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VACCINATE ADULTS!

from the Immunization Action Coalition — www.immunize.org

What's in this issue?

Leading Medical and Public Health Organizations Join Efforts Urging Physicians to Strongly Recommend HPV Vaccination

Four leading national medical associations—the American Academy of Family Physicians (AAFP), the American Academy of Pediatrics (AAP), the American College of Physicians (ACP), and the American College of Obstetricians and Gynecologists (ACOG)—together with the Immunization Action Coalition (IAC) and the Centers for Disease Control and Prevention (CDC), have issued a call to action, urging physicians across the United States to educate their patients about human papillomavirus (HPV) vaccine, and to strongly recommend HPV vaccination.

In their "Dear Colleague" letter, these medical and public health organizations emphasize to physicians that a strong healthcare provider recommendation is critical to increasing the rate of HPV vaccination and preventing HPV-associated cancers. Despite more than seven years of vaccine monitoring showing overwhelming evidence of HPV vaccine safety and effectiveness, HPV vaccination rates are not improving while rates for other adolescent vaccines are.

In the United States alone, 79 million people are currently infected with HPV. Every year, 14 million are newly infected and 26,000 cancers attributable to HPV are diagnosed. Studies show that when a provider strongly recommends HPV vaccination, patients are 4 to 5 times more likely to receive HPV vaccine. It is time for physicians to strongly recommend HPV vaccine to prevent cervical and other cancers.

"What you say matters, and how you say it matters even more," says IAC Executive Director Deborah Wexler, MD. "A lukewarm recommendation may lead people to perceive HPV vaccination as less important than other vaccines."

AAFP President Reid Blackwelder, MD, states, "It's astonishing that despite a remarkable effectiveness record, only around a third of U.S. adolescent girls complete HPV vaccination. Countries like Rwanda are immunizing more than four out of five adolescent girls. We've got to do better in the United States."

"The AAP recognizes that parents have many questions about the HPV vaccine," said AAP President James M. Perrin, MD, FAAP. "It's important for providers to be able to engage in dialogue, answer questions, and still provide a strong recommendation for the vaccine. Even with parents who have questions, a healthcare provider

Recommend HPV Vaccine. . . *continued on p. 5* ▶

Ask the Experts

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

Immunization questions?

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

HPV vaccine

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

Results from the Centers for Disease Control and Prevention's 2012 National Immunization Survey-Teen (NIS-Teen) indicate that HPV vaccination rates in girls age 13 through 17 years failed to increase between 2011 and 2012, and the 3-dose coverage rate actually declined slightly during this period. Just over half of the girls age 13 through 17 years had started the series that they should have completed by age 13 years. Only about one-third of girls this age had completed the series. In 2012, the first year HPV vaccine was routinely recommended for boys, 20.8% of boys age 13 through 17 years had received one dose and only 6.8% had received all three recommended doses. A summary of the 2012 NIS-Teen survey is available at www.cdc.gov/mmwr/pdf/wk/mm6234.pdf, page 685.

Providers can improve uptake of this life-saving vaccine in two main ways. First, studies have shown that missed opportunities are a big problem. Eighty-four percent of girls unvaccinated for HPV had a healthcare visit where 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 nearly 93% instead of 54%.

Second, the 2012 NIS-Teen data show that not receiving a healthcare provider's recommendation for HPV vaccine was one of the five main reasons

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Vaccinate Adults!

online at www.immunize.org/va

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HPV Vaccination Resources for Providers and Patients at Your Fingertips

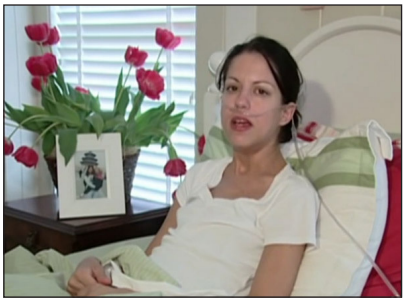
To help you carry out the important mission of improving human papillomavirus (HPV) vaccination uptake, IAC has compiled an extensive listing of online educational information and print resources about HPV from the following organizations: the Immunization Action Coalition (IAC), the Centers for Disease Control and Prevention (CDC), the American Academy of Family Physicians (AAFP), the American Academy of Pediatrics (AAP), the American College of Obstetricians and Gynecologists (ACOG), the Vaccine Education Center at the Children's Hospital of Philadelphia (VEC), and others.

Print and online resources for providers

- *Dear Colleague* letter titled "Give a strong recommendation for HPV vaccine to increase uptake!" at www.immunize.org/letter/recommend_hpv_vaccination.pdf (IAC).
- "Tips and Time-savers for Talking with Parents about HPV Vaccine" at www.cdc.gov/vaccines/who/teens/for-hcp-tipsheet-hpv.html (CDC).
- *You Are the Key to HPV Cancer Prevention* campaign web section at www.cdc.gov/vaccines/who/teens/for-hcp/hpv-resources.html (CDC).
- HPV web section at www.immunize.org/hpv (IAC).
- HPV handouts for patients and providers at www.immunize.org/handouts/hpv-vaccines.asp (IAC).
- Ask the Experts: HPV Q&As at www.immunize.org/askexperts/experts_hpv.asp (IAC).
- HPV Vaccine Information Statements in more than 15 languages at www.immunize.org/vis (CDC, IAC).
- "HPV Information for Ob-Gyns" at www.immunizationforwomen.org/immunization_facts/vaccine-preventable_diseases/human_papillomavirus (ACOG).
- "HPV Frequently Asked Questions for Providers" at www.immunizationforwomen.org/faqs/hpv (ACOG).

Print and online resources for patients

- "A Parent's Guide to HPV Vaccination" at www.immunize.org/catg.d/p4250.pdf (IAC).
- HPV Personal Testimonies of suffering at www.vaccineinformation.org/personal-testimonies (IAC).
- HPV Unprotected People Reports at www.immunize.org/reports/hpv.asp (IAC).
- HPV web section for parents and patients at www.vaccineinformation.org/hpv (IAC).
- Immunization Safety Office "Frequently Asked Questions about HPV Vaccine Safety" at www.cdc.gov/vaccinesafety/Vaccines/HPV/hpv_faqs.html (CDC).
- "Why Your Doctor Says You Should Get All 3 HPV Vaccine Shots" at www2.aap.org/immunization/families/APAHPVHandout.pdf (AAP).
- "FAQs for Patients Concerning HPV Vaccination" at www.immunizationforwomen.org/site/assets/docs/Tear pad FAQ HPV 2014 PDF final.pdf (ACOG).
- Prevent HPV web section, includes new brochure for boys and young men, videos, and more at www.chop.edu/service/vaccine-education-center/prevent-hpv/index.html (VEC).



Video: In Memory of Heather Burcham
www.youtube.com/immunizationaction

Videos and PSAs

•HPV video collection for healthcare providers at www.immunize.org/votw/hpv-videos.asp (IAC).

•Video Library features a collection of HPV-related videos for parents and the public at www.vaccineinformation.org/videos/index.asp?vid_cat=0012 (IAC).

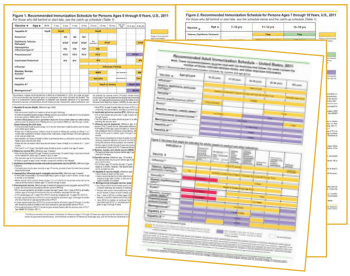
•Videos, radio PSAs, and podcasts about the importance of HPV vaccination at www.cdc.gov/vaccines/who/teens/products/video-audio.html (CDC).

Reports, commentaries, and news

- Commentary by Dr. Michael T. Brady, "Pediatricians Can Lay Out Evidence to Allay Fears Over HPV Vaccine" at http://aapnews.aappublications.org/content/35/3/9.1.full (*AAP News*).
- Joint press release: "Leading Medical and Public Health Organizations Join Efforts Urging Physicians to Strongly Recommend HPV Vaccination" at www.immunize.org/press/recommend_hpv_vaccination.asp (IAC).
- "Strong Recommendation to Vaccinate Against HPV Is Key to Boosting Uptake" at www.aafp.org/news-now/health-of-the-public/20140212hpv-vaccltr.html (*AAFP News Now).*
- Post by Dr. Nathan Boonstra "HPV Vaccines and Failure to Communicate" at www.voicesforvaccines.org/hpv-vaccines-and-failure-to-communicate (Voices for Vaccines).
- "Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer" at deainfo.nci.nih.gov/advisory/pcp/annualReports/HPV/PDF/PCP_Annual_Report_2012-2013.pdf (President's Cancer Panel).

