and content**

FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2)).

Persons should 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 below. For information on catch-up for 3-dose series, see xxxxxxxxxx (Figure x). For more detailed information on vaccination of children with special medical or other risk conditions, see xxxxxxxx (Figure x). Each check mark indicates a dose of vaccine. School entry and adolescent vaccine age groups are highlighted.

	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs
	<-1 st dose->	<-2 nd dose->		<-3 rd dose->											
3-dose series)		<-1 st dose->	<-2 nd dose->	See footnote 2											
ular pertussis ³		<-1 st dose->	<-2 nd dose->	<-3 rd dose->		<-4 th dose->				<-5 th dose->					
lar pertussis ⁴													(Tdap)		
e b ⁵ (Hib)		<-1 st dose->	<-2 nd dose->	See footnote 5a		<-3 rd or 4 th dose, see footnote 5a->									
		<-1 st dose->	<-2 nd dose->	<-3 rd dose->		<-4 th dose->									
		<-1 st dose->	<-2 nd dose->	<-3 rd dose->							<-4 th dose->				
				Annual vaccination (TIV only)						Annual vaccination (TIV or LAIV)					
							<-1 st dose->					<-2 nd dose->			
							<-1 st dose->					<-2 nd dose->			
							<-2 dose series, see footnote 11->								
4: males and														(3-dose series)	
Y > 2 mos; M: > 2 yrs.)			see footnote 13										<-1 st dose->		

Recommended ages for catch-up immunization
 Range of recommended ages for certain high-risk groups
 Range of recommended ages during which Catch-up is encouraged and for certain high-risk groups
 Not routinely recommended

Recommendations in effect as of (month) (day), 2012. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of combination vaccines is generally preferred over separate injections of its equivalent component vaccines. Vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statements, 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) 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 on vaccine contraindications for vaccination is available from CDC online (<http://www.cdc.gov/vaccines>) or by telephone (800-CDC-INFO [800-232-4636]).

Current 2012 Schedule: 7-18 years

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

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 (females)	Complete 3-Dose Series	
Meningococcal ³		See footnote ³	Dose 1	Booster at 16 years old	Range of recommended ages for catch-up immunization
Influenza ⁴		1 Dose (yearly)			
Pneumococcal ⁵		see footnote ⁵			Range of recommended ages for certain high-risk groups
Hepatitis A ⁶		Complete 2-Dose Series			
Hepatitis B ⁷		Complete 3-Dose Series			
Inactivated Poliovirus ⁸		Complete 3-Dose Series			
Measles, Mumps, Rubella ⁹		Complete 2-Dose Series			
Varicella ¹⁰		Complete 2-Dose Series			

This schedule includes recommendations in effect as of February 11, 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. 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.
- Tdap should be substituted for a single dose of Td in the catch-up 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 can be administered regardless of the interval since the last

• For children aged 6 months through 8 years:

1. for the 2011-12 season, give 2 doses (separated by at least 4 weeks) to (a) those who are receiving influenza vaccine for the first time or (b) to those who did not receive at least 1 dose of the 2010-11 vaccine.
2. for the 2012-13 season, follow dosing guidelines in the 2012 ACIP Influenza vaccine recommendations.

5. Pneumococcal vaccines.

- A single dose of PCV may be administered to children aged 6 through 18 years who have functional or anatomic asplenia, HIV infection or

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	2–3 years	4–6 years	
Hepatitis B ¹	Hep B	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 ⁶		DTaP				DTaP	
<i>Haemophilus influenzae</i> type b ⁴				Hib	Hib	Hib ⁴		Hib						Range of recommended ages for certain high-risk groups
Pneumococcal ⁵				PCV	PCV	PCV		PCV				PPSV		
Inactivated poliovirus ⁵				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								Varicella		see footnote ⁹			Varicella	
Hepatitis A ¹⁰								Dose 1 ¹⁰				HepA Series		
Meningococcal ¹¹								MCV4 — see footnote ¹¹						

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. 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 $\geq 2,000$ 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 $\geq 2,000$ 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).

7. 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.

