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Why Give Tdap during Each Pregnancy?

At its October 2012 meeting, the Advisory Committee on Immunization Practices (ACIP) voted to recommend that healthcare personnel administer a dose of Tdap vaccine to pregnant women during each pregnancy—ideally at between 27 and 36 weeks' gestation—regardless of the woman's prior history of receiving Tdap. According to information presented at the meeting, Tdap is recommended for every pregnancy for the following reasons:

Reported cases of pertussis have spiked. As of October 2012, 32,645 pertussis cases had been reported in the U.S. for the year. It is anticipated that more cases will have been reported by the end of 2012 than in any other year since 1959.

Youngest infants are the most vulnerable. Among infants, those younger than age 2 months have the highest reported incidence of pertussis cases and highest percentage of hospitalizations and deaths. Infants this age are too young to receive even the first dose in the DTaP series. Therefore, we must protect them *through other means*.

Vaccinating the mother during pregnancy can protect the youngest infants. Several studies provide evidence supporting the existence of efficient transplacental transfer of pertussis antibodies. This is likely to provide protection early in an infant's life, before he or she is old enough to begin the primary DTaP series.

Tdap given at one pregnancy provides insufficient

protection for subsequent pregnancies. In healthy non-pregnant adults who received Tdap, antibody levels peaked during the first month after vaccination. This was followed by substantial antibody decay after one year. ACIP presenters concluded that "antibody response in pregnant women would not likely be much different."

Data support the safety of Tdap for pregnant women and their infants. In 2011, ACIP reviewed the Vaccine Adverse Event Reporting System's safety data reports on use of Tdap in pregnant women. The reports showed no unusual or unexpected patterns of adverse events. Additionally, Td and TT have been used extensively in pregnant women, and no evidence indicates that administering either vaccine during pregnancy causes harm to the fetus. The ACIP pertussis working group concluded, "the benefits of vaccination outweigh the theoretical risks of severe adverse events with multiple doses of Tdap."

Administering Tdap during each pregnancy allows a mother to build an immune response and transfer it to her infant. It is a strategy that can protect our youngest infants from a serious disease before they are old enough to be vaccinated against it.

Note: For more information on administering Tdap during pregnancy, see "Ask the Experts" on page 5 of *Needle Tips* and refer to the materials on CDC's pertussis web page at www.cdc.gov/pertussis.

Ask the Experts

IAC extends thanks to our experts, medical epidemiologist Andrew T. Kroger, MD, MPH; nurse educator Donna L. Weaver, RN, MN; and medical officer Iyabode Akinsanya-Beysolow, MD, MPH. All are with the National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention (CDC).

Immunization questions?

- Call the CDC-INFO Contact Center at (800) 232-4636 or (800) CDC-INFO
- Email nipinfo@cdc.gov
- Call your state health dept. (phone numbers at www.immunize.org/coordinates)

Vaccine storage and handling

Is it still acceptable to use combination household units for storing vaccines?

CDC strongly recommends using stand-alone refrigerators and freezers for the following reasons:

- Most combination household refrigerator/freezers have a combined temperature control unit that can create cold spots and temperature fluctuations in the refrigerator portion of the unit.
- The risk of freeze damage to refrigerated vaccines is increased in combination units because air from the freezer is vented into the refrigerator to cool it. This can freeze temperature-sensitive vaccines.
- The freezer portions of many combination units are not capable of maintaining the correct storage temperature for frozen vaccines.

Purchasing new vaccine storage equipment requires planning, and you may need to use existing equipment for a while until you can purchase new equipment. In this situation, CDC recommends using a combination refrigerator/freezer unit for refrigerated vaccine only and using a separate

stand-alone freezer to store frozen vaccines.

It is important to note that most combination refrigerator/freezers share a single condenser, and the very cold air from the freezer compartment is vented into the refrigerator compartment to cool the refrigerator. You should not turn off the freezer portion of the combination unit because it will not maintain the proper temperature for the refrigerated vaccines stored in the refrigerator portion of the unit. If you are using the refrigerator portion

(continued on page 5)

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Needle Tips

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IAC Launches Major Redesign of Its Website for the Public — www.vaccineinformation.org

We have completed a major transformation of our website for the public, www.vaccineinformation.org, making it one of the most comprehensive and user-friendly sources of scientifically accurate and easily navigable immunization information on the Web today. Visitors to the website can now readily find what they need, whether they are looking for information on a specific vaccine or on vaccines needed by a particular age group, personal stories or video clips, or other resources, such as those from CDC and state health departments. Titled “Vaccine Information You Need,” the website offers parents, other adults, legislators, the media, and all interested Web users a one-stop shop for learning about vaccines and their importance.



HIGHLIGHTS OF THE REDESIGN

- Information on the website is organized into sections based on the four age groups listed below.
 - Infants/Children
 - Preteens
 - Teens
 - Adults
- Vaccines You Need: Detailed information about the immunization schedules, arranged by age group—infants and children, preteens, teens, and adults
- Personal Testimonies: Stories of suffering and loss from vaccine-preventable diseases, organized by age group and disease
- Video Library: Searchable collection of videos and public service announcements about vaccine-preventable diseases and the importance of vaccination
- Vaccine-Preventable Diseases: Information and resources for all vaccine-preventable diseases, including those associated with international travel
- Vaccine Basics: Basic and helpful information on vaccines and vaccination, ranging from “Paying for Vaccines” to “How Vaccines Work”
- Resources: Frequently updated listing of helpful resources, including brochures, blogs, videos, and more, for people in all age groups who seek information about vaccines

Please take some time to visit www.vaccineinformation.org and enjoy the colorful experience of “Vaccine Information You Need.” We would love to hear your comments; email us at admin@immunize.org.

Please link to www.vaccineinformation.org from your website, blog, or Facebook page.

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To receive sample cards, contact us: admininfo@immunize.org

"Immunization Techniques — Best Practices with Infants, Children, and Adults"



The California Department of Public Health, Immunization Branch, updated its award-winning training video, "Immunization Techniques: Best Practices with Infants, Children, and Adults." The 25-minute DVD can be used to train new employees and to refresh the skills of experienced staff on administering injectable, oral, and nasal-spray vaccines to children, teens, and adults. Make sure your healthcare setting has the 2010 edition!

The cost is \$17 each for 1–9 copies; \$10.25 each for 10–24 copies; \$7 each for 25–49 copies; \$5.75 each for 50–99 copies.

To order, visit www.immunize.org/shop, or use the order form on page 22.

For 100 or more copies, contact us for discount pricing: admininfo@immunize.org

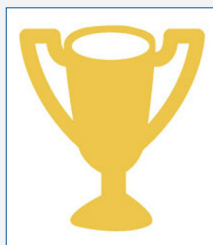
For healthcare settings in California, contact your local health department immunization program for a free copy.

IAC Honors Healthcare Institutions With Stellar Influenza Vaccination Policies

IAC's Honor Roll for Patient Safety recognizes hospitals, professional societies, and government entities that have taken a stand for patient safety by creating strong mandatory influenza vaccination policies for healthcare workers. More than 250 organizations are now enrolled.

Read the position statements of leading medical organizations and see the organizations now enrolled. You can apply for your organization to become a member. Access the Honor Roll at

www.immunize.org/honor-roll



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Vaccine Highlights

Recommendations, schedules, and more

Editor's note: The information in Vaccine Highlights is current as of February 15, 2013.

The next ACIP meetings

A committee of 15 national experts, the Advisory Committee on Immunization Practices (ACIP) advises CDC on the appropriate use of vaccines. ACIP meets three times a year in Atlanta; meetings are open to the public. Upcoming meetings will be held on Feb. 20–21 and June 19–20. For more information, visit www.cdc.gov/vaccines/recs/acip.

ACIP periodically issues public health recommendations on the use of vaccines. Clinicians who vaccinate should have a current set for reference. Published in the *Morbidity and Mortality Weekly Report (MMWR)*, ACIP recommendations are easily available. Here are sources:

- Download them from links on IAC's website: www.immunize.org/acip.
- Download them from CDC's website: www.cdc.gov/vaccines/pubs/acip-list.htm.

New and updated ACIP recs

Child and adult immunization schedules.

On Jan. 28, CDC published "Recommended Immunization Schedules for Persons Aged 0 Through 18 years and Adults Aged 19 Years and Older—United States, 2013." The child and teen schedule is issued jointly by ACIP, AAP, and AAFP. The adult schedule is issued jointly by ACIP, AAFP, ACOG, ACP, and ACNM. For the child schedule, go to www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html. For the adult schedule, go to www.cdc.gov/vaccines/schedules/hcp/adult.html.

Tdap in pregnancy. On Dec. 6, CDC posted "ACIP Provisional Updated Recommendations on Use of Tdap Vaccine for Pregnant Women" on its website. The recommendations advise prenatal care providers to administer a dose of Tdap during each pregnancy irrespective of the patient's prior history of receiving Tdap. It is anticipated that CDC will release the final updated recommendations in the Feb. 22 issue of *MMWR*. To access the new recommendations, visit www.cdc.gov/vaccines/pubs/ACIP-list.htm.

MMR. On Dec. 6, CDC posted "ACIP Provisional Recommendations: Prevention of Measles, Rubella, Congenital Rubella Syndrome (CRS), and Mumps" on its website. The provisional recommendations have new information regarding (1) the definition of evidence of immunity to measles, rubella, and mumps, (2) the use of immune globulin for measles post-exposure prophylaxis, and (3) the use of MMR vaccine in people who are HIV-infected. Access provisional recommendations at www.cdc.gov/vaccines/recs/provisional/default.htm.

Meningococcal. On Jan. 25, CDC published "Infant Meningococcal Vaccination: ACIP Recommendations and Rationale." ACIP recommends that high-risk infants receive a 4-dose series of Hib-MenCY vaccine (MenHibrix; GlaxoSmithKline) starting at age 2 months. To obtain the recommendations, go to www.cdc.gov/mmwr/pdf/wk/mm6203.pdf (pages 52–54).

Influenza vaccine news

On Jan. 16, FDA issued a press release announcing it had approved the use of the first influenza vaccine produced using a novel manufacturing technology (Flublok, Protein Sciences Corp). To read the press release, go to: www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm335891.htm?source=govdelivery.

On Dec. 14, FDA approved a request by GlaxoSmithKline to supplement its biologics license application for Fluarix influenza virus vaccine to include a quadrivalent formulation for use in people age 3 years and older. To access the package insert, go to www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM220624.pdf.

On Nov. 20, FDA issued a press release announcing that it had approved the use of the first influenza vaccine produced using cultured animal cells (Flucelvax; Novartis Vaccines and Diagnostics GmbH). For the press release, go to www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm328982.htm.

PCV13 vaccine news

On Jan. 25, FDA approved the expanded age indication for use of Prevnar 13 (Pfizer Inc.) in children and teens age 6 through 17 years for prevention of invasive pneumococcal disease caused by serotypes in the vaccine. For the package insert go to www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM201669.pdf.

