

# VACCINATE ADULTS!

from the Immunization Action Coalition — [www.immunize.org](http://www.immunize.org)

## What's In This Issue

New ACIP Recommendations .....	1
Ask the Experts:	
CDC Answers Your Questions .....	1
IAC's Redesigned	
"Talking About Vaccines" Web Section .....	2
Vaccine Highlights .....	4
Recommended U.S. Adult	
Immunization Schedule .....	6
Guide to Contraindications and Precautions	
to Commonly Used Vaccines in Adults .....	9
Vaccination Schedules for All Adults	
and High-risk Adults .....	10
Vaccinations for Pregnant Women .....	11
Patient Handout: Protect Yourself from	
Pneumococcal Disease...Get Vaccinated! .....	12
Medical Management of Vaccine Reactions	
in Adults .....	13
Handy VIS Reference Charts .....	14
The Vaccine Handbook:	
A Practical Guide for Clinicians .....	15
IAC's Immunization Resources Order Form .....	18

## New ACIP recommendations for HPV, influenza, MenB, typhoid, and yellow fever vaccines. Make sure you're up to date!

An abundance of new guidance has recently been issued for the use of vaccines by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP) in 2015 and more will be published soon. The guidance covers the use of 9-valent human papillomavirus vaccine (9vHPV, Gardasil 9, Merck); meningococcal serotype B vaccines (MenB: Bexsero, GlaxoSmithKline; Trumenba, Pfizer); influenza vaccines, typhoid vaccines (Typhim Vi, Sanofi Pasteur; Vivotif, Pax Vax) and yellow fever vaccine (YF, YF-VAX, Sanofi-Pasteur).

The following provides a brief summary of the recent changes voted upon at the February ACIP meeting, as well as recommendations recently published in *Morbidity and Mortality Weekly Report (MMWR)*.

### Human papillomavirus vaccine

On March 27, *MMWR* published "Use of 9-Valent Human Papillomavirus (HPV) Vaccine: Updated HPV Vaccination Recommendations of the ACIP."

The new 9vHPV vaccine is recommended for use along with the other HPV vaccines already recommended for use by ACIP. The recommendations include HPV vaccination of all boys and

girls at age 11 or 12 years, with HPV vaccine use recommended for females through age 26 and for males through age 21, as well as for men through age 26 who are immunocompromised or who have sex with men. For females, the 2-valent (2vHPV, Cervarix, GlaxoSmithKline), 4-valent (4vHPV, Gardasil, Merck), or 9-valent (9vHPV) HPV vaccines may be used. For males, either 4vHPV or 9vHPV should be administered. Any recommended HPV vaccine, including 9vHPV, may be used to complete a previously begun HPV vaccine series. Updated ACIP HPV recommendations are available online at [www.cdc.gov/mmwr/pdf/wk/mm6411.pdf](http://www.cdc.gov/mmwr/pdf/wk/mm6411.pdf), pages 300–304.

### Influenza vaccine

At its February meeting, ACIP voted to approve its annual influenza vaccine recommendations for the 2015–2016 influenza season. The committee reaffirmed the need for annual influenza vaccination for all people age 6 months and older. Access a related CDC press release at [www.cdc.gov/media/releases/2015/s0226-acip.html](http://www.cdc.gov/media/releases/2015/s0226-acip.html).

**Recommendations...continued on page 5 ►**

## Ask the Experts

The Immunization Action Coalition extends thanks to our experts, medical officer Andrew T. Kroger, MD, MPH, and nurse educator Donna L. Weaver, RN, MN, both with the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention (CDC).

### Stay current with FREE subscriptions

The Immunization Action Coalition's 2 periodicals, *Vaccinate Adults* and *Needle Tips*, and our email news service, *IAC Express*, are packed with up-to-date information.

**Subscribe to all 3 free publications in one place. It's simple! Go to**

[www.immunize.org/subscribe](http://www.immunize.org/subscribe)

### HPV vaccine

#### Which types of HPV are most likely to cause disease?

Of the annual average of 26,900 HPV-related cancers in the United States, approximately 64% are attributable to HPV 16 or 18 (65% for females; 63% for males; approximately 21,300 cases annually), which are included in all three HPV vaccines. Approximately 10% are attributable to HPV types 31, 33, 45, 52, and 58 (14% for females; 4% for males; approximately 3,400 cases annually), which are included in the 9-valent HPV vaccine. HPV type 16, 18, 31, 33, 45, 52, or 58 account for about 81% of cervical cancers in the United States.

Approximately 50% of cervical precancers (CIN2 or greater) are caused by HPV 16 or 18 and 25% by HPV 31, 33, 45, 52, or 58. HPV 6 or 11 cause 90% of anogenital warts (condylomata) and most cases of recurrent respiratory papillomatosis.

More information about HPV and HPV-related cancers is available in the 2014 HPV ACIP statement at [www.cdc.gov/mmwr/pdf/rr/rr6305.pdf](http://www.cdc.gov/mmwr/pdf/rr/rr6305.pdf).

### Are healthcare personnel at risk of occupational infection with HPV?

Occupational infection with HPV is possible. Some HPV-associated conditions (including anogenital and oral warts, anogenital intraepithelial neoplasias, and recurrent respiratory papillomatosis) are treated with laser or electrosurgical procedures that could produce airborne particles. These procedures should be performed in an appropriately ventilated room using standard precautions and local exhaust ventilation. Workers in HPV research laboratories who handle wild-type virus or "quasi virions" might be at risk of acquiring HPV from occupational exposures. In

**Ask the Experts...continued on page 22 ►**

### Immunization questions?

- Email [nipinfo@cdc.gov](mailto:nipinfo@cdc.gov)
- Call your state health department (phone numbers at [www.immunize.org/coordinators](http://www.immunize.org/coordinators))

## Vaccinate Adults!

online at [www.immunize.org/va](http://www.immunize.org/va)  
**Immunization Action Coalition**  
 2550 University Ave. W., Suite 415 North  
 Saint Paul, MN 55114  
 Phone: (651) 647-9009  
 Email: [admin@immunize.org](mailto:admin@immunize.org)  
 Websites: [www.immunize.org](http://www.immunize.org)  
[www.vaccineinformation.org](http://www.vaccineinformation.org)  
[www.immunizationcoalitions.org](http://www.immunizationcoalitions.org)

**Vaccinate Adults** is a publication of the Immunization Action Coalition (IAC) for health-care professionals. Content is reviewed by the Centers for Disease Control and Prevention (CDC) for technical accuracy. This publication is supported in part by CDC Grant No. U38IP000589. Content is solely the responsibility of IAC and does not necessarily represent the official views of CDC. ISSN 1944-2017.

### Publication Staff

Executive Editor: Deborah L. Wexler, MD  
 Editor: Mary Quirk  
 Associate Editor: Diane C. Peterson  
 Consulting Editors: Teresa Anderson, DDS, MPH; Marian Deegan, JD; Linda Moyer, RN  
 Editorial Assistant: Janelle T. Anderson, MA  
 Website Design: Sarah Joy

### IAC Staff

Chief Strategy Officer:  
 L.J. (Litjen) Tan, MS, PhD  
 Assoc. Director for Immunization Education:  
 William L. Atkinson, MD, MPH  
 Associate Director for Research:  
 Sharon G. Humiston, MD, MPH  
 Coordinator for Public Health:  
 Laurel Wood, MPA  
 Coordinator for Hepatitis B Projects:  
 Lynn Pollock, RN, MSN  
 Perinatal Hepatitis B Consultant:  
 Beth Rowe-West, BSN  
 Sr. Admin. for Grants and Leadership:  
 Julie Murphy, MA  
 Operations Manager: Robin VanOss  
 Associate Operations Manager: Casey Pauly

IAC publishes a free email news service (*IAC Express*) and two free periodicals (*Vaccinate Adults* and *Needle Tips*). To subscribe, go to [www.immunize.org/subscribe](http://www.immunize.org/subscribe).

IAC, a 501(c)(3) charitable organization, publishes practical immunization information for health professionals to help increase immunization rates and prevent disease.

### The Immunization Action Coalition is also supported by

Merck Sharp & Dohme Corp.  
 Pfizer Inc. • Sanofi Pasteur  
 GlaxoSmithKline  
 Medimmune/AstraZeneca • bioCSL Inc.  
 Physicians' Alliance of America  
 American Pharmacists Association  
 many other generous donors

IAC maintains strict editorial independence in its publications.

## IAC Board of Directors

Stephanie L. Jakim, MD  
*Olmsted Medical Center*  
 Sheila M. Specker, MD  
*University of Minnesota*  
 Debra A. Strodthoff, MD  
*Amery Regional Medical Center*  
 Deborah L. Wexler, MD  
*Immunization Action Coalition*

# Need help responding to vaccine-hesitant patients? Visit IAC's redesigned "Talking About Vaccines" web section for practical tips and key resources!

According to a recent study published in the journal *Pediatrics*, virtually all providers receive requests to spread out the vaccine schedule in a typical month.<sup>1</sup> In medical practices across the nation, healthcare professionals (HCP) are called upon to attest to the safety of vaccines, the importance of vaccination, and the potentially grave consequences of not vaccinating. With appreciation for the challenges facing busy HCP, IAC has redesigned its "Talking About Vaccines" web section ([www.immunize.org/talking-about-vaccines](http://www.immunize.org/talking-about-vaccines)) to provide HCP with background information and practical resources that will help them efficiently and easily discuss immunization with patients.

"Talking About Vaccines" includes the following specific topics:

- Adjuvants and Ingredients
- Alternative Medicine
- Autism
- Countering Dr. Sears
- Importance of Vaccines
- MMR
- Religious Concerns
- Responding to Parents
- Thimerosal
- Too Many Vaccines?
- Vaccine Safety

The updated web section gathers a curated collection of educational print materials, videos, podcasts, blogs, journal articles, PowerPoint presentations, websites, and more, from many trusted sources such as the Immunization Action Coalition, Centers for Disease Control and Prevention, Institute of Medicine, and Vaccine Education Center at Children's Hospital of Philadelphia. Please visit often!

We also recommend you subscribe to our weekly email news service, *IAC Express*, if you're not already on our e-mail list of 50,000 recipients. It's free! Once you complete the sign-up form at [www.immunize.org/subscribe](http://www.immunize.org/subscribe), you'll start receiving email announcements every Tuesday about important developments related to immunization.

<sup>1</sup> Kempe A, O'Leary ST, Kennedy A, et al. Physician Response to Parental Requests to Spread Out the Recommended Vaccine Schedule. *Pediatrics*, April 2015;135(4): 666-677.

[www.immunize.org/talking-about-vaccines](http://www.immunize.org/talking-about-vaccines)

Subscribe to *IAC Express*, the Immunization Action Coalition's e-news and information service at [www.immunize.org/subscribe](http://www.immunize.org/subscribe)

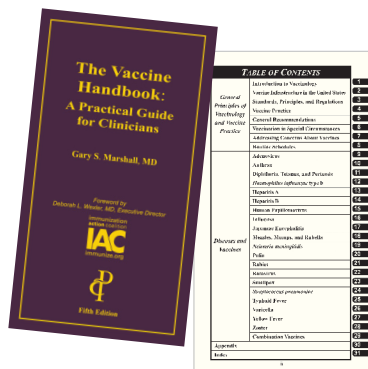
DISCLAIMER: *Vaccinate Adults!* is available to all readers free of charge. Some of the information in this issue is supplied to us by the Centers for Disease Control and Prevention in Atlanta, Georgia, and some information is supplied by third-party sources. The Immunization Action Coalition (IAC) has used its best efforts to accurately publish all of this information, but IAC cannot guarantee that the original information as supplied by others is correct or complete, or that it has been accurately published. Some of the information in this issue is created or compiled by IAC. All of the information in this issue is of a time-critical nature, and we cannot guarantee that some of the information is not now outdated, inaccurate, or incomplete. IAC cannot guarantee that reliance on the information in this issue will cause no injury. Before you rely on the information in this issue, you should first independently verify its current accuracy and completeness. IAC is not licensed to practice medicine or pharmacology, and the providing of the information in this issue does not constitute such practice. Any claim against IAC must be submitted to binding arbitration under the auspices of the American Arbitration Association in St. Paul, Minnesota.

