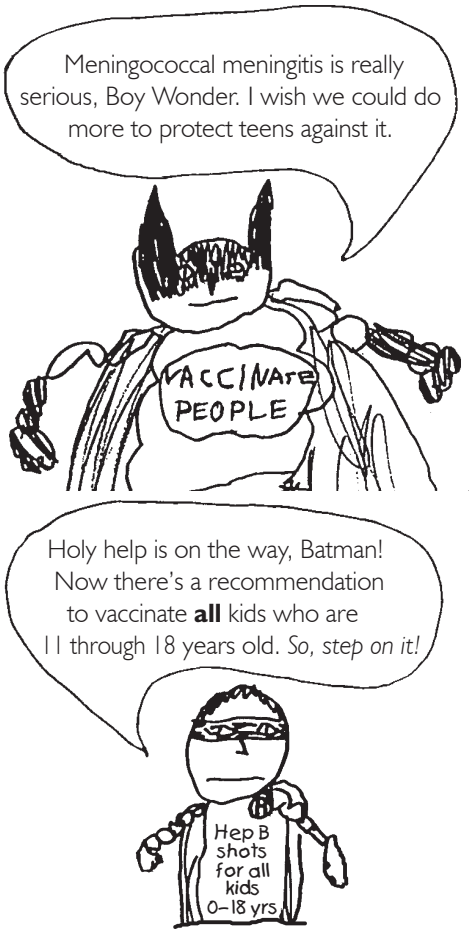
Volume 17 – Number 2 October 2007

NEEDLE TIPS

and the Hepatitis B Coalition News

Visit www.immunize.org for up-to-date immunization information from the Immunization Action Coalition



WHAT YOU'LL FIND INSIDE:

Ask the Experts

IAC extends thanks to our experts, William L. Atkinson, MD, MPH, and Andrew T. Kroger, MD, MPH, medical epidemiologists at the National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention (CDC); and Joanna Buffington, MD, MPH, medical epidemiologist, Division of Viral Hepatitis (DVH), CDC; 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 do I become a Vaccines for Children (VFC) provider?

Contact your State/Territory VFC Program Coordinator. Phone numbers are available at www.immunize.org/coordinators. Ask for a Provider Enrollment Package to be mailed to you.

Who is eligible to receive VFC vaccine?

Approximately 45% of U.S. children age 0–18 years receive vaccines under the VFC program. A child is eligible if they meet one of these criteria: (1) is Medicaid eligible, (2) is uninsured, (3) is an American Indian or Alaska Native, or (4) is underinsured (i.e., has a health insurance benefit plan that does not include vaccinations). Underinsured children are eligible to receive VFC vaccine only at a Federally Qualified Health Center (FQHC) or Rural Health Clinic (RHC).

Do I need to verify my patient's residency status before using VFC vaccine?

No. The CDC website www.cdc.gov/vaccines/programs/VFC/projects/faq-elig.htm states that the only criteria are age (age 18 years or younger) and the four eligibility criteria listed previously. No other factors (e.g., residency status) can be considered when screening for eligibility requirements for the VFC program.

(continued on page 18)

Needle Tips

Online at www.immunize.org/nt
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www.vaccineinformation.org
www.hepprograms.org
www.izcoalitions.org

Needle Tips is a semiannual publication of the Immunization Action Coalition (IAC) written for health professionals. All content is reviewed by the Centers for Disease Control and Prevention (CDC) for technical accuracy, with the exception of opinion pieces written by non-CDC authors. This publication is supported in part by CDC Grant Nos. 5U66IP524042 and 1U62PS523259. The content is solely the responsibility of IAC and does not necessarily represent the official views of CDC. Circulation is approximately 190,000. ISSN 1526-1816.

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IAC publishes two free email news services *(IAC Express* and *Hep Express)* and three free print periodicals *(Needle Tips, Vaccinate Adults,* and *Vaccinate Women).* To subscribe to any or all of them, go to www.immunize.org/subscribe.

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; HBsAg screening for all pregnant women; testing and vaccination for high-risk groups; and education and treatment for people chronically infected with hepatitis B.

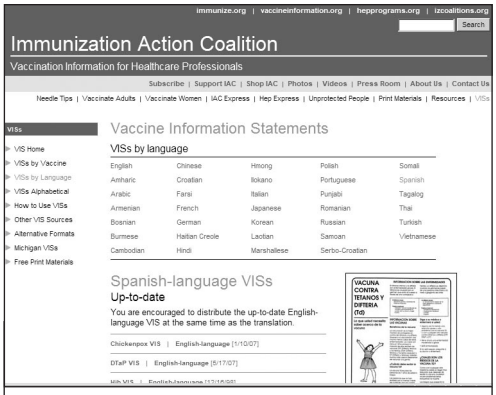
Immunization Action Coalition's most popular web sections are newly designed, easy to use

Whether you're a newcomer or a frequent visitor to the Immunization Action Coalition's (IAC's) website for health professionals, **www.immunize.org,** it's an exciting time to stop by for a visit. IAC is moving forward with a comprehensive redesign of the website. The changes to the layout are designed to make it easier for you to find the breadth of information that is available about childhood, adolescent, and adult immunization. We're redesigning it in such a way that you'll find what you need quickly and come back often.

IAC unveils the new design with some of our most popular web sections: **Vaccine Information Statements**, **Ask the Experts**, and **IAC's print and electronic periodicals.**

Vaccine Information Statements (VISs)

IAC's most frequently visited web section is the VIS home page, the main stop for thousands of visitors each day. Navigate to **www.immunize.org/vis** and download



www.immunize.org/vis

up-to-date VISs in more than 30 languages, including English. All VISs on IAC's site are in ready-to-print (PDF) format. In addition, you'll find instructions from the government about how VISs should be used.

Ask the Experts

Another "hot spot" on immunize.org is the Ask the Experts web section. At **www.immunize.org/askexperts,** you'll find compilations of more than 1,000 Q&As about immunization and viral hepatitis that have appeared in past issues of IAC's periodicals, *Needle Tips, Vaccinate Adults,* and *Vaccinate Women.* The Q&As are written by CDC immunization experts William L. Atkinson, MD, MPH, and Andrew T. Kroger, MD, MPH; and hepatitis expert Joanna Buffington, MD, MPH. The main page now features a disease/vaccine index and offers users an index of subtopics pertinent to the disease/vaccine, such as schedule, administration, and contraindications, as well as tables and other graphic elements that organize and explain complex information. Ask the Experts Q&As are reviewed annually. To access them, go to **www.immunize.org/askexperts**.

Periodicals and E-publications

IAC's free print periodicals and e-publications for health professionals are also online and feature the new design. Current issues (and complete archives) are available to share with medical and nursing staff.

Needle Tips: **www.immunize.org/nt**

Vaccinate Adults: **www.immunize. org/va**

Vaccinate Women: **www.immunize.org/vw**

IAC Express: **www.immunize.org/express**

Hep Express: **www.hepprograms.org/hepexpress**

If you aren't familiar with some of these publications and would like to learn about them, visit the links above. In addition, you can subscribe to all of them (they're free of charge) at **www.immunize.org/subscribe**.

Future plans for redesign

The next immunize.org web sections "in the works" for redesign are IAC's free print materials section, **www.immunize.org/free**, and our journal articles section, **www.immunize.org/journals**. So check back often to see what's new.

Also, make sure you're a subscriber to *IAC Express* so you can stay up to date about what's new at **www.immunize.org** and in the world of immunization. *IAC Express* is published every Monday and it's free! Subscribe at **www.immunize.org/subscribe**.

Visit IAC's popular web sections!

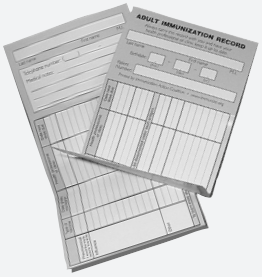
Vaccine Information Statements
www.immunize.org/vis

Ask the Experts
www.immunize.org/askexperts

IAC's free periodicals and email news
www.immunize.org/subscribe

If you have a website, please link to IAC!
www.immunize.org
www.vaccineinformation.org

Immunization record cards available for all ages—For children & teens, for adults, and for a lifetime!