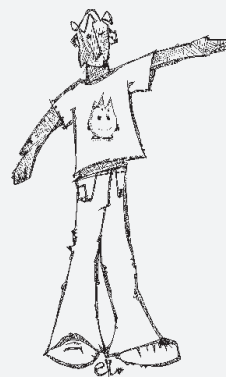
VIS and CDC news

On Nov. 16, CDC posted an updated and redesigned pediatric multi-vaccine VIS. To access the VIS and 7 translations, go to www.immunize.org/vis/vis_multi_vaccine_infants.asp.

On Nov. 27, CDC posted its highly informative *Vaccine Storage & Handling Toolkit* on its website. It includes information on the following: (1) points to consider in selecting, maintaining, and using vaccine storage units and thermometers; (2)

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consistent maintenance of the cold chain; (3) routine storage and handling practices; (4) inventory management; and (5) emergency procedures for protecting vaccine inventories. The toolkit web page offers related resources such as training materials, slide sets, and other useful items. To access the toolkit web page, go to www.cdc.gov/vaccines/recs/storage/toolkit.

New and updated VISs

The use of most Vaccine Information Statements (VISs) is mandated by federal law. Listed below are the dates of the most current VISs. Check your stock of VISs against this list. If you have outdated VISs, print current ones from IAC's website at www.immunize.org/vis. You'll find VISs in more than 30 languages.

DTaP/DT/DTP	5/17/07	MMRV	5/21/10
Hepatitis A	10/25/11	PCV13	4/16/10
Hepatitis B	2/2/12	PPSV	10/6/09
Hib	12/16/98	Polio	11/8/11
HPV (Cervarix)	5/3/11	Rabies	10/6/09
HPV (Gardasil)	2/22/12	Rotavirus	12/6/10
Influenza (LAIV)	7/2/12	Shingles	10/6/09
Influenza (TIV)	7/2/12	Td/Tdap	1/24/12
Japan. enceph.	12/7/11	Typhoid	5/29/12
Meningococcal	10/14/11	Varicella	3/13/08
MMR	4/20/12	Yellow fever	3/30/11

Multi-vaccine VIS11/16/12
(for 6 vaccines given to infants/children:
DTaP, IPV, Hib, HepB, PCV, RV)

For a ready-to-print version of this table for posting in your practice, go to www.immunize.org/catg.d/p2029.pdf.

of the combination unit, it is important that you not store vaccines directly under the vent coming from the freezer and that you add water bottles to the refrigerator to absorb cold air blown in from the freezer. This will reduce the risk of vaccines becoming too cold.

What temperature is considered a temperature excursion on refrigerated vaccine? Frozen vaccine?

Any temperature readings outside the ranges noted below are considered temperature excursions.

- For refrigerated vaccines, the minimum temperature is 35° F (2° C), and the maximum is 46° F (8° C).
- For frozen vaccines, the minimum temperature is -58° F (-50° C), and the maximum is 5° F (-15° C).

If there is a question about whether a vaccine has been exposed to a temperature excursion, label the vaccines "DO NOT USE" and store them under appropriate conditions, separate from other vaccines. Then, contact the vaccine manufacturer for further guidance. If you are a VFC provider, contact either the vaccine manufacturer and/or your state or local immunization program as directed by the VFC Program in your area.

I keep hearing about changes to vaccine storage and handling recommendations. Why is

CDC making these changes? And how can I make sure I am up to date with all the newest information?

Good questions! The why behind these changes has two parts. First, it had become increasingly apparent to CDC and state health departments that improper vaccine storage and handling is a big problem, leading to a huge waste of product, time, and money, and more importantly, to unprotected people. Second, improved technology (e.g., digital data loggers) provides tools that uncover and measure problems and also prevent them.

As far as how to keep up, on November 27, 2012, CDC released its updated *Vaccine Storage and Handling Toolkit* at www.cdc.gov/vaccines/recs/storage/toolkit/storage-handling-toolkit.pdf and posted it on CDC's Vaccine Storage and Handling Toolkit web section at www.cdc.gov/vaccines/recs/storage/toolkit. The *Vaccine Storage and Handling Toolkit* is based on the recommendations of ACIP, equipment manufacturers' product information, and studies from the National Institute for Scientific Technology. The toolkit outlines best practice strategies and recommendations on the following topics:

- Equipment considerations for storage units and thermometers
- Maintenance of the cold chain
- Routine storage and handling practices

- Inventory management
- Emergency procedures for protecting vaccine inventories

Every vaccine provider should print out this document and read and reread it carefully. CDC has provided an overview of the new information as a separate item at www.cdc.gov/vaccines/recs/storage/interim-storage-handling.pdf, as well as a set of FAQs about the new recommendations at www.cdc.gov/vaccines/recs/storage/interim-faq-storage-handling.pdf.

New!
CDC's Vaccine Storage and Handling Toolkit

www.cdc.gov/vaccines/recs/storage/toolkit

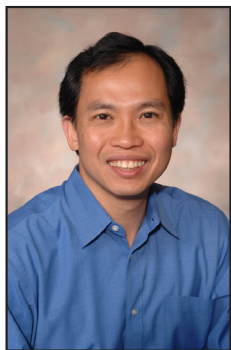
DTaP/Tdap/Td vaccine

What are the new ACIP recommendations for vaccinating pregnant women with Tdap?

In October 2012, ACIP voted to recommend that a pregnant woman receive Tdap vaccine during each

(continued on page 20)

IAC Welcomes Dr. Litjen (L.J) Tan as Chief Strategy Officer



L.J Tan, MS, PhD

The Immunization Action Coalition (IAC) is pleased to announce that Litjen (L.J) Tan, MS, PhD, has come on board as its chief strategy officer. In this capacity, Dr. Tan will expand the already considerable range of projects that make IAC a national leader in immunization education and policy. He

will also lead IAC's strategic planning, which is aimed at moving the nation's immunization rates to the next level, across the age span.

In speaking about Dr. Tan, Dr. Deborah L. Wexler, executive director of IAC, said, "L.J is a world-class leader in public health and an absolutely unique talent. His accomplishments are already tremendous; for example, he co-founded two marvelous national summits that have brought hundreds of immunization leaders together as partners in unprecedented ways. We are thrilled to be working with L.J in expanding and improving the nation's immunization services and policies."

Prior to joining IAC, Dr. Tan was the director of medicine and public health at the American Medical Association (AMA), a position he held since 2008. From 1997 to 2008, he was the AMA's director of infectious disease, immunology, and molecular medicine.

Dr. Tan is a voting member of the Department of Health and Human Services' National Vaccine Advisory Committee, where he served on the adult immunization, vaccine safety, and health-care worker immunization working groups, and is currently chair of the immunization infrastructure working group. He also served for more than ten years as the AMA's liaison to the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices, where he currently serves on the influenza, pneumococcal, zoster, and adult immunization working groups.

He co-founded and currently co-chairs the National Adult Immunization Summit and the National Influenza Vaccine Summit. He serves or has served on the steering committees of the 317 Coalition, the National Network for Immunization Information, and the National Viral Hepatitis Roundtable and on the IAC scientific advisory board. In 2007, he founded the National Immunization Congress and organized its 2007 and 2010 meetings.

A skilled and sought-after speaker, Dr. Tan has been invited to address international, national, and state immunization audiences on issues ranging from vaccine financing to risk management in vaccine safety to emerging infectious diseases. He serves or has served on a host of expert and technical advisory panels, including panels for the Centers for Medicare and Medicaid Services, The Joint Commission, and the Centers for Disease Control and Prevention. In addition, he is the author or coauthor of many peer-reviewed articles and abstracts. During his tenure at the AMA, he wrote numerous scientific reports to guide the association's policies on a diverse range of public health topics.

Dr. Tan has received several awards for his advocacy work and most recently was awarded the American Pharmacists Association's national Friend of Pharmacy Award. As a part-time faculty member at the Institute for Science Education and Science Communication, Columbia College, Chicago, he received the 2000 Excellence in Teaching Award.

Dr. Tan's photograph has been added to IAC's staff web page at www.immunize.org/aboutus/iacstaff.asp.

Summary of Recommendations for Child/Teen Immunization (Age birth through 18 years) (Page 1 of 4)

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Hepatitis B (HepB) <i>Give IM</i>	- Vaccinate all children age 0 through 18yrs. - Vaccinate all newborns with monovalent vaccine prior to hospital discharge. Give dose #2 at age 1–2m and the final dose at age 6–18m (the last dose in the infant series should not be given earlier than age 24wks). After the birth dose, the series may be completed using 2 doses of single-antigen vaccine or up to 3 doses of Comvax (ages 2m, 4m, 12–15m) or Pediarix (ages 2m, 4m, 6m), which may result in giving a total of 4 doses of hepatitis B vaccine. If mother is HBsAg-positive: give the newborn HBIG + dose #1 within 12hrs of birth; complete series at age 6m or, if using Comvax, at age 12–15m. If mother's HBsAg status is unknown: give the newborn dose #1 within 12hrs of birth. If low birth weight (less than 2000 grams), also give HBIG within 12hrs. For infants weighing 2000 grams or more whose mother is subsequently found to be HBsAg positive, give the infant HBIG ASAP (no later than 7d of birth) and follow HepB immunization schedule for infants born to HBsAg-positive mothers.	- Do not restart series, no matter how long since previous dose. 3-dose series can be started at any age. - Minimum intervals between doses: 4wks between #1 and #2, 8wks between #2 and #3, and at least 16wks between #1 and #3. Special Notes on Hepatitis B Vaccine (HepB) Dosing of HepB: Monovalent vaccine brands are interchangeable. For people age 0 through 19yrs, give 0.5 mL of either Engerix-B or Recombivax HB. Alternative dosing schedule for unvaccinated adolescents age 11 through 15yrs: Give 2 doses Recombivax HB 1.0 mL (adult formulation) spaced 4–6m apart. (Engerix-B is not licensed for a 2-dose schedule.) For preterm infants: Consult ACIP hepatitis B recommendations (MMWR 2005; 54 [RR-16]).*	Contraindication Previous anaphylaxis to this vaccine or to any of its components. Precautions - Moderate or severe acute illness. - For infants who weigh less than 2000 grams, see ACIP recs.*
DTaP, DT (Diphtheria, tetanus, acellular pertussis) <i>Give IM</i>	- Give to children at ages 2m, 4m, 6m, 15–18m, 4–6yrs. - May give dose #1 as early as age 6wks. - May give #4 as early as age 12m if 6m have elapsed since #3. - Do not give DTaP/DT to children age 7yrs and older; use Tdap or Td. - If possible, use the same DTaP product for all doses.	#2 and #3 may be given 4wks after previous dose. #4 may be given 6m after #3. - If #4 is given before 4th birthday, wait at least 6m for #5 (age 4–6yrs). - If #4 is given after 4th birthday, #5 is not needed.	Contraindications - Previous anaphylaxis to this vaccine or to any of its components. - For DTaP/Tdap only: encephalopathy not attributable to an identifiable cause, within 7d after DTP/DTaP/Tdap. Precautions - Moderate or severe acute illness. - History of arthus reaction following a prior dose of tetanus or diphtheria toxoid-containing vaccine; defer vaccination until at least 10yrs have elapsed since the last tetanus toxoid-containing vaccine. - Guillain-Barré syndrome (GBS) within 6wks after previous dose of tetanus-toxoid-containing vaccine. - For DTaP only: Any of these events following a previous dose of DTP/DTaP: 1) temperature of 105°F (40.5°C) or higher within 48hrs; 2) continuous crying for 3hrs or more within 48hrs; 3) collapse or shock-like state within 48hrs; 4) seizure within 3d. - For DTaP/Tdap only: Progressive or unstable neurologic disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized.
Tdap, Td (Tetanus, diphtheria, acellular pertussis) <i>Give IM</i>	- For children and teens lacking previous Tdap: give Tdap routinely at age 11–12yrs and vaccinate older teens on a catch-up basis; then boost every 10yrs with Td. - Make special efforts to give Tdap to children and teens who are 1) in contact with infants younger than age 12m and 2) healthcare workers with direct patient contact. - Give Tdap to pregnant adolescents during each pregnancy (preferred during 27–36 weeks' gestation), regardless of number of years since prior Td or Tdap.	- Children as young as age 7yrs and teens who are unvaccinated or behind schedule should complete a primary Td series (spaced at 0, 1–2m, and 6–12m intervals); substitute Tdap for any dose in the series, preferably as dose #1. - Tdap should be given regardless of interval since previous Td.	
Inactivated Polio (IPV) <i>Give SC or IM</i>	- Give to children at ages 2m, 4m, 6–18m, 4–6yrs. - May give dose #1 as early as age 6wks. - Not routinely recommended for U.S. residents age 18yrs and older (except certain travelers).	- The final dose should be given on or after the 4th birthday and at least 6m from the previous dose. - If dose #3 is given after 4th birthday, dose #4 is not needed if dose #3 is given at least 6m after dose #2.	Contraindication Previous anaphylaxis to this vaccine or to any of its components. Precautions - Moderate or severe acute illness. - Pregnancy.