2014 Laminated adult and child immunization schedules Order one of each for every exam room

Here are the ACIP/AAFP/ACP/ACOG/ACNM-approved schedule for adults and the ACIP/AAP/AAFP-approved immunization schedule for people ages 0 through 18 years. Both are laminated and washable for heavy-duty use, complete with essential footnotes, and printed in color for easy reading. The cost is $7.50 for each schedule and only $5.50 each for five or more copies.



To order, visit www.immunize.org/shop, or use the order form on page 18.
For 20 or more copies, contact us for discount pricing: admininfo@immunize.org

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Buy 1 box (250 cards) for $45 (first order of a 250-card box comes with a 30-day, money-back guarantee). Discounts for larger orders: 2 boxes $40 each; 3 boxes $37.50 each; 4 boxes $34.50 each

To order, visit www.immunize.org/shop, or use the order form on page 18.
To receive sample cards, contact us: admininfo@immunize.org

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Rest assured, there will be no interruption in keeping you up to date on immunization science, education, advocacy, news, and information.

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IAC is a 501(c)(3) nonprofit organization.

Vaccine Highlights

Recommendations, schedules, and more

Editor's note: The information in Vaccine Highlights is current as of March 25, 2014.

The next ACIP meetings

A committee of 15 national experts, the Advisory Committee on Immunization Practices (ACIP) advises CDC on the appropriate use of vaccines. ACIP meets three times a year in Atlanta; meetings are open to the public. The next two meetings will be held on June 25–26 and October 29–30. For more information, visit www.cdc.gov/vaccines/acip/index.html.

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

- Download them from links on Immunization Action Coalition (IAC) website: www.immunize.org/acip.
- Download them from CDC's ACIP website: 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, including details on past and upcoming meetings, meeting dates, registration, draft agendas, minutes, live meeting archives, and presentation slides.

2014 immunization schedules

On February 7, CDC published "ACIP Recommended Immunization Schedules for Persons Aged 0 Through 18 Years" and "ACIP Recommended Immunization Schedule for Adults Aged 19 Years or Older—U.S., 2014." These *MMWR* reports are available at www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a6.htm and www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a7.htm, respectively.

The child and teen immunization schedule is issued jointly by ACIP, AAP, and AAFP, and is available at www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf.

The adult schedule is issued jointly by ACIP, AAFP, ACOG, ACP, and ACNM, and is available at www.cdc.gov/vaccines/schedules/downloads/adult/adult-combined-schedule.pdf.

The Immunization Action Coalition (IAC) has developed laminated, full-size versions of both the child/teen (8-sided) and the adult (6-sided) immunization schedules. They are available for purchase. For more information, visit www.immunize.org/shop/laminated-schedules.asp.

Vaccine Information Statements

On February 4, CDC released updated VISs for *Haemophilus influenzae* type b (Hib) and Td vaccines. The updated Hib VIS replaces the 1998 version. Access the Hib VIS at www.immunize.org/vis/vis_hib.asp. Access the Td VIS at www.immunize.org/vis/vis_td.asp. Because both VISs contain changes in the adverse events section, it is advisable to begin using the updated Hib and Td VISs immediately.

On January 24, CDC released a revised Japanese encephalitis VIS. The VIS was updated to reflect the change in Ixiaro's minimum age from 17 years to age two months. Access the Japanese encephalitis VIS at www.immunize.org/vis/vis_japanese_encephalitis_ixiaro.asp.

New and updated VISs

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.

DTaP/DT/DTP.... 5/17/07	MMRV 5/21/10
Hepatitis A 10/25/11	PCV13 ..... 2/27/13
Hepatitis B 2/2/12	PPSV 10/6/09
Hib 2/4/14	Polio 11/8/11
HPV (Cervarix)..... 5/3/11	Rabies 10/6/09
HPV (Gardasil)....5/17/13	Rotavirus..... 8/26/13
Influenza (LAIV)...7/26/13	Shingles 10/6/09
Influenza (TIV) 7/26/13	Td 2/4/14
Japan. enceph..1/24/14	Tdap 5/9/13
Meningococcal.10/14/11	Typhoid 5/29/12
MMR 4/20/12	Varicella 3/13/08
Multi-vaccine VIS...unavailable Expected mid-2014	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.

Hib vaccine news

CDC published *"Prevention and Control of Haemophilus influenzae Type b Disease: Recommendations of the ACIP"* in the February 28 issue of *MMWR Recommendations and Reports*. Access the recommendations at www.cdc.gov/mmwr/pdf/rr/rr6301.pdf.

Measles news

On March 7, the New York City Department of Health and Mental Hygiene issued a press release identifying 19 cases of measles in northern Manhattan, the Bronx, and Brooklyn, including ten adults and nine infants and children. To date, there have been five hospitalizations as a result of this outbreak. New York State and Connecticut have reported cases of measles in 2014. Access the press release at www.nyc.gov/html/doh/html/pr2014/pr007-14.shtml.

On February 19, the California Department of Public Health (CDPH) issued a health advisory titled "14 Measles Cases in State of California in 2014." Access the advisory at www.cdph.ca.gov/HealthInfo/discond/Documents/CDPHMeaslesHealthAdvisoryFeb2014.pdf.

Hepatitis B vaccine news

On December 20, 2013, *MMWR Recommendations and Reports* published *CDC Guidance for Evaluating Health-Care Personnel for Hepatitis B Virus Protection and for Administering Postexposure Management.* This report contains CDC guidance that augments the 2011 ACIP recommendations for evaluating hepatitis B protection among healthcare personnel and administering post-exposure prophylaxis. Explicit guidance is provided for persons working, training, or volunteering in healthcare settings who have documented hepatitis B (HepB) vaccination years before hire or matriculation (e.g., when HepB vaccination was received as part of

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routine infant [recommended since 1991] or catch-up adolescent [recommended since 1995] vaccination). Access the guidance document at www.cdc.gov/mmwr/pdf/rr/rr6210.pdf.

Influenza news

According to a CDC telebriefing held on February 7, the 2013–14 influenza season has been particularly hard on younger- and middle-age adults, with people age 18–64 years representing 61% of all hospitalizations due to influenza—up from the previous three seasons when this age group represented only about 35% of all such hospitalizations.

On February 21, CDC published three articles in *MMWR* about influenza.

- "Interim Estimates of 2013–14 Seasonal Influenza Vaccine Effectiveness—U.S., Feb. 2014" available at www.cdc.gov/mmwr/preview/mmwrhtml/mm6307a1.htm.
- "Update: Influenza Activity—U.S., Sept. 29, 2013–Feb. 8, 2014" available at www.cdc.gov/mmwr/preview/mmwrhtml/mm6307a3.htm.
- "Influenza-Associated Intensive-Care Unit Admissions and Deaths—California, Sept. 29, 2013–Jan. 18, 2014" available at www.cdc.gov/mmwr/preview/mmwrhtml/mm6307a2.htm.

On February 3, CDC posted a "Dear Colleague" letter authored by Anne Schuchat, MD, director, NCIRD, CDC, as well as eleven professional societies. The letter urges healthcare professionals to protect all pregnant and postpartum women against influenza with vaccination, and also to initiate prompt antiviral treatment for pregnant women with influenza. Access the letter at www.cdc.gov/flu/pdf/protect/pregnancy-letter-2014.pdf.

Adult immunization news

The March/April 2014 issue of *Public Health Reports* published "Recommendations of the National Vaccine Advisory Committee (NVAC): Standards for Adult Immunization Practice." Access the Standards at www.publichealthreports.org/issueopen.cfm?articleID=3145. The NVAC standards recognize the importance of the healthcare provider recommendation for patients to receive needed vaccines, the current low vaccination rates among U.S. adults, and reflect the changed environment within which adult vaccines are now given.