8. 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

WG Proposal to ACIP

- ❑ **0-18 schedule to replace current 0-6 and 7-18 schedules:**
 - Version with 1st dose, 2nd dose
 - Highlight 4-6 and 11-12 year old columns
 - Hyperlink to footnotes
 - Keep the green catch-up bars and purple high-risk bars
 - Replace the hatch bar on Hep A row
- ❑ **Combined footnotes – 2 pages**
- ❑ **No changes to the catch-up table for 2013**
- ❑ **Defer recommendation of high-risk indication table until 2014 pending further discussion on format and content**

Recommended Immunization Schedules for Persons Aged 0 Through 18 Years

UNITED STATES, 2013

This schedule includes recommendations in effect as of December 23, 2012. 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).

<http://www.vaers.hhs.gov>

The Recommended Immunization Schedules for
Persons Aged 0 Through 18 Years are approved by the

Advisory Committee on Immunization Practices
(www.cdc.gov/vaccines/recs/acip)

American Academy of Pediatrics
(<http://www.aap.org>)

American Academy of Family Physicians
(<http://www.aafp.org>)

Figure 1. Recommended immunization schedule for persons aged 0 through 18 years – 2013.

(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 below. To determine minimum intervals between doses, see xxxxxxxx (Figure x). For more detailed information on vaccination of children with special medical or other risk conditions, see xxxxxxxx (Figure x). Each check mark (✓) indicates a single dose of vaccine. School entry and adolescent vaccine age groups are highlighted.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16-18 yrs
Hepatitis B ¹ (HepB)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rotavirus ² (RV)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RV1 (2-dose series)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RV2 (2-dose series)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Diphtheria, tetanus, & acellular pertussis ³ (DTaP-4, 5 yrs)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tetanus, diphtheria, & acellular pertussis ³ (Tdap, >7 yrs) (Tdap)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Haemophilus influenzae type B ⁴ (Hib) (Comvax [®] , 2 yrs) (Comv)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Haemophilus influenzae type B ⁴ (Hib) (ProQuad [®] , 2 yrs) (ProQ)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pneumococcal ⁵ (PCV)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pneumococcal ⁵ (PPSV)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Poliovirus ⁶ (IPV)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Poliovirus ⁶ (OPV)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Influenza ⁷ (TIV, LAIV)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Measles, mumps, rubella ⁸ (MMR)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Measles, mumps, rubella ⁸ (MMRV)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Varicella ⁹ (VAR)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hepatitis A ¹⁰ (HepA)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Human Papillomavirus ¹¹ (HPV2; females only; HPV4; males and females)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Minicoccal ¹² (Minicoc) ¹³ > 2 mos; MCV4-D99 mcs; MCV4-CRM > 2 yrs)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

This schedule includes recommendations in effect as of (month) (day), 2012. 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 on the Immunization Schedule System (ISSS) on the Internet (<http://www.aafp.org>) or by telephone (800-332-7967). 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]).

This schedule is approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip/), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

NOTE: The above recommendations must be read along with the footnotes on pages 4-5 of this schedule.

FIGURE 2. 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 • 2013

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 (Figure 1) and the footnotes section of this document.

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	Birth	4 weeks	8 weeks and at least 16 weeks after first dose; minimum age for the final dose is 24 weeks		
Rotavirus ²	6 weeks	4 weeks	4 weeks ²		
Diphtheria, tetanus, pertussis ³	6 weeks	4 weeks	4 weeks	6 months	6 months ³
Haemophilus influenzae type B ⁴	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 ⁵ if current age is younger than 12 months 8 weeks (as final dose) ⁶ 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 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 ⁶	6 weeks	4 weeks	4 weeks	6 months ⁷ minimum age 4 years for final dose	
Meningococcal ¹²	9 months	8 weeks ¹³			
Measles, mumps, rubella ⁸	12 months	4 weeks			
Varicella ⁹	12 months	3 months			
Hepatitis A	12 months	6 months			
Tetanus, diphtheria/tetanus, diphtheria, pertussis ³	7 years ⁴	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 years	Routine dosing intervals are recommended ¹²			
Hepatitis A	12 months	6 months			
Hepatitis B	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Inactivated poliovirus ⁶	6 weeks	4 weeks	4 weeks ⁷	6 months ⁷	
Meningococcal ¹²	9 months	8 weeks ¹³			
Measles, mumps, rubella ⁸	12 months	4 weeks			
Varicella ⁹	12 months	3 months if person is younger than age 13 years 4 weeks if person is aged 13 years or older			

NOTE: The above recommendations must be read along with the footnotes on pages 4-5 of this schedule.