* This document was adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP). To obtain copies of these recommendations, visit CDC's website at www.cdc.gov/vaccines/pubs/ACIP-list.htm or visit the Immunization Action Coalition (IAC) website at www.immunize.org/acip.

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Summary of Recommendations for Child/Teen Immunization (Age birth through 18 years)

(Page 2 of 4)

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Influenza Inactivated influenza vaccine (IIV) <i>Give IM</i> Live attenuated influenza vaccine (LAIV) <i>Give intranasally</i>	- Vaccinate all children and teens age 6m through 18yrs. - LAIV may be given to healthy, non-pregnant people age 2–49yrs. - Give 2 doses, spaced 4wks apart, to children age 6m through 8yrs who 1) are first-time vaccinees or 2) who meet any of the additional guidance in the current year's ACIP influenza vaccine recommendations*. - For IIV, give 0.25 mL dose to children age 6–35m and 0.5 mL dose if age 3yrs and older. - If LAIV and either MMR, Var, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart.		Contraindications - Previous anaphylaxis to this vaccine, to any of its components, including egg protein. - For LAIV only: age younger than 2yrs; pregnancy; chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, neurological/neuromuscular, hematologic, or metabolic (including diabetes) disorders; immunosuppression (including that caused by medications or HIV); for children and teens ages 6m through 18yrs, current long-term aspirin therapy; for children age 2 through 4yrs, wheezing or asthma within the past 12m, per healthcare provider statement. For children/teens who experience only hives with exposure to eggs, give IIV with additional safety precautions as found in the 2012 ACIP influenza recommendations, pages 613–618.* Precautions - Moderate or severe acute illness. - History of Guillain-Barré syndrome (GBS) within 6wks of a previous influenza vaccination. - For LAIV only: Receipt of specific antivirals (i.e., amantadine, rimantadine, zanamivir, or oseltamivir) 48hrs before vaccination. Avoid use of these antiviral drugs for 14d after vaccination.
Varicella (Var) (Chickenpox) <i>Give SC</i>	- Give dose #1 at age 12–15m. - Give dose #2 at age 4–6yrs. Dose #2 of Var or MMRV may be given earlier if at least 3m since dose #1. If the 2nd dose was given at least 4wks after 1st dose, it can be accepted as valid. - Give a 2nd dose to all older children/teens with history of only 1 dose. - MMRV may be used in children age 12m through 12yrs (see note below). Note: For the first dose of MMR and varicella given at age 12–47mos, either MMR and Var or MMRV may be used. Unless the parent or caregiver expresses a preference for MMRV, CDC recommends that MMR and Var be used for the first doses in this age group.	- If younger than age 13yrs, space dose #1 and #2 at least 3m apart. If age 13yrs and older, space at least 4wks apart. - May use as postexposure prophylaxis if given within 5d. - If Var and either MMR, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart.	Contraindications - Previous anaphylaxis to this vaccine or to any of its components. - Pregnancy or possibility of pregnancy within 4wks. - Children on high-dose immunosuppressive therapy or who are immunocompromised because of malignancy and primary or acquired immunodeficiency, including HIV/AIDS (although vaccination may be considered if CD4+ T-lymphocyte percentages are either 15% or greater in children age 1 through 8yrs or 200 cells/μL or greater in children age 9yrs and older). Precautions - Moderate or severe acute illness. - If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP's <i>General Recommendations on Immunization</i>* regarding time to wait before vaccinating. - Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24hrs before vaccination, if possible; delay resumption of these antiviral drugs for 14d after vaccination. - For MMRV only, personal or family (i.e., sibling or parent) history of seizures. Note: For patients with humoral immunodeficiency or leukemia, see ACIP recommendations.*
MMR (Measles, mumps, rubella) <i>Give SC</i>	- Give dose #1 at age 12–15m. - Give MMR at age 6 through 11m if traveling internationally; revaccinate with 2 doses of MMR at age 12–15m (and at least 4wks later). The dose given at younger than 12m does not count toward the 2-dose series. - Give dose #2 at age 4–6yrs. Dose #2 may be given earlier if at least 4wks since dose #1. For MMRV: dose #2 may be given earlier if at least 3m since dose #1. - Give a 2nd dose to all older children and teens with history of only 1 dose. - MMRV may be used in children age 12m through 12yrs (see note above).	- If MMR and either Var, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart. - When using MMR for both doses, minimum interval is 4wks. - When using MMRV for both doses, minimum interval is 3m. - Within 72hrs of measles exposure, give 1 dose of MMR as postexposure prophylaxis to susceptible healthy children age 12m and older.	Contraindications - Previous anaphylaxis to this vaccine or to any of its components. - Pregnancy or possibility of pregnancy within 4wks. - Severe immunodeficiency (e.g., hematologic and solid tumors; receiving chemotherapy; congenital immunodeficiency; long-term immunosuppressive therapy, or severely symptomatic HIV). Note: HIV infection is NOT a contraindication to MMR for children who are not severely immunocompromised (consult ACIP MMR recommendations [MMWR 1998;47 [RR-8] for details*). Vaccination is recommended if indicated for 1) children age 12m through 5yrs whose CD4+ T-lymphocyte percentage has been greater than 15% for at least 6m or 2) for children age 6yrs and older whose CD4+ T-lymphocyte counts have been 200 cells/μL or greater for at least 6m. Precautions - Moderate or severe acute illness. - If blood, plasma, or immune globulin given in past 11m, see ACIP's <i>General Recommendations on Immunization</i>* regarding time to wait before vaccinating. - History of thrombocytopenia or thrombocytopenic purpura. - For MMRV only, personal or family (i.e., sibling or parent) history of seizures. - Need for tuberculin skin testing (TST). If TST needed, give TST before or on same day as MMR, or give TST 4wks following MMR.

Summary of Recommendations for Child/Teen Immunization (Age birth through 18 years)

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Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Hib (<i>Haemophilus influenzae</i> type b) <i>Give IM</i>	- ActHib (PRP-T): give at ages 2m, 4m, 6m, 12–15m (booster dose). - PedvaxHIB or Comvax (containing PRP-OMP): give at ages 2m, 4m, 12–15m (booster dose). - Dose #1 of Hib vaccine should not be given earlier than age 6wks. - Give final dose (booster dose) no earlier than age 12m and a minimum of 8wks after the previous dose. - Hib vaccines are interchangeable; however, if different brands of Hib vaccines are administered for dose #1 and dose #2, a total of 3 doses is necessary to complete the primary series in infants. - Any Hib vaccine may be used for the booster dose. - Hib is not routinely given to children age 5yrs and older. - Hiberix (PRP-T) is approved ONLY for the booster dose at age 12m through 4yrs.	All Hib vaccines: - If #1 was given at age 12–14m, give booster in 8wks. - Give only 1 dose to unvaccinated children age 15 through 59m. ActHib: #2 and #3 may be given 4wks after previous dose. - If #1 was given at age 7–11m, only 3 doses are needed; #2 is given 4–8wks after #1, then boost at age 12–15m (wait at least 8wks after dose #2). PedvaxHIB and Comvax: #2 may be given 4wks after dose #1.	Contraindications - Previous anaphylaxis to this vaccine or to any of its components. - Age younger than 6wks. Precaution Moderate or severe acute illness.
Pneumococcal conjugate (PCV13) <i>Give IM</i>	- Give at ages 2m, 4m, 6m, 12–15m (booster dose). - Dose #1 may be given as early as age 6wks. - When children are behind on PCV13 schedule, minimum interval between doses given to children younger than age 12m is 4wks; for doses given at 12m and older, it is 8wks. - For age 24–59m and healthy: if unvaccinated or any incomplete schedule or if 4 doses of PCV7 or any other age-appropriate complete PCV7 schedule, give 1 supplemental dose of PCV13 at least 8wks after the most recent dose. - For high-risk** children age 24–71m: Give 2 doses at least 8wks apart if they previously received fewer than 3 doses; give 1 dose at least 8wks after the most recent dose if they previously received 3 doses. - PCV13 is not routinely given to healthy children age 5yrs and older. **High-risk: Those with sickle cell disease; anatomic or functional asplenia; chronic cardiac, pulmonary, or renal disease; diabetes; cerebrospinal fluid leaks; HIV infection; immunosuppression; diseases associated with immunosuppressive and/or radiation therapy; or who have or will have a cochlear implant.	- For minimum intervals, see 3rd bullet at left. - For age 7–11m: If history of 0 doses, give 2 doses of PCV13, 4wks apart, with a 3rd dose at age 12–15m; if history of 1 or 2 doses, give 1 dose of PCV13 with a 2nd dose at age 12–15m at least 8wks later. - For age 12–23m: If unvaccinated or history of 1 dose before age 12m, give 2 doses of PCV13 8wks apart; if history of 1 dose at or after age 12m or 2 or 3 doses before age 12m, give 1 dose of PCV13 at least 8wks after most recent dose; if history of 4 doses of PCV7 or other age-appropriate complete PCV7 schedule, give 1 supplemental dose of PCV13 at least 8wks after the most recent dose. - For age 24–71m and at high risk**: If unvaccinated or any incomplete schedule of 1 or 2 doses, give 2 doses of PCV13, 1 at least 8wks after the most recent dose and another dose at least 8wks later; if any incomplete series of 3 doses, or if 4 doses of PCV7 or any other age-appropriate complete PCV7 schedule, give 1 supplemental dose of PCV13 at least 8wks after the most recent PCV7 dose. - For children age 6 through 18yrs with functional or anatomic asplenia (including sickle cell disease), HIV infection or other immunocompromising condition, cochlear implant, or CSF leak, consider giving 1 dose of PCV13 regardless of previous history of PCV7 or PPSV.	Contraindication Previous anaphylaxis to a PCV vaccine, to any of its components, or to any diphtheria toxoid-containing vaccine. Precaution Moderate or severe acute illness.
Pneumococcal polysaccharide (PPSV23) <i>Give IM or SC</i>	- Give 1 dose at least 8wks after final dose of PCV13 to high-risk** children age 2yrs and older. - For children who have an immunocompromising condition or have sickle cell disease or functional or anatomic asplenia, give a 2nd dose of PPSV 5yrs after previous PPSV (consult ACIP PPSV recommendations at www.cdc.gov/vaccines/pubs/ACIP-list.htm).		Contraindication Previous anaphylaxis to this vaccine or to any of its components. Precaution Moderate or severe acute illness.
Human papillomavirus (HPV) (HPV2, Cervarix) (HPV4, Gardasil) <i>Give IM</i>	- Give 3-dose series of either HPV2 or HPV4 to girls and 3-dose series of HPV4 to boys at age 11–12yrs on a 0, 1–2, 6m schedule. (May be given as early as age 9yrs.) - Give a 3-dose series of either HPV2 or HPV4 to all older girls/women (through age 26yrs) and 3-dose series of HPV4 to all older boys/men (through age 21yrs) who were not previously vaccinated.	Minimum intervals between doses: 4wks between #1 and #2; 12 wks between #2 and #3. Overall, there must be at least 24wks between doses #1 and #3. If possible, use the same vaccine product for all doses.	Contraindication Previous anaphylaxis to this vaccine or to any of its components. Precautions - Moderate or severe acute illness. - Pregnancy.