On February 7, CDC published "Noninfluenza Vaccination Coverage Among Adults—U.S., 2012" in *MMWR*. According to the report, only modest increases occurred in Tdap vaccination among adults age 19–64 years, herpes zoster vaccination among adults age ≥60 years, and HPV vaccination among women age 19–26 years; coverage among adults in the U.S. for the other vaccines did not improve. Racial/ethnic gaps in coverage persisted for all six vaccines (PPSV, Td/Tdap, hepatitis A, hepatitis B, herpes zoster, and HPV) and widened for Tdap, herpes zoster, and HPV vaccination. Increases in vaccination coverage are needed to reduce the occurrence of vaccine-preventable diseases among adults. Access the complete report at www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a4.htm.

Meningococcal vaccine news

On November 27, 2013, the CDC Health Alert Network issued a CDC Health Advisory titled "Notice to Healthcare Providers: Recognizing and Reporting Serogroup B Meningococcal Disease Associated with Outbreaks at Princeton University and the University of California at Santa Barbara." Access the complete CDC HAN Health Advisory at http://emergency.cdc.gov/HAN/han00357.asp.

Human papillomavirus news

In February, the President's Cancer Panel released a report titled "Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer." Access the report at http://deainfo.nci.nih.gov/advisory/pcp/annualReports/HPV/PDF/PCP_Annual_Report_2012-2013.pdf.

***Recommend HPV Vaccine** . . . continued from page 1*

recommendation is the most influential factor in parents' decisions to vaccinate."

"We must not lose track of the fact that this vaccine prevents cervical—and a number of other—cancers. It is most effective when given before infection with HPV. We are urging all physicians to recommend HPV vaccination firmly and strongly for the unvaccinated and incompletely immunized young men and women in their practices," said ACP President Molly Cooke, MD, FACP.

"As ob-gyns, we have a responsibility to encourage our patients to help protect themselves against cervical cancer by getting the HPV vaccine," said ACOG President Jeanne A. Conry, MD, PhD. "We should be routinely recommending the vaccine for all of our adolescent patients as well as women up through age 26, even if they are already sexually active. In addition, we want to encourage our patients who are mothers to vaccinate their sons and daughters at 11–12 years."

"For each year that vaccination rates among girls stay at 30% instead of 80%, 4,400 future cervical cancer cases and 1,400 cervical cancer deaths will occur," stated CDC Director Tom Frieden, MD, MPH. "CDC has created many resources to help providers address parent questions effectively so that they can strongly recommend the HPV vaccine."

Healthcare provider recommendations are the key to increasing HPV vaccination rates. By improving the strength and consistency of HPV vaccination recommendations, more patients will be protected from HPV-associated cancers and disease.

The "Dear Colleague" letter referenced in this article is found on page 6–7 of this issue of *Vaccinate Adults.* It is also available at www.immunize.org/letter/recommend_hpv_vaccination.pdf. For an article about excellent resources to help you increase your HPV vaccination efforts, see page 2.

Give a strong recommendation for HPV vaccine to increase uptake!

Please copy and share this 2-page letter from AAFP, AAP, ACOG, ACP, CDC, and IAC with your colleagues. It's also available online at www.immunize.org/letter/recommend_hpv_vaccination.pdf.

Dear Colleague:

The American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), American College of Obstetricians and Gynecologists (ACOG), American College of Physicians (ACP), the Centers for Disease Control and Prevention (CDC), and the Immunization Action Coalition (IAC) are asking you to urge your patients to get vaccinated against human papillomavirus (HPV).

HPV vaccine is cancer prevention. However, HPV vaccine is underutilized in our country, despite the overwhelming evidence of its safety and effectiveness. While vaccination rates continue to improve for the other adolescent vaccines, HPV vaccination rates have not. Missed opportunities data suggest that providers are not giving strong recommendations for HPV vaccine when patients are 11 or 12 years old. The healthcare provider recommendation is the single best predictor of vaccination. Recent studies show that a patient who receives a provider recommendation is 4–5 times more likely to receive the HPV vaccine.[1,2]

What you say, and how you say it, matters. A half-hearted recommendation to a patient may not only result in the patient leaving your practice unvaccinated, but may lead the patient to believe that HPV vaccine is not as important as the other adolescent vaccines. The undersigned organizations hope that this letter, which provides key facts about HPV vaccine safety and effectiveness, will lead you to recommend HPV vaccination – firmly and strongly – to your patients. Your recommendation will reflect your commitment to prevent HPV-associated cancers and disease in the United States.

HPV-associated disease[3]

- Approximately 79 million persons in the United States are infected with HPV, and approximately 14 million people in the United States will become newly infected with HPV each year.
- Each year, an estimated 26,000 cancers are attributable to HPV; about 17,000 in women and 9,000 in men.
- Cervical cancer is the most common HPV-associated cancer among women, and oropharyngeal cancers are the most common among men.

▶ *Despite these statistics, the use of HPV vaccination to prevent HPV infection is limited and immunization rates remain low.*

Prevention of HPV-associated disease by vaccination

- Two vaccines (bivalent/HPV2 and quadrivalent/HPV4) are available to protect against HPV 16 and 18, the types that cause most cervical and other anogenital cancers, as well as some oropharyngeal cancers.
- The Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination of girls age 11 or 12 years with the 3-dose series of either HPV vaccine and routine vaccination of boys age 11 or 12 years with the 3-dose series of HPV4.
- Vaccination is recommended for females through age 26 years and for males through age 21 years who were not vaccinated when they were younger.

▶ *In 2012, only 33% of teenage girls ages 13–17 years had received 3 doses of HPV vaccine.[4] This was the first year in which HPV vaccination coverage rates did not increase from the prior year.*

Safety of HPV vaccine

- More than 175 million doses of HPV vaccine have been distributed worldwide and 57 million doses have been distributed in the United States.

- More than 7 years of post-licensure vaccine safety monitoring in the United States provide continued evidence of the safety of HPV4. Data on safety are also available from post-licensure monitoring in other countries for both vaccines and provide continued evidence of the safety of HPV2 and HPV4.
- Syncope can occur among adolescents who receive any vaccines, including HPV vaccine. ACIP recommends that clinicians consider observing patients for 15 minutes after vaccination.

▶ *Regardless of a safety profile that is similar to the other adolescent vaccines, parents cite safety concerns as one of the top five reasons they do not intend to vaccinate daughters against HPV.*

Efficacy of HPV vaccines

- Among women who have not been previously infected with a targeted HPV type, both vaccines have over 95% efficacy in preventing cervical precancers caused by HPV 16 or 18.
- HPV4 also demonstrated nearly 100% vaccine efficacy in preventing vulvar and vaginal precancers, and genital warts in women caused by the vaccine types.
- In males, HPV4 demonstrated 90% vaccine efficacy in preventing genital warts and 75% vaccine efficacy in preventing anal precancers caused by vaccine types.

▶ *Since the vaccine does not protect against all HPV types, it does not replace other prevention strategies, such as regular cervical cancer screening.*

What you say matters; how you say it matters even more.

Based on research conducted with parents and physicians, CDC suggests recommending the HPV vaccine series the same way you recommend the other adolescent vaccines.

Parents may be interested in vaccinating, yet still have questions. Taking the time to listen to parents' questions helps you save time and give an effective response. CDC has created an excellent tip sheet to assist you in answering questions parents may have about HPV vaccines. This tip sheet and many other tools on the HPV vaccine are available at **www.cdc.gov/vaccines/youarethekey**.

As a healthcare provider, we urge you to improve the strength and consistency of your recommendation for HPV vaccination to your patients. Your recommendation is the number one reason why someone will get the HPV vaccine and be protected from HPV-associated cancers and disease.