## The Vaccine Handbook: A Practical Guide for Clinicians ("The Purple Book") by Gary Marshall, MD

**NEW!** Fifth edition extensively updated for 2015

Purchase *The Vaccine Handbook* (560 pages)  
from IAC at [www.immunize.org/vaccine-handbook](http://www.immunize.org/vaccine-handbook).

\$29.95 + shipping • Discount pricing available!

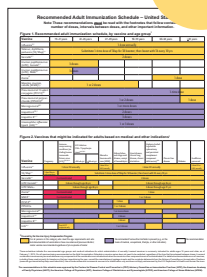


## Laminated adult and child immunization schedules Order one of each for every exam room

2015

The 2015 versions of the ACIP/AAP/ACOG/ACNM-approved schedule for adults (6-sided) and the ACIP/AAP/AAFP-approved immunization schedule for people ages 0 through 18 years (8-sided). Both are laminated and washable for heavy-duty use, complete with essential footnotes, and printed in color for easy reading.

► To order, visit [www.immunize.org/shop](http://www.immunize.org/shop), or use the order form on page 18. Quantity discounts are available.



Schedules: \$7.50 each

## Wallet-sized immunization record cards for all ages: For adults, for children and teens, and for a lifetime!



Record  
Cards:  
\$45/box

Now you can give any patient a permanent vaccination record card designed specifically for their age group: adult, child and teen, or lifetime. These brightly colored cards are printed on durable rip-, smudge-, and water-proof paper. Each box contains 250 cards.

► To order, visit [www.immunize.org/shop](http://www.immunize.org/shop), or use the order form on page 18.

Quantity discounts are available. To receive sample cards, contact us: [admininfo@immunize.org](mailto:admininfo@immunize.org)

## Training Video: "Immunization Techniques – Best Practices with Infants, Children, and Adults"



DVD: \$17 each

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.

► To order, visit [www.immunize.org/shop](http://www.immunize.org/shop), or use the order form on page 18.

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

## Advisory Board

### Liaisons from Organizations

**Bernadette A. Albanese, MD, MPH**  
Council of State & Territorial Epidemiologists

**Stephen L. Cochi, MD, MPH**  
Nat'l Ctr. for Immun. & Resp. Diseases, CDC

**Bruce Gellin, MD, MPH**  
National Vaccine Program Office, DHHS

**Neal A. Halsey, MD**  
Institute for Vaccine Safety, Johns Hopkins Univ.

**Claire Hannan, MPH**  
Association of Immunization Managers

**Carol E. Hayes, CNM, MN, MPH**  
American College of Nurse-Midwives

**Gregory James, DO, MPH, FACOFP**  
American Osteopathic Association

**Samuel L. Katz, MD**  
Pediatric Infectious Diseases Society

**Elyse Olshen Kharbanda, MD, MPH**  
Society for Adolescent Health and Medicine

**Marie-Michele Leger, MPH, PA-C**  
American Academy of Physician Assistants

**Harold S. Margolis, MD**  
Nat'l Ctr. for Emerg. & Zoonotic Inf. Diseases, CDC

**Lisa M. McKeown, MPH**  
Nat'l Assn. of County & City Health Officials

**Martin G. Myers, MD**  
National Network for Immunization Information

**Kathleen M. Neuzil, MD, MPH**  
American College of Physicians

**Paul A. Offit, MD**  
Vaccine Education Ctr., Children's Hosp. of Phila.

**Walter A. Orenstein, MD**  
Emory Vaccine Center, Emory University

**Mitchel C. Rothholz, RPh, MBA**  
American Pharmacists Association

**Thomas N. Saari, MD**  
American Academy of Pediatrics

**William Schaffner, MD**  
Infectious Diseases Society of America

**Anne Schuchat, MD**  
Nat'l Ctr. for Immun. & Resp. Diseases, CDC

**Rhoda Sperling, MD**  
Amer. College of Obstetricians & Gynecologists

**Thomas E. Stenvig, RN, PhD**  
American Nurses Association

**Kathryn L. Talkington, MPAff**  
Assn. of State & Territorial Health Officials

**Ann S. Taub, MA, CPNP**  
National Assn. of Pediatric Nurse Practitioners

**John W. Ward, MD**  
Division of Viral Hepatitis, NCHSTP, CDC

**Patricia N. Whitley-Williams, MD, MPH**  
National Medical Association

**Walter W. Williams, MD, MPH**  
Nat'l Ctr. for Immun. & Resp. Diseases, CDC

### Individuals

**Hie-Won L. Hann, MD**  
Jefferson Medical College, Philadelphia, PA

**Mark A. Kane, MD, MPH**  
Consultant, Seattle, WA

**Edgar K. Marcuse, MD, MPH**  
University of Washington School of Medicine

**Brian J. McMahon, MD**  
Alaska Native Medical Center, Anchorage, AK

**Stanley A. Plotkin, MD**  
Vaxconsult.com

**Gregory A. Poland, MD**  
Mayo Clinic, Rochester, MN

**Sarah Jane Schwarzenberg, MD**  
University of Minnesota

**Coleman I. Smith, MD**  
Minnesota Gastroenterology, Minneapolis, MN

**Richard K. Zimmerman, MD, MPH**  
University of Pittsburgh



# Vaccine Highlights

## Recommendations, schedules, and more

Editor's note: The information in Vaccine Highlights is current as of May 26, 2015.

### Next ACIP meetings

The Advisory Committee on Immunization Practices (ACIP) is comprised of 15 national experts who advise CDC on the appropriate use of vaccines. ACIP meets three times a year in Atlanta; meetings are open to the public and available online via live webcast. The next meetings will be held on June 24–25 and October 21–22. For more information, visit [www.cdc.gov/vaccines/acip](http://www.cdc.gov/vaccines/acip). ACIP periodically issues recommendations on the use of vaccines; they are published and readily available in the *Morbidity and Mortality Weekly Report (MMWR)*. Clinicians who vaccinate should have a current set for reference. Here are sources:

- Download from IAC's website: [www.immunize.org/acip](http://www.immunize.org/acip)
- Download from CDC's website: [www.cdc.gov/vaccines/hcp/acip-recs](http://www.cdc.gov/vaccines/hcp/acip-recs)

In addition, extensive information on ACIP meetings is available at [www.cdc.gov/vaccines/acip/meetings/meetings-info.html](http://www.cdc.gov/vaccines/acip/meetings/meetings-info.html).

For details about the vaccine recommendations voted upon by ACIP at its February 26 meeting, see the lead story on page 1.

## IAC EXPRESS

### Get weekly updates on vaccine information while it's still news!

All the news we publish in "Vaccine Highlights" will be sent by email to you every Tuesday. Free!

To sign up for **IAC Express** – and any of our other free publications – visit

[www.immunize.org/subscribe](http://www.immunize.org/subscribe)

### HPV vaccine news

On March 27, CDC published "Use of 9-Valent Human Papillomavirus (HPV) Vaccine: Updated HPV Vaccination Recommendations of the ACIP" in *MMWR*. The new 9-valent HPV vaccine (9vHPV, Gardasil 9, Merck) is recommended for use along with the other HPV vaccines already recommended for use by ACIP. Access the recommendations at [www.cdc.gov/mmwr/pdf/wk/mm6411.pdf](http://www.cdc.gov/mmwr/pdf/wk/mm6411.pdf), pages 300–304. A new VIS for 9vHPV was released on April 15.

### Influenza vaccine news

At its February meeting, ACIP voted to approve its annual influenza vaccine recommendations for the 2015–2016 influenza season. The committee reaffirmed the need for annual influenza vaccination for all people age 6 months and older. Access a related CDC press release at [www.cdc.gov/media/releases/2015/s0226-acip.html](http://www.cdc.gov/media/releases/2015/s0226-acip.html).

### Typhoid vaccine news

On March 27, CDC published "Updated Recommendations for the Use of Typhoid Vaccine – ACIP, U.S., 2015" in *MMWR*. Access the recommendations at [www.cdc.gov/mmwr/pdf/wk/mm6411.pdf](http://www.cdc.gov/mmwr/pdf/wk/mm6411.pdf), pages 305–308.

### VIS news

Since February 24, CDC has released several updated Vaccine Information Statements (VISs); the following VISs pertain to adult vaccination:

- *Haemophilus influenzae* type b (Hib) VIS, April 2, 2015
- Gardasil 9 VIS, April 15, 2015
- Pneumococcal Polysaccharide (PPSV23) VIS, April 24, 2015
- Td VIS, dated February 24, 2015
- Tdap VIS, dated February 24, 2015

For all VISs in up to 40 languages, visit [www.immunize.org/vis](http://www.immunize.org/vis).

### Measles news

On April 17, CDC published a report on measles in the U.S. from January 4 to April 2 in *MMWR*. According to CDC, more than 80% of measles cases occurred among people who were unvaccinated/unknown status. Access the article at [www.cdc.gov/mmwr/pdf/wk/mm6414.pdf](http://www.cdc.gov/mmwr/pdf/wk/mm6414.pdf), pages 373–376.

## vaccineinformation.org



INFANTS



PRETEENS

IAC's website for parents and people of all ages provides timely, accurate, and proven information about vaccines and the diseases they prevent.



TEENS



ADULTS

Vaccines save lives!

### Vaccine error news

On March 26, 2015, the Institute for Safe Medication Practices (ISMP) published an article titled "Recommendations for Practitioners to Prevent Vaccine Errors Part 2: Analysis of ISMP Vaccine Errors Reporting Program." Access the report at [www.ismp.org/newsletters/acutecare/showarticle.aspx?id=104](http://www.ismp.org/newsletters/acutecare/showarticle.aspx?id=104).

### Current VIS dates

Check the dates on your supply of Vaccine Information Statements (VISs). If any are outdated, get current versions and VISs in more than 30 languages at [www.immunize.org/vis](http://www.immunize.org/vis).

Adenovirus .....	6/11/14	MMRV .....	5/21/10
Anthrax .....	3/10/10	Meningococcal .....	10/14/11
Chickenpox .....	3/13/08	Multi-vaccine .....	10/22/14
DTaP .....	5/17/07	PCV13 .....	2/27/13
Hib .....	4/2/15	PPSV .....	4/24/15
Hepatitis A .....	10/25/11	Polio .....	11/8/11
Hepatitis B .....	2/2/12	Rabies .....	10/6/09
HPV-Cervarix .....	5/3/11	Rotavirus .....	4/15/15
HPV-Gardasil .....	5/17/13	Shingles .....	10/6/09
HPV-Gardasil 9 .....	4/15/15	Td .....	2/24/15
Influenza .....	8/19/14	Tdap .....	2/24/15
Japanese enceph...	1/24/14	Typhoid .....	5/29/12
MMR .....	4/20/12	Yellow fever .....	3/30/11

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

**Recommendations...** continued from page 1

## Meningococcal B vaccine

Also in February, ACIP voted that a series of either of the recently licensed MenB vaccines should be administered to people 10 years of age and older who are at increased risk of meningococcal disease. These individuals include:

- People with persistent complement component deficiencies, including inherited or chronic deficiencies in C3, C5-9, properdin, factor D, factor H, or taking eculizumab;
- People with anatomic or functional asplenia, including sickle cell disease;
- Microbiologists routinely exposed to isolates of *Neisseria meningitidis*; and
- People identified to be at increased risk because of a meningococcal B outbreak.

No preference was stated on the use of one MenB vaccine over the other.

ACIP delayed its discussion about the use of MenB vaccine in adolescents and college students until the June meeting.

## Typhoid vaccine

On March 27, CDC published "Updated Recommendations for the Use of Typhoid Vaccine – ACIP, U.S., 2015" in *MMWR* ([www.cdc.gov/mmwr/pdf/wk/mm6411.pdf](http://www.cdc.gov/mmwr/pdf/wk/mm6411.pdf), pages 305–308).