Footnotes — Recommended immunization schedule for persons aged 0 through 18 years—United States, 2013

For further guidance on the use of the vaccines mentioned below, see: <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm>.

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

Routine vaccination:

- All birth.
- Administer monovalent HepB to all newborns before hospital discharge.
- For infants born to hepatitis B surface antigen (HBsAg)-positive mothers, administer HepB vaccine and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) 1 to 2 months after completion of the HepB series, at age 9 through 18 months (preferably at the next well-child visit).
- If mother's HBsAg status is unknown, within 12 hours of birth administer HepB vaccine for all infants regardless of birth weight. For infants weighing < 2000 grams, administer HBIG in addition to HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if she is HBsAg-positive, also administer HBIG for infants weighing > 2000 grams (no later than age 1 week).

Do not follow the birth dose:

- The second dose should be administered at age 1 or 2 months. Monovalent HepB vaccine should be used for doses administered before age 6 weeks.
- Infants who did not receive a birth dose should receive 3 doses of a HepB-containing vaccine on a schedule of 0, 1 to 2 months, and 6 months starting as soon as feasible. (See Figure 2.)
- 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.
- Administration of a total of 4 doses of HepB vaccine is recommended when a combination vaccine containing HepB is administered after the birth dose.

Catch-up vaccination:

- Unvaccinated persons ages 7 years and older should complete a 3-dose series.
- A 2-dose series (doses separated by at least 4 months) of adult formulation Recombivax HB is licensed for use in children aged 11 through 15 years.
- For other catch-up issues, see Figure 2.

Rotavirus (RV) vaccines. (Minimum age: 6 weeks for both RV-1 (Rotarix) and RV-5 (RotaTaq).)

Routine vaccination:

- Administer a series of RV vaccine to all infants as follows:
 - If RV-1 is used, administer a 2-dose series at 2 and 4 months of age.
 - If RV-5 is used, administer a 3-dose series at ages 2, 4, and 6 months.
- If any dose in series was RV5 or vaccine product is unknown for any dose in the series, a total of 3 doses of RV vaccine should be administered.

Catch-up vaccination:

- The maximum age for the first dose in the series is 14 weeks, 6 days.
- Vaccination should not be initiated for infants aged 15 weeks, 0 days or older.
- The maximum age for the final dose in the series is 8 months, 0 days.
- If RV-1 (Rotarix) is administered for the first and second doses, a third dose is not indicated.
- For other catch-up issues, see Figure 2.

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

Routine vaccination:

- Administer a series of DTaP vaccine at ages 2, 4, 6, and 15-18 months, with a booster at age 4-6 years. The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.

Catch-up vaccination:

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

For other catch-up issues, see Figure 2.

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

Routine vaccination:

- Administer 1 dose of Tdap vaccine to all adolescents aged 11-12 years.
- Tdap can be administered regardless of the interval since the last tetanus and diphtheria toxoid-containing vaccine.

Catch-up vaccination:

- Persons aged 7 through 10 years who are not fully immunized with the childhood DTaP vaccine series, should receive Tdap vaccine as the first dose in the catch-up series; if additional doses are needed, use Td vaccine. For these children, an adolescent Tdap vaccine should not be given.
- 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.
- An inadvertent dose of Tdap vaccine administered to children ages 7 through 10 years can count as part of the catch-up series. This dose can count as the adolescent Tdap dose, or the child can later receive a Tdap booster dose at age 11-12 years.
- For other catch-up issues, see Figure 2.

