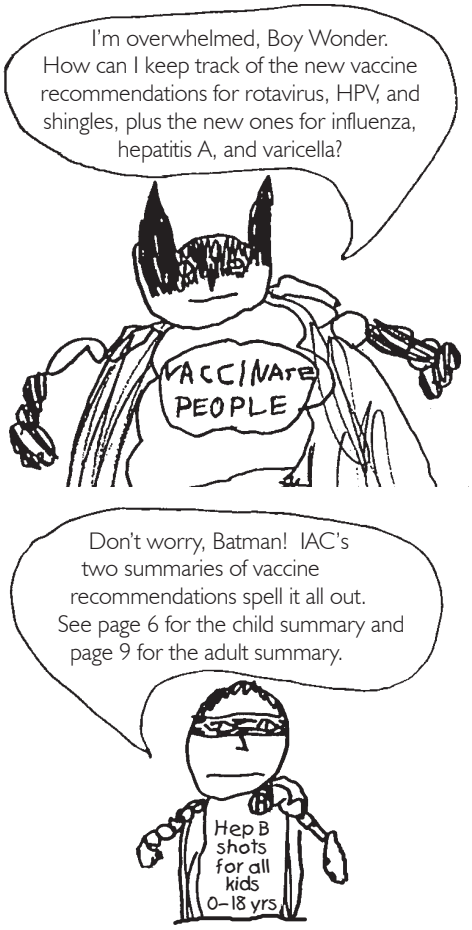
Volume 16 – Number 2 October 2006

NEEDLE TIPS

and the Hepatitis B Coalition News

Published by the Immunization Action Coalition for individuals and organizations concerned about vaccine-preventable diseases



WHAT YOU'LL FIND INSIDE:

Ask the Experts

IAC extends thanks to our experts: William L. Atkinson, MD, MPH, medical epidemiologist; and Andrew T. Kroger, MD, MPH, medical officer. Both are with the National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention (CDC). Eric E. Mast, MD, MPH, is chief, Prevention Branch, CDC's Division of Viral Hepatitis (DVH); and Linda A. Moyer, RN, who until her retirement, was an epidemiologist and chief, Education and Training Team, at DVH. Currently an IAC consultant, she maintains close professional ties with 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)

Immunization questions

How common is human papillomavirus (HPV) infection?

HPV is the most common sexually transmitted infection in the United States. Currently, more than 20 million men and women in the United States are infected with HPV, and more than 6 million are estimated to become infected each year. HPV is most common in young women and men in their late teens and early 20s. By age 50, at least 80% of sexually active women will have acquired HPV infection.

How serious is disease caused by HPV?

HPV infection is responsible for nearly 100% of cervical cancer in women and contributes to other cancers that can affect males or females. Cervical cancer is diagnosed in more than 9,700 women in the United States each year and results in 3,700 deaths. Approximately 70% of cervical cancers are caused by two of the strains of HPV included in the newly licensed HPV vaccine. HPV also causes genital warts in men and women.

Please provide more information about the new HPV vaccine.

Gardasil™, manufactured by Merck, is the first vaccine approved by FDA to prevent cervical cancer, precancerous genital lesions, and genital warts

(continued on page 18)

Needle Tips

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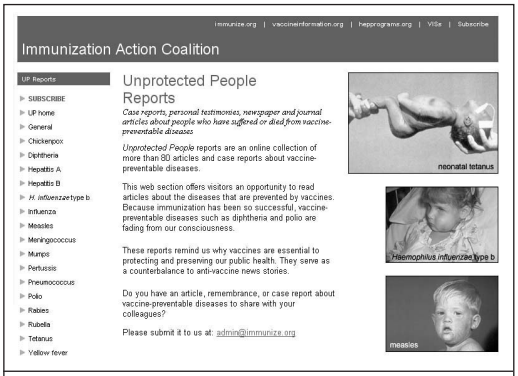
IAC, a 501(c)3 nonprofit organization, publishes practical immunization information for health professionals to help increase immunization rates and prevent disease.

The Hepatitis B Coalition, a program of IAC, promotes hepatitis B vaccination for all persons 0–30 years; HBsAg screening for all pregnant women; testing and vaccination for high-risk groups; and education and treatment for people chronically infected with hepatitis B.

Read compelling case reports about vaccine-preventable diseases online

IAC's Unprotected People reports are ready to download and print. Visit www.immunize.org/reports.

Unprotected People reports are an online collection of more than 80 articles and case reports about people with vaccine-preventable diseases. The reports offer health professionals an opportunity to share with their patients articles about the diseases that are prevented by vaccines. The success of immunization means that vaccine-preventable diseases such as diphtheria and polio are fading from our consciousness. These reports remind us why vaccines are critical to protecting and preserving our public health. They also serve as a counterbalance to anti-vaccine media stories that portray vaccines as harmful.



www.immunize.org/reports

IAC's collection comprises several different types of articles. One type are personal testimonies and newspaper stories for the public about people who have suffered or died from vaccine-preventable diseases. In one poignant report, a physician recalls how five of his 12 siblings died of pertussis and measles in the pre-vaccine era. In another, a family remembers their 15-year-old daughter who two weeks after being diagnosed with acute hepatitis B virus infection dies of fulminant liver failure.

"The more personal stories of the benefits of immunizations are helpful in our education of parents." M.S., MSN, DrPH, CPNP

We also publish case reports and disease outbreak updates from the medical literature. Sources for Unprotected People include articles reprinted from CDC's *Morbidity and Mortality Weekly Report*. For example, one report describes four influenza-related deaths and ten instances of severe influenza illness among children and young adults under age 21 in early 2003.

IAC also has a collection of general reports that promote the importance of vaccination. For example, Betty Bumpers and Rosalyn Carter, co-founders of Every Child by Two, express their concern about anti-vaccine campaigns in the Unprotected People report titled "Some parents fall for vaccination scare stories, with deadly results," and a physician affirms the protection that vaccines afford children and explains why he made sure his own son was vaccinated in the report titled "Are vaccinations worth it?"

Unprotected People reports are free to download in ready-to-print format (pdf) at www.immunize.org/reports. The reports are arranged alphabetically by disease name, ranging from chickenpox to yellow fever. You can print reports and hand them out one at a time, or staple several together and make them available as reading material in your waiting area or exam rooms.

"We are going to be faxing these stories out on a biweekly basis to the physician offices through our local medical society. We hope that offices will create 'Read Me' files of them to place in their waiting rooms. One way we can counteract the anti-vaccine testimonials! Thank you so much for offering these!" L.O., PharmD

New Unprotected People reports usually appear first in *IAC Express,* a free email news service from IAC. More than 20,000 health professionals are subscribed. To sign up for this free e-newsletter and read Unprotected People reports when they're published, visit www.immunize.org/express.

Do you have an article, remembrance, or case report to share with your colleagues about vaccine-preventable diseases? Please submit them to us at admin@immunize.org.

Updated! Immunization record cards for adults

Give your adult patients a permanent vaccination record card. Modified to add space for you to record new vaccines—HPV, Tdap, zoster, and meningococcal. Printed on rip-proof, smudge-proof, waterproof paper, this durable canary-yellow card is sized to fit in a wallet. To view the card, visit www.immunize.org/adultizcards/adultizcard.pdf.

Buy 1 box (250 cards) for $35 (first order of a 250-card box comes with a 30-day money-back guarantee)

Discounts for larger orders: 2 boxes (500 cards) $65; 3 boxes (750 cards) $90; 4 boxes (1000 cards) $110

To order, visit www.immunize.org/adultizcards, or use the order form on page 23.

(To receive sample cards, email your request to admin@immunize.org.)

Do you vaccinate children or adults?

Then your practice needs this training video!

"Immunization Techniques: Safe, Effective, Caring"

developed by California Dept. of Health Services Immunization Branch

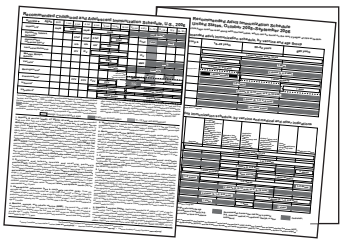
Available in videotape (VHS) or DVD format. Each comes with presenter's notes and a skills checklist. (For details, see page 22.)

Cost is $30 for VHS video; $35 for DVD. For 20 or more copies, contact us for discount pricing. For more information or to order online, visit www.immunize.org/iztech.

To order by fax or mail, use the order form on page 23.

Questions? Email admin@immunize.org or call (651) 647-9009.

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



IAC's versions of the ACIP/AAP/AAFP-approved childhood/adolescent immunization schedule and the ACIP/AAFP/ACOG-approved adult schedule are laminated for heavy-duty use, complete with essential footnotes, and printed in color for easy reading. The cost is $4 each for the 2-sided childhood/adolescent schedule and $5 each for the 4-sided adult schedule. For five or more copies, contact us for discount pricing.

For more information or to order online, go to www.immunize.org/immschedules.

To order by fax or mail, use the order form on page 23.

Vaccine Highlights

Recommendations, schedules, and more

Editor's note: The information on these pages is current as of September 12, 2006.

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 meetings will be held Oct. 25-26, 2006, Feb. 21-22, 2007, and June 27-28, 2007. For more information, visit www.cdc.gov/nip/acip.

Registration information for those who plan to attend ACIP meetings: To expedite security clearance at CDC's Clifton Road campus, all ACIP attendees should register online at www.cdc.gov/nip/ACIP/dates.htm. Non-U.S. citizens are required to register at least three weeks before an ACIP meeting and to complete an additional document. The document is available from Dee Gardner at dgardner@cdc.gov or (404) 639-8836.

ACIP recommendations

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

- Download them from links on IAC's website: www.immunize.org/acip.
- Download them from CDC's website: www.cdc.gov/nip/publications/acip-list.htm.
- Call the CDC-INFO Contact Center: (800) CDC-INFO [(800) 232-4636].

Looking for your state health department immunization and hepatitis consultants?

For phone numbers of people to contact at your state (or federal project) health department for help on immunization issues, the Vaccines for Children (VFC) Program, or hepatitis A, B, or C, go to

www.immunize.org/coordinators

Recently published ACIP recommendations:

- "Prevention of Rotavirus Gastroenteritis Among Infants and Children" (8/11/06)
- "Prevention and Control of Influenza" (7/28/06)
- "Prevention of Hepatitis A Through Active or Passive Immunization" (5/19/06)

CDC has begun posting provisional ACIP recommendations at www.cdc.gov/nip/recs/provisional_recs. Provisional recommendations are those ACIP has voted on but are not yet approved by CDC or the Department of Health and Human Services, and not yet published in *MMWR.*

Influenza news

On July 28, CDC published the ACIP recommendation "Prevention and Control of Influenza" in *MMWR Recommendations and Reports,* Vol. 55 (RR-10). It includes new or updated information on the following: (1) recommending influenza vaccination for children ages 24–59 months; (2) administering 2 doses of vaccine to children ages 6 months to 9 years; (3) advising health professionals, influenza campaign organizers, and state and local public health agencies to expand outreach to vaccinate more persons; and (4) reminding providers to routinely offer vaccine throughout the influenza season. To read the complete recommendations, go to www.cdc.gov/mmwr/PDF/rr/rr5510.pdf.

On Jan. 1, use of a federal VIS for influenza vaccines became a requirement. The 2006–07 influenza season will be the first season that providers will be required to use VISs when vaccinating adults and children. To access current VISs for trivalent inactivated influenza vaccine (TIV) and live attenuated influenza vaccine (LAIV) in a variety of languages and formats, go to www.immunize.org/vis/#influenza.

On June 13, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) approved an infection control standard that requires accredited healthcare organizations to offer influenza vaccinations to staff, volunteers, and independent practitioners who have close patient contact, effective Jan. 1, 2007. To view a press release about the standard, go to www.jointcommission.org/newsroom/newsreleases/nr_06_13_06.htm.

On May 16, the American Heart Association and the American College of Cardiology published guidelines for secondary prevention for patients with coronary and other atherosclerotic vascular disease. One of the intervention recommendations is that patients with cardiovascular disease receive influenza vaccination. The guidelines are available in the journal *Circulation* at circ.ahajournals.org/cgi/content/full/113/19/2363.

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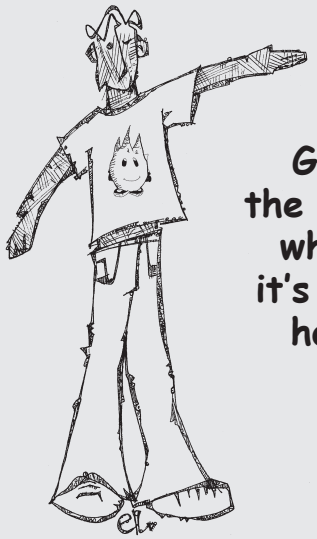

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IAC Express is a free immunization news service. To sign up, send an e-mail message to express@immunize.org with the word SUBSCRIBE in the "Subject:" field. Or visit:

www.immunize.org/express

HPV news

On Sept. 5, CDC released an interim Vaccine Information Statement (VIS) for human papillomavirus (HPV) vaccine. A final VIS will be available after ACIP recommendations are published in *MMWR* and the vaccine is covered by the Vaccine Injury Compensation Program. To access the interim VIS, go to www.cdc.gov/nip/publications/VIS/vis-hpv.pdf or www.immunize.org/vis/hpv.pdf.

In August, the American College of Obstetricians and Gynecologists (ACOG) posted excerpts of its recommendations for the use of human papillomavirus (HPV) vaccine on the ACOG website (www.acog.org). In the September 2006 issue of the journal *Obstetrics & Gynecology,* the ACOG recommendations are available in their entirety to journal

subscribers. To read the excerpts on ACOG's website, go to www.acog.org/departments/dept_notice.cfm?recno=7&bulletin=3945.