Signed:

Reid B. Blackwelder, MD
President, American Academy of Family Physicians

Thomas Frieden, MD
Director, Centers for Disease Control and Prevention

Molly Cooke, MD
President, American College of Physicians

Jeanne Conry, MD
President, American College of Obstetricians and Gynecologists

Thomas K. McInerny, MD
President, American Academy of Pediatrics

Deborah Wexler, MD
Executive Director, Immunization Action Coalition

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2. Factors associated with human papillomavirus vaccine-series initiation and healthcare provider recommendation in U.S. adolescent females: 2007 National Survey of Children's Health. *Vaccine*. 2012. 30(20):3112–3118.
3. Human papillomavirus-associated cancers – United States, 2004–2008. *MMWR*. 2012. 61(15): 258–261.
4. Human papillomavirus vaccination coverage among adolescent girls, 2007–2012, and Postlicensure Vaccine Safety Monitoring, 2006–2013 – United States. *MMWR*. 2013. 62(29): 591–595.

How to Administer Intradermal, Intranasal, and Oral Vaccinations

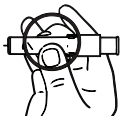
While most vaccines are administered by either intramuscular or subcutaneous injection, there are several vaccines that are administered through other means. These include the intradermal route, the intranasal route, and the oral route. Here are some simple instructions to use as a guide. Complete information is available in the package inserts and can also be obtained at www.immunize.org/packageinserts.

Intradermal (ID) administration

Fluzone by sanofi pasteur, Intradermal Inactivated Influenza Vaccine

1 Gently shake the microinjection system before administering the vaccine.

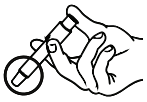
2 Hold the system by placing the thumb and middle finger on the finger pads; the index finger should remain free.



3 Insert the needle perpendicular to the skin, in the region of the deltoid, in a short, quick movement.

4 Once the needle has been inserted, maintain light pressure on the surface of the skin and inject using the index finger to push on the plunger. Do not aspirate.

5 Remove the needle from the skin. With the needle directed away from you and others, push very firmly with the thumb on the plunger to activate the needle shield. You will hear a click when the shield extends to cover the needle.



6 Dispose of the applicator in a sharps container.

Intranasal (IN) administration

FluMist by MedImmune, Live Attenuated Influenza Vaccine

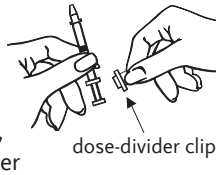
1 FluMist (LAIV) is for intranasal administration only. Do not inject FluMist.

2 Remove the rubber tip protector. Do not remove the dose-divider clip at the other end of the sprayer.

3 With the patient in an upright position (i.e., head not tilted back), place the tip just inside the nostril to ensure LAIV is delivered into the nose. The patient should breathe normally.

4 With a single motion, depress the plunger as rapidly as possible until the dose-divider clip prevents you from going further.

5 Pinch and remove the dose-divider clip from the plunger.



6 Place the tip just inside the other nostril, and with a single motion, depress plunger as rapidly as possible to deliver the remaining vaccine.

7 Dispose of the applicator in a sharps container.

Oral administration: Rotavirus vaccines

Rotateq by Merck

1 Tear open the pouch and remove the dosing tube. Clear the fluid from the dispensing tip by holding the tube vertically and tapping the cap.

2 Open the dosing tube in two easy motions:
a) Puncture the dispensing tip by screwing cap **clockwise** until it becomes tight.
b) Remove the cap by turning it **counterclockwise**.

3 Administer the dose by gently squeezing liquid into infant's mouth toward the inner cheek until dosing tube is empty. (A residual drop may remain in the tip of the tube.)

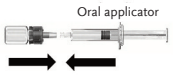
4 Discard the empty tube and cap in an approved biological waste container according to local regulations.

Note: If, for any reason, an incomplete dose is administered (e.g., infant spits or regurgitates the vaccine), a replacement dose is not recommended.

Rotarix by GlaxoSmithKline

1 Remove the cap of the vial and push the transfer adapter onto the vial (lyophilized vaccine).

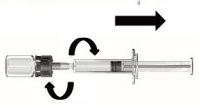
2 Shake the diluent in the oral applicator (white, turbid suspension). Connect the oral applicator to the transfer adapter.



3 Push the plunger of the oral applicator to transfer the diluent into the vial. The suspension will appear white and cloudy.

4 Withdraw the vaccine into the oral applicator.

5 Twist and remove the oral applicator from the vial.



6 Administer the dose by gently placing the applicator plunger into the infant's mouth toward the inner cheek and gently expelling the contents until the applicator is empty.

7 Discard the empty vial, cap, and oral applicator in an approved biological waste container according to local regulations.

Note: If, for any reason, an incomplete dose is administered (e.g., the infant spits or regurgitates the vaccine), a replacement dose is not recommended.

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Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

www.immunize.org/catg.d/p2021.pdf • Item #P2021 (3/14)

Meningococcal Vaccination Recommendations by Age and/or Risk Factor

This table summarizes the recommendations of CDC's Advisory Committee on Immunization Practices for the use of meningococcal vaccine.

MCV4 = Menactra (sanofi) and Menveo (Novartis) **MCV4-D** = Menactra
MCV4-CRM = Menveo **Hib-MenCY** = MenHibrix (GlaxoSmithKline)
MPSV = Menomune (sanofi)

Targeted group by age and/or risk factor	Primary dose(s)	Booster dose(s)
People ages 11 through 18 years	Give 1 dose of MCV4, preferably at age 11 or 12 years[1]	Give booster at age 16 years if primary dose given at age 12 years or younger
		Give booster at age 16 through 18 years if primary dose given at age 13 through 15 years[2]
People ages 19 through 21 years who are first year college students living in residence halls	Give 1 dose of MCV4[1]	Give booster if previous dose given at age younger than 16 years
Travelers to or residents of countries where meningococcal disease is hyperendemic or epidemic,[3] people present during outbreaks caused by a vaccine serogroup,[4] and other people with prolonged increased risk for exposure (e.g., microbiologists routinely working with *Neisseria meningitidis*)		
• for children age 2 through 18 months	Give MCV4-CRM at ages 2, 4, 6 and 12–15 months[5]	If risk continues, give initial booster after 3 years followed by boosters every 5 years
• for children age 7 through 23 months who have not initiated a series of MCV4-CRM or Hib-MenCY	Give 2 doses, separated by 3 months,[6] of MCV4-CRM (if age 7–23 months)[7] or MCV4-D (if age 9–23 months)	
• for age 2 through 55 years	Give 1 dose of MCV4[1]	Boost every 5 years with MCV4[8,9]
• for age 56 years and older	If no previous MCV4 dose and either short-term travel or outbreak-related, give 1 dose of MPSV; all others, give 1 dose of MCV4	Boost every 5 years with MCV4[9]
People with persistent complement component deficiencies[10]		
• for age 2 through 18 months	Give MCV4-CRM or Hib-MenCY at ages 2, 4, 6 and 12–15 months	Give MCV4 booster after 3 years followed by boosters every 5 years thereafter
• for children age 7 through 23 months who have not initiated a series of MCV4-CRM or Hib-MenCY	Give 2 doses, separated by 3 months, of MCV4-CRM (if age 7–23 months)[7] or MCV4-D (if age 9–23 months)	
• for ages 2 through 55 years	Give 2 doses of MCV4, 2 months apart	Boost every 5 years with MCV4[8,11]
• for age 56 years and older	Give 2 doses of MCV4, 2 months apart	Boost every 5 years with MCV4[11]
People with functional or anatomic asplenia, including sickle cell disease		
• for age 2 through 18 months	Give MCV4-CRM or Hib-MenCY at ages 2, 4, 6 and 12–15 months	Give MCV4 booster after 3 years followed by boosters every 5 years thereafter
• for children age 19 through 23 months who have not initiated a series of MCV4-CRM or Hib-MenCY	Give 2 doses of MCV4-CRM, 3 months apart	
• for ages 2 through 55 years	Give 2 doses of MCV4, 2 months apart[12]	Boost every 5 years with MCV4[8,11]
• for age 56 years and older	Give 2 doses of MCV4, 2 months apart	Boost every 5 years with MCV4[11]

FOOTNOTES

1. If the person is HIV-positive, give 2 doses, 2 months apart.
2. The minimum interval between doses of MCV4 is 8 weeks.
3. Prior receipt of Hib-MenCY is not sufficient for children traveling to the Hajj or African meningitis belt as it doesn't provide protection against serogroups A or W.
4. Seek advice of local public health authorities to determine if vaccination is recommended.
5. Children ages 2 through 18 months who are present during outbreaks caused by serogroups C or Y may be given an age-appropriate series of Hib-MenCY.
6. If a child age 7 through 23 months will enter an endemic area in less than 3 months, give doses as close as 2 months apart.
7. If using MCV4-CRM, dose 2 should be given no younger than age 12 months.
8. If primary dose(s) given when younger than age 7 years, give initial booster after 3 years, followed by boosters every 5 years.
9. Booster doses are recommended if the person remains at increased risk.
10. Persistent complement component deficiencies include C3, C5–C9, properdin, factor H, and factor D.
11. If the person received a 1-dose primary series, give booster at the earliest opportunity, then boost every 5 years.
12. Children with functional or anatomic asplenia should complete an age-appropriate series of PCV13 vaccine before vaccination with MCV4-D; MCV4-D should be given at least 4 weeks following last dose of PCV13. MCV4-CRM or Hib-MenCY may be given at any time before or after PCV13.