Now you can give any patient a permanent vaccination record card designed specifically for their age group: child & teen, adult, or lifetime. The three cards list all vaccines recommended for each age. The cards are printed on durable rip-, smudge-, and water-proof paper. Wallet-sized when folded, the cards are brightly colored to stand out. To view the cards or for more details, go to www.immunize.org/shop and click on the images.

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/shop, 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"

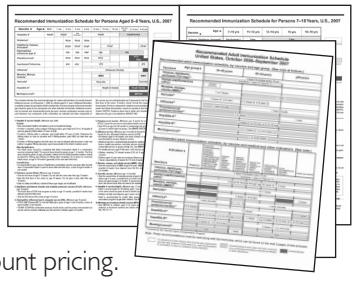
developed by California Dept. of Health Services Immunization Branch

Cost is $30 for VHS video; $35 for DVD.

For 20 or more copies, contact us for discount pricing. To order, visit www.immunize.org/shop, or 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



Here are the ACIP/AAP/AAFP-approved immunization schedule for people ages 0–18 years and the ACIP/AAFP/ACOG/ACP-approved schedule for adults. Both are laminated for heavy-duty use, complete with essential footnotes, and printed in color for easy reading. The cost is $5 for each schedule and only $3 each for five or more copies. For 20 or more copies, contact us for discount pricing.

To order, visit www.immunize.org/shop, or 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, 2007.

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 on Oct. 24–25, 2007, and Feb. 27–28, 2008. For more information including details about registration procedures, visit www.cdc.gov/vaccines/recs/acip.

ACIP recommendations

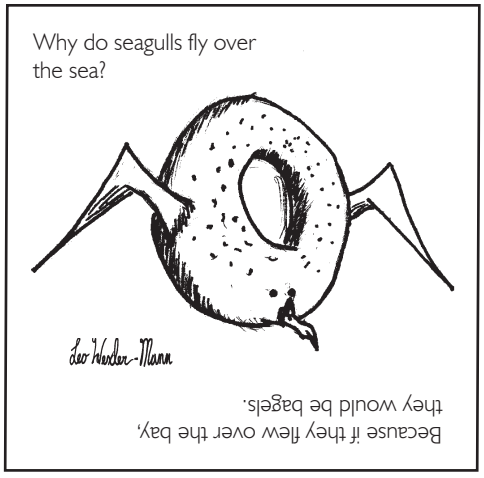
ACIP periodically issues public health recommendations on the use of vaccines. Clinicians who vaccinate should have a current set for reference. Published in the *Morbidity and Mortality Weekly Report (MMWR),* ACIP recommendations are easily available. Here are sources:

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

Recently published ACIP recommendations:

- "Revised Recommendations of ACIP to Vaccinate All Persons Aged 11–18 Years with Meningococcal Conjugate Vaccine" (8/10/07)
- "Prevention and Control of Influenza" (7/13/07)
- "Prevention of Varicella" (6/22/07)
- "Quadrivalent Human Papillomavirus Vaccine" (3/23/07)

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



Influenza news

On July 16, CDC released the VIS for trivalent inactivated influenza vaccine (TIV; injectable) and the VIS for live, attenuated intranasal influenza vaccine (LAIV; nasal spray). Both are intended for use during the 2007–08 influenza vaccination season. In the event that the licensing information for LAIV vaccine is changed, CDC will issue an updated VIS for LAIV. To access the 2007–08 VIS for TIV vaccine, go to www.immunize.org/vis/2flu.pdf. To access the 2007–08 VIS for LAIV vaccine, go to www.immunize.org/vis/liveflu.pdf.

On July 13, CDC published the ACIP recommendations "Prevention and Control of Influenza" for 2007. It includes new or updated information on the following: (1) emphasis on the importance of administering 2 doses of vaccine to all children age 6 months–8 years if they have never been vaccinated with either nasal spray or injectable influenza vaccine; (2) recommendation that children age 6 months–8 years who received only 1 dose in their first year of vaccination receive 2 doses the following year; (3) recommendation that all persons, including school-age children, who want to reduce the risk of becoming ill with influenza or of transmitting influenza to others be vaccinated; (4) emphasis on immunization providers offering influenza vaccine and scheduling immunization clinics throughout the influenza season; (5) recommendation that healthcare facilities consider the level of vaccination coverage among healthcare personnel (HCP) as one measure of a patient-safety quality program and implement policies to encourage HCP vaccination. To read the complete recommendations, go to www.cdc.gov/mmwr/PDF/rr/rr5606.pdf.

On April 17, FDA approved avian influenza virus vaccine H5N1 (sanofi pasteur), the first such vaccine approved for use in humans in the U.S. It is intended for use in persons age 18–64 years who are at increased risk of exposure to the H5N1 influenza virus subtype contained in the vaccine. To view the package insert, go to www.fda.gov/cber/label/h5n1san041707LB.pdf.

HPV news

On March 23, CDC published the ACIP recommendations "Quadrivalent Human Papillomavirus Vaccine." It calls for vaccination of girls and women age 9–26 years and routine 3-dose vaccination for girls at age 11–12 years. The recommendations are available at www.cdc.gov/mmwr/PDF/rr/rr5602.pdf.

Viral hepatitis news

On July 18, CDC released an interim VIS for hepatitis B vaccine; it stresses that the birth dose of the vaccine is now recommended for ALL newborns before hospital discharge. To access the interim VIS, go to www.immunize.org/vis/hepb01.pdf.

On April 9, the American Academy of Pediatrics Committee on Infectious Diseases issued a policy statement, "Hepatitis A Vaccine Recommendations," which recommends that all children receive hepatitis A vaccination at age 1 year. To access the policy statement, go to www.cispimmunize.org/ill/pdf/HepAAAPPolicy.pdf.

On March 28, FDA approved an accelerated dosing schedule for Twinrix® [Hepatitis A (Inactivated) and Hepatitis B (Recombinant) Vaccine, GSK]. The accelerated schedule could benefit in-

dividuals traveling to high-risk areas; emergency responders, especially those being deployed to disaster areas overseas; and others who are at risk for hepatitis A and B viral infections. To view the package insert, go to www.fda.gov/cber/label/hahbgsk032807LB.pdf.

Varicella news

On June 22, CDC published the ACIP recommendations "Prevention of Varicella." It calls for a routine 2-dose varicella vaccination program for children and second-dose catch-up varicella vaccination for children, adolescents, and adults who previously had received only 1 dose. The recommendations are available at www.cdc.gov/mmwr/pdf/rr/rr5604.pdf.

On June 18, CDC announced that Merck is temporarily suspending production of varicella zoster virus (VZV) bulk, which is used to manufacture varicella vaccine, MMR-V vaccine, and zoster vaccine. Stocks of ProQuad® (MMR-V) were depleted as of June 15. Current projections are for adequate supply to fully implement the recommended immunization schedule for varicella vaccine for all age groups and for the recommended use of zoster vaccine. For updated information, go to www.cdc.gov/vaccines/vac-gen/shortages.

Meningococcal news

On Aug.16, CDC released a revised interim VIS for meningococcal vaccines; the revisions make the VIS consistent with the revised ACIP recommendations, published on Aug. 10 (see the following paragraph). To access the revised interim VIS, go to www.immunize.org/vis/menin06.pdf.

On Aug.10, CDC published a notice to *MMWR* readers that outlines specific information about revised recommendations for meningococcal conjugate vaccine (MCV4; Menactra™, sanofi pasteur). Healthcare providers should vaccinate previously unvaccinated persons age 11–18 years with MCV4 at the earliest possible healthcare visit. ACIP encourages healthcare providers to vaccinate with MCV4 throughout the year to minimize seasonal increases in vaccine demand during July and August when students prepare to return to school from summer vacation. To read the complete *MMWR* notice, go to www.cdc.gov/mmwr/preview/mmwrhtml/mm5631a3.htm.

Looking for your state health department's immunization and hepatitis coordinators?