On June 29, ACIP voted to recommend HPV vaccination for girls and women ages 9–26 years and routine three-dose vaccination for girls at age 11–12 years. As of this writing the recommendation has not been made official by publication in *MMWR;* however, the provisional recommendations for the use of HPV vaccine are available at www.cdc.gov/nip/recs/provisional_recs/hpv.pdf.

On June 8, FDA licensed Gardasil® (Merck), a quadrivalent HPV recombinant vaccine for use in preventing infection with HPV Types 6, 11, 16, and 18 in females ages 9–26 years. To view the Gardasil package insert, go to www.fda.gov/cber/label/hpvmer060806LB.pdf.

Varicella news

On June 29, ACIP voted to recommend a second dose of varicella vaccine for children ages 4–6 years to increase protection against the disease. The first dose is recommended at ages 12–15 months. A second dose is also recommended for children, adolescents, and adults who previously received only one dose. As of this writing the recommendation has not been made official by publication in *MMWR;* however, the provisional ACIP recommendations are available at www.cdc.gov/nip/vaccine/varicella/varicella_acip_recs_prov_june_2006.pdf.

Mumps news

On May 17, ACIP issued updated criteria for evidence of mumps immunity to two doses of live mumps virus vaccine for school-age children and high-risk adults and updated the mumps vaccination recommendations to two routine doses for susceptible healthcare workers, and in outbreak settings, to two doses for children ages 1–4 years, low-risk adults, and susceptible healthcare workers. The updated criteria are available at www.cdc.gov/mmwr/pdf/wk/mm55e601.pdf.

What two letters of the alphabet spell big trouble for your teeth?

Meningococcal news

In May, CDC announced that sanofi pasteur, manufacturer of meningococcal conjugate vaccine (MCV4), anticipates that demand for the vaccine will outpace supply at least through summer 2006. CDC, in consultation with ACIP, the American Academy of Pediatrics, American Academy of Family Physicians, American College Health Association, and Society for Adolescent Medicine, recommends that until further notice, providers defer vaccinating persons age 11–12 years but continue administering the vaccine to older persons for whom it is recommended. For information, go to www.cdc.gov/nip/news/shortages.

Herpes zoster (shingles) news

On Sept. 11, CDC released an interim VIS for shingles (herpes zoster or Zos) vaccine. A final VIS will be available after ACIP recommendations are published in *MMWR*. To access the interim VIS, go to www.cdc.gov/nip/publications/VIS/vis-shingles.pdf or www.immunize.org/vis/shingles.pdf.

On May 25, FDA licensed Zostavax® (Merck), a live attenuated vaccine for use in preventing herpes zoster (shingles) in persons age 60 years and older. As of this writing, ACIP has not made recommendations for the use of Zostavax. However, providers can begin using Zostavax without a specific ACIP recommendation. Providers should observe indications and contraindications as listed in the manufacturer's package insert. See www.fda.gov/cber/label/zosmer052506LB.pdf.

Tdap vaccine news

On June 30, ACIP voted to recommend one dose of Tdap vaccine postpartum before hospital discharge for women who have not previously received Tdap and who received the last dose of Td vaccine two or more years before delivery. As of this writing the recommendation has not been made official by publication in *MMWR;* however, the provisional recommendations are available at www.cdc.gov/nip/recs/provisional_recs/tdap-preg.pdf.

In March, the American Academy of Pediatrics Committee on Infectious Diseases published "Prevention of Pertussis Among Adolescents" in the journal *Pediatrics.* To obtain a copy, go to http://aappolicy.aappublications.org/cgi/reprint/pediatrics;117/3/965.pdf.

Rotavirus news

On Aug. 11, CDC published the ACIP recommendations "Prevention of Rotavirus Gastroenteritis Among Infants and Children." It calls for routine immunization of U.S. infants with three doses of oral rotavirus vaccine at ages 2, 4, and 6 months. The recommendations are available at www.cdc.gov/mmwr/PDF/rr/rr5512.pdf.

STD vaccination news

On Aug. 4, CDC published "Sexually Transmitted Diseases Treatment Guidelines, 2006." They provide clinical guidance for preventing, diagnosing, and treating STDs in a variety of primary-care settings. Included is guidance for preexposure vaccination against hepatitis B virus and hepatitis A virus. There is also reference to human papillomavirus vaccine. The STD guidelines are available at www.cdc.gov/std/treatment/2006/rr5511.pdf.

Current VIS dates

The use of most Vaccine Information Statements (VISs) is mandated by federal law. Listed below are the dates of the most current VISs. Check your stock of VISs against this list. If you have outdated VISs, print current ones from one of these sources: CDC's website at www.cdc.gov/nip/publications/vis (has VISs in English) or IAC's website at www.immunize.org/vis (has VISs in more than 30 languages).

DTaP/DT/DTP	7/30/01	PCV	9/30/02
hepatitis A	3/21/06	PPV	7/29/97
hepatitis B	7/11/01	polio	1/1/00
Hib	12/16/98	rabies	1/12/06
HPV (H. papillomavirus)	9/5/06	rotavirus	4/12/06
influenza (LAIV)	6/30/06	shingles	9/11/06
influenza (TIV)	6/30/06	Td	6/10/94
Japan. enceph.	5/11/05	Tdap	7/12/06
meningococcal	10/7/05	typhoid	5/19/04
MMR	1/15/03	varicella	12/16/98
yellow fever	11/9/04		

If you have a website, please link to the Immunization Action Coalition's websites:

www.immunize.org

www.vaccineinformation.org

Summary of Recommendations for Childhood and Adolescent Immunization

Adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP)* by the Immunization Action Coalition, September 2006

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and other related issues	Contraindications and precautions (mild illness is not a contraindication)
Hepatitis B *Give IM*	• Vaccinate all children ages 0 through 18yrs. • Vaccinate all newborns with monovalent vaccine prior to hospital discharge. Give dose #2 at 1–2m and the final dose at 6–18m (the last dose in the infant series should not be given earlier than age 24wks). After the birth dose, the series may be completed using 2 doses of single-antigen vaccine or up to 3 doses of Comvax (ages 2m, 4m, 12–15m) or Pediarix (ages 2m, 4m, 6m), which may result in giving a total of 4 doses of hepatitis B vaccine. • **If mother is HBsAg-positive:** give the newborn HBIG + dose #1 within 12hrs of birth; complete series at age 6m or, if using Comvax, at 12–15m. • **If mother's HBsAg status is unknown:** give the newborn dose #1 within 12hrs of birth. If mother is subsequently found to be HBsAg positive, give infant HBIG within 7d of birth and follow the schedule for infants born to HBsAg-positive mothers.	• Do not restart series, no matter how long since previous dose. • 3-dose series can be started at any age. • Minimum spacing between doses: 4wks between #1 and #2, 8wks between #2 and #3, and at least 16wks between #1 and #3 (e.g., 0-, 2-, 4m; 0-, 1-, 4m). **Special Notes on Hepatitis B Vaccine (HepB)** **Dosing of HepB:** Vaccine brands are interchangeable. For persons ages 0 through 19yrs, give 0.5 mL of either Engerix-B or Recombivax HB. **Alternative dosing schedule for unvaccinated adolescents ages 11 through 15yrs:** Give 2 doses Recombivax HB 1.0mL (adult formulation) spaced 4–6m apart. (Engerix-B is not licensed for a 2-dose schedule.) **For preterm infants:** Consult ACIP hepatitis B recommendations (*MMWR* 2005; 54 [RR-16]).	**Contraindication:** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
DTaP, DT (Diphtheria, tetanus, acellular pertussis) *Give IM*	• Give to children at ages 2m, 4m, 6m, 15–18m, 4–6yrs. • May give dose #1 as early as age 6wks. • May give #4 as early as age 12m if 6m have elapsed since #3 and the child is unlikely to return at age 15–18m. • Do not give DTaP/DT to children age 7yrs and older. • If possible, use the same DTaP product for all doses.	• #2 and #3 may be given 4wks after previous dose. • #4 may be given 6m after #3. • If #4 is given before 4th birthday, wait at least 6m for #5 (age 4–6yrs). • If #4 is given after 4th birthday, #5 is not needed.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • For DTaP/Tdap only: encephalopathy within 7d after DTP/DTaP. **Precautions** • Moderate or severe acute illness. • Guillain-Barré syndrome within 6wks after previous dose of tetanus toxoid-containing vaccine. • For DTaP only: Any of these occurrences following a previous dose of DTP/DTaP: 1) temperature of 105°F (40.5°C) or higher within 48hrs; 2) continuous crying for 3hrs or more within 48hrs; 3) collapse or shock-like state within 48hrs; 4) convulsion with or without fever within 3d. • For DTaP/Tdap only: Unstable neurologic disorder. **Note:** Use of Td or Tdap is not contraindicated in pregnancy. At the provider's discretion, either vaccine may be administered during the 2nd or 3rd trimester.
Td, Tdap (Tetanus, diphtheria, acellular pertussis) *Give IM*	• Give Tdap booster dose to adolescents age 11–12yrs if 5yrs have elapsed since last dose DTaP/DTP; boost every 10yrs with Td. • Give 1-time Tdap to all adolescents who have not received previous Tdap. Special efforts should be made to give Tdap to persons age 11yrs and older who are - in contact with infants younger than age 12m. - healthcare workers with direct patient contact. • In pregnancy, when indicated, give Td or Tdap in 2nd or 3rd trimester. If not administered during pregnancy, give Tdap in immediate postpartum period.	• If never vaccinated with tetanus- and diphtheria-containing vaccine: give Td dose #1 now, dose #2 4wks later, and dose #3 6m after #2, then give booster every 10yrs. A 1-time Tdap may be substituted for any dose in the series. • Intervals of 2yrs or less between Td and Tdap may be used if needed.	
Polio (IPV) *Give SC or IM*	• Give to children at ages 2m, 4m, 6–18m, 4–6yrs. • May give #1 as early as age 6wks. • Not routinely recommended for those age18yrs and older (except certain travelers).	• All doses should be separated by at least 4wks. • If dose #3 is given after 4th birthday, dose #4 is not needed.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.
Human Papillomavirus (HPV) *Give IM*	• Give 3-dose series to girls at age 11–12yrs on a 0, 2, 6m schedule. • May be given as early as age 9yrs. • Vaccinate all older females (through age 26yrs) not previously vaccinated.	• Dose #2 may be given 4wks after dose #1. • Dose #3 may be given 12wks after dose #2.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.

*For specific ACIP recommendations, refer to the official ACIP statements published in *MMWR*. To obtain copies of these statements, call the CDC-INFO Contact Center at (800) 232-4636; visit CDC's website at www.cdc.gov/nip/publications/ACIP-list.htm; or visit the Immunization Action Coalition (IAC) website at www.immunize.org/acip.

This table is revised periodically. Visit IAC's website at www.immunize.org/childrules to make sure you have the most current version. IAC thanks William Atkinson, MD, MPH, from CDC's National Center for Immunization and Respiratory Diseases for his assistance. For more information, contact IAC at 1573 Selby Avenue, St. Paul, MN 55104, (651) 647-9009, or email admin@immunize.org.

Summary of Recommendations for Childhood and Adolescent Immunization

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccine administration and other related issues	Contraindications and precautions (mild illness is not a contraindication)
Varicella (Var) (Chickenpox) *Give SC*	• Give dose #1 at age 12–15m. • Give dose #2 at age 4–6yrs. Dose #2 may be given earlier if at least 3m since dose #1. • Give a routine second dose to all older children and adolescents with history of only 1 dose. • MMRV may be used in children 12m through 12yrs.	• If younger than age 13yrs, space dose #1 and #2 at least 3m apart. If age 13yrs or older, space 4–8wks apart. • May use as postexposure prophylaxis if given within 3–5d. • If Var and either MMR, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Children immunocompromised because of high doses of systemic steroids, cancer, leukemia, lymphoma, or immunodeficiency. **Note:** For patients with humoral immunodeficiency, HIV infection, or leukemia, or for patients on high doses of systemic steroids, see ACIP recommendations*. **Precautions** • Moderate or severe acute illness. • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating. • History of thrombocytopenia or thrombocytopenic purpura.
MMR (Measles, mumps, rubella) *Give SC*	• Give dose #1 at age 12–15m. • Give dose #2 at age 4–6yrs. Dose #2 may be given earlier if at least 4wks since dose #1. • If a dose was given before age12m, it doesn't count as the first dose, so give #1 at age 12–15m with a minimum interval of 4wks between the invalid dose and dose #1. • MMRV may be used in children 12m through 12yrs.	• If MMR and either Var, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart. • When using MMR (not MMRV) for both doses, minimum interval is 4wks.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Severe immunodeficiency (e.g., hematologic and solid tumors; congenital immunodeficiency; long-term immunosuppressive therapy, or severely symptomatic HIV). **Precautions** • Moderate or severe acute illness. • If blood, plasma, or immune globulin given in past 11m or if on high-dose immunosuppressive therapy, see ACIP statement *General Recommendations on Immunization** regarding delay time. • History of thrombocytopenia or thrombocytopenic purpura. **Note:** MMR is not contraindicated if a PPD (tuberculosis skin test) was recently applied. If PPD and MMR not given on same day, delay PPD for 4–6wks after MMR.
Influenza Trivalent inactivated influenza vaccine (TIV) *Give IM* Live attenuated influenza vaccine (LAIV) *Give intranasally*	• On an annual basis, vaccinate all children ages 6–59m, as well as all siblings and household contacts of children ages 0–59m. • Vaccinate persons 5yrs and older who - have a risk factor (e.g., pregnancy, heart disease, lung disease, diabetes, renal dysfunction, hemoglobinopathy, immunosuppression, on long-term aspirin therapy, or have a condition that compromises respiratory function or the handling of respiratory secretions or that can increase the risk of aspiration) or live in a chronic-care facility. - live or work with at-risk people as listed above. • Vaccinate any person wishing to reduce the likelihood of becoming ill with influenza. • LAIV may be given to healthy, non-pregnant persons ages 5yrs and older. • Give 2 doses to first-time vaccinees ages 6m through 8yrs. For TIV, space 4wks apart; for LAIV, space 6wks apart (no younger than age 5yrs). • For TIV, give 0.25 mL dose to children ages 6–35m and 0.5 mL dose if age 3yrs and older.		**Contraindications** • Previous anaphylaxis to this vaccine, to any of its components, or to eggs. • For LAIV only: Pregnancy, asthma, reactive airway disease, or other chronic disorder of the pulmonary or cardiovascular systems; an underlying medical condition, including metabolic diseases such as diabetes, renal dysfunction, and hemoglobinopathies; a known or suspected immune deficiency disease or receiving immunosuppressive therapy; history of Guillain-Barré syndrome. **Precautions** • Moderate or severe acute illness. • For TIV only: History of Guillain-Barré syndrome within 6wks of previous TIV.
Rotavirus (Rota) *Give orally*	• Give a 3-dose series at ages 2m, 4m, 6m. • May give dose #1 as early as age 6wks. • Give dose #3 no later than age 32wks.	• Do not begin series in infants older than age 12wks. • Dose #2 and #3 may be given 4wks after previous dose.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Altered immunocompetence. • Moderate to severe acute gastroenteritis or chronic gastrointestinal disease. • History of intussusception.