Summary of Recommendations for Child/Teen Immunization (Age birth through 18 years)

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Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Rotavirus (RV) <i>Give orally</i>	• Rotarix (RV1): give at ages 2m, 4m. • RotaTeq (RV5): give at ages 2m, 4m, 6m. • May give dose #1 as early as age 6wks. • Give final dose no later than age 8m 0 days.	• Do not begin series in infants older than age 14wks 6 days. • Intervals between doses may be as short as 4wks. • If prior vaccination included use of different or unknown brand(s), a total of 3 doses should be given.	Contraindications • Previous anaphylaxis to this vaccine or to any of its components. If allergy to latex, use RV5. • History of intussusception. • Diagnosis of severe combined immunodeficiency (SCID). Precautions • Moderate or severe acute illness. • Altered immunocompetence other than SCID. • Chronic gastrointestinal disease. • Spina bifida or bladder exstrophy.
Hepatitis A (HepA) <i>Give IM</i>	• Give 2 doses spaced 6 to 18m apart to all children at age 1yr (12–23m). • Vaccinate all previously unvaccinated children and adolescents age 2yrs and older who - Want to be protected from HAV infection and lack a specific risk factor. - Live in areas where vaccination programs target older children. - Travel anywhere except U.S., W. Europe, N. Zealand, Australia, Canada, or Japan. - Have chronic liver disease, clotting factor disorder, or are adolescent males who have sex with other males. - Use illicit drugs (injectable or non-injectable). - Anticipate close personal contact with an international adoptee from a country of high or intermediate endemicity during the first 60 days following the adoptee's arrival in the U.S.	• Minimum interval between doses is 6m. • Children who are not fully vaccinated by age 2yrs can be vaccinated at subsequent visits. • Consider routine vaccination of children age 2yrs and older in areas with no existing program. • Give 1 dose as postexposure prophylaxis to incompletely vaccinated children and teens age 12m and older who have recently (during the past 2wks) been exposed to hepatitis A virus.	Contraindication Previous anaphylaxis to this vaccine or to any of its components. Precaution Moderate or severe acute illness.
Meningococcal conjugate (MCV4) <i>Give IM</i> Hib-MenCY <i>Give IM</i> Meningococcal polysaccharide (MPSV4) <i>Give SC</i>	• Give quadrivalent MCV (Menactra [MCV4-D] or Menveo [MCV4-CRM]) dose #1 routinely at age 11 through 12yrs and a booster dose at age 16yrs. • Give MCV4 to all unvaccinated teens age 13 through 18yrs; if vaccinated at age 13–15yrs, give booster dose at age 16–18yrs with a minimum interval of at least 8 weeks between doses. • Give 1 initial dose to unvaccinated first-year college students age 19–21yrs who live in residence halls; give booster dose if most recent dose given when younger than age 16yrs. • Give Hib-MenCY (MenHibrix) to children age 2 through 18m with persistent complement component deficiency or anatomic/functional asplenia; give at ages 2, 4, 6, 12–15m • For children age 19 through 23m with persistent complement component deficiency, give either an infant series of Hib-MenCY at ages 2, 4, 6, 12–15m or give 2 doses of MCV4-D starting at age 9m, at least 8wks apart. • Give either brand of MCV4 to unvaccinated children age 24m and older with persistent complement component deficiency or anatomic or functional asplenia; give 2 doses, 2 m apart. If MCV4-D is given, it must be separated by 4wks from the final dose of PCV13.	• If previously vaccinated with MPSV4 or MCV4 and risk of meningococcal disease persists, revaccinate with MCV4 in 3yrs (if previous dose given when younger than age 7yrs) or in 5yrs (if previous dose given at age 7yrs or older). Then, give additional booster doses every 5yrs if risk continues. • When administering MCV4 to children and teens with HIV infection, give 2 initial doses, separated by 8wks. • Minimum ages for MCV: 6 wks (Hib-MenCY), 9m (MCV4-D), 2yrs (MCV4-CRM).	Contraindication Previous anaphylaxis to this vaccine or to any of its components. Precaution Moderate or severe acute illness. Note: Only use MPSV4 if there is a permanent contraindication or precaution to MCV4.

10 Summary of Recommendations for Adult Immunization (Age 19 years & older)

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Vaccine name and route	People for whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Influenza Inactivated Influenza vaccine (IIV) <i>Give IM or intradermally</i> Live attenuated influenza vaccine (LAIV) <i>Give intranasally</i>	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf . • Vaccination is recommended for all adults. (This includes healthy adults age 19–49yrs without risk factors.) • LAIV is approved only for healthy nonpregnant people age 2–49yrs. • Adults age 18 through 64yrs may be given any intramuscular IIV product or, alternatively, the intradermal IIV product (Fluzone Intradermal). • Adults age 65yrs and older may be given standard-dose IIV or, alternatively, high-dose IIV (Fluzone High-Dose). Note: Healthcare personnel who care for severely immunocompromised people (i.e., those who require care in a protected environment) should receive IIV rather than LAIV. For information on other contraindications and precautions to LAIV, see far right column.	• Give 1 dose every year in the fall or winter. • Begin vaccination services as soon as vaccine is available and continue until the supply is depleted. • Continue to give vaccine to unvaccinated adults throughout the influenza season (including when influenza activity is present in the community) and at other times when the risk of influenza exists. • If 2 or more of the following live virus vaccines are to be given—LAIV, MMR, Var, HZV, and/or yellow fever—they should be given on the same day. If they are not, space them by at least 28d.	Contraindications • Previous anaphylactic reaction to this vaccine, to any of its components, including egg protein. • For LAIV only: pregnancy; chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, neurological/neuromuscular, hematologic, or metabolic (including diabetes) disorders; immunosuppression (including that caused by medications or HIV). For adults who experience only hives with exposure to eggs, give IIV with additional safety precautions as found in the 2012 ACIP influenza recommendations, pages 613–618.* Precautions • Moderate or severe acute illness. • History of Guillain-Barré syndrome (GBS) within 6wks following previous influenza vaccination. • For LAIV only: receipt of specific antivirals (i.e., amantadine, rimantadine, zanamivir, or oseltamivir) 48hrs before vaccination. Avoid use of these antiviral drugs for 14d after vaccination.
Pneumococcal polysaccharide (PPSV) <i>Give IM or SC</i> Pneumococcal conjugate (PCV13) <i>Give IM</i>	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf . • People age 65yrs and older. • People younger than age 65yrs who have chronic illness or other risk factors, including chronic cardiac or pulmonary disease (including asthma), chronic liver disease, alcoholism, diabetes, CSF leaks, cigarette smoking, as well as candidates for or recipients of cochlear implants and people living in special environments or social settings (including American Indian/Alaska Natives age 50 through 64yrs if recommended by local public health authorities). • Those at highest risk of serious pneumococcal infection, including people who - Have anatomic or functional asplenia, including sickle cell disease. - Have an immunocompromising condition, including HIV infection, leukemia, lymphoma, Hodgkin’s disease, multiple myeloma, generalized malignancy, chronic renal failure, or nephrotic syndrome. - Are receiving immunosuppressive chemotherapy (including corticosteroids). - Have received an organ or bone marrow transplant.	• Give 1 dose if unvaccinated or if previous vaccination history is unknown. • Give a 1-time revaccination to people - Age 65yrs and older if 1st dose was given prior to age 65yrs and 5yrs have elapsed since dose #1. - Age 19 through 64yrs who are at highest risk of fatal pneumococcal infection or rapid antibody loss (see the 3rd bullet in the box to left for listings of people at highest risk) and 5yrs have elapsed since dose #1. • Give 1 dose of PCV13 to people age 19yrs and older at highest risk of serious pneumococcal infection (see column to left), and to those who have CSF leaks, or are candidates for or recipient of cochlear implants. If previously vaccinated with PPSV, give PCV13 at least 12m following PPSV; if not previously vaccinated with PPSV, give PCV13 first, followed by PPSV in 8wks.	Contraindication Previous anaphylactic reaction to this vaccine, including (for PCV13) to any diphtheria toxoid-containing vaccine, or to any of its components. Precaution Moderate or severe acute illness.

* This document was adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP). To obtain copies of these recommendations, visit CDC’s website at www.cdc.gov/vaccines/pubs/ACIP-list.htm or visit the Immunization Action Coalition (IAC) website at www.immunize.org/acip.