Technical content reviewed by the Centers for Disease Control and Prevention

Recommended Adult Immunization Schedule – United States, 2014

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

Figure 1. Recommended adult immunization schedule, by vaccine and age group[1]

Vaccine	19–21 years	22–26 years	27–49 years	50–59 years	60–64 years	≥65 years
Influenza[2,*]	1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap)[3,*]	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs					
Varicella[4,*]	2 doses					
Human papillomavirus (HPV) Female[5,*]	3 doses					
Human papillomavirus (HPV) Male[5,*]	3 doses					
Zoster[6]					1 dose	
Measles, mumps, rubella (MMR)[7,*]	1 or 2 doses					
Pneumococcal 13-valent conjugate PCV13)[8,*]	1 dose					
Pneumococcal polysaccharide (PPSV23)[9,10]	1 or 2 doses					1 dose
Meningococcal[11,*]	1 or more doses					
Hepatitis A[12,*]	2 doses					
Hepatitis B[13,*]	3 doses					
Haemophilus influenzae type b (Hib)[14,*]	1 or 3 doses					

Figure 2. Vaccines that might be indicated for adults based on medical and other indications[1]

Vaccine	Pregnancy	Immunocompromising conditions (excluding human immunodeficiency virus [HIV])[4,6,7,8,15]	HIV Infection CD4+ T lymphocyte count[4,6,7,8,15] <200 cells/μL	HIV Infection CD4+ T lymphocyte count[4,6,7,8,15] ≥200 cells/μL	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)[8,14]	Chronic liver disease	Diabetes	Healthcare personnel
Influenza[2,*]	1 dose IIV annually				I dose IIV or LAIV annually	I dose IIV annually					I dose IIV or LAIV annually
Td/Tdap[3,*]	1 dose Tdap in each pregnancy	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs									
Varicella[4,*]	Contraindicated			2 doses							
HPV Female[5,*]		3 doses through age 26 yrs				3 doses through age 26 yrs					
HPV Male[5,*]		3 doses through age 26 yrs				3 doses through age 21 yrs					
Zoster[6,*]	Contraindicated			1 dose							
MMR[7,*]	Contraindicated			1 or 2 doses							
PCV13[8,*]						1 dose					
PPSV23[9,10]						1 or 2 doses					
Meningococcal[11,*]	1 or more doses										
Hepatitis A[12,*]						2 doses					
Hepatitis B[13,*]			3 doses								
Hib[14,*]		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 ages19 years and older, as of February 1, 2014. 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). 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.

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), American Academy of Family Physicians (AAFP), and American College of Physicians (ACP), American College of Obstetricians and Gynecologists (ACOG), and American College of Nurse-Midwives (ACNM).

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.
- 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.
- 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.
- Additional information and resources regarding vaccination of pregnant women can be found at www.cdc.gov/vaccines/adults/rec-vac/pregnant.html.

2. Influenza vaccination.

- Annual vaccination against influenza is recommended for all persons age 6 months and 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 vaccine formulation should be used.
- Adults age 18 through 49 years can receive the recombinant influenza vaccine (RIV) (Flublok). RIV does not contain any egg protein.
- 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 (i.e., those who require care in a protected environment) should receive IIV or RIV rather than LAIV.
- 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).

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

- Administer 1 dose of Tdap vaccine to pregnant women during each pregnancy (preferred 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 given 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 at least 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 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 and 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 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 routinely 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 conjugate (PCV13) vaccination.

- Adults age 19 years or older with immunocompromising conditions (including chronic renal failure and nephrotic syndrome), functional or anatomic asplenia, cerebrospinal fluid leaks, or cochlear implants who have not previously received PCV13 or PPSV23 should receive a single dose of PCV13 followed by a dose of PPSV23 at least 8 weeks later.
- Adults age 19 years or older with the aforementioned conditions who have previously received 1 or more doses of PPSV23 should receive a dose of PCV13 1 or more years after the last PPSV23 dose was received. For adults who require additional doses of PPSV23, the first such dose should be given no sooner than 8 weeks after PCV13 and at least 5 years since the most recent dose of PPSV23.
- When indicated, PCV13 should be administered to patients who are uncertain of their vaccination status history and have no record of previous vaccination.
- Although PCV13 is licensed by the U.S. Food and Drug Administration for use among and can be administered to persons age 50 years and older, ACIP recommends PCV13 for adults age 19 years and older with the specific medical conditions noted above.

9. Pneumococcal polysaccharide (PPSV23) vaccination.

- When PCV13 is also indicated, PCV13 should be given first (see footnote 8).
- Vaccinate all persons with the following indications:
  - all adults age 65 years and older;
  - adults younger than age 65 years with chronic lung disease (including chronic obstructive pulmonary disease, emphysema, and asthma); chronic cardiovascular diseases; diabetes mellitus; chronic renal failure; nephrotic syndrome; chronic liver disease (including cirrhosis); alcoholism; cochlear implants; cerebrospinal fluid leaks;

(continued)

immunocompromising conditions; and functional or anatomic asplenia (e.g., sickle cell disease and other hemoglobinopathies, congenital or acquired asplenia, splenic dysfunction, or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]);
  - residents of nursing homes or long-term care facilities; and
  - adults who smoke cigarettes.
- Persons with immunocompromising conditions and other selected conditions are recommended to receive PCV13 and PPSV23 vaccines. See footnote 8 for information on timing of PCV13 and PPSV23 vaccinations.
- Persons with asymptomatic or symptomatic HIV infection should be vaccinated as soon as possible after their diagnosis.
- When cancer chemotherapy or other immunosuppressive therapy is being considered, the interval between vaccination and initiation of immunosuppressive therapy should be at least 2 weeks. Vaccination during chemotherapy or radiation therapy should be avoided.
- Routine use of PPSV23 vaccine is not recommended for American Indians/Alaska Natives or persons younger than age 65 years unless they have underlying medical conditions that are PPSV23 indications. However, public health authorities may consider recommending PPSV23 for American Indians/Alaska Natives who are living in areas where the risk for invasive pneumococcal disease is increased.
- When indicated, PPSV23 should be administered to patients who are uncertain of their vaccination status and there is no record of previous vaccination.

10. Revaccination with PPSV23.

- One-time revaccination 5 years after the first dose of PPSV23 is recommended for persons ages 19 through 64 years with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); and immunocompromising conditions.
- Persons who received 1 or 2 doses of PPSV23 before age 65 years for any indication should receive another dose of the vaccine at age 65 years or later if at least 5 years have passed since their previous dose.
- No further doses of PPSV23 are needed for persons vaccinated with PPSV23 at or after age 65 years.

11. Meningococcal vaccination.

- Administer 2 doses of quadrivalent meningococcal conjugate vaccine (MenACWY [Menactra, Menveo]) at least 2 months apart to adults of all ages with functional asplenia or persistent complement component deficiencies. HIV infection is not an indication for routine vaccination with MenACWY. If an HIV-infected persons 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 16th 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) is preferred for adults age 56 years and 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 anatomic or functional asplenia, persistent complement component deficiencies, or microbiologists).

12. 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, give 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule may be used, given on days 0, 7, and 21 to 30, followed by a booster dose at month 12.