These revised ACIP recommendations include updated information on the two currently available typhoid vaccines and on vaccine safety. Routine typhoid vaccination is not recommended in the U.S. The vaccine is recommended for international travelers to specific areas, as well as for those who are routinely exposed to *Salmonella* serotype

Typhi (i.e., microbiologists/laboratory workers and intimate contacts of documented chronic carriers).

## Yellow fever vaccine

ACIP voted to recommend that a single dose of yellow fever (YF) vaccine provides long-lasting protection and is adequate for most travelers. ACIP also stated that additional doses of YF vaccine may be indicated for certain populations. A booster dose of YF vaccine may be considered for travelers who received their last dose at least 10 years previously and who will be in a higher-risk setting based on season, location, activities, and duration of their travel. For more details, see IAC's ACIP meeting summary in "Technically Speaking," April 2015, [www.immunize.org/technically-speaking/20150401.asp](http://www.immunize.org/technically-speaking/20150401.asp).

## Apply for IAC's Influenza Vaccination Honor Roll

Join more than 500 healthcare  
settings already honored!



This honor roll recognizes healthcare settings that have implemented mandatory vaccination policies for healthcare personnel (HCP).

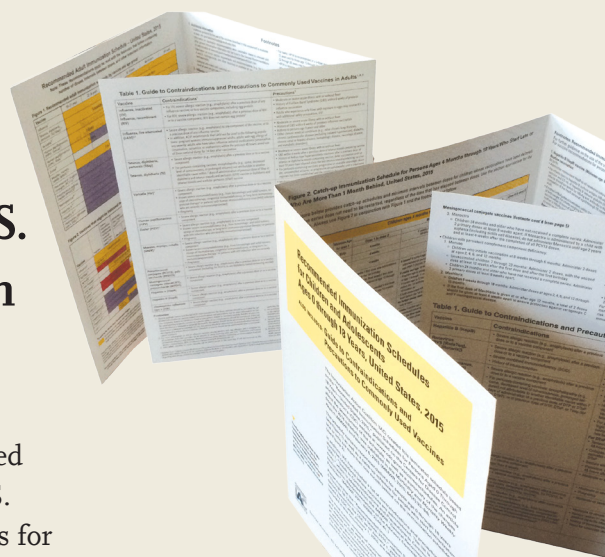
To find the healthcare settings listed by state, visit [www.immunize.org/honor-roll/influenza-mandates/honorees.asp](http://www.immunize.org/honor-roll/influenza-mandates/honorees.asp)

To read position statements supporting mandatory HCP vaccination from leading healthcare organizations and professional medical societies or to apply, visit [www.immunize.org/honor-roll/influenza-mandates](http://www.immunize.org/honor-roll/influenza-mandates)

## Laminated U.S. Immunization Schedules

Purchase IAC's laminated versions of the 2015 U.S. immunization schedules for children (0–18 years old) and adults. Both are laminated and washable for heavy-duty use, complete with essential footnotes, and printed in color for easy reading.

More information and discount pricing options are available online at [www.immunize.org/laminated-schedules](http://www.immunize.org/laminated-schedules) or see the order form on page 24.



## Recommended Adult Immunization Schedule – United States, 2015

Note: These recommendations ***must*** be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

**Figure 1. Recommended adult immunization schedule, by vaccine and age group<sup>1</sup>**

Vaccine	19–21 years	22–26 years	27–49 years	50–59 years	60–64 years	≥65 years
Influenza <sup>2,*</sup>	1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap) <sup>3,*</sup>	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs					
Varicella <sup>4,*</sup>	2 doses					
Human papillomavirus (HPV) Female <sup>5,*</sup>	3 doses					
Human papillomavirus (HPV) Male <sup>5,*</sup>	3 doses					
Zoster <sup>6</sup>					1 dose	
Measles, mumps, rubella (MMR) <sup>7,*</sup>	1 or 2 doses					
Pneumococcal 13-valent conjugate (PCV13) <sup>8,*</sup>	1-time dose					
Pneumococcal polysaccharide (PPSV23) <sup>8</sup>	1 or 2 doses					1 dose
Meningococcal <sup>9,*</sup>	1 or more doses					
Hepatitis A <sup>10,*</sup>	2 doses					
Hepatitis B <sup>11,*</sup>	3 doses					
<i>Haemophilus influenzae</i> type b (Hib) <sup>12,*</sup>	1 or 3 doses					

**Figure 2. Vaccines that might be indicated for adults based on medical and other indications<sup>1</sup>**

Vaccine	Pregnancy	Immuno-compromising conditions (excluding human immunodeficiency virus [HIV]) <sup>4,6,7,8,13</sup>	HIV Infection CD4+ T lymphocyte count <sup>4,6,7,8,13</sup>		Men who have sex with men (MSM)	Kidney failure, end-stage renal disease, receipt of hemodialysis	Heart disease, chronic lung disease, chronic alcoholism	Asplenia (including elective splenectomy and persistent complement component deficiencies) <sup>8,12</sup>	Chronic liver disease	Diabetes	Healthcare personnel
		<200 cells/μL	≥200 cells/μL								
Influenza <sup>2,*</sup>	1 dose IIV annually				1 dose IIV or LAIV annually	1 dose IIV annually					1 dose IIV or LAIV annually
Td/Tdap <sup>3,*</sup>	1 dose Tdap in each pregnancy	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs									
Varicella <sup>4,*</sup>	Contraindicated			2 doses							
HPV Female <sup>5,*</sup>		3 doses through age 26 yrs				3 doses through age 26 yrs					
HPV Male <sup>5,*</sup>		3 doses through age 26 yrs				3 doses through age 21 yrs					
Zoster <sup>6</sup>	Contraindicated				1 dose						
MMR <sup>7,*</sup>	Contraindicated			1 or 2 doses							
PCV13 <sup>8,*</sup>					1 dose						
PPSV23 <sup>8</sup>					1 or 2 doses						
Meningococcal <sup>9,*</sup>	1 or more doses										
Hepatitis A <sup>10,*</sup>					2 doses						
Hepatitis B <sup>11,*</sup>				3 doses							
Hib <sup>12,*</sup>		Post-HSCT recipients only	1 or 3 doses								

\*Covered by the Vaccine Injury Compensation Program.

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indication)

No recommendation

These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly indicated for adults ages 19 years and older, as of February 1, 2015. For all vaccines being recommended on the Adult Immunization Schedule: a vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices ([www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html)). Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.



## Footnotes

### 1. Additional Information

- Additional guidance for the use of the vaccines described in this supplement is available at [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html).
- Information on vaccination recommendations when vaccination status is unknown and other general immunization information can be found in the General Recommendations on Immunization at [www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm).
- Information on travel vaccine requirements and recommendations (e.g., for hepatitis A and B, meningococcal, and other vaccines) is available at [wwwnc.cdc.gov/travel/destinations/list](http://wwwnc.cdc.gov/travel/destinations/list).
- Additional information and resources regarding vaccination of pregnant women can be found at [www.cdc.gov/vaccines/adults/rec-vac/pregnant.html](http://www.cdc.gov/vaccines/adults/rec-vac/pregnant.html).

### 2. Influenza vaccination.

- Annual vaccination against influenza is recommended for all persons age 6 months or older.
- Persons age 6 months and older, including pregnant women and persons with hives-only allergy to eggs, can receive the inactivated influenza vaccine (IIV). An age-appropriate IIV formulation should be used.
- Adults age 18 years or older can receive the recombinant influenza vaccine (RIV) (Flublok). RIV does not contain any egg protein and can be given to age-appropriate persons with egg allergy or any severity.
- Healthy, nonpregnant persons age 2 through 49 years without high-risk medical conditions can receive either intranasally administered live, attenuated influenza vaccine (LAIV) (FluMist), or IIV.
- Healthcare personnel who care for severely immunocompromised persons who require care in a protected environment should receive IIV or RIV; healthcare personnel who receive LAIV should avoid providing care for severely immunosuppressed persons for 7 days after vaccination.
- The intramuscularly or intradermally administered IIV are options for adults age 18 through 64 years.
- Adults age 65 years or older can receive the standard-dose IIV or the high-dose IIV (Fluzone High-Dose).
- A list of currently available influenza vaccines can be found at [www.cdc.gov/flu/protect/vaccine/vaccines.htm](http://www.cdc.gov/flu/protect/vaccine/vaccines.htm).

### 3. Tetanus, diphtheria, and acellular pertussis (Td/Tdap) vaccination.

- Administer 1 dose of Tdap vaccine to pregnant women during each pregnancy (preferably during 27 to 36 weeks' gestation), regardless of interval since prior Td or Tdap vaccination.
- Persons age 11 years or older who have not received Tdap vaccine or for whom vaccine status is unknown should receive a dose of Tdap followed by tetanus and diphtheria toxoids (Td) booster doses every 10 years thereafter. Tdap can be administered regardless of interval since the most recent tetanus or diphtheria-toxoid containing vaccine.
- Adults with an unknown or incomplete history of completing a 3-dose primary vaccination series with Td-containing vaccines should begin or complete a primary vaccination series including a Tdap dose.
- For unvaccinated adults, administer the first 2 doses at least 4 weeks apart and the third dose 6 to 12 months after the second.
- For incompletely vaccinated (i.e., less than 3 doses) adults, administer remaining doses.
- Refer to the ACIP statement for recommendations for administering Td/Tdap as prophylaxis in wound management (see footnote 1).

### 4. Varicella vaccination.

- All adults without evidence of immunity to varicella (as defined below) should receive 2 doses of single-antigen varicella vaccine or a second dose if they have received only 1 dose.
- Vaccination should be emphasized for those who have close contact with persons at high risk for severe disease (e.g., healthcare personnel and family contacts of persons with immunocompromising conditions) or are at high risk for exposure or transmission (e.g., teachers; child care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; nonpregnant women of childbearing age; and international travelers).
- Pregnant women should be assessed for evidence of varicella immunity. Women who do not have evidence of immunity should receive the first dose of varicella vaccine upon completion or termination of pregnancy and before discharge from the healthcare facility. The second dose should be administered 4 to 8 weeks after the first dose.
- Evidence of immunity to varicella in adults includes any of the following: 1) documentation of 2 doses of varicella vaccine at least 4 weeks apart; 2) U.S.-born before 1980, except healthcare personnel and pregnant women; 3) history of varicella based on diagnosis or verification of varicella disease by a healthcare provider; 4) history of herpes zoster based on diagnosis or verification of herpes zoster disease by a healthcare provider; or 5) laboratory evidence of immunity or laboratory confirmation of disease.

### 5. Human papillomavirus (HPV) vaccination.

- Two vaccines are licensed for use in females, bivalent HPV vaccine (HPV2) and quadrivalent HPV vaccine (HPV4), and one HPV vaccine for use in males (HPV4).
- For females, either HPV4 or HPV2 is recommended in a 3-dose series for routine vaccination at age 11 or 12 years, and for those age 13 through 26 years, if not previously vaccinated.

- For males, HPV4 is recommended in a 3-dose series for routine vaccination at age 11 or 12 years and for those age 13 through 21 years, if not previously vaccinated. Males age 22 through 26 years may be vaccinated.
- HPV4 is recommended for men who have sex with men through age 26 years for those who did not get any or all doses when they were younger.
- Vaccination is recommended for immunocompromised persons (including those with HIV infection) through age 26 years for those who did not get any or all doses when they were younger.
- A complete series for either HPV4 or HPV2 consists of 3 doses. The second dose should be administered 4 to 8 weeks (minimum interval of 4 weeks) after the first dose; the third dose should be administered 24 weeks after the first dose and 16 weeks after the second dose (minimum interval of at least 12 weeks).
- HPV vaccines are not recommended for use in pregnant women. However, pregnancy testing is not needed before vaccination. If a woman is found to be pregnant after initiating the vaccination series, no intervention is needed; the remainder of the 3-dose series should be delayed until completion or termination of pregnancy.