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Summary of Recommendations for Adult Immunization (Age 19 years & older)

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Vaccine name and route	People for whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
MMR (Measles, mumps, rubella) <i>Give SC</i>	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf. • People born in 1957 or later (especially those born outside the U.S.) should receive at least 1 dose of MMR if they have no laboratory evidence of immunity to each of the 3 diseases or documentation of a dose given on or after the first birthday. • People in high-risk groups, such as healthcare personnel (paid, unpaid, or volunteer), students entering college and other post–high school educational institutions, and international travelers, should receive a total of 2 doses. • People born before 1957 are usually considered immune, but evidence of immunity (serology or documented history of 2 doses of MMR) should be considered for healthcare personnel. • Women of childbearing age who do not have acceptable evidence of rubella immunity or vaccination.	• Give 1 or 2 doses (see criteria in 1st and 2nd bullets in box to left). • If dose #2 is recommended, give it no sooner than 4wks after dose #1. • If a pregnant woman is found to be rubella susceptible, give 1 dose of MMR postpartum. • If 2 or more of the following live virus vaccines are to be given—LAIV, MMR, Var, HZV, and/or yellow fever—they should be given on the same day. If they are not, space them by at least 28d. • Within 72hrs of measles exposure, give 1 dose as postexposure prophylaxis to susceptible adults. Note: Routine post-vaccination serologic testing is not recommended.	Contraindications • Previous anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Severe immunodeficiency (e.g., hematologic and solid tumors; receiving chemotherapy; congenital immunodeficiency; long-term immunosuppressive therapy; or severely symptomatic HIV). Note: HIV infection is NOT a contraindication to MMR for those who are not severely immunocompromised (i.e., CD4+ T-lymphocyte counts are greater than or equal to 200 cells/μL) for 6 months.* Precautions • Moderate or severe acute illness. • If blood, plasma, and/or immune globulin were given in past 11m, see ACIP’s <i>General Recommendations on Immunization</i>* regarding time to wait before vaccinating. • History of thrombocytopenia or thrombocytopenic purpura. Note: If TST (tuberculosis skin test) and MMR are both needed but not given on same day, delay TST for 4–6wks after MMR.
Varicella (chickenpox) (Var) <i>Give SC</i>	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf. • All adults without evidence of immunity. Note: Evidence of immunity is defined as written documentation of 2 doses of varicella vaccine; a history of varicella disease or herpes zoster (shingles) based on healthcare-provider diagnosis; laboratory evidence of immunity or confirmation of disease; and/or birth in the U.S. before 1980, with the exceptions that follow. - Healthcare personnel born in the U.S. before 1980 who do not meet any of the criteria above should be tested or given the 2-dose vaccine series. If testing indicates they are not immune, give the 1st dose of varicella vaccine immediately. Give the 2nd dose 4–8 wks later. - Pregnant women born in the U.S. before 1980 who do not meet any of the criteria above should either 1) be tested for susceptibility during pregnancy and if found susceptible, given the 1st dose of varicella vaccine postpartum before hospital discharge, or 2) not be tested for susceptibility and given the 1st dose of varicella vaccine postpartum before hospital discharge. Give the 2nd dose 4–8wks later.	• Give 2 doses. • Dose #2 is given 4–8wks after dose #1. • If dose #2 is delayed, do not repeat dose #1. Just give dose #2. • If 2 or more of the following live virus vaccines are to be given—LAIV, MMR, Var, HZV, and/or yellow fever—they should be given on the same day. If they are not, space them by at least 28d. • May use as postexposure prophylaxis if given within 5d. Note: Routine post-vaccination serologic testing is not recommended.	Contraindications • Previous anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • People on long-term immunosuppressive therapy or who are immunocompromised because of malignancy and primary or acquired immunodeficiency, including HIV/AIDS (although vaccination may be considered if CD4+ T-lymphocyte counts are greater than or equal to 200 cells/μL. See <i>MMWR</i> 2007;56,RR-4). Precautions • Moderate or severe acute illness. • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP’s <i>General Recommendations on Immunization</i>* regarding time to wait before vaccinating. • Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24hrs before vaccination, if possible; delay resumption of these antiviral drugs for 14d after vaccination.
Zoster (shingles) (HZV) <i>Give SC</i>	• People age 60yrs and older.	• Give 1-time dose if unvaccinated, regardless of previous history of herpes zoster (shingles) or chickenpox. • If 2 or more of the following live virus vaccines are to be given—MMR, Var, HZV and/or yellow fever—they should be given on the same day. If they are not, space them by at least 28d.	Contraindications • Previous anaphylactic reaction to any component of zoster vaccine. • Primary cellular or acquired immunodeficiency. • Pregnancy. Precautions • Moderate or severe acute illness. • Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24hrs before vaccination, if possible; delay resumption of these antiviral drugs for 14d after vaccination.

Summary of Recommendations for Adult Immunization (Age 19 years & older)

Vaccine name and route	People for whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Hepatitis A (HepA) <i>Give IM</i> Brands may be used interchangeably.	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf. • All people who want to be protected from hepatitis A virus (HAV) infection and lack a specific risk factor. • People who travel or work anywhere EXCEPT the U.S., Western Europe, New Zealand, Australia, Canada, and Japan. • People with chronic liver disease; injecting and non-injecting drug users; men who have sex with men; people who receive clotting-factor concentrates; people who work with HAV in experimental lab settings; food handlers when health authorities or private employers determine vaccination to be appropriate. • People who anticipate close personal contact with an international adoptee from a country of high or intermediate endemicity during the first 60 days following the adoptee’s arrival in the U.S. • Adults age 40yrs or younger with recent (within 2 wks) exposure to HAV. For people older than age 40yrs with recent (within 2 wks) exposure to HAV, immune globulin is preferred over HepA vaccine.	• Give 2 doses, spaced 6–12m apart. • If dose #2 is delayed, do not repeat dose #1. Just give dose #2. For Twinrix (hepatitis A and B combination vaccine [GSK]) for patients age 18yrs and older only: give 3 doses on a 0, 1, 6m schedule. There must be at least 4wks between doses #1 and #2, and at least 5m between doses #2 and #3. An alternative schedule can also be used at 0, 7d, 21–30d, and a booster at 12m.	Contraindication Previous anaphylactic reaction to this vaccine or to any of its components. Precaution Moderate or severe acute illness.
Hepatitis B (HepB) <i>Give IM</i> Brands may be used interchangeably.	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf. • All adults who want to be protected from hepatitis B virus infection and lack a specific risk factor. • Household contacts and sex partners of HBsAg-positive people; injecting drug users; sexually active people not in a long-term, mutually monogamous relationship; men who have sex with men; people with HIV; people seeking STD evaluation or treatment; hemodialysis patients and those with renal disease that may result in dialysis; diabetics younger than age 60yrs (diabetics age 60yrs and older may be vaccinated at the clinician’s discretion [see ACIP recommendations*]); healthcare personnel and public safety workers who are exposed to blood; clients and staff of institutions for the developmentally disabled; inmates of long-term correctional facilities; certain international travelers; and people with chronic liver disease. Note: Provide serologic screening for immigrants from endemic areas. If patient is chronically infected, assure appropriate disease management. For sex partners and household contacts of HBsAg-positive people, provide serologic screening and administer initial dose of HepB vaccine at same visit.	Give 3 doses on a 0, 1, 6m schedule. • Alternative timing options for vaccination include 0, 2, 4m; 0, 1, 4m; and 0, 1, 2, 12m (Engerix brand only). • There must be at least 4wks between doses #1 and #2, and at least 8wks between doses #2 and #3. Overall, there must be at least 16wks between doses #1 and #3. • Give adults on hemodialysis or with other immunocompromising conditions 1 dose of 40µg/mL (Recombivax HB) at 0, 1, 6m or 2 doses of 20 µg/mL (Engerix-B) given simultaneously at 0, 1, 2, 6m. Schedule for those who have fallen behind: If the series is delayed between doses, DO NOT start the series over. Continue from where you left off.	Contraindication Previous anaphylactic reaction to this vaccine or to any of its components. Precaution Moderate or severe acute illness.
Inactivated Polio (IPV) <i>Give IM or SC</i>	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf. • Not routinely recommended for U.S. residents age 18yrs and older. Note: Adults living in the U.S. who never received or completed a primary series of polio vaccine need not be vaccinated unless they intend to travel to areas where exposure to wild-type virus is likely. Previously vaccinated adults can receive 1 booster dose if traveling to polio endemic areas or to areas where the risk of exposure is high.	• Refer to ACIP recommendations* regarding unique situations, schedules, and dosing information.	Contraindication Previous anaphylactic reaction to this vaccine or to any of its components. Precautions • Moderate or severe acute illness. • Pregnancy.

Summary of Recommendations for Adult Immunization (Age 19 years & older)

(Page 4 of 4)

Vaccine name and route	People for whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Human papillomavirus (HPV) (HPV2, Cervarix) (HPV4, Gardasil) <i>Give IM</i>	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf . • All previously unvaccinated women through age 26yrs and men through age 21yrs. • All previously unvaccinated men through age 26yrs who 1) have sex with men or 2) are immunocompromised as a result of infection (including HIV), disease, or medications or who lack either of the preceding risk factors but want to be vaccinated.	• Give 3 doses on a 0, 2, 6m schedule. Use either HPV2 or HPV4 for women, and only HPV4 for men. • There must be at least 4wks between doses #1 and #2 and at least 12wks between doses #2 and #3. Overall, there must be at least 24wks between doses #1 and #3. If possible, use the same vaccine product for all three doses.	Contraindication Previous anaphylactic reaction to this vaccine or to any of its components. Precautions • Moderate or severe acute illness. • Pregnancy.
Meningococcal conjugate vaccine, quadrivalent (MCV4) Menactra, Menveo <i>Give IM</i> Meningococcal polysaccharide vaccine (MPSV4) Menomune <i>Give SC</i>	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf . • People with anatomic or functional asplenia or persistent complement component deficiency. • People who travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the “meningitis belt” of Sub-Saharan Africa). • Microbiologists routinely exposed to isolates of <i>N. meningitidis</i>. • First year college students through age 21yrs who live in residence halls; see 5th bullet in the box to the right for details.	• Give 2 initial doses of MCV4 separated by 2m to adults 55yrs and younger with risk factors listed in 1st bullet in column to left or if vaccinating adults with HIV infection in this age group. Give 1 dose of MPSV4 to adults 56yrs and older with risk factors. • Give 1 initial dose to all other adults with risk factors (see 2nd–4th bullets in column to left). • Give booster doses every 5yrs to adults with continuing risk (see the 1st–3rd bullets in column to left for listings of people with possible continuing risk). • MCV4 is preferred over MPSV4 for people age 55yrs and younger; use MPSV4 ONLY if age 56yrs or older or if there is a permanent contraindication/precaution to MCV4. • For first year college students age 19–21yrs living in residence halls, give 1 initial dose if unvaccinated and give booster dose if most recent dose was given when younger than age 16yrs.	Contraindication Previous anaphylactic reaction to this vaccine or to any of its components. Precaution • Moderate or severe acute illness.
Tdap, Td (Tetanus, diphtheria, acellular pertussis) <i>Give IM</i> <i>Using tetanus toxoid (TT) instead of Tdap or Td is not recommended.</i>	For people through age 18 years, consult “Summary of Recommendations for Child/Teen Immunization” at www.immunize.org/catg.d/p2010.pdf . • All people who lack written documentation of a primary series consisting of at least 3 doses of tetanus- and diphtheria-toxoid-containing vaccine. • A booster dose of Td or Tdap may be needed for wound management, so consult ACIP recommendations.* For Tdap only: • Adults who have not already received Tdap. • Healthcare personnel of all ages. • Give Tdap to pregnant women during each pregnancy (preferred during 27–36 weeks’ gestation), regardless of number of years since prior Td or Tdap.	• For people who are unvaccinated or behind, complete the primary Td series (spaced at 0, 1–2m, 6–12m intervals); substitute a one-time dose of Tdap for one of the doses in the series, preferably the first. • Give Td booster every 10yrs after the primary series has been completed. • Tdap should be given regardless of interval since previous Td.	Contraindications • Previous anaphylactic reaction to this vaccine or to any of its components. • For Tdap only, history of encephalopathy not attributable to an identifiable cause, within 7d following DTP/DTaP, or Tdap. Precautions • Moderate or severe acute illness. • Guillain-Barré syndrome within 6wks following previous dose of tetanus toxoid-containing vaccine. • History of arthus reaction following a prior dose of tetanus- or diphtheria toxoid-containing vaccine (including MCV4); defer vaccination until at least 10yrs have elapsed since the last tetanus toxoid-containing vaccine. • For Tdap only, progressive or unstable neurologic disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized.