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

Looking for the latest VISs and vaccine recommendations?

www.immunize.org/newreleases

Rotavirus news

In the March 16 *MMWR,* CDC published a report on the data gathered in the first year of postmarketing monitoring for intussusception after RotaTeq® vaccination in the U.S. The data do not suggest that RotaTeq is associated with intussusception. The reported number of intussusception cases among infants vaccinated with RotaTeq reported through the Vaccine Adverse Event Reporting System does not exceed the number of expected background cases. To access the article, go to www.cdc.gov/mmwr/preview/mmwrhtml/mm5610a3.htm.

CDC resources

On Aug.1, CDC launched a multi-media, bilingual campaign to vaccinate pre-teens and adolescents. The campaign's primary audiences are the parents and guardians of pre-teens and adolescents, as well as pediatricians, family physicians, and their staffs. The campaign stresses vaccinating all 11- and 12-year-olds against meningococcal disease (MCV4) and tetanus-diphtheria-pertussis (Tdap), and 11- and 12-year-old girls against human papillomavirus (HPV). It also encourages pre-teens and adolescents to get caught up on missed childhood vaccines, such as those that protect against hepatitis B, measles-mumps-rubella, polio, and varicella. For resources for parents and healthcare professionals, go to www.cdc.gov/vaccines/specgrps/preteens-adol.htm.

In July, CDC released the 2008 edition of "Health Information for International Travel" (the Yellow Book). For more information, including ordering information, go to wwwn.cdc.gov/travel/contentYellowBook.aspx.

In June, CDC's National Center for Immunization and Respiratory Diseases (NCIRD) launched its new Vaccines & Immunizations website. It replaces the previous website (www.cdc.gov/nip) and offers users new resources and a new look. To access the new site, go to www.cdc.gov/vaccines.

In May, the IAC website posted the CDC booklet "Childcare and School Immunization Requirements: 2005–06." To access the entire booklet go to www.cdc.gov/vaccines/vac-gen/laws/downloads/izlaws05-06.pdf. For additional information on state-by-state vaccination mandates including maps, visit www.immunize.org/laws.

Additional resources

In its June 15 online issue, the journal *Clinical Infectious Diseases* published an article titled "Actions to Strengthen Adult and Adolescent Immunization Coverage in the United States: Policy Principles of the Infectious Diseases Society of America." To access the article, go to www.journals.uchicago.edu/CID/journal/issues/v44n12/51160/51160.web.pdf.

In May, the National Institute of Allergy and Infectious Diseases, published "The Jordan Report: Accelerated Development of Vaccines 2007." To access the report, go to www3.niaid.nih.gov/about/organization/dmid/PDF/Jordan2007.pdf.

Looking for IAC's new and updated free print materials for patients and staff?

www.immunize.org/new

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/vaccines/pubs/vis (has VISs in English) or IAC's website at www.immunize.org/vis (has VISs in more than 30 languages).

DTaP/DT/DTP.....5/17/07	PCV..... 9/30/02
hepatitis A.....3/21/06	PPV..... 7/29/97
hepatitis B 7/18/07	polio 1/1/00
Hib 12/16/98	rabies 1/12/06
HPV (H. papillomavirus)...2/2/07	rotavirus 4/12/06
influenza (LAIV) ..7/16/07	shingles..... 9/11/06
influenza (TIV) 7/16/07	Td 6/10/94
Japan. enceph. ..5/11/05	Tdap 7/12/06
meningococcal.... 8/16/07	typhoid 5/19/04
MMR.....1/15/03	varicella 1/10/07
yellow fever.....11/9/04	

Looking for recent media articles about vaccines?

www.immunize.org/vaccinenews

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 related issues	Contraindications and precautions (mild illness is not a contraindication)
Hepatitis B *Give IM*	• Vaccinate all children age 0 through 18yrs. • Vaccinate all newborns with monovalent vaccine prior to hospital discharge. Give dose #2 at age 1–2m and the final dose at age 6–18m (the last dose in the infant series should not be given earlier than age 24wks). After the birth dose, the series may be completed using 2 doses of single-antigen vaccine or up to 3 doses of Comvax (ages 2m, 4m, 12–15m) or Pediarix (ages 2m, 4m, 6m), which may result in giving a total of 4 doses of hepatitis B vaccine. • **If mother is HBsAg-positive:** give the newborn HBIG + dose #1 within 12hrs of birth; complete series at age 6m or, if using Comvax, at age 12–15m. • **If mother's HBsAg status is unknown:** give the newborn dose #1 within 12hrs of birth. If 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 age 0 through 19yrs, give 0.5 mL of either Engerix-B or Recombivax HB. **Alternative dosing schedule for unvaccinated adolescents age 11 through 15yrs:** Give 2 doses Recombivax HB 1.0 mL (adult formulation) spaced 4–6m apart. (Engerix-B is not licensed for a 2-dose schedule.) **For preterm infants:** Consult ACIP hepatitis B recommendations (*MMWR* 2005; 54 [RR-16]).	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **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 dose of 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.	
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 age 18yrs 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 papilloma-virus (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 girls and women (through age 26yrs) who were 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.

*This document was adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP). To obtain copies of the recommendations, call the CDC-INFO Contact Center at (800) 232-4636; visit CDC's website at www.cdc.gov/vaccines/pubs/ACIP-list.htm; or visit the Immunization Action Coalition (IAC) website at www.immunize.org/acip. This table is revised periodically. Visit IAC's website at www.immunize.org/childrules to make sure you have the most current version.

Technical content reviewed by the Centers for Disease Control and Prevention, Sept. 2007.

www.immunize.org/catg.d/p2010.pdf • Item #P2010 (9/07)

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 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 age 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 not related to HIV. **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. **Note:** For patients with humoral immunodeficiency, HIV infection, or leukemia, or for patients on high doses of systemic steroids, see ACIP recommendations*.
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 age 12m, 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 age 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*	• Vaccinate all persons age 6m or older, including school-aged children, wanting to reduce their risk of becoming ill with influenza or of spreading it to others. • Vaccinate all children age 6–59m, as well as all siblings and household contacts of children age 0–59m. • Vaccinate persons age 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. • LAIV may be given to healthy, non-pregnant persons age 5–49yrs. • Give 2 doses to first-time vaccinees age 6m through 8yrs. For TIV, space 4wks apart; for LAIV, space 6wks apart. • For TIV, give 0.25 mL dose to children age 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 age 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 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 age 2m, 4m, 6m, 12–15m (booster dose). • PedvaxHIB or Comvax (containing PRP-OMP): give at age 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 3 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 4wks after previous dose. • If #1 was given at age 7–11m, only 3 doses are needed; #2 is given 4–8wks after #1, then boost at age 12–15m (wait at least 8wks after dose #2). **PedvaxHIB and Comvax:** • #2 may be given 4wks after dose #1.	**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 age 24–59m. • Give 2 doses at least 8wks apart to unvaccinated high-risk** children age 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.	• For age 7–11m: If history of 0–2 doses, give additional doses 4wks apart with no more than 3 total doses by age 12m; then give booster 8wks later. • For age 12–23m: If 0–1 dose before age 12m, give 2 doses at least 8wks apart. If 2–3 doses before age 12m, give 1 dose at least 8wks after previous dose. • For age 24–59m: If patient has had no previous doses, or has a history of 1–3 doses given before age 12m but no booster dose, or has a history of only 1 dose given at age 12–23m, give 1 dose now.	**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 age 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 age 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** (MPSV) *Give SC*	• Give 1-time dose of MCV4 to adolescents age 11 through 18yrs. • Vaccinate all college freshmen living in dorms who have not been vaccinated. • Vaccinate all children age 2yrs and older who have any of the following risk factors (use MPSV 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).	If previously vaccinated with MPSV and risk continues, give MCV4 5yrs after MPSV. **Note:** MCV4 is not licensed for use in children younger than age 11yrs.	**Contraindication** Previous anaphylaxis 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 (GBS).