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

Routine vaccination:

- Administer a Hib vaccine primary series and a booster dose to all infants. The primary series doses should be administered at 2, 4, and 6 months of age; however, if PRP-OMP (PedvaximHIB or Comvax) is administered at 2 and 4 months of age, a dose at age 6 months is not indicated. One booster dose should be administered at age 12 through 15 months.
- Hibertix (PRP-T) should only be used for the booster (final) dose in children aged 12 months through 4 years, who have received at least one dose of Hib.

Catch-up vaccination:

- If dose 1 was administered at ages 12-14 months, administer booster (as final dose) at least 8 weeks after dose 1.
- If the first 2 doses were PRP-OMP (PedvaximHIB or Comvax), and were 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, regardless of Hib vaccine (PRP-T or PRP-OMP) used for first dose.
- For unvaccinated children ages 15 months or older, administer only 1 dose.
- For other catch-up issues, see Figure 2.

Vaccination of Persons with high-risk conditions:

- Hib vaccine is not routinely recommended for patients over 5 years of age. However one dose of Hib vaccine should be administered to unvaccinated or partially vaccinated persons aged 5 years or older who have sickle cell disease, leukemia, malignant neoplasms, anatomic/functional asplenia, human immunodeficiency virus (HIV) infection, or other immunocompromising conditions.

6a. Pneumococcal conjugate vaccine. (Minimum age: 6 weeks)

Routine vaccination:

- Administer a series of PCV13 vaccine at ages 2, 4, 6 months with a booster at age 12-15 months.
- For children ages 14 through 59 months who have received an age-appropriate series of 7-valent PCV (PCV7), administer a single supplemental dose of 13-valent PCV (PCV13).

Catch-up vaccination:

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

Vaccination of Persons with high-risk conditions:

- For children aged 24 through 71 months with certain underlying medical conditions (see footnote 6c), 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 may be administered to previously unvaccinated 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-1), available at <http://www.cdc.gov/mmwr/pdf/mm105911.pdf>.
- Administer PPSV23 at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions (see footnotes 6b and 6c).

6b. Pneumococcal polysaccharide vaccine (PPSV23). (Minimum age: 2 years)

Vaccination of Persons with high-risk conditions:

- Administer PPSV23 at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions (see footnote 6c). A single revaccination with PPSV should be administered after 5 years to children with anatomic/functional asplenia or an immunocompromising condition.

6c. Medical conditions for which PPSV23 would be indicated in children aged 2 years and older and for use of PCV13 in children < 6 years of age:

- Immunocompetent children with: Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), Chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy), Diabetes mellitus, 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.

For further guidance on the use of the vaccines mentioned below, see: <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm>.

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

Routine vaccination:

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

Catch-up vaccination:

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

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

Routine vaccination:

- Administer influenza vaccine annually to all children beginning at age 6 months. For most healthy, nonpregnant persons aged 2 through 49 years, either LAIV or TIV may be used. However, LAIV should NOT be administered to some persons, including 1) those with asthma, 2) children 2 through 4 years who had wheezing in the past 12 months, or 3) those 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).
- For children aged 6 months through 8 years:
 - For the 2012-13 season, administer 2 doses (separated by at least 4 weeks) to children who are receiving influenza vaccine for the first time.
 - For additional guidance, follow dosing guidelines in the 2012 ACIP Influenza vaccine recommendations, MMWR 2012; 61: 613-618 (RR-32), available at <http://www.cdc.gov/mmwr/pdf/mm126132.pdf>.
 - For the 2013-14 season, follow dosing guidelines in the 2013 ACIP Influenza vaccine recommendations.
- Administer 1 dose to persons aged 9 years and older.

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

Routine vaccination:

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

Catch-up vaccination:

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

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

Routine vaccination:

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

Catch-up vaccination:

- For persons aged 7 through 18 months 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 children aged 7 years 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.