Summary of Recommendations for Childhood and Adolescent Immunization

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and other related issues	Contraindications and precautions (mild illness is not a contraindication)
Hib (*Haemophilus influenzae* type b) *Give IM*	• HibTITER (HbOC) and ActHib (PRP-T): give at 2m, 4m, 6m, 12–15m (booster dose). • PedvaxHIB or Comvax (containing PRP-OMP): give at 2m, 4m, 12–15m. • Dose #1 of Hib vaccine may be given no earlier than age 6wks. • The last dose (booster dose) is given no earlier than age 12m and a minimum of 8wks after the previous dose. • Hib vaccines are interchangeable; however, if different brands of Hib vaccines are administered, a total of three doses are necessary to complete the primary series in infants. • Any Hib vaccine may be used for the booster dose. • Hib is not routinely given to children age 5yrs and older.	**All Hib vaccines:** • If #1 was given at 12–14m, give booster in 8wks. • Give only 1 dose to unvaccinated children from age 15m to 5yrs. **HibTITER and ActHib:** • #2 and #3 may be given 4 wks after previous dose. • If #1 was given at 7–11m, only 3 doses are needed; #2 is given 4–8wks after #1, then boost at 12–15m (wait at least 8wks after dose #2). **PedvaxHIB and Comvax:** • #2 may be given 4wks after dose #1.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Pneumo. conjugate (PCV) *Give IM*	• Give at ages 2m, 4m, 6m, 12–15m. • Dose #1 may be given as early as age 6wks. • Give 1 dose to unvaccinated healthy children ages 24–59m. • Give 2 doses at least 8wks apart to unvaccinated high-risk** children ages 24–59m. • PCV is not routinely given to children age 5yrs and older. ****High-risk:** Those with sickle cell disease; anatomic/functional asplenia; chronic cardiac, pulmonary, or renal disease; diabetes; cerebrospinal fluid leaks; HIV infection; immunosuppression; or who have or will have a cochlear implant.	• Minimum interval between doses for infants younger than age 12m is 4wks, for age 12m and older is 8wks. • For infants 7–11m of age: If unvaccinated, give dose #1 now, give dose #2 4–8wks later, and boost at 12–15m. If infant has had 1 or 2 previous doses, give next dose now, and boost at 12–15m. • For children ages 12–23m: If unvaccinated or only one previous dose before 12m, give 2 doses at least 8wks apart. If 2 doses given before 12m, give booster at least 8wks after previous dose.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Pneumo. polysacch. (PPV) *Give IM or SC*	• Give 1 dose at least 8wks after final dose of PCV to high-risk children age 2yrs and older. • For children who are immunocompromised or have sickle cell disease or functional or anatomic asplenia, give a 2nd dose of PPV 3–5yrs after previous PPV (consult ACIP PPV recommendations [*MMWR* 1997;46 [RR-8] for details*).		**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Hepatitis A *Give IM*	• Give 2 doses to all children at age 1yr (12–23m) spaced 6m apart. • Vaccinate all children and adolescents age 2 years and older who - Live in a state, county, or community with a routine vaccination program already in place for children ages 2yrs and older. - Travel anywhere except U.S., W. Europe, N. Zealand, Australia, Canada, or Japan. - Wish to be protected from HAV infection. - Have chronic liver disease, clotting factor disorder, or are MSM adolescents.	• Minimum interval between doses is 6m. • Consider routine vaccination of children ages 2yrs and older in areas with no existing program.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Meningococcal conjugate (MCV4) *Give IM* — **polysaccharide** (MPSV4) *Give SC*	• Give 1-time dose of MCV4 to adolescents ages 11–12yrs, to adolescents at high school entry (approximately age 15yrs), and to college freshmen living in dormitories. • Vaccinate all children age 2yrs and older who have any of the following risk factors (use MPSV4 if age younger than 11yrs and MCV4 if age 11yrs and older): - Anatomic or functional asplenia, or terminal complement component deficiencies. - Travel to, or reside in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of Sub-Saharan Africa). **Note:** Other adolescents who wish to decrease their risk of meningococcal disease may be vaccinated with MCV4.	If previously vaccinated with MPSV4 and risk continues, give MCV4 5yrs after MPSV4.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components, including diphtheria toxoid (for MCV4). **Precaution** Moderate or severe acute illness. **Note:** MCV4 is not licensed for use in children younger than age 11 yrs.

Summary of Recommendations for Adult Immunization

Adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP)* by the Immunization Action Coalition, September 2006

Vaccine name and route	For whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Influenza Trivalent inactivated influenza vaccine (TIV) *Give IM*	• Persons age 50yrs and older. • Persons with medical problems (e.g., heart disease, lung disease, diabetes, renal dysfunction, hemoglobinopathy, immunosuppression) and/or people living in chronic-care facilities. • Persons with any condition that compromises respiratory function or the handling of respiratory secretions or that can increase the risk of aspiration (e.g., cognitive dysfunction, spinal cord injury, seizure disorder, or other neuromuscular disorder). • Persons working or living with at-risk people. • Women who will be pregnant during the influenza season (December–March). • All healthcare workers and other persons who provide direct care to at-risk people. • Household contacts and out-of-home caregivers of children ages 0–59m. • Travelers at risk for complications of influenza who go to areas where influenza activity exists or who may be among people from areas of the world where there is current influenza activity (e.g., on organized tours). • Persons who provide essential community services. • Students or other persons in institutional settings (e.g., dormitory residents). • Anyone wishing to reduce the likelihood of becoming ill with influenza.	• Given every year in the fall or winter. • October and November are the ideal months to give TIV. • LAIV may be given as early as August. • Continue to give TIV and LAIV through the influenza season from December through March (including when influenza activity is present in the community) and at other times when the risk of influenza exists.	**Contraindication** Previous anaphylactic reaction to this vaccine, to any of its components, or to eggs. **Precautions** • Moderate or severe acute illness. • History of Guillain-Barré syndrome within 6wks of previous TIV.
Influenza Live attenuated influenza vaccine (LAIV) *Give intranasally*	• Healthy, non-pregnant persons age 49yrs and younger who meet any of the conditions listed below. - Working or living with at-risk people as listed in the section above. - Healthcare workers or other persons who provide direct care to at-risk people (except persons in close contact with severely immunosuppressed persons). - Household contacts and out-of-home caregivers of children ages 0–59m. - Travelers who may be among people from areas of the world where there is current influenza activity (e.g., on organized tours). - Persons who provide essential community services. - Students or other persons in institutional settings (e.g., dormitory residents). - Anyone wishing to reduce the likelihood of becoming ill with influenza.		**Contraindications** • Previous anaphylactic reaction to this vaccine, to any of its components, or to eggs. • Pregnancy, asthma, reactive airway disease or other chronic disorder of the pulmonary or cardiovascular system; an underlying medical condition, including metabolic disease such as diabetes, renal dysfunction, and hemoglobinopathy; a known or suspected immune deficiency disease or receiving immunosuppressive therapy; history of Guillain-Barré syndrome. **Precaution** Moderate or severe acute illness.
Pneumococcal poly-saccharide (PPV) *Give IM or SC*	• Persons age 65yrs and older. • Persons who have chronic illness or other risk factors, including chronic cardiac or pulmonary disease, chronic liver disease, alcoholism, diabetes, CSF leak, as well as people living in special environments or social settings (including Alaska Natives and certain American Indian populations). Those at highest risk of fatal pneumococcal infection are persons with anatomic asplenia, functional asplenia, or sickle cell disease; immunocompromised persons including those with HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure, or nephrotic syndrome; persons receiving immunosuppressive chemotherapy (including corticosteroids); those who received an organ or bone marrow transplant; and candidates for or recipients of cochlear implants.	• Routinely given as a one-time dose; administer if previous vaccination history is unknown. • One-time revaccination is recommended 5yrs later for persons at highest risk of fatal pneumococcal infection or rapid antibody loss (e.g., renal disease) and for persons age 65yrs and older if the 1st dose was given prior to age 65 and 5yrs or more have elapsed since the previous dose.	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.

*For specific ACIP recommendations, refer to the official ACIP statements published in *MMWR*. To obtain copies of these statements, call the CDC-INFO Contact Center at (800) 232-4636; visit CDC's website at www.cdc.gov/nip/publications/ACIP-list.htm; or visit the Immunization Action Coalition (IAC) website at www.immunize.org/acip.

This table is revised periodically. Visit IAC's website at www.immunize.org/adultrules to make sure you have the most current version. IAC thanks William Atkinson, MD, MPH, from CDC's National Center for Immunization and Respiratory Diseases for his assistance. For more information, contact IAC at 1573 Selby Avenue, St. Paul, MN 55104, (651) 647-9009, or email admin@immunize.org.

Summary of Recommendations for Adult Immunization (continued)

Vaccine name and route	For whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Hepatitis B (Hep B) *Give IM* Brands may be used interchangeably.	• All adolescents; any adult wishing to obtain immunity. • High-risk persons, including household contacts and sex partners of HBsAg-positive persons; injecting drug users; heterosexuals with more than one sex partner in 6 months; men who have sex with men; persons with recently diagnosed STDs; patients receiving hemodialysis and patients with renal disease that may result in dialysis; recipients of certain blood products; healthcare workers and public safety workers who are exposed to blood; clients and staff of institutions for the developmentally disabled; inmates of long-term correctional facilities; and certain international travelers. • Persons with chronic liver disease. **Note:** Provide serologic screening for immigrants from endemic areas. When HBsAg-positive persons are identified, offer appropriate disease management. In addition, screen their sex partners and household members, and give the first dose of vaccine at the same visit. If found susceptible, complete the vaccine series.	• Three doses are needed on a 0, 1, 6m schedule. • Alternative timing options for vaccination include 0, 2, 4m and 0, 1, 4m. • There must be 4wks between doses #1 and #2, and 8wks between doses #2 and #3. Overall, there must be at least 16wks between doses #1 and #3. • **Schedule for those who have fallen behind:** If the series is delayed between doses, DO NOT start the series over. Continue from where you left off. For Twinrix® (hepatitis A and B combination vaccine [GSK]), three doses are needed on a 0, 1, 6m schedule. Recipients must be age 18yrs or older.	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Hepatitis A (Hep A) *Give IM* Brands may be used interchangeably.	• Persons who travel or work anywhere except the U.S., Western Europe, New Zealand, Australia, Canada, and Japan. • Persons with chronic liver disease, including persons with hepatitis B and C; injecting and non-injecting drug users; men who have sex with men; people with clotting-factor disorders; persons who work with hepatitis A virus in experimental lab settings (not routine medical laboratories); and food handlers when health authorities or private employers determine vaccination to be cost effective. • Anyone wishing to obtain immunity to hepatitis A. **Note:** Prevaccination testing is likely to be cost effective for persons older than age 40yrs, as well as for younger persons in certain groups with a high prevalence of hepatitis A virus infection.	• Two doses are needed. • The minimum interval between doses #1 and #2 is 6m. • If dose #2 is delayed, do not repeat dose #1. Just give dose #2.	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Safety during pregnancy has not been determined, so benefits must be weighed against potential risk.
Td, Tdap (Tetanus, diphtheria, pertussis) *Give IM*	• All adults who lack a history of a primary series consisting of at least 3 doses of tetanus- and diphtheria-containing vaccine. • A booster dose of tetanus- and diphtheria-containing toxoid may be needed for wound management as early as 5yrs after receiving a previous dose, so consult ACIP recommendations.* • Using tetanus toxoid (TT) instead of Td or Tdap is <u>not</u> recommended. • In pregnancy, when indicated, give Td or Tdap in 2nd or 3rd trimester. If not administered during pregnancy, give Tdap in immediate postpartum period. <u>For Tdap (tetanus- and diphtheria-toxoids with acellular pertussis vaccine) only:</u> • All adults younger than age 65yrs who have not received Tdap. • Healthcare workers who work in hospitals or ambulatory care settings and have direct patient contact and who have not received Tdap. • Adults in contact with infants younger than age 12m (e.g., parents, grandparents younger than age 65yrs, childcare providers, healthcare workers) who have not received a dose of Tdap.	• For persons who are unvaccinated or behind, complete the primary series with Td (spaced at 0, 1–2m, 6–12m intervals). One dose of Tdap may be used for any dose if ages 19–64yrs. • Give Td booster every 10yrs after the primary series has been completed. For adults ages 19–64yrs, a 1-time dose of Tdap is recommended to replace the next Td. • Intervals of 2yrs or less between Td and Tdap may be used if needed. **Note:** The 2 Tdap products are licensed for different age groups: Adacel (sanofi) for use in persons ages 11–64yrs and Boostrix (GSK) for use in persons ages 10–18yrs.	**Contraindications** • Previous anaphylactic reaction to this vaccine or to any of its components. • For Tdap only, history of encephalopathy within 7 days following DTP/DTaP. **Precautions** • Moderate or severe acute illness. • Guillain-Barré syndrome within 6wks of receiving a previous dose of tetanus toxoid-containing vaccine. • Unstable neurologic condition. **Note:** Use of Td or Tdap is not contraindicated in pregnancy. At the provider's discretion, either vaccine may be administered during the 2nd or 3rd trimester.
Polio (IPV) *Give IM or SC*	Not routinely recommended for persons age 18yrs and older. **Note:** Adults living in the U.S. who never received or completed a primary series of polio vaccine need not be vaccinated unless they intend to travel to areas where exposure to wild-type virus is likely (i.e., India, Pakistan, Afghanistan, and certain countries in Africa). Previously vaccinated adults can receive one booster dose if traveling to polio endemic areas.	• Refer to ACIP recommendations* regarding unique situations, schedules, and dosing information.	**Contraindication** Previous anaphylactic or neurologic reaction to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.