13. 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 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.

14. *Haemophilus influenzae* type b (Hib) vaccination.

- One dose of Hib vaccine should be administered to persons who have functional or anatomic 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 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.

15. 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.

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 or by telephone, 800-822-7967. Information on how to file a Vaccine Injury Compensation Program claim is available at www.hrsa.gov/vaccinecompensation or by telephone, 800-338-2382. Information about filing a claim for vaccine injury is available through 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 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[1,*,†]

Vaccine	Contraindications[1]	Precautions[1]
Influenza, inactivated injectable (IIV)[2]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose of any influenza vaccine or to a vaccine component, including egg protein	• Moderate or severe acute illness with or without fever • History of Guillain-Barré Syndrome (GBS) within 6 weeks of previous influenza vaccination • Persons who experience only hives with exposure to eggs may receive RIV (if age 18–49 years) or, with additional safety precautions, IIV.[2]
Influenza, recombinant (RIV)[2]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose of RIV or to a vaccine component. RIV does not contain egg protein.[2]	• Moderate or severe acute illness with or without fever • History of GBS within 6 weeks of previous influenza vaccination
Influenza, live attenuated (LAIV)[2,3]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose of any influenza vaccine or to a vaccine component, including egg protein • Conditions for which the ACIP recommends against use, but which are not contraindications in vaccine package insert: immune suppression, certain chronic medical conditions such as asthma, diabetes, heart or kidney disease, and pregnancy[2,3]	• Moderate or severe acute illness with or without fever • History of GBS within 6 weeks of previous influenza vaccination • Receipt of specific antivirals (i.e., amantadine, rimantadine, zanamivir, or oseltamivir) 48 hours before vaccination. Avoid use of these antiviral drugs for 14 days after vaccination
Tetanus, diphtheria, pertussis (Tdap) **Tetanus, diphtheria (Td)**	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component For pertussis-containing vaccines: Encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures) not attributable to another identifiable cause within 7 days of administration of previous dose of Tdap, DTP, or DTaP.	• Moderate or severe acute illness with or without fever • GBS within 6 weeks after a previous dose of tetanus toxoid-containing vaccine • 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 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
Varicella (Var)[3]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component • Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, or long-term immunosuppressive therapy[4] or patients with human immunodeficiency virus [HIV] infection who are severely immunocompromised) • Pregnancy	• Moderate or severe acute illness with or without fever • Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product)[5] • 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
Human papillomavirus (HPV)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever • Pregnancy
Zoster[3]	• Severe allergic reaction (e.g., anaphylaxis) to a vaccine component • Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, or long-term immunosuppressive therapy[4] or patients with HIV infection who are severely immunocompromised) • Pregnancy	• Moderate or severe acute illness with or without fever • 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
Measles, mumps, rubella (MMR)[3]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component • Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, or long-term immunosuppressive therapy[4] or patients with HIV infection who are severely immunocompromised) • Pregnancy	• Moderate or severe acute illness with or without fever • Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product)[5] • History of thrombocytopenia or thrombocytopenic purpura • Need for tuberculin skin testing[6]
Pneumococcal (PCV13 or PPSV23)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component (including to any vaccine containing diphtheria toxoid for PCV13)	• Moderate or severe acute illness with or without fever
Meningococcal: conjugate (MenACWY); polysaccharide (MPSV4)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever
Hepatitis A (HepA)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever
Hepatitis B (HepB)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever
***Haemophilus influenzae* type b (Hib)**	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever

Footnotes

1. 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.
2. 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 getting LAIV, see CDC. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP) — United States, 2013–14. *MMWR* 2013;62(No. RR07):1–43, available at www.cdc.gov/vaccines/hcp/acip-recs/index.html.
3. LAIV, MMR, varicella, and zoster vaccines can be administered on the same day. If not administered on the same day, live vaccines should be separated by at least 28 days.
4. Immunosuppressive steroid dose is considered to be 2 or more weeks of daily receipt of 20 mg of 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.
5. Vaccine should be deferred for the appropriate interval if replacement immune globulin products are being administered (see 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/hcp/acip-recs/index.html.
6. 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. General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP)." *MMWR* 2011; 60(No. RR-2), 40–41 and from Atkinson W, Wolfe S, Hamborsky J, eds. Appendix A. *Epidemiology and Prevention of Vaccine-Preventable Diseases.*12th ed.

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

Before you vaccinate adults, consider their "H-A-L-O"!

What is H-A-L-O? As shown below, it's an easy-to-use chart that can help you make an *initial* decision about vaccinating a patient based on four factors—the patient's **H**ealth condition, **A**ge, **L**ifestyle, and **O**ccupation. In some situations, though, you can vaccinate a patient without considering these factors. For example, all adults need a dose of Tdap as well as annual vaccination against influenza, and any adult who wants protection against hepatitis A or hepatitis B can be vaccinated. Note that not all patients who mention one or more **H-A-L-O** factors will need to be vaccinated. Before you make a *definitive* decision about vaccinating your patient, it's important that you refer to the more detailed information found in the Immunization Action Coalition's "Summary of Recommendations for Adult Immunization," located at www.immunize.org/catg.d/p2011.pdf or the complete vaccine recommendations of the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) at www.cdc.gov/vaccines/pubs/ACIP-list.htm.

How do I use H-A-L-O? Though some **H-A-L-O** factors can be easily determined (e.g., age, pregnancy), you will need to ask your patient about the presence or absence of others. Once you determine which of the factors apply, scan down each column of the chart to see at a glance which vaccinations are *possibly* indicated (they are shown with a check mark).

H-A-L-O checklist of factors that indicate a possible need for adult vaccination

Vaccine	**H**ealth factors									**A**ge factors	**L**ifestyle factors							**O**ccupational or other factors				
	Pregnant	Certain chronic diseases	Immunosuppressed (including HIV)	History of STD	Asplenia	Cochlear implant candidate/recipient	Organ transplant (for stem cell transplant, see ACIP's General Recommendations on Immunization)	CSF leaks	Alcoholism		Born outside the U.S.	Men who have sex with men	Not in a long-term, mutually monogamous relationship	User of injecting or non-injecting drugs	International traveler	Close contact of international adoptee	Cigarette smoker	College students	Parent or caregiver of a young child	Healthcare worker	Certain lab workers	Adults in institutional settings (e.g., chronic care, correctional)
HepA		✔										✔		✔	✔	✔					✔	
HepB		✔	✔	✔							✔	✔	✔	✔	✔					✔		✔
Hib		✔	✔		✔																	
HPV (females)										Through 26 yrs												
HPV (males)			✔							Routine through 21 yrs; risk-based 22–26 yrs		✔										
IPV															✔						✔	
Influenza	Annual vaccination is recommended for all adults ····· ►																					
Meningococcal		✔			✔										✔			✔			✔	
MMR			?							Routine 1 dose if born after 1956; 2nd dose for some					✔			✔		✔		
PCV13		✔	✔		✔	✔	✔	✔														
PPSV23		✔	✔		✔	✔	✔	✔	✔	65 yrs & older							✔					✔
Tdap	A single dose is recommended for all adults; pregnant women should receive Tdap during each pregnancy ····· ►																					
Varicella	Completion of a 2-dose series is recommended for non-pregnant adults through age 59 years who do not have evidence of immunity to varicella ····· ►																					
Zoster										60 yrs & older												