Additional Information:

- For contraindications and precautions to use of a vaccine and for additional information regarding that vaccine, vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement available online at <http://www.cdc.gov/vaccines/pubs/acip-list.htm>.
- For the purposes of calculating intervals between doses, 4 weeks = 28 days. Intervals of 4 months or greater are determined by calendar months.
- Information on travel vaccine requirements and recommendations is available at <http://www.cdc.gov/travel/page/vaccinations.htm>.
- For vaccination of persons with primary and secondary immunodeficiencies, see Table 13. Vaccination of persons with primary and secondary immunodeficiencies, General Recommendations on Immunization (ACIP), available at http://www.cdc.gov/mmwr/preview/mmwrhtml/m6002a1.htm?ts=dm#r6002a1_e, and American Academy of Pediatrics. Passive Immunization. In: Pickering LK, Baker CI, Kimberlin DW, Long SS eds. Red book: 2012 report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics.

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

Routine vaccination:

- Initiate the 2-dose HepA vaccine series to children between ages 12 through 23 months; separate the 2 doses by 6 to 18 months.
- Children who have received one dose of HepA vaccine prior to 24 months of age, should receive a second dose 6 to 18 months after the first dose.
- For 18 months and older, children who have not already received the complete HepA vaccine series, 2 doses of HepA vaccine separated by 6 to 18 months may be administered if immunity against hepatitis A virus infection is desired.

Catch-up vaccination:

- The minimum interval between the two doses is 6 months.
- Special populations:
 - Administer 2 doses of Hep A vaccine to persons older than 23 months who live in areas where vaccination programs target older children, or who are at increased risk for infection. See MMWR 2006;55(No. RR-7), available at <http://www.cdc.gov/mmwr/pdf/mm065507.pdf>.

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

Routine vaccination:

- Administer a 3-dose series of HPV vaccine to all adolescents aged 11-12 years. Either HPV4 or HPV2 may be used with females, and only HPV4 may be used with males.
- 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).

Catch-up vaccination:

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

13. Meningococcal conjugate vaccine, quadrivalent (MCV4). (Minimum age: 2 months for HibMenCY, 9 months for Menactra (MCV4-D), 2 years for Menveo (MCV4-CRM).)

Routine vaccination:

- Administer MCV4 vaccine at age 11-12 years, with a booster dose at age 16 years.
- 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; 60:1018-1019 (RR-30) available at: <http://www.cdc.gov/mmwr/pdf/mm116030.pdf>.

Catch-up vaccination:

- Administer MCV4 vaccine at age 13 through 18 years if 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 from the preceding dose.
- If the first dose is administered at age 16 years or older, a booster dose is not needed.
- For other catch-up issues, see Figure 2.

Vaccination of Persons with high-risk conditions:

- For children <19 months with persistent complement component deficiency or anatomic/functional asplenia, administer an infant series of HibMenCY at 2, 4, 6 and 12-15 months.
- For children 19 through 23 months with persistent complement component deficiency, administer 2 primary doses of MCV4-D, at least 8 weeks apart.
- For children >= 24 months with persistent complement component deficiency or functional/anatomic asplenia, who have not received a complete series of HibMenCY or MCV-D, administer 2 primary doses of either MCV4. If MCV4-D (Menactra) is administered to a child with asplenia, do not administer MCV4-D until at least 4 weeks after the completion of all PCV13 doses. See MMWR 2011; 60:1391-1392 (RR-40), available at <http://www.cdc.gov/mmwr/pdf/mm116040.pdf>.
- For children >= 5 months old who are residents of or travelers to countries in the Meningitis Belt or the Hajj, administer an age appropriate formulation and series of MCV4 for protection against serogroups A and W-135. Prior receipt of HibMenCY is not sufficient for children traveling to the Meningitis Belt or the Hajj. See MMWR 2011; 60:1391-1392 (RR-40), available at <http://www.cdc.gov/mmwr/pdf/mm116040.pdf>.
- For children who are present during outbreaks caused by a vaccine serogroup, administer or complete an age and formulation appropriate series of HibMenCY or MCV4.
- For booster doses among persons with high-risk conditions refer to <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm#mening>.