Summary of Recommendations for Adult Immunization (continued)

Vaccine name and route	For whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Varicella (Var) (Chickenpox) *Give SC*	All adults without evidence of immunity. Immunity is defined as any one of the following: • a history of two doses of Var • born in the U.S. before 1980 • history of varicella disease or herpes zoster based on healthcare provider diagnosis • laboratory evidence of immunity or laboratory confirmation of disease	• Two doses are needed. • Dose #2 is given 4–8wks after dose #1. • If Var and either MMR, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart. • If the second dose is delayed, do not repeat dose #1. Just give dose #2.	**Contraindications** • Previous anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Persons immunocompromised because of malignancies and primary or acquired cellular immunodeficiency including HIV/AIDS. (See *MMWR* 1999, Vol. 48, No. RR-6.) **Note:** For those on high-dose immunosuppressive therapy, consult ACIP recommendations regarding delay time.* **Precautions** • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating. • Moderate or severe acute illness.
Meningococcal Conjugate vaccine (MCV4) *Give IM* Polysaccharide vaccine (MPSV4) *Give SC*	• College freshmen living in dormitories. • Adolescents and adults with anatomic or functional asplenia or with terminal complement component deficiencies. • Persons who travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of Sub-Saharan Africa). • Microbiologists who are routinely exposed to isolates of *N. meningitidis.*	• One dose is needed. • If previous vaccine was MPSV4, revaccinate after 5yrs if risk continues. • Revaccination after MCV4 is not recommended. • MCV4 is preferred over MPSV4 for persons age 55yrs and younger, although MPSV4 is an acceptable alternative.	**Contraindication** Previous anaphylactic or neurologic reaction to this vaccine or to any of its components, including diphtheria toxoid (for MCV4). **Precautions** • Moderate or severe acute illness. • For MCV4 only, history of Guillain-Barré syndrome.
MMR (Measles, mumps, rubella) *Give SC*	• Persons born in 1957 or later (especially those born outside the U.S.) should receive at least one dose of MMR if there is no serologic proof of immunity or documentation of a dose given on or after the first birthday. • Persons in high-risk groups, such as healthcare workers, students entering college and other post–high school educational institutions, and international travelers, should receive a total of two doses. • Persons born before 1957 are usually considered immune, but proof of immunity (serology or vaccination) may be desirable for healthcare workers. • Women of childbearing age who do not have acceptable evidence of rubella immunity or vaccination.	• One or two doses are needed. • If dose #2 is recommended, give it no sooner than 4wks after dose #1. • If MMR and either Var, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart. • If a pregnant woman is found to be rubella susceptible, administer MMR postpartum.	**Contraindications** • Previous anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Persons immunocompromised because of cancer, leukemia, lymphoma, immunosuppressive drug therapy, including high-dose steroids or radiation therapy. **Note:** HIV positivity is NOT a contraindication to MMR except for those who are severely immunocompromised. **Precautions** • If blood, plasma, and/or immune globulin were given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating. • Moderate or severe acute illness. • History of thrombocytopenia or thrombocytopenic purpura. **Note:** If PPD (tuberculosis skin test) and MMR are both needed but not given on same day, delay PPD for 4–6wks after MMR.
Human-papillomavirus (HPV) *Give IM*	All previously unvaccinated women through age 26yrs.	• Three doses are needed. • Dose #2 is given 4–8wks after dose #1, and dose #3 is given 6m after dose #1 (at least 12wks after dose #2).	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precaution** Data on vaccination in pregnancy are limited; therefore, vaccination during pregnancy should be delayed until after completion of the pregnancy.
Zoster (shingles) (Zos) *Give SC*	A herpes zoster (shingles) vaccine was licensed in May 2006 for use in persons age 60yrs and older. ACIP recommendations for its use are pending. Refer to the package insert for details on its use.		

Hepatitis B and the healthcare worker

CDC answers frequently asked questions about how to protect healthcare workers

The Immunization Action Coalition thanks Eric E. Mast, MD, MPH, chief, Prevention Branch, Division of Viral Hepatitis, National Center for HIV/AIDS, Hepatitis, STD, and TB Prevention; William L. Atkinson, MD, MPH, medical epidemiologist, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention; and Linda A. Moyer, RN, consultant to the Immunization Action Coalition, for reviewing and updating the following questions and answers.

Healthcare workers need more vaccinations than just hepatitis B!

For information about additional vaccines you may need, see the references at the bottom of page 3.

Which workers in the healthcare setting need hepatitis B vaccine?

The Occupational Safety and Health Administration (OSHA) requires that hepatitis B vaccine be offered to healthcare workers (HCWs) who have a reasonable expectation of being exposed to blood on the job. This requirement does not include HCWs who would not be expected to have occupational risk, such as receptionists, billing staff, and general office workers.

At what anatomic site should hepatitis B vaccine be administered to adults? What needle size should be used?

The deltoid muscle is recommended for routine intramuscular (IM) vaccination among adults. The gluteus muscle should not be used as a site for administering hepatitis B vaccine. The suggested needle size is 1"–2" depending on the recipient's gender and weight (1" for females weighing less than 70 kg; 1½" for females weighing 70–100 kg; 1"–1½" for males weighing less than 120 kg; and 2" for males weighing 120 kg or more and females more than 100 kg). A 22- to 25-gauge needle should be used. For optimal protection, it is crucial that the vaccine be administered IM, not subcutaneously.

If a HCW had one dose only of hepatitis B vaccine 4 months ago, should the series be restarted?

No. The hepatitis B vaccine series should not be restarted when doses are delayed; rather, the series should be continued from where it stopped. The HCW should receive the second dose of vaccine now and the third dose at least 8 weeks later. There needs to be at least 16 weeks between the first and the third doses and at least 8 weeks between the second and third doses of vaccine.

Is it safe for HCWs to be vaccinated during pregnancy?

Yes. Limited data indicate no apparent risk for adverse events to developing fetuses. Current hepatitis B vaccines contain noninfectious hepatitis B surface antigen (HBsAg) and should pose no risk to the fetus. If the mother is being vaccinated because she is at risk for hepatitis B virus (HBV) infection (e.g., a HCW, a person with a sexually transmitted disease, an injection drug user, multiple sex partners), vaccination should be initiated as soon as her risk factor is identified during the pregnancy. If not vaccinated, a pregnant woman may contract an HBV infection, which might result in severe disease for the mother and chronic infection for the newborn. In addition, giving hepatitis B vaccine to the mother is not a contraindication to breastfeeding.

Which HCWs need serologic testing after receiving 3 doses of hepatitis B vaccine?

All HCWs who have a reasonable risk of exposure to blood or body fluids containing blood (e.g., HCWs with direct patient contact, HCWs who have the risk of needlestick or sharps injury, laboratory workers who draw or test blood) should have postvaccination testing for antibody to hepatitis B surface antigen (anti-HBs). Postvaccination testing should be done 1–2 months after the last dose of vaccine.

What should be done if a HCW's postvaccination anti-HBs test is negative 1–2 months after the last dose of vaccine?

Repeat the 3-dose series and test for anti-HBs 1–2 months after the last dose of vaccine. If the HCW is still negative after a second vaccine series, the HCW is considered a non-responder to hepatitis B vaccination. HCWs who do not respond to vaccination should be tested for HBsAg to determine if they have chronic HBV infection. If the HBsAg test is positive, the person should receive appropriate counseling and medical management. Persons who test negative for HBsAg should be considered susceptible to HBV infection and should be counseled about precautions to prevent HBV infection and the need to obtain hepatitis B immune globulin (HBIG) prophylaxis for any known or likely exposure to HBsAg-positive blood.

How often should I test HCWs after they've received the hepatitis B vaccine series to make sure they're protected?

For immune competent HCWs, periodic testing or periodic boosting is not needed. Postvaccination testing (anti-HBs) should be done 1–2 months after the last dose of hepatitis B vaccine. If adequate anti-HBs (at least 10 mIU/mL) is present, nothing more needs to be done. If postvaccination testing is less than 10 mIU/mL, the vaccine series should be repeated and anti-HBs testing done, 1–2 months after the last dose of the second series. This information should be recorded in the HCW's employee health record.

Should a HCW who performs invasive procedures and who once had a positive anti-HBs result be revaccinated if the anti-HBs titer is rechecked and is less than 10 mIU/mL?

No. Immune competent persons known to have responded to hepatitis B vaccination do not require additional passive or active immunization. Postvaccination testing should be done 1–2 months after the original vaccine series is completed. In this scenario, the initial postvaccination testing showed that the HCW was protected. Substantial evidence suggests that adults who respond to hepatitis B vaccination (anti-HBs of at least 10 mIU/mL) are protected from chronic HBV infection for as long as 23 years, even if there is no detectable anti-HBs currently. Only immunocompromised persons (e.g., hemodialysis patients, some HIV-positive persons) need to have anti-HBs testing and booster doses of vaccine to maintain their protective anti-HBs concentrations of at least 10 mIU/mL.

Before reading the recommendations of CDC's Advisory Committee on Immunization Practices (ACIP) that say not to do this, we tested our employees for anti-HBs several years after they were vaccinated and some people had inadequate results, even though they had all completed a 3-dose series. What should we do now?

ACIP does not recommend periodic testing of vaccinated HCWs because anti-HBs concentrations decline over time, and HCWs remain protected even if their anti-HBs concentration declines to below

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www.immunize.org/catg.d/2109hcw.pdf • Item #P2109 (8/06)

10 mIU/mL. For HCWs who have been vaccinated in the past and who do not have a documented response to vaccination of at least 10 mIU/mL, ACIP recommends testing for anti-HBs at the time of an exposure and providing appropriate management based on the results of testing. (See postexposure guidelines in Table 1.) If cost is not a great concern or if an employee or employer wants documented assurance of immunity, a revaccination series can be undertaken followed by testing 1–2 months after the 3rd dose of hepatitis B vaccine.

How often should anti-HBs testing be done on HCWs who perform invasive procedures?

For persons whose immune status is normal, periodic serologic testing to assess anti-HBs concentrations is not necessary. Persons who perform invasive procedures should be treated no differently from other HCWs with respect to anti-HBs testing. If a HCW has an exposure (e.g., needlestick), s/he should be evaluated for their need for immunoprophylaxis according to postexposure guidelines in Table 1.

If HCWs received hepatitis B vaccination in the past and were not tested for immunity, should they be tested now?

No. In this scenario, a HCW does not need to be tested unless s/he has an exposure. If an exposure occurs, refer to the postexposure guidelines in Table 1.

How should a vaccinated HCW with an unknown anti-HBs response be managed if they have a percutaneous or mucosal exposure to blood or body fluids from an HBsAg-positive source?

This person should be tested for anti-HBs as soon as possible after exposure. If the anti-HBs concentration is at least 10 mIU/mL, no further treatment is needed. If the anti-HBs concentration is less than 10 mIU/mL, HBIG and one dose of hepatitis B vaccine should be administered. Prior to administering the HBIG and vaccine, blood should be drawn for a baseline HBsAg test. Subsequently, in 3–6 months, an additional anti-HBs and an HBsAg test should be performed. If the HBsAg is positive, the person is infected and should be referred for medical evaluation. If the anti-HBs result is at least 10 mIU/mL, the person is seroprotected. It is necessary to do postvaccination testing later than the usual recommended time frame because anti-HBs from HBIG might be detected if testing is done any earlier. The postvaccination test result should be recorded in the person's health record.

For a pre-employment physical, a HCW states she received all three hepatitis B vaccine doses as an adolescent. Would you test for anti-HBs?

If the HCW has written documentation of a full hepatitis B vaccine series, testing for anti-HBs at this point is not necessary. If the HCW has a subsequent exposure to HBV, hepatitis B immunoprophylaxis should be administered following guidelines for a person who has been vaccinated, but the immune response is not known (Table 1). This information should be documented in the HCW's employee health record. This approach should be sufficient to meet the needs of the employer and the requirements of OSHA. If there is no written documentation of hepatitis B vaccination, see the next question.