### 6. Zoster vaccination.

- A single dose of zoster vaccine is recommended for adults age 60 years or older regardless of whether they report a prior episode of herpes zoster. Although the vaccine is licensed by the U.S. Food and Drug Administration for use among and can be administered to persons age 50 years or older, ACIP recommends that vaccination begin at age 60 years.
- Persons age 60 years and older with chronic medical conditions may be vaccinated unless their condition constitutes a contraindication, such as pregnancy or severe immunodeficiency.

### 7. Measles, mumps, rubella (MMR) vaccination.

- Adults born before 1957 are generally considered immune to measles and mumps. All adults born in 1957 or later should have documentation of 1 or more doses of MMR vaccine unless they have a medical contraindication to the vaccine or laboratory evidence of immunity to each of the three diseases. Documentation of provider-diagnosed disease is not considered acceptable evidence of immunity for measles, mumps, or rubella.
- *Measles component:* A routine second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who: 1) are students in postsecondary educational institutions, 2) work in a healthcare facility, or 3) plan to travel internationally. Persons who received inactivated (killed) measles vaccine or measles vaccine of unknown type from 1963–1967 should be revaccinated with 2 doses of MMR vaccine.
- *Mumps component:* A routine second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who: 1) are students in a postsecondary educational institution, 2) work in a healthcare facility, or 3) plan to travel internationally. Persons vaccinated before 1979 with either killed mumps vaccine or mumps vaccine of unknown type who are at high risk for mumps infection (e.g., persons who are working in a healthcare facility) should be considered for revaccination with 2 doses of MMR vaccine.
- *Rubella component:* For women of childbearing age, regardless of birth year, rubella immunity should be determined. If there is no evidence of immunity, women who are not pregnant should be vaccinated. Pregnant women who do not have evidence of immunity should receive MMR vaccine upon completion or termination of pregnancy and before discharge from the healthcare facility.
- *Healthcare personnel born before 1957:* For unvaccinated healthcare personnel born before 1957 who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease, healthcare facilities should consider vaccinating personnel with 2 doses of MMR vaccine at the appropriate interval for measles and mumps or 1 dose of MMR vaccine for rubella.

### 8. Pneumococcal (13-valent pneumococcal conjugate vaccine [PCV13] and 23-valent pneumococcal polysaccharide vaccine [PPSV23]) vaccination.

- General information
  - When indicated, only a single dose of PCV13 is recommended for adults.
  - No additional PPSV23 is indicated for adults vaccinated with PPSV23 at or after age 65 years.
  - When both PCV13 and PPSV23 are indicated, PCV13 should be administered first; PCV13 and PPSV23 should not be administered during the same visit.
  - When indicated, PCV13 and PPSV23 should be administered to adults whose pneumococcal vaccination history is incomplete or unknown.
- Adults age 65 years and older who
  - have not received PCV13 or PPSV23: administer PCV13 followed by a PPSV23 in 6 to 12 months.
  - have not received PCV13 but have received a dose of PPSV23 at age 65 years or older: administer PCV13 at least 1 year after the dose of PPSV23 received at age 65 years or older.
  - have not received PCV13 but have received 1 or more doses of PPSV23 before age 65: administer PCV13 at least 1 year after the most recent PPSV23; administer a dose of PPSV23 6 to 12 months after PCV13, or as soon as possible if this time window has passed, and at least 5 years after most recent dose of PPSV23.
  - have received PCV13 but not PPSV23 before age 65 years: administer PPSV23 6 to 12 months after PCV13 or as soon as possible if this time window has passed.

(continued)

- have received PCV13 and 1 or more doses of PPSV23 before age 65 years: administer PPSV23 6 to 12 months after PCV13, or as soon as possible if this time window has passed, and at least 5 years after the most recent dose of PPSV23.
- Adults age 19 through 64 years with immunocompromising conditions or functional or anatomic asplenia (defined below) who
  - have not received PCV13 or PPSV23: administer PCV13 followed by PPSV23 at least 8 weeks after PCV13; administer a second dose of PPSV23 at least 5 years after the first dose of PPSV23.
  - have not received PCV13 but have received 1 dose of PPSV23: administer PCV13 at least 1 year after the PPSV23; administer a second dose of PPSV23 at least 8 weeks after PCV13 and at least 5 years after the first dose of PPSV23.
  - have not received PCV13 but have received 2 or more doses of PPSV23: administer PCV13 and at least 1 year after the most recent dose of PPSV23.
  - have received PCV13 but not PPSV23: administer PPSV23 at least 8 weeks after PCV13; administer a second dose of PPSV23 at least 5 years after the first dose of PPSV23.
  - have received PCV13 and 1 dose of PPSV23: administer a second dose of PPSV23 at least 5 years after the first dose of PPSV23.
- Adults age 19 through 64 years who have cerebrospinal fluid leaks or cochlear implants: administer PCV13 followed by PPSV23 at least 8 weeks after PCV13.
- Adults age 19 through 64 years who have chronic heart disease (including congestive heart failure and cardiomyopathies, excluding hypertension), chronic lung disease (including chronic obstructive lung disease, emphysema, and asthma), chronic liver disease (including cirrhosis), alcoholism, or diabetes mellitus: administer PPSV23.
- Adults age 19 through 64 years who smoke cigarettes or reside in nursing homes or long-term care facilities: administer PPSV23.
- Routine pneumococcal vaccination is not recommended for American Indian/Alaska Native or other adults unless they have the indications as above; however, public health authorities may consider recommending the use of pneumococcal vaccines for American Indians/Alaska Natives or other adults who live in areas with increased risk for invasive pneumococcal disease.
- **Immunocompromising conditions** that are indications for pneumococcal vaccination are: congenital or acquired immunodeficiency (including B- or T-lymphocyte deficiency, complement deficiencies, and phagocytic disorders excluding chronic granulomatous disease), HIV infection, chronic renal failure, nephrotic syndrome, leukemia, lymphoma, Hodgkin's disease, generalized malignancy, multiple myeloma, solid organ transplant, and iatrogenic immunosuppression (including long-term systemic corticosteroids and radiation therapy)
- **Anatomical or functional asplenia** that are indications for pneumococcal vaccination are: sickle cell disease and other hemoglobinopathies, congenital or acquired asplenia, splenic dysfunction, and splenectomy. Administer pneumococcal vaccines at least 2 weeks before immunosuppressive therapy or an elective splenectomy, and as soon as possible to adults who are newly diagnosed with asymptomatic or symptomatic HIV infection.

## 9. Meningococcal vaccination.

- Administer 2 doses of quadrivalent meningococcal conjugate vaccine (MenACWY [Menactra, Menveo]) at least 2 months apart to adults of all ages with anatomical or functional asplenia or persistent complement component deficiencies. HIV infection is not an indication for routine vaccination with MenACWY. If an HIV-infected person of any age is vaccinated, 2 doses of MenACWY vaccine should be administered at least 2 months apart.
- Administer a single dose of meningococcal vaccine to microbiologists routinely exposed to isolates of *Neisseria meningitidis*, military recruits, persons at risk during an outbreak attributable to a vaccine serogroup, and persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic.
- First-year college students up through age 21 years who are living in residence halls should be vaccinated if they have not received a dose on or after their 16<sup>th</sup> birthday.
- MenACWY is preferred for adults with any of the preceding indications who are age 55 years or younger as well as for adults age 56 years or older who a) were vaccinated previously with MenACWY and are recommended for revaccination, or b) for whom multiple doses are anticipated. Meningococcal polysaccharide vaccine (MPSV4 [Menomune]) is preferred for adults age 56 years or older who have not received MenACWY previously and who require a single dose only (e.g., travelers).
- Revaccination with MenACWY every 5 years is recommended for adults previously vaccinated with MenACWY or MPSV4 who remain at increased risk for infection (e.g., adults with anatomical or functional asplenia, persistent complement component deficiencies, or microbiologists).

## 10. Hepatitis A vaccination.

- Vaccinate any person seeking protection from hepatitis A virus (HAV) infection and persons with any of the following indications:
  - men who have sex with men and persons who use injection or noninjection illicit drugs;
  - persons working with HAV-infected primates or with HAV in a research laboratory setting;

- persons with chronic liver disease and persons who receive clotting factor concentrates;
- persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A; and
- unvaccinated persons who anticipate close personal contact (e.g., household or regular babysitting) with an international adoptee during the first 60 days after arrival in the United States from a country with high or intermediate endemicity. (See footnote 1 for more information on travel recommendations.) The first dose of the 2-dose hepatitis A vaccine series should be administered as soon as adoption is planned, ideally 2 or more weeks before the arrival of the adoptee.
- Single-antigen vaccine formulations should be administered in a 2-dose schedule at either 0 and 6 to 12 months (Havrix), or 0 and 6 to 18 months (Vaqta). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule may be used, administered on days 0, 7, and 21 to 30, followed by a booster dose at month 12.

## 11. Hepatitis B vaccination.

- Vaccinate persons with any of the following indications and any person seeking protection from hepatitis B virus (HBV) infection:
  - sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., persons with more than 1 sex partner during the previous 6 months); persons seeking evaluation or treatment for a sexually transmitted disease (STD); current or recent injection drug users; and men who have sex with men;
  - healthcare personnel and public safety workers who are potentially exposed to blood or other infectious body fluids;
  - persons with diabetes who are younger than age 60 years as soon as feasible after diagnosis; persons with diabetes who are age 60 years or older at the discretion of the treating clinician based on the likelihood of acquiring HBV infection, including the risk posed by an increased need for assisted blood glucose monitoring in long-term care facilities, the likelihood of experiencing chronic sequelae if infected with HBV, and the likelihood of immune response to vaccination;
  - persons with end-stage renal disease, including patients receiving hemodialysis, persons with HIV infection, and persons with chronic liver disease;
  - household contacts and sex partners of hepatitis B surface antigen-positive persons, clients and staff members of institutions for persons with developmental disabilities, and international travelers to countries with high or intermediate prevalence of chronic HBV infection; and
  - all adults in the following settings: STD treatment facilities, HIV testing and treatment facilities, facilities providing drug abuse treatment and prevention services, healthcare settings targeting services to injection drug users or men who have sex with men, correctional facilities, end-stage renal disease programs and facilities for chronic hemodialysis patients, and institutions and nonresidential day care facilities for persons with developmental disabilities.
- Administer missing doses to complete a 3-dose series of hepatitis B vaccine to those persons not vaccinated or not completely vaccinated. The second dose should be administered 1 month after the first dose; the third dose should be given at least 2 months after the second dose (and at least 4 months after the first dose). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, give 3 doses at 0, 1, and 6 months; alternatively, a 4-dose Twinrix schedule, administered on days 0, 7, and 21 to 30 followed by a booster dose at month 12 may be used.
- Adult patients receiving hemodialysis or with other immunocompromising conditions should receive 1 dose of 40 mcg/mL (Recombivax HB) administered on a 3-dose schedule at 0, 1, and 6 months or 2 doses of 20 mcg/mL (Engerix-B) administered simultaneously on a 4-dose schedule at 0, 1, 2, and 6 months.

## 12. *Haemophilus influenzae* type b (Hib) vaccination.

- One dose of Hib vaccine should be administered to persons who have anatomical or functional asplenia or sickle cell disease or are undergoing elective splenectomy if they have not previously received Hib vaccine. Hib vaccination 14 or more days before splenectomy is suggested.
- Recipients of hematopoietic stem cell transplant (HSCT) should be vaccinated with a 3-dose regimen 6 to 12 months after a successful transplant, regardless of vaccination history; at least 4 weeks should separate doses.
- Hib vaccine is not recommended for adults with HIV infection since their risk for Hib infection is low.

## 13. Immunocompromising conditions.

- Inactivated vaccines generally are acceptable (e.g., pneumococcal, meningococcal, and inactivated influenza vaccine) and live vaccines generally are avoided in persons with immune deficiencies or immunocompromising conditions. Information on specific conditions is available at [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html).

Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at [www.vaers.hhs.gov](http://www.vaers.hhs.gov) or by telephone, 800-822-7967. Information on how to file a Vaccine Injury Compensation Program claim is available at [www.hrsa.gov/vaccinecompensation](http://www.hrsa.gov/vaccinecompensation) or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400. Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines) or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 8:00 a.m. – 8:00 p.m. Eastern Time, Monday – Friday, excluding holidays.



# Guide to Contraindications and Precautions to Commonly Used Vaccines in Adults<sup>1,\*†</sup>

Vaccine	Contraindications <sup>1</sup>	Precautions <sup>1</sup>
<b>Influenza, inactivated (IIV)</b> <b>Influenza, recombinant (RIV)</b>	<ul style="list-style-type: none"> <li>For IIV, severe allergic reaction (e.g., anaphylaxis) after a previous dose of any influenza vaccine; or to a vaccine component, including egg protein</li> <li>For RIV, severe allergic reaction (e.g., anaphylaxis) after a previous dose of RIV or to a vaccine component. RIV does not contain egg protein<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> <li>History of Guillain-Barré Syndrome (GBS) within 6 weeks of previous influenza vaccination</li> <li>Adults who experience only hives with exposure to eggs may receive RIV or, with additional safety precautions, IIV<sup>2</sup></li> </ul>
<b>Influenza, live attenuated (LAIV)<sup>2,3</sup></b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine, or to a previous dose of any influenza vaccine</li> <li>In addition, ACIP recommends that LAIV not be used in the following populations: pregnant women; immunosuppressed adults; adults with egg allergy of any severity; adults who have taken influenza antiviral medications (amantadine, rimantadine, zanamivir, or oseltamivir) within the previous 48 hours; avoid use of these antiviral drugs for 14 days after vaccination</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> <li>History of GBS within 6 weeks of previous influenza vaccination</li> <li>Asthma in persons age 5 years and older</li> <li>Other chronic medical conditions (e.g., other chronic lung diseases, chronic cardiovascular disease [excluding isolated hypertension], diabetes, chronic renal or hepatic disease, hematologic disease, neurologic disease, and metabolic disorders)</li> </ul>
<b>Tetanus, diphtheria, pertussis (Tdap)</b>  <b>Tetanus, diphtheria (Td)</b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</li> <li>For pertussis-containing vaccines: encephalopathy (e.g., coma, decreased level of consciousness, or prolonged seizures) not attributable to another identifiable cause within 7 days of administration of previous dose of Tdap or diphtheria and tetanus toxoids and pertussis (DTP) vaccine or diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> <li>GBS within 6 weeks after a previous dose of tetanus toxoid-containing vaccine</li> <li>History of Arthus-type hypersensitivity reactions after a previous dose of tetanus or diphtheria toxoid-containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus toxoid-containing vaccine</li> <li>For pertussis-containing vaccines: progressive or unstable neurologic disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized</li> </ul>
<b>Varicella (Var)<sup>3</sup></b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</li> <li>Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, or long-term immunosuppressive therapy<sup>4</sup> or patients with human immunodeficiency virus [HIV] infection who are severely immunocompromised)</li> <li>Pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> <li>Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product)<sup>5</sup></li> <li>Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination; avoid use of these antiviral drugs for 14 days after vaccination</li> </ul>
<b>Human papillomavirus (HPV)</b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> <li>Pregnancy</li> </ul>
<b>Zoster (HZV)<sup>3</sup></b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) to a vaccine component</li> <li>Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, or long-term immunosuppressive therapy<sup>4</sup> or patients with HIV infection who are severely immunocompromised)</li> <li>Pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> <li>Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination; avoid use of these antiviral drugs for 14 days after vaccination</li> </ul>
<b>Measles, mumps, rubella (MMR)<sup>3</sup></b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</li> <li>Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, or long-term immunosuppressive therapy<sup>4</sup> or patients with HIV infection who are severely immunocompromised)</li> <li>Pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> <li>Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product)<sup>5</sup></li> <li>History of thrombocytopenia or thrombocytopenic purpura</li> <li>Need for tuberculin skin testing<sup>6</sup></li> </ul>
<b>Pneumococcal: conjugate (PCV13), polysaccharide (PPSV23)</b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component (including, for PCV13, to any diphtheria toxoid-containing vaccine)</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
<b>Meningococcal: conjugate (MenACWY), polysaccharide (MPSV4)</b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
<b>Hepatitis A (HepA)</b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
<b>Hepatitis B (HepB)</b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>
<b>Haemophilus influenzae type b (Hib)</b>	<ul style="list-style-type: none"> <li>Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component</li> </ul>	<ul style="list-style-type: none"> <li>Moderate or severe acute illness with or without fever</li> </ul>

## FOOTNOTES

- Vaccine package inserts and the full ACIP recommendations for these vaccines should be consulted for additional information on vaccine-related contraindications and precautions and for more information on vaccine excipients. Events or conditions listed as precautions should be reviewed carefully. Benefits of and risks for administering a specific vaccine to a person under these circumstances should be considered. If the risk from the vaccine is believed to outweigh the benefit, the vaccine should not be administered. If the benefit of vaccination is believed to outweigh the risk, the vaccine should be administered. A contraindication increases the chance of a serious adverse reaction. Therefore, a vaccine should not be administered when a contraindication is present.
- For more information on use of influenza vaccines among persons with egg allergies and a complete list of conditions that CDC considers to be reasons to avoid receiving LAIV, see CDC. "Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)—United States, 2014–15 Influenza Season." *MMWR* 2014;63(32):691–97.
- LAIV, MMR, varicella, or zoster vaccines can be administered on the same day. If not administered on the same day, these live vaccines should be separated by at least 28 days.
- Immunosuppressive steroid dose is considered to be 2 or more weeks of daily receipt of 20 mg prednisone or the equivalent. Vaccination should be deferred for at least 1 month after discontinuation of such therapy. Providers should consult ACIP recommendations for complete information on the use of specific live vaccines among persons on immune-suppressing medications or with immune suppression because of other reasons.

- Vaccine should be deferred for the appropriate interval if replacement immune globulin products are being administered (see Table 5 in CDC. "General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practices [ACIP]." *MMWR* 2011;60(No. RR-2), available at [www.cdc.gov/vaccines/pubs/acip-list.htm](http://www.cdc.gov/vaccines/pubs/acip-list.htm)).
- Measles vaccination might suppress tuberculin reactivity temporarily. Measles-containing vaccine may be administered on the same day as tuberculin skin testing. If testing cannot be performed until after the day of MMR vaccination, the test should be postponed for at least 4 weeks after the vaccination. If an urgent need exists to skin test, do so with the understanding that reactivity might be reduced by the vaccine.

\* Adapted from "Table 6. Contraindications and Precautions to Commonly Used Vaccines" found in: CDC. "General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP)." *MMWR* 2011;60(No. RR-2), p. 40–41, and from Atkinson W, Wolfe S, Hamborsky J, eds. Appendix A. *Epidemiology and Prevention of Vaccine-Preventable Diseases* ([www.cdc.gov/vaccines/pubs/pink-book/index.html](http://www.cdc.gov/vaccines/pubs/pink-book/index.html)).

† Regarding latex allergy, consult the package insert for any vaccine given.

Technical content reviewed by the Centers for Disease Control and Prevention

These documents reflect current ACIP recommendations. Download, copy, and share the entire series widely!

**10 Vaccinate Adults!** • May 2015 • Immunization Action Coalition • (651) 647-9009 • [www.immunize.org](http://www.immunize.org) • [www.vaccineinformation.org](http://www.vaccineinformation.org)

# Vaccinations for Pregnant Women

*The table below shows which vaccinations you should have to protect your health when you are pregnant. Make sure you and your healthcare provider keep your vaccinations up to date.*

Vaccine	Do you need it during your pregnancy?
<b>Hepatitis A</b> (HepA)	<b>Maybe.</b> You need this vaccine if you have a specific risk factor for hepatitis A virus infection* or simply want to be protected from this disease. The vaccine is usually given in 2 doses, 6 months apart. It's safe to get this vaccine during pregnancy.
<b>Hepatitis B</b> (HepB)	<b>Maybe.</b> You need this vaccine if you have a specific risk factor for hepatitis B virus infection* or simply want to be protected from this disease. The vaccine is usually given in 3 doses, over a 6-month period. It's safe to get this vaccine during pregnancy. It's important, too, that your newborn baby gets started on his or her hepatitis B vaccination series before leaving the hospital.
<b>Hib</b> ( <i>Haemophilus influenzae</i> type b)	<b>Maybe.</b> Some adults with certain high-risk conditions need vaccination with Hib vaccine.*
<b>Human papillomavirus</b> (HPV)	<b>No.</b> This vaccine is not recommended to be given during pregnancy, but if you inadvertently receive it, this is not a cause for concern. HPV vaccine is recommended for all women age 26 years or younger, so make sure you are vaccinated before or after your pregnancy. The vaccine is given in 3 doses over a 6-month period.
<b>Influenza</b>	<b>Yes!</b> You need a flu shot every fall (or winter) for your protection and for the protection of your baby and others around you. It's safe to get the vaccine at any time during your pregnancy.
<b>Measles, mumps, rubella</b> (MMR)	<b>No.</b> The MMR vaccine is not recommended to be given during pregnancy, but if you inadvertently receive it, this is not a cause for concern. At least 1 dose of MMR vaccine is recommended for you if you were born in 1957 or later. (And you may need a second dose.*) It's best for you (and any future baby) to receive the protection vaccination provides before trying to conceive.
<b>Meningococcal</b> (MCV4, MPSV4)	<b>Maybe.</b> You need this vaccine if you have one of several health conditions, or if you are 19–21 and a first-year college student living in a residence hall and you either have never been vaccinated or were vaccinated before age 16.* It's safe to get the vaccine during pregnancy.
<b>Pneumococcal</b> (PCV13 [conjugate vaccine]; PPSV23 [polysaccharide vaccine])	<b>Maybe.</b> You need 1 or both of these vaccines if you have a certain risk factor for pneumococcal disease, such as diabetes. If you're unsure of your risk, talk to your healthcare provider to find out if you need this vaccine.* It's safe to get the vaccine during pregnancy.
<b>Tetanus, diphtheria, &amp; whooping cough</b> (pertussis) (Tdap, Td)	<b>Yes!</b> Women who are pregnant need a dose of Tdap vaccine (adult whooping cough vaccine) during each pregnancy, preferably during the third trimester. After that, you'll need a Td booster dose every 10 years. Talk to your healthcare provider if you haven't had at least 3 tetanus- and diphtheria-containing shots sometime in your life or if you have a deep or dirty wound.
<b>Varicella</b> (chickenpox) (VAR)	<b>No.*</b> Varicella vaccine is not recommended to be given during pregnancy, but if you inadvertently receive it, this is not a cause for concern. If you haven't been vaccinated or had chickenpox, it's best for you (and any future baby) to be protected with the vaccine before trying to conceive, or after you've completed your pregnancy. The vaccine is given in 2 doses 4–8 weeks apart.

\* Consult your healthcare provider to determine your level of risk for infection and your need for this vaccine.

**Are you planning to travel outside the United States?** If so, you may need additional vaccines. The Centers for Disease Control and Prevention (CDC) provides information to assist travelers and their healthcare providers in deciding which vaccines, medications, and other measures are necessary to prevent illness and injury during international travel. Visit CDC's website at [wwwnc.cdc.gov/travel/destinations/list](http://wwwnc.cdc.gov/travel/destinations/list), or call 800-CDC-INFO (800-232-4636). You may also consult a travel clinic or your healthcare provider.



# Protect yourself from **pneumococcal disease**...

## Get vaccinated!

### What is pneumococcal disease?

Pneumococcal disease is caused by bacteria that can lead to serious infections in the lungs (pneumonia), blood, and brain (meningitis).

### How do you catch it?

You can catch pneumococcal bacteria from infected people who cough or sneeze around you.