FOOTNOTE CHANGES

Footnote Changes (1)

- ❑ **Footnotes from the 0-6, 7-18 and Catch-up Schedules combined**
- ❑ **To improve clarity because footnotes are no longer under the figures:**
 - Subheadings added to each vaccine footnote
 - Routine vaccination
 - Catch-up vaccination
 - Vaccination of persons with high-risk conditions/Special Situations

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

Routine vaccination:

• **At birth:**

- Administer monovalent HepB to all newborns before hospital discharge.
- For infants born to hepatitis B surface antigen (HBsAg)-positive mothers, administer HepB vaccine and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) 1 to 2 months after completion of the HepB series, at age 9 through 18 months (preferably at the next well-child visit).
- If mother's HBsAg status is unknown, within 12 hours of birth administer HepB vaccine for all infants regardless of birth weight. For infants weighing < 2000 grams, administer HBIG in addition to HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if she is HBsAg-positive, also administer HBIG for infants weighing ≥ 2000 grams (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 vaccine should be used for doses administered before age 6 weeks.
- Infants who did not receive a birth dose should receive 3 doses of a HepB-containing vaccine on a schedule of 0, 1 to 2 months, and 6 months starting as soon as feasible. (See Figure 2.)
- 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 1st dose.
- Administration of a total of 4 doses of HepB vaccine is recommended when a combination vaccine containing HepB is administered after the birth dose.

Catch-up vaccination:

- Unvaccinated persons ages 7 years and older should complete a 3-dose series.
- A 2-dose series (doses separated by at least 4 months) of adult formulation Recombivax HB is licensed for use in children aged 11 through 15 years.
- For other catch-up issues, see Figure 2.

2. **Rotavirus (RV) vaccines.** (Minimum age: 6 weeks for both RV-1 (Rotarix) and RV-5 (Rota Teq).)

Routine vaccination:

- Administer a series of RV vaccine to all infants as follows:
 1. If RV-1 is used, administer a 2-dose series at 2 and 4 months of age.
 2. If RV-5 is used, administer a 3-dose series at ages 2, 4 and 6 months.
 3. If any dose in series was RV5 or vaccine product is unknown for any dose in the series, a total of 3 doses of RV vaccine should be

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

5a. **Routine vaccination:**

- Administer a Hib vaccine primary series and a booster dose to all infants. The primary series doses should be administered at 2, 4, and 6 months of age, however, if PRP-OMP (PedvaxHib or Comvax) is administered at 2 and 4 months of age, a dose at age 6 months is not indicated. One booster dose should be administered at age 12 through 15 months.
- Hiberix (PRP-T) should only be used for the booster (final) dose in children aged 12 months through 4 years, who have received at least one dose of Hib.

Catch-up vaccination:

- If dose 1 was administered at ages 12-14 months, administer booster (as final dose) at least 8 weeks after dose 1.
- If the first 2 doses were PRP-OMP (PedvaxHIB or Comvax), and were 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, regardless of Hib vaccine (PRP-T or PRP-OMP) used for first dose.
- For unvaccinated children ages 15 months or older, administer one dose.
- For other catch-up issues, see figure 2.

Vaccination of Persons with high-risk conditions:

- Hib vaccine is not routinely recommended for patients over 5 years of age. However one dose of Hib vaccine should be administered to unvaccinated or partially vaccinated persons aged 5 years or older who have sickle cell disease, leukemia, malignant neoplasms, anatomic or functional asplenia, human immunodeficiency virus (HIV) infection or other immunocompromising conditions.

6a. **Pneumococcal conjugate vaccine.** (Minimum age: 6 weeks)

Routine vaccination:

- Administer a series of PCV13 vaccine at ages 2, 4, 6 months with booster at age 12-15 months.
- For children ages 14 through 59 months who have received an age-appropriate series of 7-valent PCV (PCV7), administer a single supplemental dose of 13-valent PCV (PCV13).

Catch-up vaccination:

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

Vaccination of Persons with high-risk conditions:

- For children aged 24 through 74 months with certain underlying

Footnote Changes (2)

- Routine vaccination
 - First bullet now gives general administration guidance
 - Example:
 - DTaP: Administer a series of DTaP vaccine at ages 2, 4, 6 and 15-18 months, with a booster at age 4-6 years.
 - Where appropriate, define recommendations by age
 - Example:
 - Meningococcal and Pneumococcal

• If RV-1(Rotarix) is administered for the first and second doses, a third dose is not indicated.