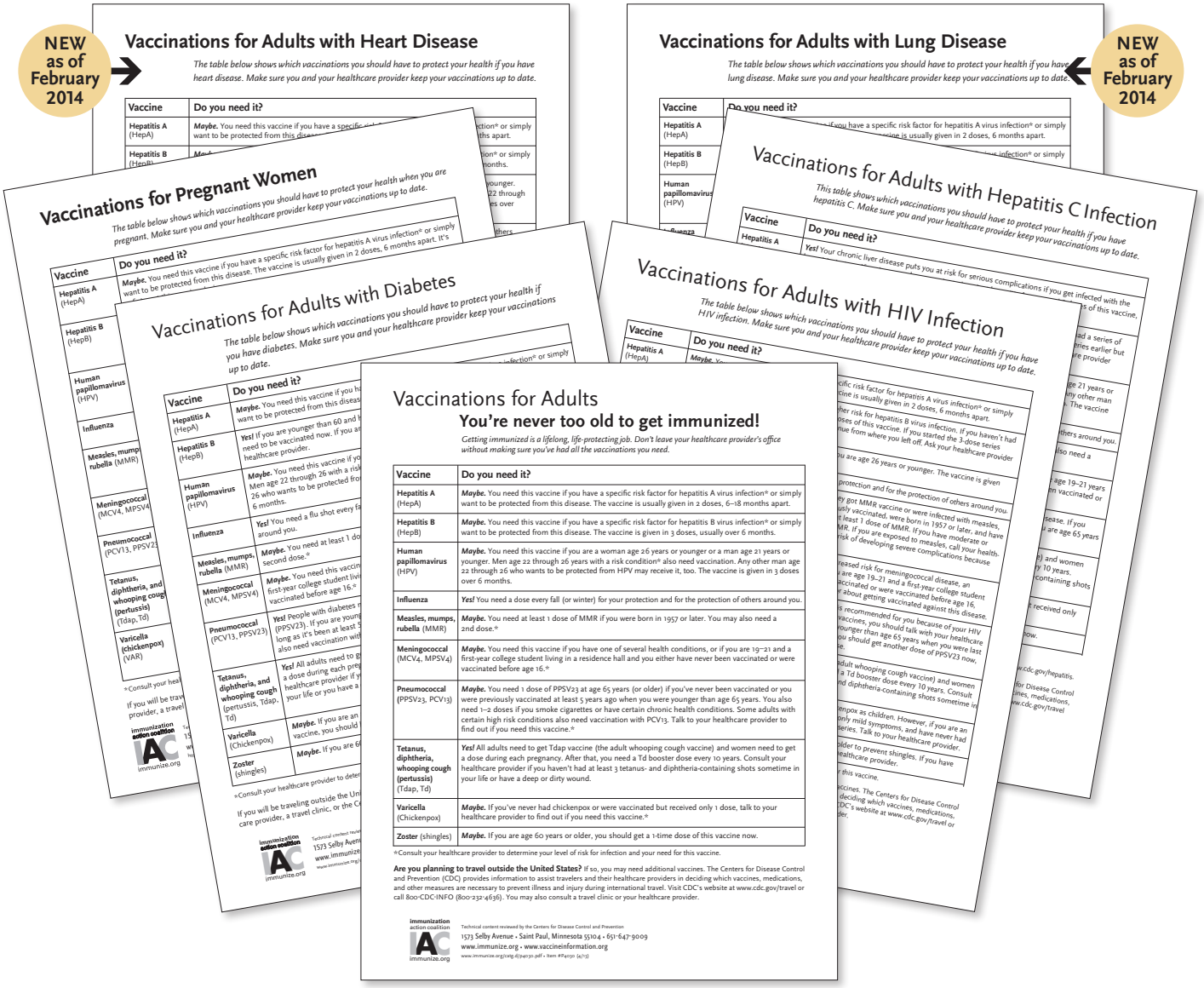
? = Vaccination may be indicated depending on degree of immunosuppression.

IMMUNIZATION ACTION COALITION 1573 Selby Avenue ▪ St. Paul, MN 55104 ▪ 651-647-9009 ▪ www.immunize.org ▪ www.vaccineinformation.org

Technical content reviewed by the Centers for Disease Control and Prevention
www.immunize.org/catg.d/p3070.pdf ▪ Item #P3070 (11/13)

Patient Schedules for All Adults and for High-Risk Adults

These documents are ready for you to download, copy, and use!



Vaccinations for Adults –
You're never too old to get immunized!:
www.immunize.org/catg.d/p4030.pdf

Vaccinations for Adults with Heart Disease:
www.immunize.org/catg.d/p4044.pdf

Vaccinations for Pregnant Women:
www.immunize.org/catg.d/p4040.pdf

Vaccinations for Adults with Diabetes:
www.immunize.org/catg.d/p4043.pdf

Vaccinations for Adults with Lung Disease:
www.immunize.org/catg.d/p4045.pdf

Vaccinations for Adults with Hepatitis C:
www.immunize.org/catg.d/p4042.pdf

Vaccinations for Adults with HIV Infection:
www.immunize.org/catg.d/p4041.pdf

IAC's "Ask the Experts" team from CDC

Andrew T. Kroger, MD, MPH

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parents reported for not vaccinating daughters.

CDC urges healthcare providers to increase the consistency and strength of how they recommend HPV vaccine, especially when patients are age 11 or 12 years. 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.
- IAC's "Human Papillomavirus HPV: A Parent's Guide to Preteen and Teen HPV Vaccination," available at www.immunize.org/catg.d/p4250.pdf.

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

DTaP and Tdap vaccines

A 17-year-old received a dose of Tdap vaccine when she was 12 years old. She is now pregnant. Should she get another dose of Tdap vaccine?

Yes. ACIP recommends a dose of Tdap during each pregnancy irrespective of the patient's prior history of receiving Tdap. To maximize the maternal antibody response and passive antibody transfer to the infant, optimal timing for Tdap administration is between 27 and 36 weeks gestation. For more information, see www.cdc.gov/mmwr/pdf/wk/mm6207.pdf, page 131.

Influenza vaccine

May Fluzone High-Dose (sanofi) be administered to patients younger than age 65 years?

No. Fluzone High-Dose is licensed only for persons age 65 years and older and is not recommended for younger people. See *MMWR*, April 30, 2010, available at www.cdc.gov/mmwr/preview/mmwrhtml/mm5916a2.htm for details about the licensure of this vaccine.

Vaccinate Adults correction policy

If you find an error, please notify us immediately by sending an email message to 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.

MMR and varicella vaccines

Would you consider a healthcare provider with 2 documented doses of MMR vaccine (Merck) to be immune even if their serology for 1 or more of the antigens comes back negative?

Yes. Healthcare personnel (HCP) with 2 documented doses of MMR vaccine are considered to be immune regardless of the results of a subsequent serologic test for measles, mumps, or rubella. Documented age-appropriate vaccination supersedes the results of subsequent serologic testing. HCP who do not have documentation of MMR vaccination and whose serologic test is interpreted as "indeterminate" or "equivocal" should be considered not immune and should receive 2 doses of MMR. ACIP does not recommend serologic testing after vaccination. For more information, see ACIP's recommendations on the use of MMR at www.cdc.gov/mmwr/pdf/rr/rr6204.pdf, page 22.

I have patients who claim to remember receiving MMR vaccine but have no written record, or whose parents report the patient has been vaccinated. Should I accept this as evidence of vaccination?

No. Self-reported doses and history of vaccination provided by a parent or other caregiver are not considered valid. You should only accept a written, dated record as evidence of vaccination.

We have adult patients in our practice at high risk for measles, including patients going back to college or preparing for international travel, who don't remember ever receiving MMR vaccine or having had measles disease. How should we manage these patients?

You have two options. You can test for immunity or you can just give 2 doses of MMR at least 4 weeks apart. There is no harm in giving MMR vaccine to a person who may already be immune to one or more of the vaccine viruses. If you or the patient opt for testing, and the tests indicate the patient is not immune to one or more of the vaccine components, give your patient 2 doses of MMR at least 4 weeks apart. If any test results are indeterminate or equivocal, consider your patient nonimmune. ACIP does not recommend serologic testing after vaccination because commercial tests may not be sensitive enough to reliably detect vaccine-induced immunity.

I have a 45-year-old patient who is traveling to Jordan to work with Syrian refugees. She doesn't recall ever getting a second dose of MMR (she didn't go to college and never worked in healthcare). She was rubella immune when pregnant 20 years ago. Her measles titer is negative. Would you recommend a second dose of MMR vaccine?

Yes. ACIP recommends 2 doses of MMR given at least 4 weeks apart for any adult born in 1957 or later who plans to travel internationally. There is no harm in giving MMR vaccine to a person who may already be immune to one or more of the vaccine viruses.

MMRV was mistakenly given to a 31-year-old instead of MMR. Can this be considered a valid dose?