### Is it serious?

Yes. Even with good medical care, pneumococcal disease can be deadly. The disease is hard to treat because some bacteria have become resistant to antibiotics. Pneumococcal bacteria can cause pneumonia, blood infections, and meningitis. Such infections can lead to deafness, brain damage, and even death.



### Am I at risk?

Yes. Anyone can get pneumococcal disease. You are at greater risk if you are 65 or older, very young, or have certain health conditions.

### How can I protect myself from pneumococcal disease?

You can protect yourself against these serious types of blood and brain infections by getting vaccinated.

There are 2 vaccines that can prevent pneumococcal disease: PCV13 and PPSV23. You should get both vaccines if you are age 65 years or older.

You might need these shots before age 65 if you are a smoker or if you have certain health conditions.

Ask your healthcare provider if you should get this vaccine!



► For more information, visit [www.vaccineinformation.org](http://www.vaccineinformation.org)

# Medical Management of Vaccine Reactions in Adults

- Table describes procedures you can follow if various reactions occur.
- Emergency medical protocol and supplies list are ready for your use.
- Dosing information is provided for your convenience.

## Medical Management of Vaccine Reactions in Adults (continued)

### Needed medications for a community immunization clinic

#### FIRST-LINE medication

□ **Epinephrine**, aqueous 1:1000 (i.e., 1 mg/mL) dilution, in ampules, vials of solution, or prefilled syringes, including epinephrine autoinjectors (e.g., EpiPen and Auvi-Q). If autoinjectors are stocked, at least three should be available.

#### Optional medication: H<sub>1</sub> antihistamines

□ Diphenhydramine (e.g., Benadryl) oral (12.5 mg/5 mL liquid, 25 or 50 mg capsules/tablets) or injectable (50 mg/mL solution).

□ Hydroxyzine (e.g., Atarax, Vistaril) oral (10 mg/5 mL or 25 mg/5 mL liquid, 25 mg capsules).

### Needed supplies for a community immunization clinic

□ Syringes (1 and 3 cc) and needles (22 and 25 g, 1", 1½", and 2") for epinephrine, diphenhydramine, or hydroxyzine. For ampules, use filtered needles.

□ Alcohol wipes

□ Tourniquet

□ Adult airways (small, medium, and large)

□ Adult size pocket mask with one-way valve

□ Oxygen (if available)

□ Stethoscope

□ Sphygmomanometer (blood pressure measuring device) with adult-size and extra-large cuffs

□ Tongue depressors

□ Flashlight with extra batteries (for examination of the mouth and throat)

□ Wristwatch with a second hand or other timing device

□ Cell phone or access to onsite phone

### Emergency medical protocol for reactions in adults

1 If itching and swelling are confined to the site of injection, observe patient closely for symptoms.

2 If symptoms are generalized, activate EMS (e.g., call 911) and notify the patient's primary care physician by a second person, while the primary care physician arrives. Monitor airway, breathing, circulation, and level of consciousness.

3 **DRUG DOSING INFORMATION: The standard dose is 1–2 mg/kg of epinephrine. There is no maximum dose in the setting of anaphylaxis.**

**a First-line treatment:** Administer intramuscularly, 0.01 mL/kg/dose of 1 mg/mL, with maximum single dose of 0.3 mL.

**b Optional treatment:** H<sub>1</sub> antihistamine. Administer diphenhydramine (e.g., Benadryl) orally (12.5 mg/5 mL liquid, 25 or 50 mg capsules/tablets) or injectable (50 mg/mL solution) or hydroxyzine (e.g., Atarax, Vistaril) orally (10 mg/5 mL or 25 mg/5 mL liquid, 25 mg capsules) or injectable (50 mg/mL solution).

4 Monitor the patient closely until EMS arrives. If necessary, position (flat on back) unless he or she is in respiratory distress. If breathing is difficult, patient's head may be tilted back to prevent loss of consciousness. Monitor blood pressure and pulse.

5 If EMS has not arrived and symptoms are severe, repeat epinephrine every 5–15 minutes for up to 3 doses.

6 Record all vital signs, medications administered to the patient, including the time, dosage, response, and the name of the medical personnel who administered the medication, and other relevant clinical information.

7 Notify the patient's primary care physician.

## Medical Management of Vaccine Reactions in Adult Patients

All vaccines have the potential to cause an adverse reaction. In order to minimize adverse reactions, patients should be carefully screened for precautions and contraindications before vaccine is administered. Even with careful screening, reactions may occur. These reactions can vary from trivial and inconvenient (e.g., soreness, itching) to severe and life threatening (e.g., anaphylaxis). If reactions occur, staff should be prepared with procedures for their management. The table below describes procedures to follow if various reactions occur.

REACTION	SYMPTOMS	MANAGEMENT
Localized	Soreness, redness, itching, or swelling at the injection site	Apply a cold compress to the injection site. Consider giving an analgesic (pain reliever) or antipruritic (anti-itch) medication.
	Slight bleeding	Apply an adhesive compress over the injection site.
	Continuous bleeding	Place thick layer of gauze pads over site and maintain direct and firm pressure; raise the bleeding injection site (e.g., arm) above the level of the patient's heart.
Psychological fright and syncope (fainting)	Fright before injection is given	Have patient sit or lie down for the vaccination.
	Extreme paleness, sweating, coldness of the hands and feet, nausea, lightheadedness, dizziness, weakness, or visual disturbances	Have patient lie flat or sit with head between knees for several minutes. Loosen any tight clothing and maintain an open airway. Apply cool, damp cloths to patient's face and neck.
	Fall, without loss of consciousness	Examine the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated.
Anaphylaxis	Loss of consciousness	Check the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated. Call 911 if patient does not recover immediately.
	Sudden or gradual onset of generalized itching, erythema (redness), or urticaria (hives); angioedema (swelling of the lips, face, or throat); severe bronchospasm (wheezing); shortness of breath; shock; abdominal cramping; or cardiovascular collapse.	See "Emergency Medical Protocol for Management of Anaphylactic Reactions in Adults" on the next page for detailed steps to follow in treating anaphylaxis.

CONTINUED ON NEXT PAGE ►



Saint Paul, Minnesota • 651-647-9009 • [www.immunize.org](http://www.immunize.org) • [www.vaccineinformation.org](http://www.vaccineinformation.org)  
[www.immunize.org/catg.d/p3082.pdf](http://www.immunize.org/catg.d/p3082.pdf) • Item #P3082 (9/14)

### REFERENCES

Simons FE, Camargo CA. Anaphylaxis: Rapid recognition and treatment. In: UpToDate, Bochner BS (Ed). UpToDate: Waltham, MA, 2013.

Boyce JA, Assa'ad A, Burks AW, et al. Guidelines for the Diagnosis and Management of Food Allergy in the United States: Report of the NIAID-Sponsored Expert Panel. *Allergy Clin Immunol* 2010; 126(6): S1–S57.



Saint Paul, Minnesota • 651-647-9009 • [www.immunize.org](http://www.immunize.org) • [www.vaccineinformation.org](http://www.vaccineinformation.org)  
[www.immunize.org/catg.d/p3082.pdf](http://www.immunize.org/catg.d/p3082.pdf) • Item #P3082 (9/14)

These standing orders for the medical management of vaccine reactions in adult patients shall remain in effect for patients of the

NAME OF CLINIC \_\_\_\_\_ until rescinded or until \_\_\_\_\_ DATE

MEDICAL DIRECTOR'S SIGNATURE \_\_\_\_\_ DATE OF SIGNING \_\_\_\_\_

Visit [www.immunize.org/catg.d/p3082.pdf](http://www.immunize.org/catg.d/p3082.pdf).

# Handy VIS reference charts are ready to print, cut out, and use in your medical setting!

► Visit [www.immunize.org/catg.d/p2029.pdf](http://www.immunize.org/catg.d/p2029.pdf).

## Current Dates of Vaccine Information Statements (VISs) as of April 24, 2015

Check your supply of VISs against this list. If you have outdated VISs, get current versions at [www.immunize.org/vis](http://www.immunize.org/vis).

Adenovirus.....	6/11/14	MMRV.....	5/21/10
Anthrax.....	3/10/10	Meningococcal.....	10/14/11
Chickenpox.....	3/13/08	Multi-vaccine.....	10/22/14
DTaP.....	5/17/07	PCV13.....	2/27/13
Hib.....	4/2/15	PPSV.....	4/24/15
Hepatitis A.....	10/25/11	Polio.....	11/8/11
Hepatitis B.....	2/2/12	Rabies.....	10/6/09
HPV-Cervarix.....	5/3/11	Rotavirus.....	4/15/15
HPV-Gardasil.....	5/17/13	Shingles.....	10/6/09
HPV-Gardasil 9.....	4/15/15	Td.....	2/24/15
Influenza.....	8/19/14	Tdap.....	2/24/15
Japanese enceph.....	1/24/14	Typhoid.....	5/29/12
MMR.....	4/20/12	Yellow fever.....	3/30/11

Immunization Action Coalition [www.immunize.org/catg.d/p2029.pdf](http://www.immunize.org/catg.d/p2029.pdf) • Item #2029(4/15)

## Current Dates of Vaccine Information Statements (VISs) as of April 24, 2015

Check your supply of VISs against this list. If you have outdated VISs, get current versions at [www.immunize.org/vis](http://www.immunize.org/vis).

Adenovirus.....	6/11/14	MMRV.....	5/21/10
Anthrax.....	3/10/10	Meningococcal.....	10/14/11
Chickenpox.....	3/13/08	Multi-vaccine.....	10/22/14
DTaP.....	5/17/07	PCV13.....	2/27/13
Hib.....	4/2/15	PPSV.....	4/24/15
Hepatitis A.....	10/25/11	Polio.....	11/8/11
Hepatitis B.....	2/2/12	Rabies.....	10/6/09
HPV-Cervarix.....	5/3/11	Rotavirus.....	4/15/15
HPV-Gardasil.....	5/17/13	Shingles.....	10/6/09
HPV-Gardasil 9.....	4/15/15	Td.....	2/24/15
Influenza.....	8/19/14	Tdap.....	2/24/15
Japanese enceph.....	1/24/14	Typhoid.....	5/29/12
MMR.....	4/20/12	Yellow fever.....	3/30/11

Immunization Action Coalition [www.immunize.org/catg.d/p2029.pdf](http://www.immunize.org/catg.d/p2029.pdf) • Item #2029(4/15)



## Current Dates of Vaccine Information Statements (VISs) as of April 24, 2015

Check your supply of VISs against this list. If you have outdated VISs, get current versions at [www.immunize.org/vis](http://www.immunize.org/vis).

Adenovirus.....	6/11/14	MMRV.....	5/21/10
Anthrax.....	3/10/10	Meningococcal.....	10/14/11
Chickenpox.....	3/13/08	Multi-vaccine.....	10/22/14
DTaP.....	5/17/07	PCV13.....	2/27/13
Hib.....	4/2/15	PPSV.....	4/24/15
Hepatitis A.....	10/25/11	Polio.....	11/8/11
Hepatitis B.....	2/2/12	Rabies.....	10/6/09
HPV-Cervarix.....	5/3/11	Rotavirus.....	4/15/15
HPV-Gardasil.....	5/17/13	Shingles.....	10/6/09
HPV-Gardasil 9.....	4/15/15	Td.....	2/24/15
Influenza.....	8/19/14	Tdap.....	2/24/15
Japanese enceph.....	1/24/14	Typhoid.....	5/29/12
MMR.....	4/20/12	Yellow fever.....	3/30/11

Immunization Action Coalition [www.immunize.org/catg.d/p2029.pdf](http://www.immunize.org/catg.d/p2029.pdf) • Item #2029(4/15)

## Current Dates of Vaccine Information Statements (VISs) as of April 24, 2015

Check your supply of VISs against this list. If you have outdated VISs, get current versions at [www.immunize.org/vis](http://www.immunize.org/vis).