Pneumococcal Vaccines — CDC answers your questions

Experts from the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention answer your questions about pneumococcal polysaccharide (PPSV23) and pneumococcal conjugate (PCV13) vaccines.

How serious is pneumococcal disease?

Pneumococcal disease is a serious disease that causes much sickness and death. In fact, it kills more people in the United States each year than all other vaccine-preventable diseases combined. It is estimated that in the United States in 2007, more than 40,000 cases and more than 4,000 deaths occurred from invasive pneumococcal diseases (bacteremia and meningitis). More than half of the cases occurred in adults who were recommended to receive pneumococcal vaccine. Children younger than age 5 and adults older than 65 have the highest incidence of serious disease.

Case-fatality rates are highest for pneumococcal meningitis and bacteremia, and the highest mortality occurs among the elderly and patients who have underlying medical conditions. Despite appropriate antimicrobial therapy and intensive medical care, the overall case-fatality rate for pneumococcal bacteremia is about 20% among adults. Among elderly patients, the rate may be as high as 60%.

Who is recommended to receive pneumococcal polysaccharide vaccine (PPSV23)?

PPSV23 is recommended for anyone who meets any of the criteria below:

- Age 65 years and older
- Age 2 through 64 years with any of the following conditions
 1. cigarette smokers age 19 years and older
 2. alcoholism
 3. chronic liver disease, cirrhosis
 4. chronic cardiovascular disease, excluding hypertension (e.g., congestive heart failure, cardiomyopathies)
 5. chronic pulmonary disease (including COPD and emphysema, and for adults age 19 years and older, asthma)
 6. diabetes mellitus
 7. candidate for or recipient of cochlear implant
 8. cerebrospinal fluid (CSF) leak
 9. functional or anatomic asplenia (e.g., sickle cell disease, splenectomy)
 10. immunocompromising conditions (e.g., HIV infection, leukemia, congenital immunodeficiency, Hodgkin's disease, lymphoma, multiple myeloma, generalized malignancy, immunosuppressive therapy)
 11. solid organ transplantation; for bone marrow transplantation, see www.cdc.gov/vaccines/pubs/hemato-cell-transplts.htm
 12. chronic renal failure or nephrotic syndrome

Could you briefly summarize the revaccination recommendations for PPSV23?

Children and adults younger than age 65 who are at highest risk for serious pneumococcal infection or likely to have a rapid decline in antibody levels (see categories 9 through 12 in previous answer) should get 2 doses of PPSV 5 years apart, with a third dose after they turn age 65 (if at least 5 years have passed since the last dose). Patients with no risk factors should get 1 dose at age 65. Thus, depending on risk and age at vaccination, a person age 65 or older may have received 1, 2, or 3 doses of PPSV.

What are the recommendations for routinely administering PCV13 to children?

Give infants a primary series of PCV13 at age 2, 4, and 6 months. Boost at age 12 through 15 months. For catch-up vaccination, give PCV13 to healthy children through age 59 months and give PCV13 to children through age 71 months who have certain underlying medical conditions. For information on underlying medical conditions, see next question and answer.

Which underlying medical conditions indicate that an older child or teen should receive PCV13?

PCV13 vaccination is recommended for unvaccinated children age 2 through 71 months (6 years) who are in categories 4–12 in the numbered list to the left. Consider vaccination for children age 6 through 18 years who are in categories 8–12.

Which adults are recommended to receive a dose of PCV13 vaccine?

Adults age 19 years and older who have not previously received PCV13 and who have the conditions specified below should receive a PCV13 dose at the next vaccination opportunity.

- Immunocompromising conditions (e.g., congenital or acquired immunodeficiency, HIV, chronic renal failure, nephrotic syndrome, leukemia, lymphoma, Hodgkin's disease, generalized malignancy, iatrogenic immunosuppression, solid organ transplant, and multiple myeloma)
- Functional or anatomic asplenia (e.g., sickle cell disease and other hemoglobinopathies and congenital and acquired asplenia)
- Cerebrospinal fluid (CSF) leak
- Cochlear implants

For complete information on CDC's recommendations for the use of pneumococcal vaccines, go to www.immunize.org/acip

What dosing intervals should be observed when giving PCV13 and PPSV23 to patients (children and adults) who are recommended to receive both vaccines?

Give PCV13 first and give PPSV23 8 weeks later. If the patient has already received PPSV23, wait 1 year before giving PCV13 to avoid interference between the 2 vaccines.

If patients who are in a recommended risk group for PPSV23 or PCV13 aren't sure if they have already received these vaccines, should healthcare providers vaccinate them?

Yes. If patients do not have a documented vaccination history and their records are not readily obtainable, you should administer the recommended doses. Extra doses will not harm the patient.

We just gave PPSV23 to a 66-year-old patient who is newly diagnosed with a medical condition that places him at increased risk for pneumococcal disease and its complications. Should we give him a second dose in 5 years because of his underlying medical condition?

No. People who are first vaccinated with PPSV23 at age 65 years or older should receive only 1 dose, regardless of their underlying medical condition.

When should I vaccinate a child or adult who is planning to have either a cochlear implant or elective splenectomy?

If possible, administer the appropriate vaccine prior to the splenectomy or cochlear implant so that the person planning to have the procedure has antibody to pneumococcus at the time of the surgery. If the procedure is done on an emergency basis, vaccinate as soon as possible according to the routine schedule. Administer a dose of PPSV23 to all patients no sooner than 8 weeks (minimum interval) from the previous dose of PCV13.

If a patient has had laboratory-confirmed pneumococcal pneumonia, does he or she still need to be vaccinated with PCV13 and/or PPSV23?

Yes. More than 90 known serotypes of pneumococcus exist (23 serotypes are in PPSV23 and 13 serotypes are in PCV13). Infection with one serotype does not necessarily produce immunity to other serotypes. As a result, patients who are candidates for vaccination should be vaccinated even if they have had one or more episodes of invasive pneumococcal disease.

For a table view of the recommendations, see “Pneumococcal Vaccination Recommendations for Children and Adults by Age and/or Risk Factor” at www.immunize.org/catg.d/p2019.pdf.

Pneumococcal Vaccination Recommendations for Children¹ and Adults by Age and/or Risk Factor

Risk Group	Underlying medical condition or other risk factor	Recommendations for Vaccination with Pneumococcal Conjugate Vaccine (PCV13)			Recommendations for Vaccination with Pneumococcal polysaccharide vaccine (PPSV23)		
		Administer doses needed to complete schedule to children through age 71 months	Consider administering 1 dose to PCV13-naïve children age 6–18 years	Administer 1 dose to PCV13-naïve adults age 19 years and older	Administer 1 dose at age 2 through 64 years	Administer second dose 5 years after first dose if age <65 years	Administer 1 dose at age 65 years
Immuno-competent	Healthy adult, non-smoker						X
	Chronic heart disease ²	X			X		X
	Chronic lung disease ³	X			X		X
	Diabetes mellitus	X			X		X
	Cerebrospinal fluid leak	X	X	X	X		X
	Cochlear implant	X	X	X	X		X
	Alcoholism				X		X
	Chronic liver disease, cirrhosis				X		X
	Cigarette smoking (≥19 yrs)				X		X
Functional or anatomic asplenia	Sickle cell disease/other hemoglobinopathy	X	X	X	X	X	X
	Congenital or acquired asplenia	X	X	X	X	X	X
Immuno-compromised	Congenital or acquired immunodeficiency ⁴	X	X	X	X	X	X
	HIV	X	X	X	X	X	X
	Chronic renal failure	X	X	X	X	X	X
	Nephrotic syndrome	X	X	X	X	X	X
	Leukemia	X	X	X	X	X	X
	Lymphoma	X	X	X	X	X	X
	Hodgkin disease	X	X	X	X	X	X
	Generalized malignancy	X	X	X	X	X	X
	Iatrogenic immunosuppression ⁵	X	X	X	X	X	X
	Solid organ transplant	X	X	X	X	X	X
	Multiple myeloma	X	X	X	X	X	X

Technical content reviewed by the Centers for Disease Control and Prevention

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www.immunize.org/catg.d/p2019.pdf • Item #P2019 (2/13)

1. For PCV13 vaccination of healthy children, see “Recommendations for Pneumococcal Vaccine Use in Children” at www.immunize.org/catg.d/p2016.pdf.
2. Particularly cyanotic congenital heart disease and cardiac failure in children; excluding hypertension in adults.
3. Including asthma in children if treated with high-dose oral corticosteroid therapy; including asthma in adults.

4. Includes B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease).
5. Diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy.

Vaccinations for Infants and Children, Age 0–10 Years

Getting your child vaccinated on time will help protect him or her against 15 vaccine-preventable diseases. Ask your child's healthcare provider if your child is up to date with all recommended vaccines.