Summary of Recommendations for Adult Immunization

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*	• All persons wanting to reduce the likelihood of becoming ill with influenza or of spreading it to others. • Persons age 50yrs and older. • Persons with medical problems (e.g., heart disease, lung disease, diabetes, renal dysfunction, hemoglobinopathy, immunosuppression). • 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 living in chronic care facilities. • Persons working or living with at-risk people. • Women who will be pregnant during the influenza season (December–March). • All healthcare personnel and other persons who provide direct care to at-risk people. • Household contacts and out-of-home caregivers of children age 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). • Students or other persons in institutional settings (e.g., dormitory residents).	• Give 1 dose every year in the fall or winter. • Vaccine should be given as soon as it is available and should continue until the supply is depleted. • Continue to give vaccine to unvaccinated adults throughout the influenza season (including when influenza activity is present in the community) and at other times when the risk of influenza exists.	**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 (GBS) within 6wks of previous TIV.
Influenza Live attenuated influenza vaccine (LAIV) *Give intranasally*	• All persons wanting to reduce the likelihood of becoming ill with influenza or of spreading it to others. • Healthy, non-pregnant persons age 49yrs and younger who meet any of the criteria listed below. - Working or living with at-risk people as listed in the section above. - Healthcare personnel 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 age 0–59m. - Travelers who may be among people from areas of the world where there is current influenza activity (e.g., on organized tours). - Students or other persons in institutional settings (e.g., dormitory residents).		**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 current receipt of immunosuppressive therapy; history of GBS. **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 1-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 65yrs 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.

*This document was adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP). To obtain copies of these recommendations, call the CDC-INFO Contact Center at (800) 232-4636; visit CDC's website at www.cdc.gov/vaccines/pubs/ACIP-list.htm; or visit the Immunization Action Coalition (IAC) website at www.immunize.org/acip. This table is revised periodically. Visit IAC's website at www.immunize.org/adultrules to make sure you have the most current version.

Technical content reviewed by the Centers for Disease Control and Prevention, September 2007.

www.immunize.org/catg.d/p2011.pdf • Item #P2011 (9/07)

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 (HepB) *Give IM* Brands may be used interchangeably.	• All persons through age 18yrs. • All adults wishing to obtain immunity against hepatitis B virus infection. • High-risk persons, including household contacts and sex partners of HBsAg-positive persons; injecting drug users; sexually active persons not in a long-term, mutually monogamous relationship; men who have sex with men; persons with HIV or a recently diagnosed STD; patients receiving hemodialysis and patients with renal disease that may result in dialysis; healthcare personnel and public safety workers who are exposed to blood; clients and staff of institutions for the developmentally disabled; inmates of long-term correctional facilities; and certain international travelers. • Persons with chronic liver disease. **Note:** Provide serologic screening for immigrants from endemic areas. If patient is chronically infected, assure appropriate disease management. Screen sex partners and household members; give HepB at the same visit if not already vaccinated.	• 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]) for patients age 18yrs and older only: 3 doses are needed on a 0, 1, 6m schedule. An accelerated schedule can also be used at 0, 7, 21–30d, and a booster at 12m.	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Hepatitis A (HepA) *Give IM* Brands may be used interchangeably.	• All persons wishing to obtain immunity to hepatitis A virus infection. • 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 appropriate. **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-toxoid-containing vaccine. • A booster dose of tetanus- and diphtheria-toxoid-containing vaccine 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. **For Tdap only:** • All adults younger than age 65yrs who have not already received Tdap. • Healthcare personnel 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 personnel) who have not received a dose of Tdap should be prioritized for vaccination.	• For persons who are unvaccinated or behind, complete the primary series with Td (spaced at 0, 1–2m, 6–12m intervals). One-time dose of Tdap may be used for any dose if age 18–64yrs. • Give Td booster every 10yrs after the primary series has been completed. For adults age 18–64yrs, 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. **Note:** The two Tdap products are licensed for different age groups: Adacel™ (sanofi) for use in persons age 11–64yrs and Boostrix® (GSK) for use in persons age 10–18yrs.	**Contraindications** • Previous anaphylactic reaction to this vaccine or to any of its components. • For Tdap only, history of encephalopathy within 7d following DTP/DTaP. **Precautions** • Moderate or severe acute illness. • GBS within 6wks of receiving a previous dose of tetanus-toxoid-containing vaccine. • Unstable neurologic condition. • History of arthus reaction following a previous dose of tetanus- and/or diphtheria-toxoid-containing vaccine, including MCV4. **Note:** Use of Td/Tdap is not contraindicated in pregnancy. Either vaccine may be given during trimester #2 or #3 at the provider's discretion.
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 Nigeria). 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. **Note:** Evidence of immunity is defined as a history of 2 doses of varicella vaccine; born in the U.S. before 1980 (exception: healthcare personnel and pregnant women); a history of varicella disease or herpes zoster based on healthcare provider diagnosis; laboratory evidence of immunity; and/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 malignancy and primary or acquired cellular immunodeficiency, including HIV/AIDS (although vaccination may be considered if CD4+ T-lymphocyte counts are greater than or equal to 200 cells/μL. See *MMWR* 2007;56,RR-4). **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. **Note:** For those on high-dose immunosuppressive therapy, consult ACIP recommendations regarding delay time.*
Meningococcal Conjugate vaccine (MCV4) *Give IM* Polysaccharide vaccine (MPSV4) *Give SC*	• All persons age 11 through 18yrs. • College freshmen living in dormitories. • Persons 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 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 (GBS).
MMR (Measles, mumps, rubella) *Give SC*	• Persons born in 1957 or later (especially those born outside the U.S.) should receive at least 1 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 personnel, students entering college and other post–high school educational institutions, and international travelers, should receive a total of 2 doses. • Persons born before 1957 are usually considered immune, but proof of immunity (serology or vaccination) may be desirable for healthcare personnel. • Women of childbearing age who do not have acceptable evidence of rubella immunity or vaccination.	• One or 2 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 (i.e., CD4+ T-lymphocyte counts are less than 200 cells/μL). **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 on a 0, 2, 6m schedule. • The minimum interval between doses #1 and #2 is 4wks, and between #2 and #3 is 12wks.	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precaution** Data on vaccination in pregnancy are limited. Vaccination should be delayed until after completion of the pregnancy.
Zoster (shingles) (Zos) *Give SC*	ACIP has voted to recommend herpes zoster (shingles) vaccine for all persons age 60yrs and older who do not have contraindications. Provisional recommendations are online at www.cdc.gov/vaccines/recs/provisional/default.htm#acip.		

Guidelines for Standing Orders in Labor & Delivery and Nursery Units to Prevent Hepatitis B Virus (HBV) Transmission to Newborns

In December 2005, the Centers for Disease Control and Prevention (CDC) published new recommendations of the Advisory Committee on Immunization Practices (ACIP) for prevention of hepatitis B virus (HBV) infections in infants and children. The American Academy of Pediatrics, American Academy of Family Physicians, and American College of Obstetricians and Gynecologists have endorsed these recommendations. To obtain a copy, go to www.cdc.gov/mmwr/PDF/rr/rr5416.pdf.

The guidelines below were developed to help all hospitals establish standing orders and protocols in their labor and delivery and nursery units. The content has been reviewed by CDC staff for consistency with CDC recommendations.

To protect all infants, CDC recommends that all delivery hospitals **institute standing orders and protocols** to ensure healthcare professionals do the following:

- Administer hepatitis B vaccine to all newborns who weigh at least 2 kg (4.4 lb) before discharge from the nursery.
- Identify all infants born to mothers who are hepatitis B surface antigen (HBsAg) positive or to mothers with unknown HBsAg status. Administer appropriate immunoprophylaxis to all these infants.

Labor and Delivery (L&D) Procedures

Upon admission, review the HBsAg[1] status of all pregnant women. Be sure to review a copy of the mother's *original* laboratory report to verify that the correct test was performed during this pregnancy and to verify the test date. Do not rely on a transcribed test result!

For women with a documented HBsAg lab report

- Place a copy of the *original* laboratory report of the mother's HBsAg[1] test result into (1) the mother's L&D record and (2) the infant's medical record.
- If the mother is HBsAg positive, alert the nursery staff.
- If the mother is HBsAg negative during a prenatal visit but was at risk for acquiring HBV infection during this pregnancy (e.g., not in a long-term, mutually monogamous relationship; had an HBsAg-positive sex partner; had evaluation or treatment for a sexually transmitted disease; currently uses or recently used injection drugs), perform a repeat test for HBsAg.[1] Instruct the laboratory to call L&D and the nursery with the HBsAg test result ASAP.