• For other catch-up issues, see Figure 2.

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

Routine vaccination:

- Administer a series of DTaP vaccine at ages 2, 4, 6, and 15-18 months, with a booster at age 4-6 years. The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.

Catch-up vaccination:

- The fifth dose of DTaP is not necessary if the fourth dose was administered at age 4 years or older.
- For other catch-up issues, see Figure 2.

4. **Tetanus and diphtheria toxoids and acellular pertussis (Tdap) vaccine.**

Routine vaccination:

- Administer 1 dose of Tdap vaccine to all adolescents aged 11-12 years.
- Tdap can be administered regardless of the interval since the last tetanus and diphtheria toxoid-containing vaccine.

Catch-up vaccination:

- Persons aged 7 through 10 years who are not fully immunized with the childhood DTaP vaccine series, should receive Tdap vaccine as the first dose in the catch-up series; if additional doses are needed, use Td vaccine. For these children, an adolescent Tdap vaccine should not be given.
- 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.
- An inadvertent dose of DTaP vaccine administered to children ages 7 through 10 years can count as part of the catch-up series. This dose can count as the adolescent Tdap dose, or the child can later receive a Tdap booster dose at age 11-12 years.
- For other catch-up issues, see Figure 2.

cochlear implant or CSF leak. See MMWR 2010;59 (No. RR-11), available at <http://www.cdc.gov/mmwr/pdf/rr/rr5911.pdf>

- Administer PPSV23 at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions (see footnotes 6b and 6c).

6b. **Pneumococcal polysaccharide vaccine (PPSV23).** (Minimum age: 2 years)

Vaccination of Persons with high-risk conditions:

- Administer PPSV23 at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions (see footnote 6c). A single revaccination with PPSV should be administered after 5 years to children with anatomic/functional asplenia or an immunocompromising condition.

6c. **Medical conditions for which PPSV23 would be indicated in children aged 2 years and older and for use of PCV13 in children < 6 years of age:**

- Immunocompetent children with: Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), Chronic lung disease (including asthma if treated with high-dose oral corticosteroid therapy), Diabetes mellitus, 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.

SPECIFIC FOOTNOTE CHANGES

6a. Pneumococcal conjugate vaccine. (Minimum age: 6 weeks)

Routine vaccination:

- Administer a series of PCV13 vaccine at ages 2, 4, 6 months with a booster at age 12-15 months.
- For children ages 14 through 59 months who have received an age-appropriate series of 7-valent PCV (PCV7), administer a single supplemental dose of 13-valent PCV (PCV13).

Catch-up vaccination:

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

Vaccination of Persons with high-risk conditions:

- For children aged 24 through 71 months with certain underlying medical conditions (see footnote 6c), 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 may be administered to previously unvaccinated 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), available at <http://www.cdc.gov/mmwr/pdf/rr/rr5911.pdf>
- Administer PPSV23 at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions (see footnotes 6b and 6c).

6b. Pneumococcal polysaccharide vaccine (PPSV23). (Minimum age: 2 years)

Vaccination of Persons with high-risk conditions

- Administer PPSV23 at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions (see footnote 6c). A single revaccination with PPSV should be administered after 5 years to children with anatomic/functional asplenia or an immunocompromising condition. See MMWR 2010:59 (No. RR-11), available at <http://www.cdc.gov/mmwr/pdf/rr/rr5911.pdf>.

6c. Medical conditions for which PPSV23 would be indicated in children aged 2 years and older and for use of PCV13 in children < 6 years of age:

- i. *Immunocompetent children with: Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure), Chronic lung disease(including asthma if treated with high-dose oral corticosteroid therapy), Diabetes mellitus, Cerebrospinal fluid leaks, Cochlear implant;*
- ii. *Children with functional or anatomic asplenia (Sickle cell disease and other hemoglobinopathies, congenital or acquired asplenia, or splenic dysfunction);*
- iii. *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.*

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

Routine vaccination:

- Administer influenza vaccine annually to all children beginning at age 6 months. For most healthy, nonpregnant persons aged 2 through 49 years, either LAIV or TIV may be used. However, LAIV should NOT be administered to some persons, including 1) those with asthma, 2) children 2 through 4 years who had wheezing in the past 12 months, or 3) those 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)