(continued on next page)

Table 1: Recommendations for postexposure prophylaxis after percutaneous or mucosal exposure to HBV in an occupational setting

Vaccination and antibody response status of exposed persons[1]	Treatment			
	Source is HBsAg positive	Source is HBsAg negative	Source is unknown or not tested	
			High risk	Low risk
Unvaccinated	HBIG[2] (1 dose) and begin a hepatitis B vaccine series	Begin a hepatitis B vaccine series	Begin a hepatitis B vaccine series	Begin a hepatitis B vaccine series
Known responder[3]	No treatment	No treatment	No treatment	No treatment
Nonresponder[3]				
Not revaccinated[4]	HBIG (1 dose) and begin a revaccination series	Begin a revaccination series	HBIG (1 dose) and begin a revaccination series	Begin a revaccination series
After revaccination[4]	HBIG (2 doses)[5]	No treatment	HBIG (2 doses)[5]	No treatment
Antibody response unknown	Test for anti-HBs[6] If adequate[3], no treatment If inadequate, HBIG x 1 and vaccine booster	No treatment	Test for anti-HBs[6] If adequate,[3] no treatment If inadequate, give vaccine booster and check anti-HBs in 1–2 months	

1. Persons known to have had HBV infection in the past or who are chronically infected do not require HBIG or vaccine.
2. Hepatitis B immune globulin (0.06 mL/kg) administered IM.
3. Adequate response is anti-HBs of at least 10 mIU/mL after vaccination.
4. Revaccination = additional 3-dose series of hepatitis B vaccine administered after the primary series.
5. First dose as soon as possible after exposure and the second dose 1 month later.
6. Testing should be done as soon as possible after exposure.

Source: This table was adapted from "Updated U.S. PHS Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis," MMWR, *6/29/01, Vol. 50 (RR-11)*

(page 2 of 3)

Several physicians in our group have no documentation showing they received hepatitis B vaccine. They are relatively sure, however, that they received the doses many years ago. What do we do now?

Because there is no documentation of vaccination, the 3-dose vaccination series should be administered and postvaccination testing should be performed 1–2 months after the third dose of vaccine. There is no harm in receiving extra doses of vaccine. Care should always be taken to document vaccine lot, date, manufacturer, route, and vaccine dosages. Postvaccination testing results should also be documented, including the date testing was performed. All organizations (e.g., hospitals, clinics) should develop policies or guidelines to assure valid hepatitis B immunization.

A healthcare worker (HCW) thinks she had 3 doses of hepatitis B vaccine in the past but has no documentation of receiving those doses. Before reading the recommendations to revaccinate her, we obtained an anti-HBs titer and the result was greater than 10 mIU/mL. With this lab result, can't we assume she is immune?

A positive anti-HBs indicates that the vaccinated person is immune at the time the HCW was tested, but does not necessarily assure that the HCW has long-term immunity. Long-term immunity has been shown only for persons attaining an adequate anti-HBs result of at least 10 mIU/mL after a 3-dose vaccination series. The most direct way to deal with this is to vaccinate the HCW with the 3-dose series of hepatitis B vaccine; test for anti-HBs in 1–2 months and document the result in the HCW's employee health record. An adequate anti-HBs result from a documented 3-dose vaccine series would assure not only seroprotection, but long-term protection, as well.

Of course, it is possible that the HCW has an anti-HBs result of greater than 10 mIU/mL because of an HBV infection in the past. If this is of concern, a total anti-HBc test could be performed to discern this (a positive result indicates a history of HBV infection at some undefined period in time).

I'm a nurse who received the hepatitis B vaccine series more than 10 years ago and had a positive follow-up titer (at least 10 mIU/mL). At present, my titer is negative (less than 10 mIU/mL). What should I do now?

Nothing. Data show that vaccine-induced anti-HBs levels might decline over time; however, immune memory (anamnestic anti-HBs response) remains intact indefinitely following immunization. Persons with anti-HBs concentrations that decline to less than 10 mIU/mL are still protected against HBV infection. For HCWs with normal immune status who have demonstrated adequate anti-HBs (at least 10 mIU/mL) following vaccination, booster doses of vaccine or periodic anti-HBs testing is not recommended.

A person who is a known non-responder to hepatitis B vaccine has a percutaneous exposure to HBsAg-positive blood. According to older ACIP recommendations, I have the option to give HBIG x 2 or HBIG x 1 and initiate revaccination. How do I decide which to do?

Current recommendations have been revised. The recommended postexposure prophylaxis for persons who are non-responders to hepatitis B vaccine (i.e., have not responded to an initial 3-dose series and revaccination with a 3-dose series) is to give HBIG as soon as possible after exposure and a second dose of HBIG one month later (see Table 1). Exposed persons, who are known not to have responded to a primary vaccine series, but have not been revaccinated with a second 3-dose series, should receive a single dose of HBIG and reinitiate the hepatitis B vaccine series with the first dose of hepatitis B vaccine as soon as possible after exposure.

If an employee does not respond to hepatitis B vaccination (employee has had two full series of hepatitis B vaccine), does s/he need to be removed from activities that expose her/him to bloodborne pathogens? Does the employer have a responsibility in this area beyond providing the vaccine?

There are no regulations that require removal from job situations where exposure to bloodborne pathogens could occur; this is an individual policy decision within the organization. OSHA regulations require that employees in jobs where there is a reasonable risk of exposure to blood be offered hepatitis B vaccine. In addition, the regulation states that adequate personal protective equipment be provided and that standard precautions be followed. Check your state OSHA regulations regarding additional requirements. If there are no state OSHA regulations, federal OSHA regulations should be followed. Adequate documentation should be placed in the employee record regarding non-response to vaccination. HCWs who do not respond to vaccination should be tested for HBsAg to determine if they have chronic HBV infection. If the HBsAg test is positive, the person should receive appropriate counseling and medical management. Persons who test negative for HBsAg should be considered susceptible to HBV infection and should be counseled about precautions to prevent HBV infection and the need to obtain HBIG prophylaxis for any known or likely exposure to HBsAg-positive blood (see Table 1).

Can a person with chronic HBV infection become a HCW?

Yes. All HCWs should practice standard precautions, which are designed to prevent HBV transmission, both from patients to HCW and from HCW to patient. There is, however, one caveat concerning HBV-infected HCWs. Those who are HBsAg positive and HBeAg (hepatitis B e antigen) positive should not perform exposure-prone procedures (e.g., gynecologic, cardiothoracic surgery) unless they have sought counsel from an expert review panel and been advised under what circumstances, if any, they may continue to perform these procedures. Such circumstances might include notifying prospective patients of the HCW's seropositivity before they undergo exposure-prone invasive procedures. For more information on this issue, see the *Mortality and Morbidity Weekly Report,* "Recommendations for Preventing Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Patients During Exposure-Prone Invasive Procedures," *MMWR,* 7/12/91, Vol. 40(RR-8);1–9. This document is available at www.cdc.gov/mmwr/preview/mmwrhtml/00014845.htm.

Keep your own vaccination history!

Record the dates you received hepatitis B vaccine, as well as the results of your postvaccination serologic testing (anti-HBs).

Remember to save records of any vaccinations you receive so you don't have to repeat them.

To order adult immunization record cards, visit www.immunize.org/adultizcards.

For more information on vaccination recommendations for healthcare workers, see the following:

1. "Immunization of Health-Care Workers," *MMWR,* 12/26/97, Vol. 46 (RR-18), www.cdc.gov/mmwr/PDF/rr/rr4618.pdf
2. "Influenza Vaccination of Health-Care Personnel," *MMWR,* 2/24/06, Vol. 55 (RR-2), www.cdc.gov/mmwr/PDF/rr/rr5502.pdf
3. "Healthcare Worker Vaccination Recommendations," Immunization Action Coalition, www.immunize.org/catg.d/p2017.pdf

(page 3 of 3)

If you administer vaccines, you need these materials!

Free and CDC-reviewed, they're ready for you to download, copy, and use!

Here's the link: www.immunize.org/catg.d/p4060scr.pdf

Patient name: _____ Date of birth: ___/___/___ (mo.) (day) (yr.)

Screening Questionnaire for Child and Teen Immunization

For parents/guardians: The following questions will help us determine which vaccines your child may be given today. If you answer "yes" to any question, it does not necessarily mean your child should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your healthcare provider to explain it.

	Yes	No	Don't Know
1. Is the child sick today?	☐	☐	☐
2. Does the child have allergies to medications, food, or any vaccine?	☐	☐	☐
3. Has the child had a serious reaction to a vaccine in the past?	☐	☐	☐
4. Has the child had a seizure, brain, or nerve problem?	☐	☐	☐
5. Does the child have cancer, leukemia, AIDS, or any other immune system problem?	☐	☐	☐
6. Has the child taken cortisone, prednisone, other steroids, or anticancer drugs, or had x-ray treatments in the past 3 months?	☐	☐	☐
7. Has the child received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin in the past year?	☐	☐	☐
8. Is the child/teen pregnant or is there a chance she could become pregnant during the next month?	☐	☐	☐
9. Has the child received vaccinations in the past 4 weeks?	☐	☐	☐

Form completed by: _____ Date: _____

Form reviewed by: _____ Date: _____

Did you bring your child's immunization record card with you? yes ☐ no ☐

It is important to have a personal record of your child's vaccinations. If you don't have a record card, ask the child's healthcare provider to give you one! Bring this record with you every time you seek medical care for your child. Make sure your healthcare provider records all your child's vaccinations on it. Your child will need this card to enter day care, kindergarten, junior high, etc.

www.immunize.org/catg.d/p4060scr.pdf • Item #P4060 (9/06)

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Here's the link: www.immunize.org/catg.d/p4065scr.pdf

Patient name: _____ Date of birth: ___/___/___ (mo.) (day) (yr.)

Screening Questionnaire for Adult Immunization

For patients: The following questions will help us determine which vaccines you may be given today. If you answer "yes" to any question, it does not necessarily mean you should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your healthcare provider to explain it.

	Yes	No	Don't Know
1. Are you sick today?	☐	☐	☐
2. Do you have allergies to medications, food, or any vaccine?	☐	☐	☐
3. Have you ever had a serious reaction after receiving a vaccination?	☐	☐	☐
4. Do you have cancer, leukemia, AIDS, or any other immune system problem?	☐	☐	☐
5. Do you take cortisone, prednisone, other steroids, or anticancer drugs, or have you had x-ray treatments?	☐	☐	☐
6. Do you have a seizure, brain, or nerve problem?	☐	☐	☐
7. During the past year, have you received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin?	☐	☐	☐
8. For women: Are you pregnant or is there a chance you could become pregnant during the next month?	☐	☐	☐
9. Have you received any vaccinations in the past 4 weeks?	☐	☐	☐

Form completed by: _____ Date: _____

Form reviewed by: _____ Date: _____

Did you bring your immunization record card with you? yes ☐ no ☐

It is important for you to have a personal record of your vaccinations. If you don't have a record card, ask your healthcare provider to give you one! Bring this record with you every time you seek medical care. Make sure your healthcare provider records all your vaccinations on it.

www.immunize.org/catg.d/p4065scr.pdf • Item #P4065 (9/06)

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Here's the link: www.immunize.org/catg.d/4036need.pdf

Your name: _____ Date of birth: ___/___/___ (mo.) (day) (yr.) Today's date: ___/___/___ (mo.) (day) (yr.)

Do I Need Any Vaccinations Today?

Many adults are behind on their vaccinations. These checklists will help you and your healthcare provider determine if you need any vaccinations. Please check the boxes that apply to you.

Influenza vaccination

- ❑ I am age 50 years or older.
- ❑ I am younger than age 50 years, and one or more of the following conditions or situations applies to me:
  - ___ lung disease
  - ___ heart disease
  - ___ kidney disease
  - ___ diabetes
  - ___ HIV/AIDS
  - ___ a disease that affects my immune system
  - ___ a condition that may cause me to choke when I swallow (e.g., neuromuscular disorder, spinal cord injury, seizure disorder)
  - ___ I live in a nursing home or chronic care facility.
  - ___ I will be pregnant during the influenza season (December–March).
  - ___ I provide essential community services.
  - ___ I am a healthcare worker.
  - ___ I am a household contact or caregiver of a person who has one of the illnesses listed at the left, is age 65 years or older, or is age 0–59 months.
- ❑ I am not in one of the groups listed above, but I'd like to be vaccinated to avoid getting influenza this season.

Pneumococcal vaccination

- ❑ I am age 65 years or older, and I have never had a dose of pneumococcal vaccine.
- ❑ I am age 65 years or older and had one dose of pneumococcal vaccine when I was younger than 65; it has been at least 5 years since that dose.
- ❑ I have one of the following health problems and I (❑ have) (❑ have not) had a previous dose of pneumococcal vaccine:
  - ___ lung disease (not asthma)
  - ___ heart disease
  - ___ diabetes
  - ___ alcoholism
  - ___ cochlear implant
  - ___ kidney disease
  - ___ liver disease
  - ___ HIV/AIDS
  - ___ Hodgkin's disease
  - ___ leukemia
  - ___ multiple myeloma
  - ___ lymphoma
  - ___ organ or bone marrow transplant
  - ___ generalized malignancy
  - ___ cerebrospinal fluid leak
  - ___ sickle cell disease
  - ___ had my spleen removed
  - ___ on medication or receiving x-ray treatment that affects my immune system

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

- ❑ I am younger than age 65 years and have not had a pertussis-containing vaccine as an adult.
- ❑ I have or will have close contact with a child younger than 12 months and have not had a pertussis-containing vaccine as an adult.
- ❑ I have not yet had at least 3 tetanus- and diphtheria-containing shots.
- ❑ I have had at least 3 tetanus- and diphtheria-containing shots in my lifetime, but I believe it's been 10 years or more since I received my last shot.
- ❑ I have no idea if I ever received any tetanus- and diphtheria-containing shots in school, the military, or elsewhere.