For women without a documented HBsAg lab report

- Perform HBsAg[1] testing ASAP on women who do not have a documented HBsAg test result from the current pregnancy.
- Instruct the lab to call L&D and the nursery with the newly obtained HBsAg test result ASAP.

Nursery Procedures

Procedures to follow for **ALL** newborns

1. Review a copy of the mother's *original* HBsAg[1] lab report to ensure test was ordered and interpreted accurately.
2. Provide appropriate management based on (1) the mother's HBsAg status and (2) the infant's birth weight. Manage infants who weigh less than 2 kg differently from those who weigh 2 kg or more. See descriptions below and footnotes 2, 5, 6.
3. Give the mother an immunization record card that includes the hepatitis B vaccination date. Explain the need for the complete hepatitis B vaccine series to protect her baby. Remind her to bring the card with her each time her baby sees a provider.

For infants born to HBsAg-negative mothers

Administer single-antigen hepatitis B vaccine (0.5 mL, IM) before discharge to all infants weighing at least 2 kg at birth.[2, 3, 4] Document the hepatitis B vaccine dose in the infant's medical record, including date, time, site of administration, and lot number.

For infants born to mothers with unknown HBsAg status

Administer single-antigen hepatitis B vaccine (0.5 mL, IM) within 12 hours of birth.[3, 5] Do not wait for test results to return before giving this dose of vaccine. Document the hepatitis B vaccine dose appropriately.

- Confirm that the laboratory has received serum for the mother's HBsAg[1] test. Verify when the HBsAg result will be available and that it will be reported to L&D and the nursery ASAP. If the nursery does not receive the report at the expected time, call the laboratory for the result.
- If the mother's HBsAg[1] test result is positive, do the following:
  - Administer hepatitis B immune globulin (HBIG 0.5 mL, IM) to the infant ASAP. Document the HBIG dose appropriately in the infant's medical record. There is little benefit in giving HBIG if more than 7 days have elapsed since birth.
  - Alert the mother's and infant's physician(s) of the test result.
  - Follow the instructions below for infants born to HBsAg-positive mothers.
- If the infant must be discharged before the HBsAg result is known:
  - Document contact information for the parents (e.g., addresses, telephone numbers, emergency contacts) in case further treatment is needed.
  - Obtain the name, address, and phone number of the mother's and the infant's healthcare providers.
  - Notify the mother's and the infant's healthcare providers that the mother's HBsAg test result is pending.

For infants born to HBsAg-positive mothers

- Administer HBIG (0.5 mL, IM) and single-antigen hepatitis B vaccine[3, 6] (0.5 mL, IM) at separate injection sites within 12 hours of birth. Document the hepatitis B vaccine and HBIG doses appropriately in the infant's medical record.
- Notify the local or state health department of the infant's birth and the date and time of administration of HBIG and hepatitis B vaccine doses.
- Obtain the name, address, and phone number of the infant's primary care provider. Notify the provider of the infant's birth, the date and time of HBIG and hepatitis B vaccine doses administered, and the importance of additional on-time vaccination and postvaccination testing of the infant for HBsAg and antibody to HBsAg after completion of the hepatitis B vaccine series.
- Provide advice to the mother. Tell her (1) that she may breast-feed her infant upon delivery, even before hepatitis B vaccine and HBIG are given; (2) about the importance of her infant completing the full hepatitis B vaccine series on schedule; (3) that blood will need to be drawn from the infant after completion of the hepatitis B vaccine series at age 9–18 months to determine if the infant needs further management; (4) about modes of HBV transmission and the need for testing and vaccination of susceptible household, sexual, and needle-sharing contacts; (5) that she needs to have a medical evaluation for chronic hepatitis B, including an assessment of whether she is eligible for antiviral treatment.

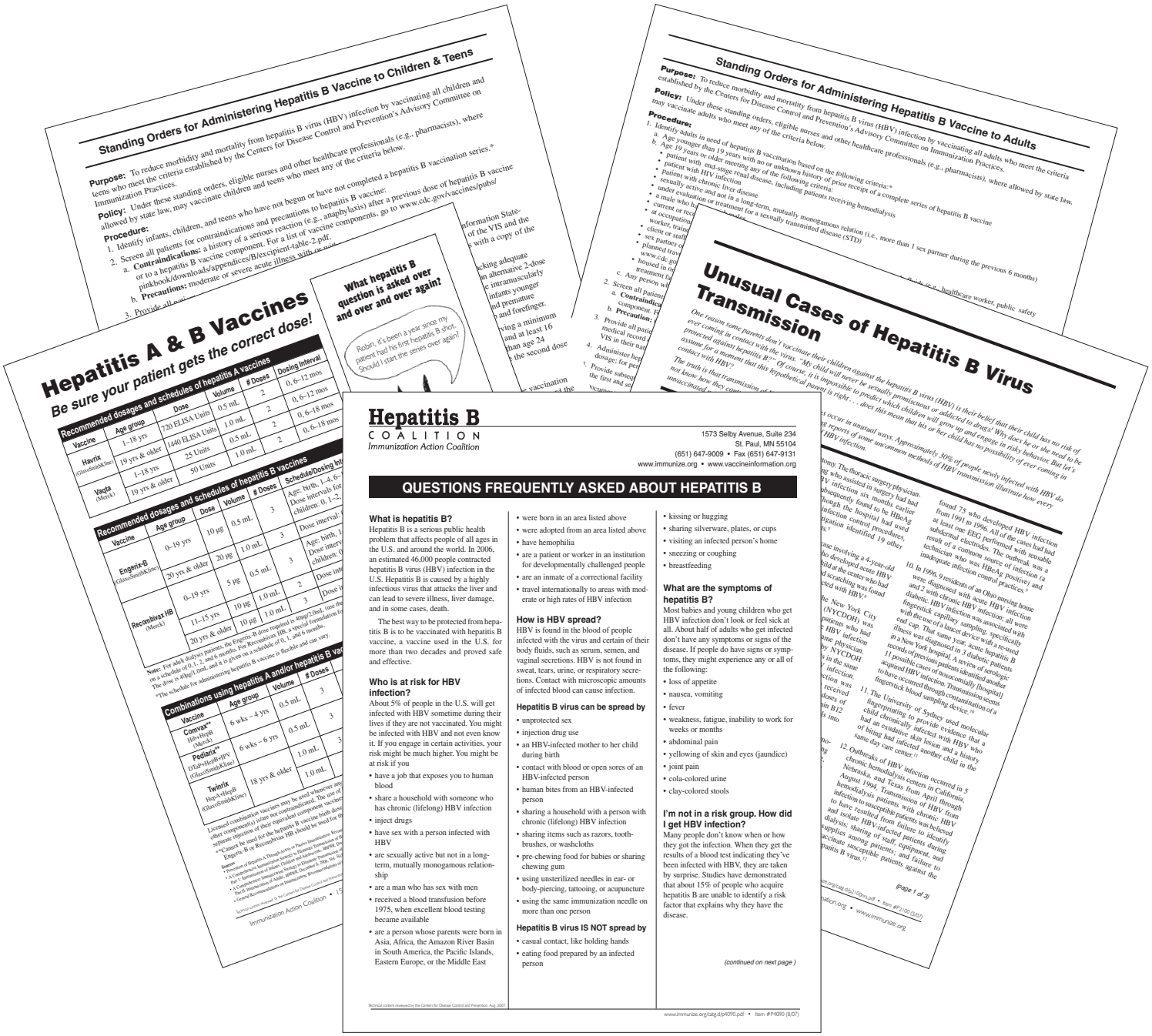
Footnotes

1. Be sure the correct test for HBsAg (hepatitis B surface antigen) was/is ordered. The HBsAg test should not be confused with other hepatitis B serologic tests, including antibody to HBsAg (anti-HBs or HBsAb) and antibody to hepatitis B core antigen (anti-HBc or HBcAb).
2. Infants weighing less than 2 kg whose mothers are documented to be HBsAg negative should receive the first dose of vaccine 1 month after birth or at hospital discharge. The mother's HBsAg status must be part of the infant's medical record.
3. Federal law requires that you give parents a Hepatitis B Vaccine Information Statement (VIS) before vaccine administration. To obtain a VIS, download it from the IAC website at www.immunize.org/vis or call your state health department.
4. Exceptions to giving the birth dose of hepatitis B vaccine are allowed on a case-by-case basis and only in rare circumstances. If a birth dose is not administered, a copy of the mother's negative HBsAg test result from the current pregnancy must be placed in the infant's medical record and the attending physician must write a specific order directing staff not to administer the birth dose in the hospital. Infants who don't receive the first dose of hepatitis B vaccine before hospital discharge should receive the first dose no later than age 2 months.
5. An infant weighing less than 2 kg whose mother's HBsAg status is unknown should receive HBIG and hepatitis B vaccine within 12 hours of birth. Do not count the hepatitis B vaccine dose as the first dose in the vaccine series. Reinitiate the full hepatitis B vaccine series at age 1–2 months.
6. An infant weighing less than 2 kg whose mother is HBsAg positive should receive the first dose of hepatitis B vaccine and HBIG within 12 hours of birth. Do not count the hepatitis B vaccine dose as the first dose in the vaccine series. Reinitiate the full hepatitis B vaccine series at age 1–2 months.