- For children aged 6 months through 8 years:

- For the 2012-13 season, administer 2 doses (separated by at least 4 weeks) to children who are receiving influenza vaccine for the first time. For additional guidance, follow dosing guidelines in the 2012 ACIP Influenza vaccine recommendations, MMWR 2012; 61: 613-618 (RR-32), available at <http://www.cdc.gov/mmwr/pdf/wk/mm6132.pdf>.
- For the 2013-14 season, follow dosing guidelines in the 2013 ACIP Influenza vaccine recommendations.

- Administer 1 dose to persons aged 9 years and older.

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

Routine vaccination:

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

Catch-up vaccination:

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

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

Routine vaccination:

- Initiate the 2 dose HepA vaccine series to children between ages 12 through 23 months; separate the 2 doses by 6 to 18 months.
- Children who have received one dose of HepA vaccine prior to 24 months of age, should receive a second dose 6 to 18 months after the first dose.
- For any person 2 years and older who has not already received the complete HepA vaccine series, completion of 2 doses of HepA vaccine separated by 6 to 18 months may be administered if immunity against hepatitis A virus infection is desired.
-

Catch-up vaccination:

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

Special populations:

- Administer 2 doses of HepA vaccine to persons older than 23 months who live in areas where vaccination programs target older children, or who are at increased risk for infection, See MMWR 2006;55(No. RR-7), available at <http://www.cdc.gov/mmwr/pdf/rr/rr5507.pdf>.

Meningococcal vaccine footnotes

- Will adopt language based on ACIP Vote today**

Tdap in pregnancy

- Will adopt language based on ACIP vote today**

2013 Immunization Schedules

Next Steps

- **Revisions as necessary from ACIP, CDC**
- **Submission to MMWR for editing during the first week in December 2012**
- **Submission of edited copy to AAP and AAFP by January 1, 2013**
- **Publication in MMWR in February 2013**
- **Publication in Pediatrics and American Family Physician in February 2013**

Thank you

Harmonized Schedule Subject Matter Experts

- Division of Bacterial Diseases
 - Gina Mootrey
 - Tamara Pilishvili
 - Elizabeth Briere
 - Amanda Cohn
 - Jennifer Liang
 - Tom Clark
- Influenza Division
 - Jerome Tokars
 - Lisa Grohskopf
- Division of Viral Diseases
 - David Bell
 - Mona Marin
 - Margaret Cortese
 - Greg Wallace
 - Stephanie Bialek
 - Umesh Parashar
 - Huong McLean
- Division of Viral Hepatitis, NCHHSTP
 - Deborah Holtzman (ADS)
 - Trudy Murphy
- Division of STD Prevention, NCHHSTP
 - Sevgi Aral (ADS)
 - Fred Bloom (ADS)
 - Lauri Markowitz
- NCIRD OD
 - David Swerdlow (ADS)
- NCIRD, ISD
 - Abigail Shefer (ADS)

Thank You

- NCIRD, OD
 - Kris Sheedy
 - Michelle Basket
 - Kate LaVail
- NCIRD, EIPB
 - Melissa Barnett (Graphics)
 - Donna Weaver
 - JoEllen Wolicki
 - Skip Wolfe
 - Zunera Mirza

Harmonized Schedule Work Group 2012

- Renee Jenkins (ACIP, chair - incoming)
- Cody Meissner (ACIP, chair - outgoing)
- Susan Lett (ACIP)
- Ruth Karron (ACIP)
- Lorry Rubin (AAP)
- Everett Schlam (AAFP)
- Patsy Stinchfield (NAPNAP)
- Rosemary Spence (AIM)
- Katie Brewer (ANA)
- Amy Middleman (SAHM)
- Chris Barry (AAPA)
- Diane Peterson (IAC)
- Yabo Akinsanya-Beysolow (CDC Lead)
- Andrew Kroger (CDC)
- Jennifer Hamborsky (CDC)
- Ex-officio members:
- Kris Ehresmann (ACIP)
- William Atkinson

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