(continued on page 2)

www.immunize.org/catg.d/4036need.pdf • Item #P4036 (7/06)

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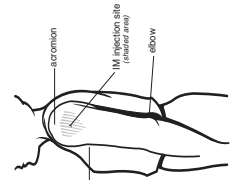
Here's the link: www.immunize.org/catg.d/p2020.pdf

How to Administer Intramuscular (IM) Injections

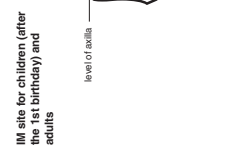
Administer these vaccines via intramuscular (IM) route: Diphtheria-tetanus (DT, Td with pertussis (DTaP, Tdap); Hib; hepatitis A; hepatitis B; human papillomavirus (HPV); inactivated influenza; meningococcal conjugate (MCV4); and pneumococcal conjugate (PCV). Administer inactivated polio (IPV) and pneumococcal polysaccharide (PPV) either IM or SC.

Patient age	Site	Needle size	Needle insertion
Birth to 12 mos.	Anterolateral thigh muscle	5/8" (newborn only); 7/8"–1" needle, 22–25 gauge	Use a needle long enough to reach deep into the muscle. Insert needle at a 90° angle to the skin with a quick thrust. (Before administering an injection, it is not necessary to aspirate, i.e., to pull back on the syringe plunger to see if it draws back blood.) Multiple injections given in the same extremity should be separated by a minimum of 1", if possible.
12 mos. to 10 yrs.	Thickest portion of deltoid muscle—above level of axilla and below acromion	7/8" to 1¼" needle, 22–25 gauge	
Children and adults 11 yrs. and older	Thickest portion of deltoid muscle—above level of axilla and below acromion	1"–1½" needle, 22–25 gauge	

"CDC–ACIP General Recommendations on Immunization" at www.cdc.gov/mmwr/preview/mmwrhtml/rr5202a1.htm



IM site for infants



Insert needle at a 90° angle into the anterolateral thigh muscle.

IM site for children (after the 1st birthday) and adults

Insert needle at a 90° angle into thickest portion of deltoid muscle—above the level of the axilla and below the acromion.

www.immunize.org/catg.d/p2020.pdf • Item #P2020 (7/06)

Adapted by the Immunization Action Coalition, courtesy of the Minnesota Department of Health

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sure you pinch up on SC tissue to prevent injection into the muscle.

sure you pinch up on the SC tissue to prevent injection into the muscle.

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First do no harm

Protect patients by making sure all staff receive yearly influenza vaccine!

Right now, healthcare employers are strongly encouraged to increase their employees' influenza immunization rates. But in 2007, a healthcare organization's accreditation may depend on it! The Centers for Disease Control and Prevention (CDC) recently published new recommendations for healthcare settings, and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) will soon establish new influenza infection control standards.

Big changes are taking place in influenza vaccination of healthcare personnel (HCP): The responsibility for increasing the rates of HCP influenza vaccination is rapidly shifting from the employee to the employer.

What's happening?

At CDC: In February 2006, CDC published "Influenza Vaccination of Health-Care Personnel." These recommendations "apply to HCP in acute care hospitals, nursing homes, skilled nursing facilities, physician offices, urgent care centers, and outpatient clinics, and to persons who provide home healthcare and emergency medical services" and were issued jointly by HICPAC (the Healthcare Infection Control Practices Advisory Committee) and ACIP (the Advisory Committee on Immunization Practices). The summary box in the right column presents an overview, including the recommendation that employers vaccinate employees at the work site at no cost. To obtain a copy of the complete recommendations, go to: www.cdc.gov/mmwr/PDF/rr/rr5502.pdf.

At JCAHO: In June, JCAHO (the Joint Commission on Accreditation of Healthcare Organizations) approved an infection control standard that requires accredited organizations to offer influenza vaccinations to staff, volunteers, and independent practitioners who have close patient contact. According to a JCAHO press release, the standard "will become an accreditation requirement beginning January 1, 2007, for the Critical Access Hospital, Hospital, and Long-Term Care accreditation programs." To read the press release, go to: www.jointcommission.org/newsroom/newsreleases/nr_06_13_06.htm.

Why is it happening?

The short answer is because HCP influenza vaccination rates remain appallingly low, and unvaccinated HCP are infecting vulnerable patients with influenza. Fewer than 45% of HCP are immunized against influenza each year, even though ACIP has urged annual influenza vaccination for HCP since 1981. Further, influenza transmission has been documented among patients in a variety of clinical settings, and infections have been linked to unvaccinated HCP. Clearly, we are doing our patients harm.

What should your healthcare facility do to comply?

In the box below are practical online resources healthcare organizations will find valuable in creating influenza vaccination programs for employees.

Practical resources for vaccinating HCP against influenza

Centers for Disease Control and Prevention
Read "Influenza Vaccination of Health-Care Personnel": www.cdc.gov/mmwr/PDF/rr/rr5502.pdf

Access CDC's Influenza web page: www.cdc.gov/flu

National Influenza Vaccine Summit (NIVS)
(Co-sponsored by the American Medical Association and CDC). See the NIVS Health Care Worker Home Page: www.ama-assn.org/go/hcwfluimmunization

Massachusetts Medical Society
See the "2006 Employee Flu Immunization Campaign Kit": www.massmed.org/flu_kit

Immunization Action Coalition
Get these IAC print materials online:

"Standing Orders for Administering Influenza Vaccine to Adults": www.immunize.org/catg.d/p3074.pdf

"Screening Questionnaire for Injectable Influenza Vaccination": www.immunize.org/catg.d/p4066.pdf

"Screening Questionnaire for Intranasal Influenza Vaccination": www.immunize.org/catg.d/p4067.pdf

"Declination of Influenza Vaccination" form: www.immunize.org/catg.d/p4068.pdf

Summary of CDC's HICPAC / ACIP Recommendations

The committees that developed and endorsed these recommendations included persons with expertise in infectious diseases, infection control, pediatrics, vaccinology, internal medicine, and public health. The recommendations are as follows:

- **Educate HCP regarding the benefits of influenza vaccination** and the potential health consequences of influenza illness for themselves and their patients, the epidemiology and modes of transmission, diagnosis, treatment, and nonvaccine infection control strategies, in accordance with their level of responsibility in preventing health-care-associated influenza.
- **Offer influenza vaccine annually to all eligible HCP** to protect staff, patients, and family members and to decrease HCP absenteeism. Use of either available vaccine (inactivated [TIV] or live attenuated influenza vaccine [LAIV]) is recommended for eligible persons. During periods when TIV is in short supply, use of LAIV is especially encouraged when feasible for eligible HCP.
- **Provide influenza vaccination to HCP at the work site and at no cost** as one component of employee health programs. Use strategies that have been demonstrated to increase influenza vaccine acceptance, including vaccination clinics, mobile carts, vaccination access during all work shifts, and modeling and support by institutional leaders.
- **Obtain a signed declination from HCP who decline influenza vaccination** for reasons other than medical contraindications.
- **Monitor HCP influenza vaccination coverage and declination** at regular intervals during influenza season and provide feedback of ward-, unit-, and specialty-specific rates to staff and administration.
- **Use the level of HCP influenza vaccination coverage as one measure of a patient-safety quality program.**

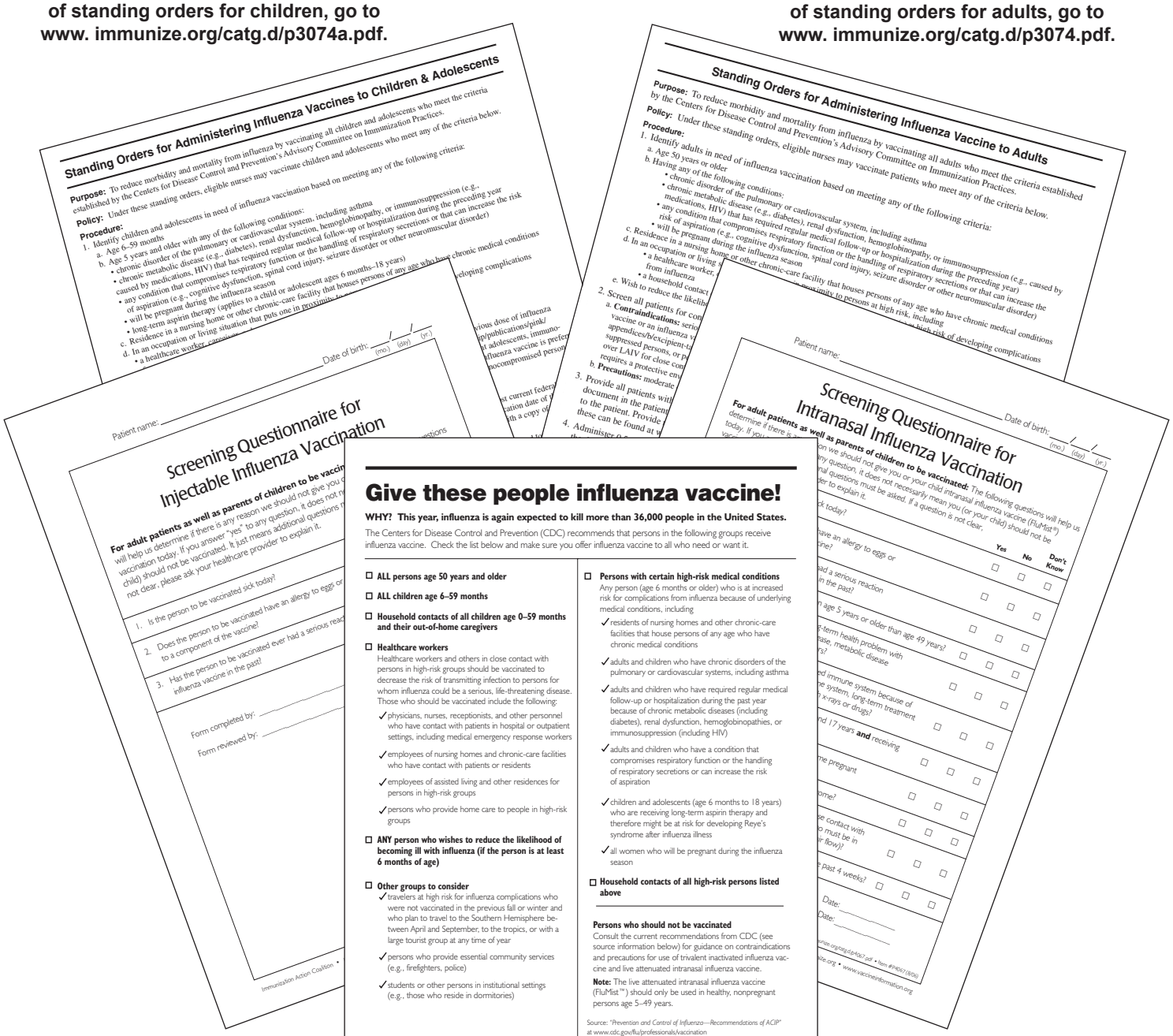
www.immunize.org/catg.d/p2014.pdf • Item #P2014 (9/06)

Influenza Vaccination Standing Orders and Screening Questionnaires

Free and CDC-reviewed, they're ready for you to download, copy, and use!

For a ready-to-copy 8-1/2" x 11" version of standing orders for children, go to www. immunize.org/catg.d/p3074a.pdf.

For a ready-to-copy 8-1/2" x 11" version of standing orders for adults, go to www. immunize.org/catg.d/p3074.pdf.



Standing Orders for Administering Influenza Vaccines to Children & Adolescents

Standing Orders for Administering Influenza Vaccine to Adults

Screening Questionnaire for Injectable Influenza Vaccination

Screening Questionnaire for Intranasal Influenza Vaccination

Give these people influenza vaccine!

WHY? This year, influenza is again expected to kill more than 36,000 people in the United States.

The Centers for Disease Control and Prevention (CDC) recommends that persons in the following groups receive influenza vaccine. Check the list below and make sure you offer influenza vaccine to all who need or want it.

- ☐ **ALL persons age 50 years and older**
- ☐ **ALL children age 6–59 months**
- ☐ **Household contacts of all children age 0–59 months and their out-of-home caregivers**
- ☐ **Healthcare workers**
  Healthcare workers and others in close contact with persons in high-risk groups should be vaccinated to decrease the risk of transmitting infection to persons for whom influenza could be a serious, life-threatening disease. Those who should be vaccinated include the following:
  - ✓ physicians, nurses, receptionists, and other personnel who have contact with patients in hospital or outpatient settings, including medical emergency response workers
  - ✓ employees of nursing homes and chronic-care facilities who have contact with patients or residents
  - ✓ employees of assisted living and other residences for persons in high-risk groups
  - ✓ persons who provide home care to people in high-risk groups
- ☐ **ANY person who wishes to reduce the likelihood of becoming ill with influenza (if the person is at least 6 months of age)**
- ☐ **Other groups to consider**
  - ✓ travelers at high risk for influenza complications who were not vaccinated in the previous fall or winter and who plan to travel to the Southern Hemisphere between April and September, to the tropics, or with a large tourist group at any time of year
  - ✓ persons who provide essential community services (e.g., firefighters, police)
  - ✓ students or other persons in institutional settings (e.g., those who reside in dormitories)
- ☐ **Persons with certain high-risk medical conditions**
  Any person (age 6 months or older) who is at increased risk for complications from influenza because of underlying medical conditions, including
  - ✓ residents of nursing homes and other chronic-care facilities that house persons of any age who have chronic medical conditions
  - ✓ adults and children who have chronic disorders of the pulmonary or cardiovascular systems, including asthma
  - ✓ adults and children who have required regular medical follow-up or hospitalization during the past year because of chronic metabolic diseases (including diabetes), renal dysfunction, hemoglobinopathies, or immunosuppression (including HIV)
  - ✓ adults and children who have a condition that compromises respiratory function or the handling of respiratory secretions or can increase the risk of aspiration
  - ✓ children and adolescents (age 6 months to 18 years) who are receiving long-term aspirin therapy and therefore might be at risk for developing Reye's syndrome after influenza illness
  - ✓ all women who will be pregnant during the influenza season
- ☐ **Household contacts of all high-risk persons listed above**

Persons who should not be vaccinated
Consult the current recommendations from CDC (see source information below) for guidance on contraindications and precautions for use of trivalent inactivated influenza vaccine and live attenuated intranasal influenza vaccine.