www.immunize.org/catg.d/p2130.pdf • Item #P2130 (8/07)

Viral hepatitis education materials for patients and staff

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



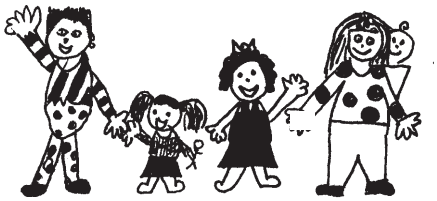
For 8-1/2" x 11" copies of the pieces above, visit IAC's website: www.immunize.org

1. Standing orders for administering hepatitis B vaccine to children & teens: www.immunize.org/catg.d/p3076a.pdf
2. Standing orders for administering hepatitis B vaccine to adults: www.immunize.org/catg.d/p3076.pdf
3. Hepatitis A and B vaccines: Be sure your patient gets the correct dose!: www.immunize.org/catg.d/p2081.pdf
4. Unusual cases of hepatitis B virus transmission: www.immunize.org/catg.d/p2100nrs.pdf
5. Questions frequently asked about hepatitis B: www.immunize.org/catg.d/p4090.pdf

COPY THIS and use it with your patients

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 health problem with asthma, lung disease, heart disease, kidney disease, metabolic disease (e.g., diabetes), or a blood disorder?	☐	☐	☐
5. Has the child had a seizure, brain, or nerve problem?	☐	☐	☐
6. Does the child have cancer, leukemia, AIDS, or any other immune system problem?	☐	☐	☐
7. Has the child taken cortisone, prednisone, other steroids, or anticancer drugs, or had x-ray treatments in the past 3 months?	☐	☐	☐
8. Has the child received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin in the past year?	☐	☐	☐
9. Is the child/teen pregnant or is there a chance she could become pregnant during the next month?	☐	☐	☐
10. 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 personal record, ask the child's healthcare provider to give you one with all your child's vaccinations on it. Keep this record in a safe place and bring it with you every time you seek medical care for your child. Your child will need this important document for the rest of his or her life to enter day care or school, for employment, or for international travel.

Technical content reviewed by the Centers for Disease Control and Prevention, August 2007

www.immunize.org/catg.d/p4060.pdf • Item #P4060 (8/07)

Reliable Sources of Immunization Information: Where to go to find answers!

COPY THIS for your patients

Websites

Centers for Disease Control and Prevention (CDC)

National Center for Immunization and Respiratory Diseases (NCIRD)

www.cdc.gov/vaccines

NCIRD provides leadership for the planning, coordination, and implementation of immunization activities nationwide.

Division of Viral Hepatitis

www.cdc.gov/hepatitis

The Division of Viral Hepatitis is part of the CDC. This website provides a substantial amount of information on the prevention of viral hepatitis.

Childhood Immunization Support Program (CISP)

www.cispimmunize.org

Created by the American Academy of Pediatrics, this is an immunization website for parents and health professionals.

Immunization Action Coalition (IAC)

www.immunize.org and www.vaccineinformation.org

IAC is a nonprofit organization that promotes immunization for all people against vaccine-preventable diseases. These websites offer educational materials, photos, and video clips for parents, health professionals, the media, and the general public.

National Network for Immunization Information (NNii)

www.immunizationinfo.org

NNii provides current, science-based, extensively reviewed information to health professionals, the media, policy makers, and the public.

National Vaccine Program Office (NVPO)

www.hhs.gov/nvpo

NVPO is a federal program that provides pertinent information about childhood, adolescent, and adult immunization policy.

Vaccine Education Center (VEC)

www.vaccine.chop.edu

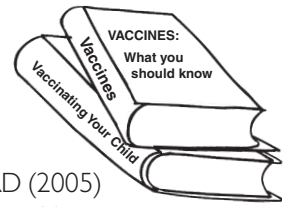
The goal of the VEC at Children's Hospital of Philadelphia is to accurately communicate the facts about each childhood vaccine. VEC publishes a monthly vaccine e-newsletter for parents titled "Parents PACK." For more information or to subscribe, visit www.vaccine.chop.edu/parents

Phone Numbers

CDC–INFO Contact Center

A toll-free number for consumers and health professionals who have questions about public health, including questions about vaccine-preventable diseases. For more information, contact (800) CDC-INFO or (800) 232-4636. This operates 24/7 in English & Spanish. TTY: (888) 232-6348.

Books for Parents



Parents Guide to Childhood Immunization

A 70-page booklet from CDC's NCIRD (2005) at www.cdc.gov/vaccines/pubs/parents-guide

To access a ready-to-print version of the Parents Guide, go to www.cdc.gov/vaccines/pubs/parents-guide/downloads/2005-parents-guide.pdf

Vaccines: What You Should Know, 3rd edition

By Paul Offit, MD, and Louis Bell, MD, John Wiley & Sons, Inc., 2003. To purchase, visit your local bookstore or visit www.wiley.com

Vaccinating Your Child: Questions and Answers for the Concerned Parent, 2nd edition

By Sharon Humiston, MD, MPH, and Cynthia Good, Peachtree Publishers, 2003. To purchase, visit your local bookstore, call Peachtree Publishers at (800) 241-0113, or visit www.peachtree-online.com

Videos

"Vaccines and Your Baby" and "Vaccines: Separating Fact from Fear"

These videos answer the questions of new parents, and are available in English and Spanish. All are available at a nominal charge from the Vaccine Education Center. To order, call (215) 590-9990 or order online at www.vaccine.chop.edu

Technical content reviewed by the Centers for Disease Control and Prevention, August 2007.

www.immunize.org/catg.d/p4012.pdf • Item #P4012 (8/07)

COPY THIS and hand it out to staff

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, including all school-aged children, who wish to reduce their likelihood of becoming ill with influenza or of transmitting influenza to others**
- ☐ **ALL persons age 50 years and older**
- ☐ **ALL children age 6–59 months**
- ☐ **Household contacts and caregivers of children younger than age 5 years, particularly contacts of infants younger than age 6 months**
- ☐ **Household contacts and caregivers of adults age 50 years and older**
- ☐ **Healthcare personnel**

  Healthcare personnel 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
- ☐ **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
  - ✓ children and adults who have chronic disorders of the pulmonary or cardiovascular systems, including asthma
  - ✓ children and adults who have chronic metabolic diseases (including diabetes), renal dysfunction, hemoglobinopathies, or immunosuppression (including HIV)
  - ✓ children and adults who have conditions that compromise respiratory function or the handling of respiratory secretions or that can increase the risk of aspiration
  - ✓ children and adolescents (age 6 months through 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