Vaccine	Is your child up to date?
Chickenpox (varicella; Var)	Your child needs 2 doses of chickenpox vaccine. The first dose is given at 12–15 months and the second at 4–6 years.
Diphtheria, tetanus, and whooping cough (pertussis; DTaP)	Your child needs 5 doses of DTaP vaccine. The first dose is given at 2 months, the second at 4 months, the third at 6 months, the fourth at 15–18 months, and the fifth at 4–6 years.
Haemophilus influenzae type b (Hib)	Your child needs 3–4 doses of Hib vaccine, depending on the brand of vaccine. The first dose is given at 2 months, the second at 4 months, the third at 6 months (if needed), and the last at 12–15 months.
Hepatitis A (HepA)	Your child needs 2 doses of hepatitis A vaccine. The first dose is given at age 1 year and the second 6–18 months later.
Hepatitis B (HepB)	Your child needs 3–4 doses of hepatitis B vaccine, depending on the brand of vaccine. The first dose is given at birth, the second at 1–2 months, the third at 4 months (if needed), and the last at 6–18 months.
Influenza (Flu)	Everyone age 6 months and older needs influenza vaccination every fall or winter and for the rest of their lives. Some children younger than age 9 years may need 2 doses. Ask your child's healthcare provider if your child needs more than 1 dose.
Measles, mumps, rubella (MMR)	Your child needs 2 doses of MMR vaccine. The first dose is given at 12–15 months and the second at 4–6 years.
Meningococcal (MCV)	Meningococcal conjugate vaccine (MCV) is recommended for infants and children with certain health conditions. Talk with your healthcare provider to find out if your child needs MCV. Two doses are recommended for all children starting at age 11 years.
Pneumococcal (PCV13, PPSV23)	Your child needs 4 doses of pneumococcal conjugate vaccine (PCV). The first dose is given at 2 months, the second at 4 months, the third at 6 months, and the fourth at 12–15 months. Some children need a dose of PPSV pneumococcal vaccine. Ask your child's healthcare provider if your child needs this extra protection against pneumococcal disease.
Polio (IPV)	Your child needs 4 doses of polio vaccine (IPV). The first dose is given at 2 months, the second at 4 months, the third at 6–18 months, and the fourth at 4–6 years.
Rotavirus (RV)	Your child needs 2–3 doses of rotavirus vaccine (RV), depending on the brand of vaccine. The first dose is given at 2 months, the second at 4 months, and the third (if needed) at 6 months.

If your child will be traveling outside the United States, additional vaccines may be needed. For information, consult your healthcare provider, a travel clinic, or the Centers for Disease Control and Prevention at www.cdc.gov/travel.

Vaccinations for Preteens and Teens, Age 11–19 Years

Getting immunized is a lifelong, life-protecting job. Make sure you and your healthcare provider keep your immunizations up to date. Check to be sure you've had all the vaccinations you need.

Vaccine	Do you need it?
Chickenpox (varicella; Var)	If you haven't been vaccinated and haven't had chickenpox, you need 2 doses of this vaccine. Anybody who was vaccinated with only 1 dose should get a second dose.
Hepatitis A (HepA)	You need 2 doses of hepatitis A vaccine if you would like to be protected from this disease or if you have a risk factor for hepatitis A. Check with your healthcare provider to find out if you need this vaccine.
Hepatitis B (HepB)	This vaccine is recommended for all people age 0–18 years. You need a series of doses of hepatitis B vaccine if you have not already received them.
Human papillomavirus (HPV)	All preteens and teens age 11 and older need 3 doses of HPV vaccine. The vaccine protects against HPV, the most common cause of cervical cancer. It also protects against some other types of cancers, such as cancer of the anus and penis.
Influenza (Flu)	Everyone age 6 months and older needs influenza vaccination every fall or winter and for the rest of their lives.
Measles, mumps, rubella (MMR)	You need 2 doses of MMR vaccine if you have not already received them. MMR vaccine is usually given in childhood.
Meningococcal (MCV4)	All preteens and teens age 11–18 years need 2 doses of MCV4. If you are a first-year college student living in a residence hall, you need a dose of MCV4 if you have never received it or received it when you were younger than 16. Check with your healthcare provider.
Pneumococcal (PCV13, PPSV23)	Do you have a chronic health problem? If so, check with your healthcare provider to find out if you need the pneumococcal vaccine.
Polio (IPV)	You need a series of at least 3 doses of polio vaccine if you have not already received them. Polio vaccine is usually given in childhood.
Tetanus, diphtheria, and whooping cough (pertussis; Tdap)	All preteens and teens (and adults!) need a dose of Tdap vaccine, a vaccine that protects you from tetanus, diphtheria, and whooping cough (pertussis). After getting a dose of Tdap, you will need a tetanus-diphtheria (Td) shot every ten years.

If you will be traveling outside the United States, additional vaccines may be needed. For information, consult your healthcare provider, a travel clinic, or the Centers for Disease Control and Prevention at www.cdc.gov/travel.

Do I Need Any Vaccinations Today? – A questionnaire for adults

YOUR NAME _____ DATE OF BIRTH _____ / ____ / ____ TODAY'S DATE _____ / ____ / ____
month / day / year month / day / year

☒ Do I Need Any Vaccinations Today?

This questionnaire will help you and your healthcare provider determine if you need any vaccinations today. Please check the boxes that apply to you.

Influenza vaccination

- ☐ I haven't had my annual influenza vaccination yet this season – so I need it now.

Pneumococcal vaccination (PPSV23, PCV13)

- ☐ I am 65 or older. I either never received a pneumococcal shot or I don't remember receiving a shot.
- ☐ I am 65 or older and received 1 or 2 doses of pneumococcal vaccine when I was younger than 65. It has either been 5 years or more since my last shot or I don't remember how long it has been.
- ☐ I am younger than 65. I have not been vaccinated against pneumococcal disease, and I am in one of the following risk groups:
- ☐ I smoke cigarettes.
 - ☐ I have heart, lung (including asthma), liver, kidney, or sickle cell disease; diabetes; or alcoholism.
 - ☐ I have a weakened immune system due to cancer, Hodgkin's disease, leukemia, lymphoma, multiple myeloma, kidney failure, HIV/AIDS; or I am receiving radiation therapy; or I am on medication that suppresses my immune system.
 - ☐ I had an organ or bone marrow transplant.
 - ☐ I had my spleen removed, had or will have a cochlear implant, or have leaking spinal fluid.
 - ☐ I live in a nursing home or other long-term care facility, and I have never had a pneumococcal shot.

Tetanus-, diphtheria-, and pertussis (whooping cough)-containing vaccination (e.g., DTP, DTaP, Tdap, or Td)

- ☐ I either never received a dose of Tdap vaccine or I don't remember if I have.
- ☐ I have not yet received at least 3 tetanus- and diphtheria- containing shots.
- ☐ I have received at least 3 tetanus- and diphtheria-containing shots in my lifetime, but I believe it's been 10 years or more since I received my last shot.
- ☐ I am in my late second or third trimester of my pregnancy and haven't had a dose of Tdap vaccine during this pregnancy.

Measles-Mumps-Rubella (MMR) vaccination

- ☐ I was born in 1957 or later and either never received an MMR shot or I don't remember receiving a shot.
- ☐ I am a woman thinking about a future pregnancy and do not know if I'm immune to rubella.
- ☐ I am a healthcare worker, and I have no laboratory evidence of immunity to measles, mumps, or rubella. I received 1 dose of MMR vaccine, but I don't remember receiving 2 doses.
- ☐ I was born in 1957 or later. I received only 1 MMR shot, and I am in one of the following groups:
- ☐ I am entering college or a post-high school educational institution.
 - ☐ I am planning to travel internationally.

continued on page 2 ►



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• I have been diagnosed with HIV.

continued on page 3 ►

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After the Shots . . . What to do if your child has discomfort

After the Shots...

Your child may need extra love and care after getting vaccinated. Some vaccinations that protect children from serious diseases also can cause discomfort for a while.

Here are answers to questions many parents have after their children have been vaccinated. If this sheet doesn't answer your questions, call your healthcare provider.

Vaccinations may hurt a little... but disease can hurt a lot!

Call your healthcare provider right away if you answer "yes" to any of the following questions:

- ☐ Does your child have a temperature that your healthcare provider has told you to be concerned about?
- ☐ Is your child pale or limp?
- ☐ Has your child been crying for more than 3 hours and just won't quit?
- ☐ Is your child's body shaking, twitching, or jerking?
- ☐ Is your child very noticeably less active or responsive?

► Please see page 2 for information on the proper amount of medicine to give your child to reduce pain or fever.

What to do if your child has discomfort

I think my child has a fever. What should I do?

Check your child's temperature to find out if there is a fever. An easy way to do this is by taking a temperature in the armpit using an electronic thermometer (or by using the method of temperature-taking your healthcare provider recommends). If your child has a temperature that your healthcare provider has told you to be concerned about or if you have questions, call your healthcare provider.

Here are some things you can do to help reduce fever:

- Give your child plenty to drink.
- Dress your child lightly. Do not cover or wrap your child tightly.
- Give your child a fever- or pain-reducing medicine such as acetaminophen (e.g., Tylenol) or ibuprofen (e.g., Advil, Motrin). The dose you give your child should be based on your child's weight and your healthcare provider's instructions. See the dose chart on page 2. *Do not give aspirin.* Recheck your child's temperature after 1 hour. Call your healthcare provider if you have questions.

My child has been fussy since getting vaccinated. What should I do?

After vaccination, children may be fussy because of pain or fever. To reduce discomfort, you may want to give your child a medicine such as acetaminophen or ibuprofen. See the dose chart on page 2. *Do not give aspirin.* If your child is fussy for more than 24 hours, call your healthcare provider.

My child's leg or arm is swollen, hot, and red. What should I do?

- Apply a clean, cool, wet washcloth over the sore area for comfort.
- For pain, give a medicine such as acetaminophen or ibuprofen. See the dose chart on page 2. *Do not give aspirin.*
- If the redness or tenderness increases after 24 hours, call your healthcare provider.

My child seems really sick. Should I call my healthcare provider?

If you are worried at all about how your child looks or feels, call your healthcare provider!

HEALTHCARE PROVIDER: PLEASE FILL IN THE INFORMATION BELOW.

If your child's temperature is _____°F or _____°C or higher, or if you have questions, call your healthcare provider.

Healthcare provider phone number: _____

page 1 of 2

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AFTER THE SHOTS: WHAT TO DO IF YOUR CHILD HAS DISCOMFORT

Medicines and Dosages

Choose the proper medicine, and make sure you give it right.

1. Ask your healthcare provider or pharmacist for the proper medicine.
2. Give the dose based on your child's age. Do not give more than the dose shown.
3. If you have questions about dosages, call your healthcare provider.
4. Always use a proper measuring device.
 - When giving acetaminophen liquid, use the measuring device that came with the medicine.
 - When giving ibuprofen liquid, use a kitchen spoon!

Take these two steps to avoid causing discomfort:

1. Don't give your child a larger amount of medicine than is shown in the table below. Too much medicine can cause discomfort.
2. When you give your child acetaminophen or cold medicines. This can also cause discomfort unless you talk to your child's healthcare provider.

Acetaminophen (Tylenol or another brand name)
Give every 4 to 6 hours, as needed, no more than 5 doses in 24 hours.