Note: The live attenuated intranasal influenza vaccine (FluMist™) should only be used in healthy, nonpregnant persons age 5–49 years.

Source: "Prevention and Control of Influenza—Recommendations of ACIP" at www.cdc.gov/flu/professionals/vaccination

www.immunize.org/catg.d/2013flu.pdf • Item #P2013 (8/06)

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For a ready-to-copy 8-1/2" x 11" version of this screening questionnaire, go to www. immunize.org/catg.d/p4066.pdf.

For a ready-to-copy 8-1/2" x 11" version of this piece, go to www. immunize.org/catg.d/2013flu.pdf.

For a ready-to-copy 8-1/2" x 11" version of this screening questionnaire, go to www. immunize.org/catg.d/p4067.pdf.

IAC's "Ask the Experts" team

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due to HPV. The vaccine is highly effective against the four types of HPV virus included in the vaccine. The vaccine has no effect on HPV infection that is present at the time of vaccination, or on existing cervical cell abnormalities or genital warts. Though women already infected with an HPV vaccine virus type will not benefit from that part of the vaccine, they could still benefit from the other vaccine virus types in the vaccine.

What are the recommendations for use of HPV vaccine?

In June 2006, ACIP voted to recommend that HPV vaccine be routinely given to girls age 11–12 years, although it can be given to girls as young as 9 years. ACIP also voted to recommend that girls and women ages 13 through 26 years receive the vaccine. Ideally vaccine should be administered before onset of sexual activity, but sexually active females should still be vaccinated.

Gardasil is licensed as a 3-dose series, with dose #2 given 2 months after dose #1, and dose #3 given 4 months after dose #2. The minimum interval between doses #1 and #2 is 4 weeks, and between doses #2 and #3 is 12 weeks. The vaccine should be administered IM in the deltoid. For more information on the use of HPV vaccine, see the provisional ACIP recommendations from CDC at www.cdc.gov/nip/recs/provisional_recs/hpv.pdf. ACIP recommendations do not become official until they are published in *MMWR,* which is expected to occur later this year.

If a woman is diagnosed with HPV, should she still be vaccinated?

Yes. Although the vaccine would not alter the clinical course of the current infection, she would still benefit from protection against the other virus types in the vaccine.

What is the Current Procedural Terminology (CPT) code for HPV vaccine?

It is 90649. CPT codes are used for billing.

Why is it important to vaccinate against rotavirus? Isn't the disease benign?

Rotavirus is the most common cause of severe gastroenteritis in infants and young children. The disease may cause severe dehydrating diarrhea with vomiting and fever. Almost all children are infected by age 5 years. Annually, rotavirus in the U.S. is responsible for 3 million infections, more than 400,000 physician visits, 160,000 emergency department visits, 55,000–70,000 hospitalizations, and between 20 and 60 deaths.

What are the recommendations for use of RotaTeq®?

RotaTeq, the new rotavirus (RV) vaccine, is recommended for routine oral administration for all infants as a 3-dose series. The usual schedule is at ages 2, 4, and 6 months. The first dose may be given as early as age 6 weeks. The vaccine should not be administered to infants older than 32 weeks, even if the 3-dose series has not been completed. The first dose should be administered between ages 6 and 12 weeks. A minimum interval of 4 weeks should be observed between each of the doses.

What are the storage and handling guidelines for RotaTeq?

RotaTeq should be stored at refrigerator temperature, protected from light. Do not administer the vaccine if it has been frozen or exposed to freezing temperatures.

Which infants should not receive RotaTeq?

Do not give it to an infant who has a severe allergic reaction to an RV vaccine component or following a prior dose, has altered immunocompetence, has a pre-existing chronic gastrointestinal disease or history of intussusception, or has a moderate or severe acute illness at the time of the clinic visit.

Can preterm infants receive RV?

ACIP recommends the vaccination of a preterm infant if the infant is at least age 6 weeks, is being or has been discharged from the hospital, and is clinically stable.

Why is a second dose of varicella vaccine now recommended for all children?

Since 1996 when varicella vaccine was first recommended, there has been a significant decline in varicella disease, as well as varicella-related hospitalizations and deaths. Although a 1-dose regimen was estimated to be 80–85% effective, breakthrough disease occurs in highly vaccinated populations. A 2-dose regimen was adopted to further reduce the risk of disease among vaccinated persons whose numbers would accumulate over time, which could lead to varicella disease later in life when it can be more severe.

Please review the new recommendations for the second dose of varicella vaccine in children.

All children should be given 2 doses of varicella vaccine routinely. The first dose should be given at age 12–15 months (previously 12–18 months) and the second dose at 4–6 years. "Catch-up" vaccination with a second dose should be implemented for all persons older than 6 years who have received only one dose. (This includes adolescents and adults who may have missed a second dose.) The minimum interval between doses for children ages 12 months through 12 years is 3 months; for persons age 13 years and older, the minimum interval is 4 weeks.

What are the recommendations for varicella vaccination before and after pregnancy?

Live varicella vaccine should not be given to a woman who is known to be pregnant or who plans to become pregnant within one month. If a woman who is planning to become pregnant in the future comes in for a visit or an annual exam, her varicella history should be obtained and if indicated, 2 doses of vaccine should be given, spaced 4–8 weeks apart. Pregnant women should be assessed for evidence of varicella immunity and if non-immune, should receive the first dose of varicella vaccine following termination or completion of the pregnancy and prior to hospital discharge. A second dose should be given 4–8 weeks later.

Please review the new criteria for evidence of immunity to varicella.

ACIP considers evidence of immunity to varicella to be

- documentation of 2 doses of vaccine given no earlier than age 12 months, with at least 3 months between doses for children younger than age 13

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Needle Tips correction policy

The Immunization Action Coalition works tirelessly to ensure the accuracy of the information we make available. At times, however, mistakes occur. If you find an error, please notify us immediately. We publish notification of significant errors in ***Needle Tips*** and on our email announcement service ***IAC Express.*** Be sure you're signed up for this service. Visit www.immunize.org/express to sign up, or subscribe by sending an email to express@immunize.org. Enter the word SUBSCRIBE in the "Subject:" field. No message is needed.

years, or at least 4 weeks between doses for persons age 13 years and older
- U.S.-born before 1980
- a healthcare provider's diagnosis of varicella or verification of history of varicella disease
- history of herpes zoster, based on healthcare provider diagnosis
- laboratory evidence of immunity or laboratory confirmation of disease

Can ProQuad® (MMRV) be used in adults?
No. ProQuad, the new MMRV vaccine (Merck), is approved by FDA only for children ages 12 months through 12 years, and ACIP has not recommended off-label use for older children and adults.

Please discuss the new guidance from ACIP on mumps vaccination and immunity.
Following the resurgence of mumps outbreaks in 2006, ACIP issued revised recommendations for mumps vaccination. They are summarized below:
- Acceptable evidence of immunity includes documentation of 2 doses of mumps vaccine for all school-aged children (i.e., grades K–12) and adults at high risk (i.e., persons who work in healthcare facilities, international travelers, and students at post–high school educational institutions).
- Healthcare workers born during or after 1957 who do not have other evidence of immunity should receive routine vaccination with 2 doses of a live mumps virus vaccine.
- For healthcare workers born before 1957 who do not have other evidence of immunity, consider 1 dose of mumps vaccine.
- In outbreak settings, consider a second dose of mumps vaccine for children ages 1–4 years and adults at low risk.

These recommendations were published in *MMWR* on June 9, 2006.

How effective is the new Zostavax® vaccine in preventing shingles?
In May 2006, FDA licensed Zostavax by Merck to prevent herpes zoster (shingles) as a 1-dose vaccination for persons ages 60 years and older. In clinical trials, vaccine recipients had a 51% reduction in shingles, less severe illness when shingles did occur, and 66.5% less postherpetic neuralgia, compared with placebo recipients. During these trials, no significant safety issues were identified.

As of this writing, ACIP has not made recommendations for the use of Zostavax. However, providers can begin using Zostavax without a specific ACIP recommendation. Providers should observe indications and contraindications as listed in the manufacturer's package insert.

How should Zostavax be stored?
Zostavax must be stored like varicella vaccine, frozen at an average temperature of 5°F (-15°C) or colder until it is reconstituted. Any freezer that has a separate sealed freezer door and reliably maintains an average temperature of 5°F or colder is acceptable for storage. The diluent should be stored separately at room temperature or in the refrigerator.

How is Zostavax administered?
The vaccine is administered subcutaneously. Reconstitute using the diluent provided and administer it immediately after reconstitution to minimize loss of potency. If the vaccine is not administered within 30 minutes, it must be discarded.

Which adolescents and adults should receive routine Tdap vaccine?
All adolescents and adults who meet the age criteria should receive a one-time dose of Tdap. It is routinely recommended for all persons at age 11–12 years. In addition, it should be given as a one-time dose to older adolescents and to all adults younger than age 65 years. If Td has recently been given, in general, an interval of 5 years should separate the Tdap dose and the previous dose of Td. However, certain adolescents and adults should get Tdap with an interval of 2 years or less following their previous Td dose if they are a parent or caregiver of a child younger than age 12 months, a healthcare worker having direct patient contact, or at risk for pertussis because of increased pertussis in the community or during outbreaks.

Which Tdap products can be used in adolescents and which can be used in adults?
Adacel™ (sanofi pasteur) is approved for use in persons ages 11 through 64 years. Boostrix® (GlaxoSmithKline) is approved for use in persons ages 10 through 18 years. Neither product is licensed for persons ages 65 years and older nor for children ages 7 through 9 years; Td should be used in these age groups whenever protection from tetanus and/or diphtheria is needed.

Can Tdap be given as part of wound management?
Yes, as long as the person has not received Tdap previously and falls within the approved age range for receiving the Tdap vaccine brand (10 through 18 years for Boostrix, 11 through 64 years for Adacel).

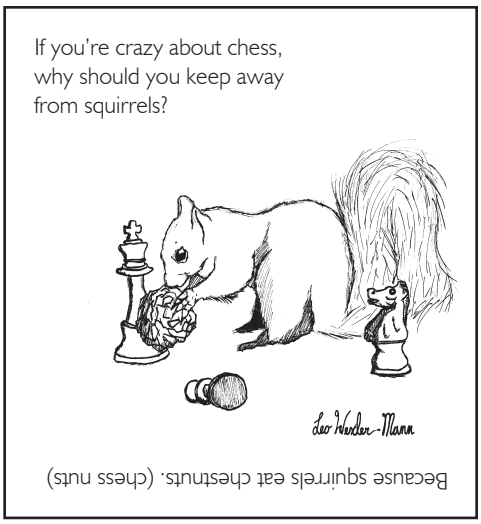
Can we give Tdap at the same visit as other vaccines?
Yes. Tdap can be given with all other vaccines. Each vaccine dose should be administered using a separate syringe.

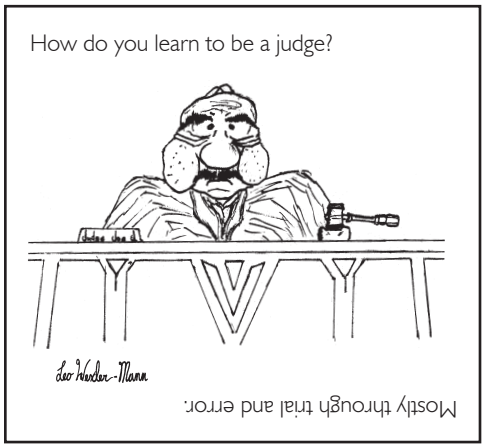
How should we vaccinate persons ages 7 through 64 years who have no record of vaccination with Td or Tdap?
If no immunization records are available, the person should be considered susceptible and started on a 3-dose vaccination schedule of Td-containing vaccine. The second dose should be given at least 4 weeks after the first dose, and the third dose should be given at least 6 months after the second dose. Tdap should be substituted for one of the doses in this series to provide protection against pertussis, if the recipient is at least age 10 years when the Tdap dose is administered.

Can Tdap be given to pregnant women?
ACIP and AAP have different recommendations on the use of Tdap in pregnancy. ACIP voted to recommend using Td (not Tdap) during pregnancy if the woman is due for a routine tetanus booster. If she is not due for the routine booster (i.e., the previous Td booster was given within the preceding 10 years), the new mother should receive Tdap immediately postpartum. However, if there is a risk that a pregnant woman could be exposed to pertussis, such as during an outbreak, a clinician can consider vaccinating her with Tdap. Tdap is not contraindicated for pregnant women. The infant's other household contacts ages 10 through 64 years should also receive 1 dose of Tdap, if not already given. AAP has endorsed preferential use of the Tdap vaccine during pregnancy in adolescents who were not vaccinated at age 11–12 years (*Pediatrics* 2006; 117:965–78). This will be a temporary measure, because starting now, age cohorts will be vaccinated at age 11–12, so that eventually, teens of all ages will be vaccinated in the pre-teen years. Providers can follow either the AAP or ACIP recommendation.