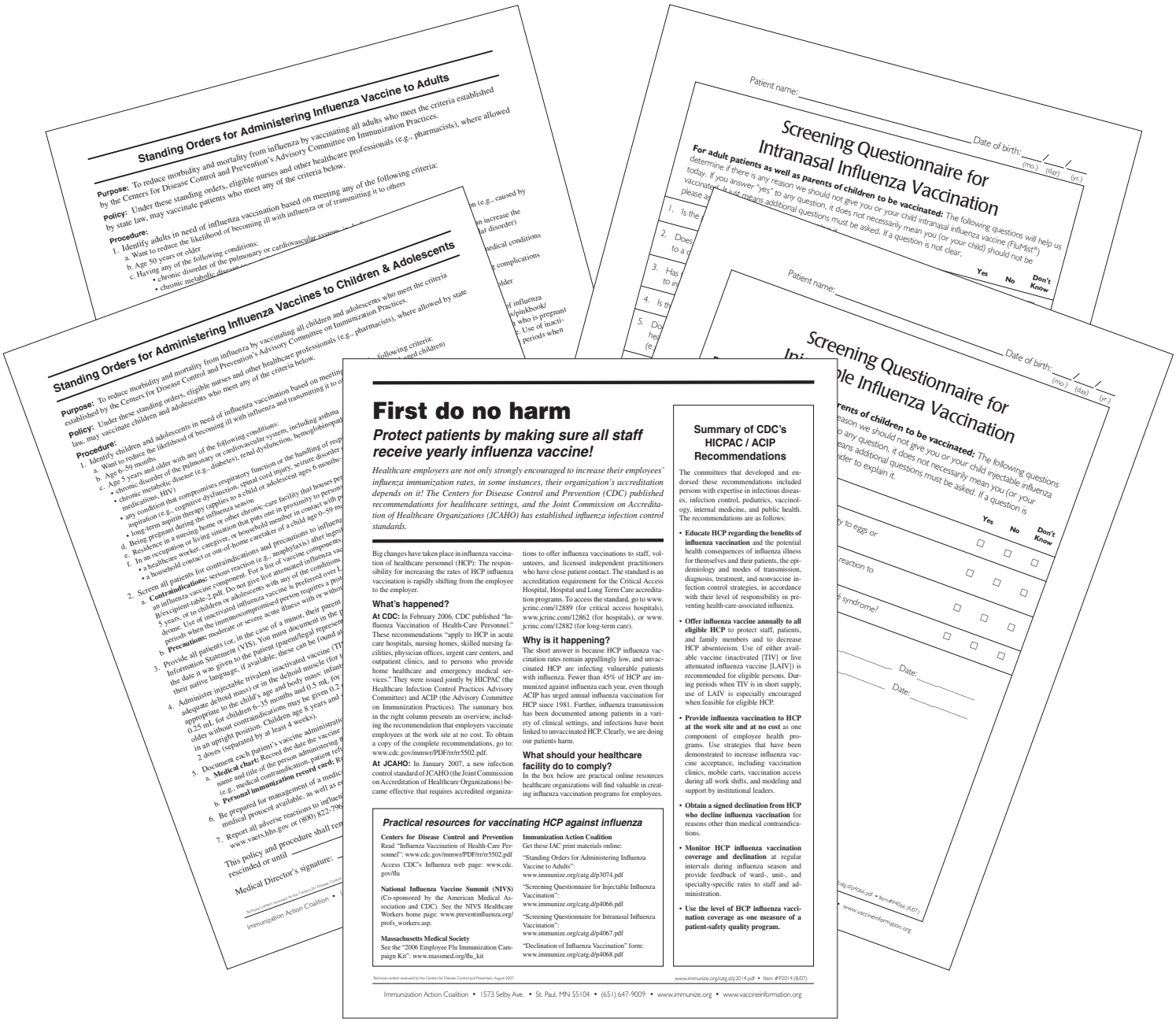
Consult the current recommendations from CDC (see source information below) for guidance on contraindications and precautions for use of trivalent inactivated influenza vaccine and live attenuated intranasal influenza vaccine.

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

Technical content reviewed by the Centers for Disease Control and Prevention, August 2007.

Influenza education materials for patients & staff

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



For 8-1/2" x 11" copies of the pieces above, visit IAC's website: www.immunize.org

1. Standing orders for administering influenza vaccines to children & adolescents: www.immunize.org/catg.d/p3074a.pdf
2. Standing orders for administering influenza vaccine to adults: www.immunize.org/catg.d/p3074.pdf
3. Screening questionnaire for injectable influenza vaccination: www.immunize.org/catg.d/p4066.pdf
4. Screening questionnaire for intranasal influenza vaccination: www.immunize.org/catg.d/p4067.pdf
5. First do no harm: Protect patients, make sure all staff receive yearly influenza vaccine!: www.immunize.org/catg.d/p2014.pdf

IAC's "Ask the Experts" team

William L. Atkinson, MD, MPH

Andrew T. Kroger, MD, MPH

Joanna Buffington, MD, MPH

Linda A. Moyer, RN

Where can I obtain standing orders for vaccination?
The Immunization Action Coalition (IAC) has developed suggested standing orders for all vaccines commonly given to children and adults. They are based on CDC's Advisory Committee on Immunization Practices (ACIP) recommendations and are reviewed for technical accuracy by CDC staff. You can find the standing orders and protocols for medical management of vaccine reactions at www.immunize.org/standingorders.

How do I obtain VISs in other languages?
CDC publishes VISs in English only; all translations have been developed by others. To access all currently available VISs in more than 30 languages and some alternative formats (audio/video), go to IAC's website at www.immunize.org/vis.

Where can I get immunization education materials to hand out to my patients?
Many excellent websites offer easy-to-access, patient-friendly materials on vaccines and and vaccine-preventable diseases. Here are just a few: the Centers for Disease Control and Prevention at www.cdc.gov/vaccines/spec-grps/parents.htm; American Academy of Pediatrics at www.cispimmunize.org; Immunization Action Coalition at www.immunize.org/free; National Network for Immunization Information at www.immunizationinfo.org; and Vaccine Education Center at Children's Hospital of Philadelphia at www.vaccine.chop.edu.

Where can I purchase laminated copies of CDC's child & teen immunization schedules? I'd like to put them in each exam room and give them to each of our healthcare staff.
IAC has created laminated versions of the child and adolescent schedule, as well as the adult schedule. Each is based on the official schedules adopted by ACIP, AAP, AAFP, ACOG, and ACP. You can find them by going to www.immunize.org/shop.

One morning, our refrigerator thermometer registered 32 degrees F. The vaccine didn't look frozen so we kept using it. Was this okay?
No. If you find that a vaccine has been exposed to an inappropriate temperature, determine the reason for the temperature alteration, mark the vaccine "Do Not Use," and contact the manufacturer or state/local health department to determine if the vaccine can be used.

What's new in the recent CDC recommendations for the use of varicella vaccine?
The new recommendations include (1) implementation of a routine 2-dose varicella vaccination program for children, with the first dose administered at age 12–15 months and the second dose at age 4–6 years; (2) catch-up vaccination with a second dose for children, adolescents, and adults who previously received only 1 dose; (3) routine vaccination of all healthy persons age 13 years and older who are without evidence of immunity; (4) prenatal assessment and postpartum vaccination; (5) expanded use of the varicella vaccine for HIV-infected children with age-specific CD4+ T-lymphocyte percentages of 15%–24% and adolescents and adults with CD4+ T-lymphocyte counts 200/µL or greater; and (6) establishment of middle school, high school, and college entry vaccination requirements. ACIP also approved new criteria for evidence of immunity to varicella. To obtain a copy of the official recommendations, go to www.cdc.gov/mmwr/pdf/rr/rr5604.pdf.

Many children in my practice have had only 1 dose of varicella vaccine. Is there a problem waiting until the 11- to 12-year-old visit to give them the second dose?
Don't delay giving the second dose of varicella vaccine. Give the second dose the next time the child or teen is in your office. The recommendation to routinely give a second dose at age 4–6 years is intended to provide improved protection in the 15–20% of children who do not adequately respond to the first dose.

What's the minimum interval between the 2 doses of varicella vaccine?
For children age 12 months through 12 years, the interval is 3 months. Doses given to children and adults age 13 years or older should be separated by a minimum interval of 4 weeks.

With the shortage of MMRV vaccine, can I make my own by mixing MMR and Varivax® in the same syringe?
Absolutely not. Vaccines should never be mixed except when specifically approved by FDA and packaged for that specific purpose.

Where can I find the recommendations for the use of rotavirus vaccine?
The ACIP recommendations can be found at www.cdc.gov/mmwr/PDF/rr/rr5512.pdf. Those of the AAP are at http://aappolicy.aappublications.org/cgi/content/full/pediatrics;119/1/171.