Yes, however, this issue is not addressed in the 2010 MMRV ACIP recommendations. Although this is off-label use, CDC recommends that when a dose of MMRV is inadvertently given to a patient age 13 years and older, it may be counted towards completion of the MMR and varicella vaccine series and does not need to be repeated.

Hepatitis B vaccine

On December 20, 2013, CDC published a new guidance document titled "CDC Guidance for Evaluating Health-Care Personnel for Hepatitis B Virus Protection and for Administering Post-exposure Management" (MMWR 2013;62[RR-10]). What is new in this document?

The document provides a comprehensive review of the epidemiology of hepatitis B virus (HBV) infection among healthcare personnel (HCP), updated information about the persistence of anti-HBs antibody following vaccination and the duration of vaccine-induced protection, and new information about HCP serologic testing and postexposure prophylaxis. The document, available at www.cdc.gov/mmwr/pdf/rr/rr6210.pdf, updates recommendations made in the 2011 Immunization of Health-Care Personnel recommendations (*MMWR* 2011;60[RR-7] available at www.cdc.gov/mmwr/pdf/rr/rr6007.pdf) and the 2006 adult hepatitis B vaccine ACIP recommendations (*MMWR* 2006;55[RR-16] available at www.cdc.gov/mmwr/PDF/rr/rr5516.pdf).

An important new recommendation is for the management of HCP who have written documentation of a complete series of hepatitis B vaccine doses in the past (including those vaccinated as infants, children, and adolescents) who were not tested for antibody response following the vaccination series and who now test negative for antibody to hepatitis B surface antigen (anti-HBs) defined as anti-HBs less than 10 mIU/mL. It is now recom-

Ask the Experts . . . continued on page 17 ▶

mended to administer 1 dose of hepatitis B vaccine to these individuals and then test for anti-HBs 1 to 2 months later. Those who test positive after the single "booster" dose are considered to be immune and no further testing or vaccination is needed. Those who test negative after the "booster" dose should receive 2 additional doses to complete a second 3-dose series. Anti-HBs testing should be repeated 1 to 2 months after completion of the second vaccination series. An algorithm is provided on page 13 of the new guidance document to assist clinicians with this process.

Another new recommendation in the guidance concerns the management of HCP who need postexposure prophylaxis. In the section titled "Post Exposure Management" on page 12, the document provides detailed recommendations for more combinations of HCP vaccination/serologic status and source patient status than in previous recommendations. A revised postexposure management table is included in the document on page 14. One of the changes is a recommendation that when the hepatitis B surface antigen (HBsAg) status of the source patient is unknown (for example, as might occur from a puncture wound from a needle in the trash), the exposed unvaccinated or incompletely vaccinated HCP should be managed as if the source patient were HBsAg positive. In these situations, the new recommendation is to include a dose of hepatitis B immune globulin (HBIG) in addition to starting or completing the vaccination series for all exposures where the HBsAg status of the source is unknown.

Zoster vaccine

A long-term care resident age 80 years who received zoster vaccine (Zostavax; Merck) several years ago recently had a mild case of shingles. Is there any recommendation for administering a second dose of vaccine in such a circumstance? Are booster doses ever recommended?

The answer to both questions is no. Zoster vaccine is not 100% effective. In the key clinical trial, overall effectiveness among people age 60 years and older was 51% and decreased with increasing age. However, the vaccine was 67% effective in preventing post-herpetic neuralgia; this effectiveness did not decrease with increasing age. The duration of protection from shingles after a dose of zoster vaccine is not known at this time. However, ACIP has not recommended a second dose for anyone. ACIP recommendations for the use of zoster vaccine are available at www.cdc.gov/mmwr/PDF/rr/rr5705.pdf.

The Zostavax package insert says to inject the vaccine into the deltoid region of the upper arm. We always give subcutaneous vaccines in the triceps area of the arm. Are we wrong?

No. The subcutaneous tissue overlying the triceps muscle of the upper arm is the usual location for subcutaneous vaccine injection for an adult.

The Zostavax package insert says that the vaccine is contraindicated in a person with a history of primary or acquired immunodeficiency states, leukemia, lymphoma, or other malignant neoplasms affecting the bone marrow or lymphatic system. Does this mean that a person who was treated for lymphoma many years ago and is now healthy should not receive zoster vaccine?

No. A person who was treated for leukemia, lymphoma, or other malignant cancers in the past and is now healthy and not receiving immunosuppressive treatment may receive zoster vaccine. However, a person who is immunosuppressed for any reason (disease or treatment) should not receive the vaccine.

Can a person age 60 years or older with a diagnosis of an autoimmune disease, such as lupus or rheumatoid arthritis, receive zoster vaccine?

Yes, with one qualification. A diagnosis of an autoimmune condition such as lupus or rheumatoid arthritis is not a contraindication to zoster vaccination. However, the treatment of these conditions may involve the use of an immunosuppressive drug, which could be a contraindication.

A 65-year-old patient is having major back surgery next week. He is requesting zoster vaccine today. Can I give him the vaccine?

Yes, with one qualification. There is no contraindication to vaccinating against zoster before surgery, unless the patient is immunocompromised for some reason.

For patients age 60 or older who don't remember having chickenpox in the past, should we test them for varicella immunity before giving zoster vaccine?

No. Simply vaccinate them with zoster vaccine according to the ACIP recommendations.

We weren't familiar with the recommendations and tested a 60-year-old for varicella antibody because she said she never had chickenpox. Her result was negative. Should this patient receive zoster vaccine or varicella vaccine?

In this situation, since you've tested the patient and the results were negative, the patient should receive varicella vaccine.

A person age 60 years or older who has no medical contraindications is eligible for zoster vaccine regardless of their memory of having had chickenpox. However, if an adult age 60 years or older is tested for varicella immunity for whatever reason, and the test is negative, he/she should be given 2 doses of varicella vaccine at least 4 weeks apart, not zoster vaccine. See www.cdc.gov/vaccines/vpd-vac/shingles/hcp-vaccination.htm for more information.

How should zoster vaccine be transported to an off-site clinic location?

Neither CDC nor the vaccine manufacturer recommends transporting varicella-containing vaccines. If these vaccines must be transported (for example, during an emergency), CDC recommends transport in a portable freezer unit that maintains the temperature between -58°F and +5°F (-50°C and -15°C). Portable freezers may be available for rent in some places. If varicella-containing vaccines must be transported and a portable freezer unit is not available, do not use dry ice. Dry ice may subject varicella-containing vaccines to temperatures colder than -58°F (-50°C).

Varicella-containing vaccines may be transported at refrigerator temperature between 36°F and 46°F (2°C and 8°C) for up to 72 continuous hours prior to reconstitution. Vaccine stored between 36°F and 46°F (2°C and 8°C) that is not used within 72 hours of removal from a freezer should be discarded. Detailed instructions for the transport of varicella-containing vaccines at refrigerator temperature are available in the CDC "Vaccine Storage & Handling Toolkit" at www.cdc.gov/vaccines/recs/storage/toolkit/storage-handling-toolkit.pdf.

To submit an "Ask the Experts" question . . .

You can email your questions about immunization to us at admin@immunize.org. IAC will respond to your inquiry. Because we receive hundreds of email messages each month, we cannot guarantee that we will use your question in "Ask the Experts." IAC works with CDC to compile new Q&As for our publications based on commonly asked questions. Most of the questions are thus a composite of several inquiries.

To receive "Ask the Experts" Q&As by email, subscribe to the Immunization Action Coalition's news service, *IAC Express.* Special "Ask the Experts" issues are published five times per year.

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	Laminated 2014 U.S. Immunization Schedules (details p. 3; call for discounts on bulk orders)	
____	R2009 Adult schedule: 1-4 copies–$7.50 each; 5-19 copies–$5.50 each.....	$ _____
____	R2008 Child/teen schedule: 1-4 copies–$7.50 each; 5-19 copies–$5.50 each	$ _____
	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 & 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	
____	R2005 Adult immunization record cards	$ _____
____	R2003 Child/teen immunization record cards	$ _____
____	R2004 Lifetime immunization record cards	$ _____

Total for Purchases $ _____

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