What are the contraindications and precautions for using Tdap?
A serious allergic reaction to a vaccine component

(continued on page 20)





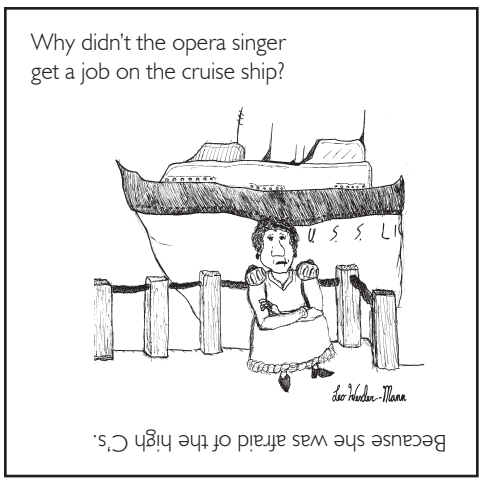
or to a prior Tdap dose is a contraindication. A history of encephalopathy within 7 days of receiving a previous pertussis-containing vaccine is a contraindication to any pertussis-containing vaccine. The precautions to Tdap include an unstable neurologic condition in adults, an unstable progressive neurologic disorder in adolescents, Guillain-Barre syndrome (GBS) within 6 weeks of receiving a tetanus-containing vaccine, Arthus-type reaction after receiving a previous tetanus- or diphtheria-containing vaccine, or a moderate or severe acute illness with or without fever.

Who needs to be vaccinated against influenza this year?

Annual vaccination is recommended for all persons who meet any of the following criteria:

- Age 50 years or older
- Ages 6 through 59 months
- Ages 5 years and older having any of the following conditions:
  - a chronic disorder of the pulmonary or cardiovascular system, including asthma
  - a chronic disease of the blood or kidneys, immunosuppression (e.g., caused by medications, HIV), or diabetes that has required medical follow-up or hospitalization in the preceding year
  - compromised ability to handle respiratory secretions or an increased risk for aspiration (e.g., cognitive dysfunction, spinal cord injury, seizure disorder, or other neuromuscular disorder)
  - pregnancy during the influenza season
  - current receipt of long-term aspirin therapy as a child or teen
- Residence in a nursing home or other chronic-care facility
- Likely to transmit influenza to persons at high risk, including
  - healthcare workers, caregivers, or household members in contact with persons having high-risk conditions
  - household contacts or out-of-home caretakers of children age 0 through 59 months.

In addition, anyone who wants to protect themselves or their children from influenza can be vaccinated.



Why didn't the opera singer get a job on the cruise ship?

Which healthcare workers need influenza vaccine?

All healthcare personnel should receive annual influenza vaccination. It is important to vaccinate all outpatient and hospital personnel, as well as those who provide home care. In short, any person who has contact with patients should be vaccinated.

What are the new CDC recommendations for influenza vaccination of healthcare personnel?

The recommendations for influenza vaccination of healthcare personnel (HCP) are not new, but influenza vaccination coverage among HCP remains low. Because HCP provide care to patients at high risk for complications of influenza, HCP should be considered a high-priority group for receiving vaccination. Achieving high rates of vaccination among HCP will protect staff and their patients, and reduce disease burden and healthcare costs.

On Feb. 24, 2006, CDC devoted an entire *MMWR Recommendations and Reports* to influenza vaccination of HCP. These new recommendations are summarized in the following points:

- All HCP should be educated regarding the benefits of influenza vaccination.
- Influenza vaccine should be offered annually to all eligible HCP.
- Provide influenza vaccination to HCP at the work site and at no cost.
- Obtain a signed declination from HCP who decline influenza vaccination.
- Monitor HCP influenza vaccination coverage and declination at regular intervals.
- Use the level of HCP vaccination coverage as one measure of a patient-safety quality program.

To obtain a copy of these CDC recommendations for healthcare personnel, go to www.cdc.gov/mmwr/pdf/rr/rr5502.pdf.

At what ages can the various injectable influenza vaccines be administered?

The range of ages for the three injectable vaccines is 6 months and older for FluZone® (sanofi pasteur), 4 years and older for Fluvirin® (Novartis), and 18 years and older for Fluarix® (GSK).

Who can receive FluMist®?

FluMist, the live attenuated influenza vaccine (LAIV), is approved for use in healthy nonpregnant persons ages 5 years through 49 years. Many of these persons are among the groups that are targeted for vaccination, including healthcare personnel (excluding those in close contact with severely immunosuppressed persons during periods when the immunocompromised person requires a protective environment) and other persons in close contact with high-risk groups, including household contacts of high-risk persons and contacts of children from birth through age 59 months. In addition, any healthy, nonpregnant person ages 5 through 49 years who wants to reduce their risk of influenza can be vaccinated with FluMist.

What are the special requirements for storage and handling of FluMist?

It must be stored in a freezer with a separate door that can reliably maintain 5°F (-15°C) or colder. Once thawed, LAIV cannot be refrozen. LAIV may be stored at refrigerator temperature but must be discarded if not used within 60 hours. Use of the manufacturer-supplied "freezebox" is no longer required to store LAIV, and the vaccine can now be stored in a conventional frost-free freezer.

How late in the season can I vaccinate my patients with influenza vaccine?

Although peak influenza activity often occurs in mid-winter months, transmission of illness may continue well into the spring. Providers are encouraged to continue vaccinating patients throughout the fall and winter including into March, as long as vaccine is available.

Hepatitis A and B

Editor's note: Three pages of Q&As titled "Hepatitis B and the Healthcare Worker" are answered by CDC experts on page 12 of Needle Tips.

What is the best way to prevent hepatitis A virus (HAV) infection?

Hepatitis A vaccination with the 2-dose series is the best way to prevent HAV infection. The first dose confers protection approximately 30 days following vaccination. If protection from HAV is needed sooner, immune globulin (IG) can be used for immediate protection. Protection from IG use lasts 3–5 months, depending upon the dosage used.

What are the new recommendations for the use of hepatitis A vaccine in children?

All children should receive two doses of hepatitis A vaccine beginning at age 1 year (i.e., 12–23 months). The two doses in the series should be administered at least 6 months apart. Children who are not vaccinated by age 2 years can be vaccinated at subsequent visits. States, counties, and communities with existing hepatitis A vaccination programs for children ages 2–18 years are encouraged to maintain these programs. In these areas, new efforts focused on routinely vaccinating 1-year-olds, should enhance, not replace, ongoing programs directed at a broader population of children. For a copy of the ACIP recommendations on hepatitis A, go to www.cdc.gov/mmwr/PDF/rr/rr5507.pdf.

What other groups are recommended to receive hepatitis A vaccination?

- Persons traveling to or working in countries that have high or intermediate endemicity of infection
- Men who have sex with men (MSM)
- Users of illegal injection and non-injection drugs
- Certain STD clients with risk factors such as those who are MSM or who use illegal drugs
- Persons who work with infected primates or with

(continued on page 21)

How do I interpret some of the common hepatitis B panel results?

Tests	Results	Interpretation	Vaccinate?
HBsAg anti-HBc anti-HBs	negative negative negative	susceptible	vaccinate if indicated
HBsAg anti-HBc anti-HBs	negative negative positive with ≥10mIU/mL*	immune due to vaccination	no vaccination necessary
HBsAg anti-HBc anti-HBs	negative positive positive	immune due to natural infection	no vaccination necessary
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive positive negative	acutely infected	no vaccination necessary
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive negative negative	chronically infected	no vaccination necessary (may need treatment)
HBsAg anti-HBc anti-HBs	negative positive negative	four interpretations possible†	use clinical judgment

*Postvaccination testing, when it is recommended, should be performed 1–2 months after the last dose of vaccine. Infants born to HBsAg-positive mothers should be tested 3–9 months after the last dose.

†1. May be recovering from acute HBV infection
2. May be distantly immune, but the test may not be sensitive enough to detect a very low level of anti-HBs in serum
3. May be susceptible with a false positive anti-HBc
4. May be chronically infected and have an undetectable level of HBsAg present in the serum

live hepatitis A virus

- Persons with clotting-factor disorders
- Persons with chronic liver disease

Hepatitis A vaccine is also recommended for any person wishing to obtain immunity.

Does VFC cover the cost of hepatitis A vaccine?

Yes, it covers the cost of the vaccine for all children through age 18 years who are VFC eligible.

Can pregnant women receive hepatitis A vaccine?

The safety of hepatitis A vaccination during pregnancy has not been determined; however, because hepatitis A vaccine is produced from inactivated HAV, the theoretic risk to the developing fetus is expected to be low. The risk associated with vaccination should be weighed against the risk for hepatitis A in pregnant women who might be at high risk for exposure to HAV.

Should persons who were tested for HBsAg in other countries be retested in the U.S.?

Regardless of where the original test was obtained, it is important to repeat a previous positive HBsAg test result to confirm acute or chronic HBV infection. Chronic infection can have lifelong ramifications for both the person and his family.

One of my foreign-born patients is HBsAg positive. How will this affect his application for legal status in the U.S.?

HBsAg-positive persons should be considered eligible for migration and adjustment-of-visa status. They should be counseled to receive recommended follow-up medical evaluation and ongoing disease monitoring in the U.S. Their family members should be evaluated as well.

What should I do for the many foreign-born children in my practice regarding hepatitis B?

In the U.S., hepatitis B vaccination is recommended for all children ages 0 through 18 years. Children born in high-endemic countries should be tested for HBsAg. Children who test negative for HBsAg and who have not been vaccinated should be given the hepatitis vaccine series. Children who test positive for HBsAg should receive appropriate medical follow-up. Household, sexual, and all needle-sharing contacts of HBsAg-positive persons should also be identified. Unvaccinated contacts should be tested for susceptibility to hepatitis B virus (HBV) infection and should be vaccinated if susceptible.

What treatment is available for persons with HBV infection?

While no specific treatment exists for persons with acute hepatitis B, persons who have chronic HBV infection require medical evaluation and regular monitoring. Therapeutic agents approved by the FDA for treatment of chronic hepatitis B can achieve sustained suppression of HBV replication and remission of liver disease in certain persons. Periodic screening with alfa fetoprotein or imaging studies has been demonstrated to enhance early detection of hepatocellular carcinoma (HCC). Chronically infected persons who have HCC have been reported to have experienced long-term survival after resection or ablation of small HCCs, and persons who were screened for HCC had a substantial survival advantage compared with historic controls.

Visit IAC's website: www.immunize.org

Hepatitis A and B lab tests

Hepatitis A lab nomenclature

anti-HAV: *Antibody to hepatitis A virus.* This diagnostic test detects total antibody of both IgG and IgM subclasses of HAV. Its presence indicates either acute or resolved infection.

IgM anti-HAV: *IgM antibody subclass of anti-HAV.* Its presence indicates a recent infection with HAV (6 mos or less). It is used to diagnose acute hepatitis A.

Hepatitis B lab nomenclature

HBsAg: *Hepatitis B surface antigen* is a marker of infectivity. Its presence indicates either acute or chronic HBV infection.

anti-HBs: *Antibody to hepatitis B surface antigen* is a marker of immunity. Its presence indicates an immune response to HBV infection, an immune response to vaccination, or the presence of passively acquired antibody. (It is also known as ***HBsAb,*** but this abbreviation is best avoided since it is often confused with abbreviations such as HBsAg.)

anti-HBc (total): *Antibody to hepatitis B core antigen* is a nonspecific marker of acute, chronic, or resolved HBV infection. It is *not* a marker of vaccine-induced immunity. It may be used in prevaccination testing to determine previous exposure to HBV infection. (It is also known as ***HBcAb,*** but this abbreviation is best avoided since it is often confused with other abbreviations.)

IgM anti-HBc: *IgM antibody subclass of anti-HBc.* Positivity indicates recent infection with HBV (within the past 6 mos). Its presence indicates acute infection.

HBeAg: *Hepatitis B "e" antigen* is a marker of a high degree of HBV infectivity, and it correlates with a high level of HBV replication. It is primarily used to help determine the clinical management of patients with chronic HBV infection.

Anti-HBe: *Antibody to hepatitis B "e" antigen* may be present in an infected or immune person. In persons with chronic HBV infection, its presence suggests a low viral titer and a low degree of infectivity.

HBV-DNA: *HBV Deoxyribonucleic acid* is a marker of viral replication. It correlates well with infectivity. It is used to assess and monitor the treatment of patients with chronic HBV infection.

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Video or DVD: "Immunization Techniques: Safe, Effective, Caring" (California Immunization Program, 2001). This 35-minute videotape or DVD presents practical information on vaccinating people of all ages. Excellent for training new staff and refreshing experienced staff. Comes with presenter notes and a skills checklist. $30 for videotape (VHS); $35 for DVD. Discounts on bulk purchases.

CD-ROM: "Vaccine Storage and Handling Toolkit" (CDC, June 2005). At $15, this is one of today's best immunization values. Includes (1) six guidelines that cover temperature monitoring, inventory management, troubleshooting, and other topics; (2) two videos: "How to Protect Your Vaccine Supply" and "Top 10 Storage and Handling Errors"; and (3) an array of print resources: forms, checklists, posters, and contact information. Priced at $15 per copy. Discounts on bulk purchases.

Video: "How to Protect Your Vaccine Supply"
(CDC, updated June 2005). This 23-minute videotape (VHS) covers the basics of vaccine handling and storage, including temperature monitoring equipment, required documentation and record-keeping, storage and handling procedures, and action steps to take when a problem occurs. Includes 8-minute bonus video "Top 10 Storage and Handling Errors." Priced at $15 per copy. Discounts on bulk purchases.

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IAC's versions of both recommended U.S. immunization schedules (childhood and adult) are now available. Both are in full color and come complete with essential footnotes. Prices start at $4 each for the two-sided childhood/adolescent schedule and $5 each for the four-sided adult schedule. Discounts on bulk purchases.

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Essential Immunization Resources from IAC

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