Adenovirus.....	6/11/14	MMRV.....	5/21/10
Anthrax.....	3/10/10	Meningococcal.....	10/14/11
Chickenpox.....	3/13/08	Multi-vaccine.....	10/22/14
DTaP.....	5/17/07	PCV13.....	2/27/13
Hib.....	4/2/15	PPSV.....	4/24/15
Hepatitis A.....	10/25/11	Polio.....	11/8/11
Hepatitis B.....	2/2/12	Rabies.....	10/6/09
HPV-Cervarix.....	5/3/11	Rotavirus.....	4/15/15
HPV-Gardasil.....	5/17/13	Shingles.....	10/6/09
HPV-Gardasil 9.....	4/15/15	Td.....	2/24/15
Influenza.....	8/19/14	Tdap.....	2/24/15
Japanese enceph.....	1/24/14	Typhoid.....	5/29/12
MMR.....	4/20/12	Yellow fever.....	3/30/11

Immunization Action Coalition [www.immunize.org/catg.d/p2029.pdf](http://www.immunize.org/catg.d/p2029.pdf) • Item #2029(4/15)



# The Vaccine Handbook: A Practical Guide for Clinicians

**New!** The fifth edition has been extensively updated for 2015.

**The Vaccine Handbook: A Practical Guide for Clinicians** ("The Purple Book") is a uniquely comprehensive source of practical, up-to-date information for vaccine providers and educators. Its author, Gary S. Marshall, MD, has drawn together the latest vaccine science and guidance into a concise, user-friendly, practical resource for the private office, public health clinic, academic medical center, and hospital.

**The Vaccine Handbook** provides

- Information on every licensed vaccine in the United States;
- Rationale behind authoritative vaccine recommendations;
- Contingencies encountered in everyday practice;
- A chapter dedicated to addressing vaccine concerns;
- Background on how vaccine policy is made;
- Standards and regulations;
- Office logistics, including billing procedures, and much more.

The fifth edition contains a foreword by Deborah L. Wexler, MD, executive director, Immunization Action Coalition, which has partnered with the publisher, Professional Communications, Inc. (PCI), to promote **The Vaccine Handbook**.



FROM THE FOREWORD:

**The Purple Book** belongs in the hands of every medical student, physician-in-training, doctor, nursing student, and nurse who provides vaccines to patients, regardless of patient age or medical specialty. It is my honor to introduce the Fifth Edition to you. This essential reference beautifully supports all of us in our efforts to move forward in protecting our patients from the consequences of preventable diseases.

DEBORAH L. WEXLER, MD  
Executive Director  
Immunization Action Coalition

## About the Author



Gary Marshall, MD, is professor of pediatrics at the University of Louisville School of Medicine in Kentucky, where he serves as chief of the division of pediatric infectious diseases and director of the Pediatric Clinical Trials Unit. In addition to being a busy clinician, he is nationally known for his work in the areas of vaccine research, advocacy, and education.

## The Reviews

*This book gives clinicians a well-organized and efficient one-stop source for information on immunizations and vaccine preventable diseases.*

— KEVIN J. DOWNES, MD  
Cincinnati Children's Hospital  
Medical Center

*During my more than 20 years in the field of immunization education, I have not seen another book that is so brimming with state-of-the-science information.*

— DEBORAH L. WEXLER, MD  
Executive Director,  
Immunization Action Coalition

*A ready reference source on the practical aspects of vaccines and vaccinations.*

— ROBERT M. JACOBSON, MD  
Mayo Foundation for Medical  
Education and Research

*The Vaccine Handbook is a wonderful, thorough collection of valuable information for all clinicians who vaccinate children.*

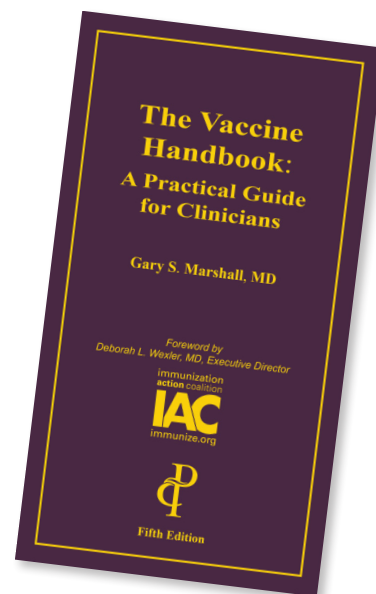
*A must have reference book for every office.*

— PAUL A. OFFIT, MD  
Maurice R. Hilleman Professor of  
Vaccinology and Professor of Pediatrics,  
University of Pennsylvania School  
of Medicine

## ORDER TODAY!

Visit [www.immunize.org/vaccine-handbook](http://www.immunize.org/vaccine-handbook)  
Questions? [admininfo@immunize.org](mailto:admininfo@immunize.org)

Quantity  
discounts  
available



2015 • Fifth edition • 560 pages • \$29.95  
ISBN: 978-1-932610-99-4

## TABLE OF CONTENTS

General Principles of Vaccinology and Vaccine Practice	Introduction to Vaccinology	1
	Vaccine Infrastructure in the United States	2
	Standards, Principles, and Regulations	3
	Vaccine Practice	4
	General Recommendations	5
	Vaccination in Special Circumstances	6
	Addressing Concerns About Vaccines	7
	Routine Schedules	8
Diseases and Vaccines	Adenovirus	9
	Anthrax	10
	Diphtheria, Tetanus, and Pertussis	11
	Haemophilus influenzae type b	12
	Hepatitis A	13
	Hepatitis B	14
	Human Papillomavirus	15
	Influenza	16
	Japanese Encephalitis	17
	Measles, Mumps, and Rubella	18
	Neisseria meningitidis	19
	Polio	20
	Rabies	21
	Rotavirus	22
	Smallpox	23
	Streptococcus pneumoniae	24
	Typhoid Fever	25
	Varicella	26
	Yellow Fever	27
	Zoster	28
	Combination Vaccines	29
Appendix		30
Index		31

iii

the laboratory setting, proper infection control should be instituted including, at minimum, bio-safety level 2. Whether HPV vaccination would be of benefit in these settings is unclear because no data exist on transmission risk or vaccine efficacy in this situation.

**Please summarize information about Merck's new 9-valent HPV vaccine (9vHPV, Gardasil 9).** 9vHPV contains the four HPV types in 4vHPV (Gardasil; 16, 18, 6, and 11) and 5 additional "high risk" types (31, 33, 45, 52, and 58). It was licensed by the U.S. Food and Drug Administration (FDA) on December 10, 2014. 9vHPV is approved for use in females 9 through 26 years and males 9 through 15 years (Merck has subsequently submitted clinical trial data to the FDA for males 16 through 26 years of age). 9vHPV has the same schedule as 4vHPV (three intramuscular doses spaced 0, 1, and 6 months apart). In a clinical trial comparing 9vHPV to 4vHPV, 9vHPV reduced the risk of disease caused by the 5 additional strains by 97%. ACIP states that clinicians can administer either 4vHPV or 9vHPV to males through age 26 years to complete the HPV vaccine series.

**With the availability of 9vHPV, has the ACIP changed its recommendations for HPV vaccines?**

The ACIP recommendations for HPV vaccination have not changed. ACIP recommends that routine HPV vaccination be initiated for females and males at age 11 or 12 years. The vaccination series can be started as early as age 9 years. Vaccination is also recommended for females aged 13 through 26 years and for males aged 13 through 21 years who have not been vaccinated previously or who have not completed the 3-dose series. In addition, vaccination is recommended for men age 22 through age 26 years who 1) have sex with men or 2) are immunocompromised as a result of infection (including HIV), disease, or medication. Other males 22 through 26 years of age may be vaccinated at the clinician's discretion.

Vaccination of females is recommended with 2vHPV (Cervix, GlaxoSmithKline), 4vHPV (as long as this formulation is available), or 9vHPV. Vaccination of males is recommended with 4vHPV (as long as this formulation is available) or 9vHPV. Ideally, HPV vaccine should be administered before potential exposure to HPV through sexual contact.

All 3 HPV vaccines should be given as a 3-dose schedule, with the second dose given 1 to 2 months after the first dose and the third dose 6 months after the first dose.

The 2014 ACIP recommendations are available at [www.cdc.gov/mmwr/pdf/rr/rr6305.pdf](http://www.cdc.gov/mmwr/pdf/rr/rr6305.pdf) (covers 2vHPV and 4vHPV), and the newly released 2015 ACIP recommendations (published March 27, 2015) are at [www.cdc.gov/mmwr/pdf/wk/mm6411.pdf](http://www.cdc.gov/mmwr/pdf/wk/mm6411.pdf), pages 300–304 (covers 9vHPV).

**Can an HPV vaccine series begun with 2vHPV or 4vHPV be completed with 9vHPV?**

Yes. Any available HPV vaccine may be used to continue or complete the series for females. 9vHPV or 4vHPV may be used to continue or complete the series for males. However, receiving fewer than 3 doses of 4vHPV or 9vHPV may provide less protection against genital warts caused by HPV types 6 and 11 than the usual 3-dose series. There are no data on the efficacy of the 5 additional HPV types included in 9vHPV if the person receives fewer than 3 doses.

**Does ACIP recommend revaccination with 9vHPV for patients who previously received a series of 2vHPV or 4vHPV?**

ACIP has not recommended routine revaccination with 9vHPV for persons who have completed a series of another HPV vaccine. There are data that indicate revaccination with 9vHPV after a series of 4vHPV is safe. Clinicians should decide if the benefit of immunity against 5 additional oncogenic strains of HPV is justified for their patients.

**Do women and men whose sexual orientation is same-sex need HPV vaccine?**

Yes. HPV vaccine is recommended for females and males regardless of their sexual orientation.

**If a dose of HPV vaccine is significantly delayed, do I need to start the series over?**

No, do not restart the series. You should continue where the patient left off and complete the series.

**To accelerate completion of the HPV vaccine series, can doses be given at 0, 1, and 4 months?**

No, there is no accelerated schedule for completing the HPV vaccine series. You should follow the recommended schedule of 0, 1–2, and 6 months.

**What are the minimum intervals between doses of HPV vaccine?**

Minimum intervals are used when patients have fallen behind on their immunization schedule or when they need their dosing schedule expedited (for example, if there is imminent travel). The minimum interval between the first and second doses of HPV vaccine is 4 weeks. The minimum interval between the second and third dose is 12 weeks. ACIP recommends an interval of 24 weeks between the first and third dose. However, the third dose can be considered to be valid if it was separated from the first dose by at least 16 weeks and from the second dose by at least 12 weeks.

**If HPV vaccine is given subcutaneously instead of intramuscularly, does the dose need to be repeated?**

Yes. No data exist on the efficacy or safety of HPV vaccine given by the subcutaneous route. All data on efficacy and duration of protection are based on a 3-dose series given on the approved schedule and administered by the intramuscular route. In the absence of data on subcutaneous administration, the Centers for Disease Control and Prevention (CDC) and the manufacturers recommend that

## IAC's "Ask the Experts" team from the Centers for Disease Control and Prevention



Andrew T. Kroger, MD, MPH



Donna L. Weaver, RN, MN

a dose of HPV vaccine given by any route other than intramuscular should be repeated. There is no minimum interval between the invalid (subcutaneous) dose and the repeat dose.

**If a patient has been sexually active for a number of years, is it still recommended to give HPV vaccine or to complete the HPV vaccine series?**

Yes. HPV vaccine should be administered to people who are already sexually active. Ideally, patients should be vaccinated before onset of sexual activity; however, patients who have already been infected with one or more HPV types still get protection from other HPV types in the vaccine that have not been acquired.

**I read that HPV vaccination rates are still low. What can we do as providers to improve these rates?**

Coverage levels for HPV vaccine are improving but are still inadequate. Results from the CDC's 2013 National Immunization Survey-Teen (NIS-Teen) indicate that HPV vaccination rates in girls age 13 through 17 years increased between 2012 and 2013. Just over 57% of girls age 13 through 17 years had started the series that they should have completed by age 13 years and 38% had completed the series. In 2013, 35% of boys age 13 through 17 years had received one dose but only 14% had received all three recommended doses. A summary of the 2013 NIS-Teen survey is available at [www.cdc.gov/mmwr/pdf/wk/mm6329.pdf](http://www.cdc.gov/mmwr/pdf/wk/mm6329.pdf), page 625–633.