CHILD'S WEIGHT	CHILD'S AGE	OLD FASHIONED INFANT
6–11 lbs (2.7–5 kg)	0–3 mos	Advise
12–17 lbs (5.5–7.7 kg)	4–11 mos	Advise
18–23 lbs (8.2–10.5 kg)	12–23 mos	Advise
24–35 lbs (10.9–15.9 kg)	2–3 yrs	1.6 mL
36–47 lbs (16.4–21.4 kg)	4–5 yrs	
48–59 lbs (21.8–26.8 kg)	6–8 yrs	
60–71 lbs (27.3–32.3 kg)	9–10 yrs	
72–95 lbs (32.7–43.2 kg)	11 yrs	

Ibuprofen (Advil, Motrin, or another brand name)
Give every 6 to 8 hours, as needed, no more than 4 doses in 24 hours.

CHILD'S WEIGHT	CHILD'S AGE	INFANT
less than 11 lbs (5 kg)	0–5 mos	
12–17 lbs (5.5–7.7 kg)	6–11 mos	1.25 mL
18–23 lbs (8.2–10.5 kg)	12–23 mos	1.875 mL
24–35 lbs (10.9–15.9 kg)	2–3 yrs	
36–47 lbs (16.4–21.4 kg)	4–5 yrs	
48–59 lbs (21.8–26.8 kg)	6–8 yrs	
60–71 lbs (27.3–32.3 kg)	9–10 yrs	
72–95 lbs (32.7–43.2 kg)	11 yrs	

* **HEALTHCARE PROVIDER: PLEASE FILL IN THE ADVISED DOSE.**

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www.immunize.org/catg.d/p4015.pdf

IAC's
"Ask the
Experts"
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from
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Andrew T. Kroger, MD, MPH



Donna L. Weaver, RN, MN



Iyabode Akinsanya-Beyislow, MD, MPH

pregnancy, even if the woman had received Tdap previously. The optimal time to administer Tdap is between 27 and 36 weeks' gestation. Vaccination during this time maximizes maternal antibody response and passive antibody transfer to the infant. Women who have never received Tdap and who do not receive it during pregnancy should receive it immediately postpartum.

When a woman gets Tdap during pregnancy, maternal pertussis antibodies transfer to the newborn, likely protecting the baby against pertussis in early life, before the baby is old enough to have received at least 3 doses of DTaP. Tdap also protects the mother, making it less likely that she will get infected with pertussis during or after pregnancy and thus less likely that she will transmit it to her infant.

The related provisional recommendations for the use of Tdap in pregnancy were published on December 6, 2012. CDC anticipates releasing the final updated recommendations in the Feb. 22 issue of *MMWR*. To access the new recommendations, visit www.cdc.gov/vaccines/pubs/ACIP-list.htm.

If a woman did not receive Tdap during pregnancy, and it is uncertain whether she received a dose of Tdap prior to her pregnancy, should she receive a dose of Tdap postpartum?

Yes. If there is no written documentation that she received a dose of Tdap prior to or during pregnancy, a dose of Tdap should be administered to her immediately postpartum.

A 7-year-old who needed a tetanus shot for wound management came into our emergency department. My question is, if a child has received the complete 5-dose series of DTaP but has never had Tdap, should the child receive Tdap or Td for wound management?

Answer corrected on February 25, 2013. Neither. A child who has completed 5 doses of DTaP has by definition received the fifth dose on or after his/her 4th birthday. In this child's case, it has been less than four years since receipt of the complete series, so the child does not need either Tdap or Td. The child is fully vaccinated against tetanus according to CDC tetanus wound management guidelines.

I have an adult patient with controlled epilepsy

who wishes to receive the Tdap vaccine. May I vaccinate him?

Controlled epilepsy is not a contraindication to receipt of Tdap. To access IAC's table of vaccine contraindications and precautions, go to www.immunize.org/catg.d/p3072a.pdf. CDC also makes this information available at www.cdc.gov/vaccines/recs/vac-admin/contraindications-vacc.htm.

Meningococcal vaccine

What are the new ACIP recommendations for use of MenHibrix, the new combination meningococcal Groups C and Y and Haemophilus influenzae type b vaccine?

Licensed in June 2012, MenHibrix (Hib-MenCY; GSK) is a vaccine indicated for active immunization to prevent invasive disease caused by *Neisseria meningitidis* serogroups C and Y and *Haemophilus influenzae* type b. This vaccine does not protect against meningococcal serogroups A, B, and W135.

In October 2012, ACIP voted to recommend that infants at increased risk for meningococcal disease be vaccinated with 4 doses of Hib-MenCY at age 2, 4, 6, and 12 through 15 months. This includes infants with recognized persistent complement pathway deficiencies and infants who have anatomic or functional asplenia, including sickle cell disease. Hib-MenCY can be used in infants age 2 through 18 months who live in communities with serogroup C and Y meningococcal disease outbreaks. On October 24, 2012, CDC published a media advisory on the use of Hib-MenCY vaccine. It's available at www.cdc.gov/media/releases/2012/a1024_HibMenCY.html.

IAC has developed a handy reference table that summarizes ACIP's recommendations for meningococcal vaccination of children and adults. It's available at www.immunize.org/catg.d/p2018.pdf.

HPV vaccine

Is fainting after the first or second dose of HPV vaccine a contraindication to administering subsequent doses?

No. Fainting is not a contraindication to administering a subsequent dose of any vaccine. Fainting

after vaccination is fairly common in adolescence. Providers should prepare for the possibility by having patients sit or lie down when receiving the vaccine and observing patients for 15 minutes after vaccination. For more information on syncope and vaccination, visit the CDC website at www.cdc.gov/vaccinesafety/Concerns/syncope_faqs.html.

Influenza vaccine

How soon after taking prednisone for an asthma attack can a child receive a flu shot?

Steroid treatment is not a contraindication for vaccination with inactivated influenza vaccine. As this vaccine is not a live virus vaccine, you can (and should) give it to people who are immunosuppressed, although the patient's immune response may not be optimal. Immunosuppression (e.g., from certain steroid treatments) is a concern only when administering live virus vaccines.

We inadvertently administered an adult dose (0.5 mL) of influenza vaccine to an 8-month-old infant. Does this child need the second dose?

Yes. Giving a larger-than-recommended dose of any vaccine does not negate the need for indicated subsequent doses.

MMR vaccine

I understand that ACIP recently changed its definition of evidence of immunity to measles, rubella, and mumps. Please explain.

At its October 2012 meeting, ACIP voted to include "laboratory confirmation of disease" as evidence of immunity for measles, mumps, and rubella. ACIP voted to remove "physician diagnosis of disease" as evidence of immunity for measles and mumps. "Physician diagnosis of disease" had not previously been accepted as evidence of immunity for rubella. With the decrease in measles and mumps cases over the last 30 years, the validity of physician-diagnosed disease has become questionable. In addition, documenting history from physician records is not a practical option for most adults. The provisional MMR recommendations are currently available on the CDC website at www.cdc.gov/vaccines/recs/provisional/default.htm.

Please note that provisional ACIP recommendations become CDC recommendations once they are accepted by the director of CDC and the Secretary of Health and Human Services and are published in *MMWR*.

Needle Tips correction policy

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What are the new provisional ACIP recommendations for use of immune globulin (IG) for measles post-exposure prophylaxis?

At its October 2012 meeting, ACIP voted to expand the use of post-exposure IG prophylaxis for measles.

- Infants younger than 12 months who have been exposed to measles should receive an IG dose of 0.5 mL/kg of body weight. Give IG intramuscularly (IGIM); the maximum dose is 15 mL. Alternatively, MMR vaccine can be given instead of IGIM, to infants age 6–11 months, if it can be given within 72 hours of exposure.
- Pregnant women without evidence of measles immunity who are exposed to measles should receive an IG dose of 400 mg/kg of body weight. Give IG intravenously (IGIV).
- Severely immunocompromised people, irrespective of evidence of measles immunity, who have been exposed to measles should receive an IG dose of 400 mg/kg of body weight. Give IG intravenously (IGIV).
- Other people who do not have evidence of measles immunity can receive an IG dose of 0.5 mL/kg of body weight. Give priority to people who were exposed to measles in settings where they have intense, prolonged close contact (e.g., household, child care, classroom, etc.). Give IG intramuscularly; the maximum dose is 15 mL.

Full details about these provisional recommendations, including the definition of severely immunocompromised people, are available at www.cdc.gov/vaccines/recs/provisional/downloads/mmr-Oct-2012.pdf.

Please describe the new provisional ACIP recommendations for the use of MMR vaccine in people who are HIV-infected.

Provisional ACIP recommendations for vaccinat-

ing people with HIV infection are as follows:

- Administer 2 doses of MMR vaccine to all HIV-infected people age 12 months and older who do not have evidence of current severe immunosuppression or current evidence of measles, rubella, and mumps immunity. To be regarded as not having evidence of current severe immunosuppression, a child age 5 years or younger must have CD4 percentages of 15% or more for 6 months or more; a person older than 5 years must have CD4 percentages of 15% or more and a CD4 lymphocyte count of 200 or more/mm³ for 6 months or more.
- Administer the first dose to babies age 12 through 15 months and the second dose to children age 4 through 6 years, or as early as 28 days after the first dose.
- Unless they have acceptable current evidence of measles, rubella, and mumps immunity, people with perinatal HIV infection who were vaccinated prior to establishment of effective antiretroviral therapy (ART) should receive 2 appropriately spaced doses of MMR vaccine after effective ART has been established. Children age 5 years or younger must have CD4 percentages of 15% or more for 6 months or more; people older than 5 years must have CD4 percentages of 15% or more and a CD4 lymphocyte count of 200 or more/mm³ for 6 months or more.

Vaccine administration

Some single-dose pre-loaded vaccines come with an air pocket in the syringe chamber. Do we need to expel the air pocket before vaccinating?

No. You do not need to get rid of the air pocket. The air will be absorbed. This is not true for syringes that you fill yourself; you should expel air bubbles from these syringes prior to vaccination to the extent that you can readily do so.*(See editor's clarification.)

Is it recommended to use a new alcohol swab to cleanse the skin before administering a vaccine, or can we swab the skin with the same alcohol swab that we used to wipe off the stopper on the vial?

You should use separate alcohol wipes to clean the vial top and the patient's skin.

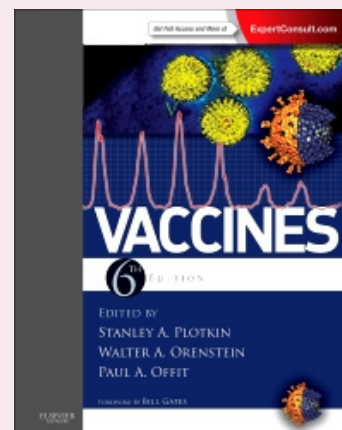
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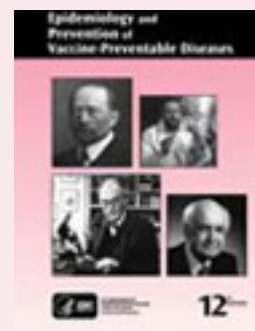
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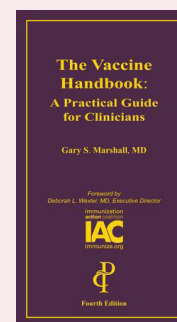
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