Providers can improve uptake of this life-saving vaccine in two main ways. First, studies have shown that missed opportunities are a big problem. Up to 88% (depending on year of birth) of girls unvaccinated for HPV had a healthcare visit where

**Ask the Experts...continued on page 17 ►**

### Vaccinate Adults correction policy

If you find an error, please notify us immediately by sending an email message to [admin@immunize.org](mailto:admin@immunize.org). We publish notification of significant errors in our email announcement service, *IAC Express*. Be sure you're signed up for this service. To subscribe, visit [www.immunize.org/subscribe](http://www.immunize.org/subscribe).

## Ask the Experts...continued from page 16

they received another vaccine such as Tdap, but not HPV. If HPV vaccine had been administered at the same visit, vaccination coverage for one or more doses could be 91% instead of 57%. Second, the 2013 NIS-Teen data show that not receiving a healthcare provider's recommendation for HPV vaccine was one of the five main reasons parents reported for not vaccinating their daughters and the number one reason for not vaccinating their sons.

CDC urges healthcare providers to increase the consistency and strength of how they recommend HPV vaccine. The following resources can help providers with these conversations.

- CDC's "Tips and Time-savers for Talking with Parents about HPV Vaccine," available at [www.cdc.gov/vaccines/who/teens/for-hcp-tipsheet-hpv.pdf](http://www.cdc.gov/vaccines/who/teens/for-hcp-tipsheet-hpv.pdf)

- IAC's "HPV Vaccine: A Guide for Young Adults," available at [www.immunize.org/catg.d/p4251.pdf](http://www.immunize.org/catg.d/p4251.pdf)

- IAC's "Protect Yourself from HPV... Get Vaccinated," available at [www.immunize.org/catg.d/p4406.pdf](http://www.immunize.org/catg.d/p4406.pdf)

For more detailed information about HPV vaccination strategies for providers, visit [www.cdc.gov/vaccines/who/teens/for-hcp/hpv-resources.html](http://www.cdc.gov/vaccines/who/teens/for-hcp/hpv-resources.html).

### **If a 30-year-old female patient insists that she wants to receive HPV vaccine, can I give it to her?**

HPV vaccine is not FDA-licensed for use in women older than age 26 years. Studies have shown that the vaccine is safe in women age 27 years and older. ACIP does not recommend the use of this vaccine outside the FDA licensing guidelines unless the series was started but not completed by age 26 years. Clinicians may choose to administer HPV vaccine off-label to men and women age 27 years or older.

### **What adverse events can be expected following HPV vaccine?**

In clinical trials involving more than 35,000 subjects, the most common adverse event was injection site pain, which was reported in 58% to 90% of recipients (depending on vaccine and dose number). Other local reactions, such as redness and/or swelling, were reported in 30% to 40% of recipients. Local reactions were reported more frequently among 9vHPV recipients than among 4vHPV recipients, probably because of the larger amount of aluminum adjuvant present in 9vHPV. Systemic reaction, such as fever, headache, and fatigue, were reported by 2% to 50% of recipients (depending on vaccine and dose number). These symptoms generally occurred at about the same rate in vaccine and placebo recipients.

### **Do HPV vaccines cause fainting?**

Nearly all vaccines have been reported to be associated with fainting (syncope). Post-vaccination syncope has been most frequently reported after

receipt of any of the three vaccines commonly given to adolescents (HPV, MCV4, and Tdap). However, it is not known whether the vaccines are responsible for post-vaccination syncope or if the association with these vaccines simply reflects the fact that adolescents are generally more likely to experience syncope.

Syncope can cause serious injury. Falls that occur due to syncope after vaccination can be prevented by having the vaccinated person seated or lying down. The person should be observed for 15 minutes following vaccination.

## MMR vaccine

**In regard to the current measles outbreak, some are saying that people who have not had the vaccine should pose no threat to those who have been vaccinated. It is my understanding that during an outbreak, vaccinated people can still contract it. Am I correct?**

You are correct that those who have been vaccinated can still be infected with infections against which they are vaccinated. No vaccine is 100% effective. Vaccine effectiveness varies from greater than 95% (for diseases such as measles, rubella, hepatitis B) to much lower (influenza this year 23%, and 60% in years with a good match of wild and vaccine viruses, and the acellular pertussis vaccines after 5 years or so offer only about 70% protection). Therefore, we encourage as many people as possible to be vaccinated to avoid outbreaks, while working towards the development of better vaccines (such as for influenza and pertussis). More information is available for each vaccine and disease at [www.cdc.gov/vaccines/vpd-vac/default.htm](http://www.cdc.gov/vaccines/vpd-vac/default.htm) and [www.immunize.org/vaccines](http://www.immunize.org/vaccines).

**We received a call from a healthcare provider who inadvertently administered MMR vaccine to a woman who was 2 months pregnant. Please advise as to appropriate action steps.**

No specific action needs to be taken other than to reassure the woman that no adverse outcomes are expected as a result of this vaccination. MMR vaccination during pregnancy alone is not a reason to terminate a pregnancy. You should consult with the provider to determine if there is a way to avoid such vaccination errors in the future. Detailed information about MMR vaccination in pregnancy is included in the most recent MMR ACIP statement, available at [www.cdc.gov/mmwr/pdf/rr/rr6204.pdf](http://www.cdc.gov/mmwr/pdf/rr/rr6204.pdf).

To find more than **1,000**  
"Ask the Experts" Q&As  
answered by CDC experts,  
visit [www.immunize.org/askexperts](http://www.immunize.org/askexperts)

## Meningococcal vaccine

**We have a 65-year-old male seeking vaccination due to international travel. Meningococcal polysaccharide vaccine (MPSV4, Menomune, Sanofi Pasteur) is unavailable, and we aren't sure when we can get it. How should we proceed? Is this a circumstance in which a conjugate vaccine is appropriate at his age?**

ACIP recommends off-label use of quadrivalent meningococcal conjugate vaccine (MCV4: Menactra, Sanofi Pasteur; Menveo, GlaxoSmithKline) in adults age 56 years and older who (1) were vaccinated previously with MCV4 and now need revaccination or (2) are recommended to receive multiple doses (e.g., adults with asplenia, microbiologists working with *Neisseria meningitidis*). Although MPSV4 is recommended in the situation you describe, it is acceptable to use MCV4 if MPSV4 is not available.

## Asplenia and vaccines

**Do any of the bacterial vaccines that are recommended for people with functional or anatomic asplenia need to be given before splenectomy? Do the doses count if they are given during the 2 weeks prior to surgery?**

Pneumococcal conjugate vaccine (PCV13, Prevnar 13, Pfizer), *Haemophilus influenzae* type b vaccine (Hib), meningococcal conjugate vaccine (MCV4), and meningococcal B vaccine should be given 14 days before splenectomy, if possible. Doses given during the 2 weeks (14 days) before surgery can be counted as valid. If the doses cannot be given prior to the splenectomy, they should be given as soon as the patient's condition has stabilized after surgery. Pneumococcal polysaccharide vaccine (PPSV23, Pneumovax, Merck) should be administered 8 weeks after the dose of PCV13 for people 2 years of age and older.

## Zoster vaccine

**My patient is a 66-year-old male with a condition that requires treatment with intravenous immune globulin (IVIG) once a month. Can he receive zoster vaccine?**

Yes. The concern about interference by circulating antibody (from the IVIG), which we have for varicella vaccine, does not apply to zoster vaccine. The amount of antigen in zoster vaccine is high enough to offset any effect of circulating antibody. Also, studies of zoster vaccine were performed on patients receiving antibody-containing blood products with no appreciable effect on efficacy.



# 2015 Laminated U.S. Immunization Schedules — both adult and child/teen versions available!

IAC has two laminated immunization schedules for 2015 – one for adults and one for children/teens. Based on CDC's immunization schedules, these laminated schedules are covered with a tough, washable coating. This allows them to stand up to a year's worth of use as at-your-fingertips guides to immunization and as teaching tools

you can use to give patients and parents authoritative information. Plus, each schedule includes a guide to vaccine contraindications and precautions. To order any of our essential immunization resources listed below, print out and mail or fax this page, or place your order online at [www.immunize.org/shop](http://www.immunize.org/shop).

**It's convenient to shop IAC online at [www.immunize.org/shop](http://www.immunize.org/shop)**

## ■ **The Vaccine Handbook: A Practical Guide for Clinicians** ("The Purple Book") by Gary Marshall, MD

Fifth edition • 2015 • 560 pages • \$29.95 + shipping

Order online at [www.immunize.org/vaccine-handbook](http://www.immunize.org/vaccine-handbook)



## Order Essential Immunization Resources

### ■ **Laminated 2015 U.S. Immunization Schedules** (details p. 3; call for discounts on bulk orders)

Qty.	1-4 copies—\$7.50 each; 5-19 copies—\$5.50 each	Amt.
_____ R2008	Child/teen schedule.....	\$ _____
_____ R2009	Adult schedule.....	\$ _____

### ■ **DVD – Immunization Techniques: Best Practices with Infants, Children, and Adults** (call for discounts on bulk orders)

1-9 copies—\$17 each; 10-24 copies—\$10.25 each; 25-49 copies—\$7 each

_____ D2021	Immunization Techniques: Best Practices with Children/Teens/Adults \$ _____
-------------	---

### ■ **Patient Immunization Record Cards – for children and teens, for adults, and for a lifetime!** (all are wallet-sized; details p. 3; call for discounts on bulk orders)

250 cards/box; 1 box—\$45; 2 boxes—\$40 each; 3 boxes—\$37.50 each; 4 boxes—\$34.50 each

_____ R2003	Child/teen immunization record cards .....	\$ _____
_____ R2005	Adult immunization record cards .....	\$ _____
_____ R2004	Lifetime immunization record cards .....	\$ _____

**Total for Purchases \$ \_\_\_\_\_**

## ■ **Make a Charitable Contribution.**

I am a ☐ new ☐ renewing contributor.

### Here is my contribution:

☐ \$35 ☐ \$50 ☐ \$100 ☐ \$250 other: \$ \_\_\_\_\_

IAC is a 501(c)(3) charitable organization and your contribution is tax deductible to the fullest extent of the law.

**Total for Purchases and Contribution \$ \_\_\_\_\_**

## How to Place an Order

**By Credit Card:** Order easily online at our secure shopping cart at [www.immunize.org/shop](http://www.immunize.org/shop).

**By Check, Purchase Order, or Credit Card:** Print out this page, fill out the necessary information, and

**Fax this page to:** (651) 647-9131 or

**Mail this page to:** Immunization Action Coalition  
2550 University Avenue West, Suite 415 North  
Saint Paul, MN 55114

**Our federal ID# is 41-1768237.**

**For Questions or International Orders:** Contact us by phone at (651) 647-9009 or email [admininfo@immunize.org](mailto:admininfo@immunize.org)

**Thank you** for your support of the Immunization Action Coalition. We depend on you!

**Method of payment:** ☐ **Check enclosed** (payable to Immunization Action Coalition)

☐ **Purchase order #** \_\_\_\_\_

☐ Visa ☐ Mastercard ☐ Am. Express ☐ Discover

Card #

Expiration Date           CV Code #\*

\*The CV Code is the Credit Verification Code, the additional 3- or 4-digit number on your credit card.

Name/Title \_\_\_\_\_

Organization \_\_\_\_\_

Shipping address (Check one: This is my ☐ organization address ☐ home address)

City/State/Zip \_\_\_\_\_

Telephone \_\_\_\_\_

Email address \_\_\_\_\_

**It's convenient to shop IAC online at [www.immunize.org/shop](http://www.immunize.org/shop)**