Is intussusception a safety concern with the new rotavirus vaccine (RotaTeq®, Merck)?
The clinical trial that led to licensure of RotaTeq included more than 70,000 infants, and found no evidence of an increased risk of intussusception in vaccine recipients. Subsequent studies of infants who have received RotaTeq have found no increase in numbers of cases of intussusception above what would normally be expected to occur.

Should a 15-year-old who received Td at age 11 years be given Tdap now?
Persons age 11–18 years should receive a dose of Tdap 5 years after receiving their last dose of Td. However, this 5-year interval is not set in stone. Someone age 11–18 years in an outbreak setting, or who will have close contact with an infant younger than age 12 months, should receive Tdap regardless of the interval since the prior dose of Td.

I am a 66-year-old pediatrician. To protect our patients, my aging colleagues (65 years and older) and I received Tdap vaccine, even though it isn't licensed for our age group. Regardless, I don't understand why this vaccine wasn't recommended or at least suggested for healthcare workers age 65 years and older who are in contact with young children.
There are no safety and efficacy data for this age group; FDA did not approve the vaccine for anyone older than age 64 years, and ACIP has not recommended off-label use of Tdap for this age group. However, there is no reason to believe that Tdap is any less safe for persons age 65 years and older than it is for younger adults. Clinicians may decide that the benefit of Tdap exceeds the hypothetical risk in these situations.

I want to protect pregnant women and their unborn children from pertussis. Can I give Tdap to pregnant women?
Tdap is not contraindicated during pregnancy. It should be administered to a pregnant woman who

(continued on page 19)

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 our email announcement service ***IAC Express.*** Be sure you're signed up for this service. To subscribe, visit www.immunize.org/subscribe

is in contact with an infant younger than age 12 months, is in an outbreak setting, or is a healthcare provider who sees children. If there is no risk to the pregnant woman of acquiring or transmitting pertussis, ACIP recommends that Tdap vaccination be deferred until the immediate postpartum period. AAP has endorsed preferential Tdap vaccination of pregnant adolescents who were not vaccinated with Tdap at age 11–12 years *(Pediatrics* 2006; 117:965-78). Providers can follow either the AAP or ACIP recommendations.

If a person of any age is diagnosed with pertussis, can they forego pertussis vaccination?

If someone has a recent culture-confirmed case of pertussis, he or she may not need immediate immunization against pertussis; however, a vaccine containing pertussis antigen will not be harmful. A person with a culture-confirmed case or a history of pertussis should continue on the routine immunization schedule for future protection against tetanus, diphtheria, and pertussis.

Someone gave Tdap to an infant instead of DTaP. Now what should be done?

If inadvertently administered to a child, a dose of Tdap should not be counted as the first, second, or third dose of DTaP. The dose should be repeated with DTaP. Continue vaccinating on schedule and make sure this does not happen again. If the dose of Tdap was administered for the fourth or fifth DTaP dose, the Tdap dose can be counted as valid. Routinely submit a Vaccine Adverse Event Reporting System (VAERS) report for any vaccine administration error.

Someone in our clinic gave DTaP to a 50-year-old instead of Tdap. How should this be handled?

The DTaP recipient received the appropriate amount of tetanus toxoid and MORE diphtheria toxoid and pertussis antigen than is recommended. Count the dose, but take measures to prevent this error in the future. Routinely submit a VAERS report for any vaccine administration error.

For whom is influenza vaccine now recommended?

ACIP recommends annual vaccination for all of the following: (1) all persons age 6 months or older, including all school-aged children, who want to reduce the likelihood of becoming ill with influenza or of transmitting it to others; (2) all persons age 50 years and older; (3) all children age 6 through 59 months; (4) all persons with any of the following conditions: chronic disorder of the pulmonary or cardiovascular system (including asthma), chronic metabolic disease (including diabetes), renal dysfunction, hemoglobinopathy, conditions that place one at risk for aspiration or immunosuppression (including immunosuppression caused by medications or by HIV), children or adolescents age 6 months through 18 years who are receiving long-term aspirin therapy, and therefore might be at risk for experiencing Reye's syndrome after influenza infection; (5) women who will be pregnant during the influenza season; (6) residents of nursing homes or other chronic-care facilities that house persons of any age who have chronic medical conditions; (7) all persons (such as healthcare personnel, caregivers, or household members) who have contact with, and are therefore likely to transmit influenza to, persons who have high-risk conditions; (8) household contacts or out-of-home caretakers of children age 0 through 59 months or of adults age 50 years or older.

During which month should I start administering influenza vaccine?

You can begin offering vaccine as soon as it becomes available. A child younger than age 9 years who is a first-time vaccinee (or who failed to get a second dose in the preceding season) should receive the first dose early in the season to assure that the second dose will be given before the influenza season begins. Planners of mass vaccination programs may want to consider scheduling their efforts after mid-October to increase the probability of having adequate vaccine supplies on hand.

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

Influenza activity generally does not peak until February or later. As long as vaccine is available, providers are encouraged to continue vaccinating patients throughout the influenza season, including into the spring months. Because influenza occurs in many areas of the world during the spring and summer, vaccine should be given to travelers who missed vaccination in the preceding fall and winter campaign.

Which children need 2 doses of influenza vaccine this season?

Children age 6 months through 8 years who are receiving influenza vaccine for the first time should receive 2 vaccine doses at a 4–6-week interval (depending on the type of vaccine). A child younger than age 9 years who received influenza vaccine in only one previous season, and received only 1 dose, should receive 2 doses this season. A child who has received a total of 2 doses of influenza vaccine, either in the same or different years, should receive only 1 dose.

If a person has influenza, when and for how long are they infectious to others?

Adults can be infectious from 1 day before symptoms occur through approximately 5 days after illness onset. Young children can shed virus several days before illness onset and can be infectious for 10 or more days after onset of symptoms. Severely immunocompromised persons can shed virus for weeks or months.

What are the age requirements for the various influenza vaccines?

The range of ages for the 4 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) and FluLaval™ (GSK). The intranasal vaccine FluMist® (MedImmune) is licensed for use in persons age 5 through 49 years.

I've heard that almost 75% of people in the U.S. are already recommended for influenza vaccination. I don't understand why we don't just have universal influenza vaccination. It would be so much easier than assessing the risk of each patient.

It's true that the number of people who are in the age-based targets (i.e., age 6 through 59 months, age 50 years or older) combined with those age 5–49 years with risk factors or who are household contacts of those with risk factors, amounts to 73% of the U.S. population. Though it may be a few more years before we reach universal influenza vaccination, ACIP now recommends vaccination for anyone who wants to reduce the likelihood of becoming ill with influenza or of transmitting it to others. Therefore, you can be comfortable recommending influenza vaccine for all your patients who want to be immune and don't want to spread influenza to others.

Sometimes I am unable to get 10 doses of influenza vaccine out of a 5.0 mL (10-dose) vial. Do you have any suggestions?

Certain vaccine syringes have small hubs where a volume of the vaccine that is withdrawn from the vial collects and is not available to be injected. Syringes without a hub are available; their use results in less vaccine wastage.

I heard about a hospital where more than 95% of employees received influenza vaccine last year. How did they achieve such a high level of vaccination?

Virginia Mason Medical Center in Seattle, WA, completed 2 years of mandatory employee influenza vaccination, achieving 98% compliance in the 2006–07 year. Toolkits, as well as other materials from a variety of organizations and the presentation on the Virginia Mason program given at the 2007 National Influenza Vaccine Summit, are available to you at www.preventinfluenza.org/profs_workers.asp.

Does the thimerosal in influenza vaccine pose a risk?

Thimerosal, a very effective preservative, has been

(continued on page 20)

Why is it good to marry an archaeologist?

Leo Wieder-Mann

Because the longer you're married, the more interested she is in you.

used to prevent bacterial contamination in vaccine vials for more than 50 years. It contains a type of mercury known as ethylmercury, which is different from the type of mercury found in fish and seafood (methylmercury). At very high levels, methylmercury can be toxic to people, especially to the neurological development of infants.

In recent years, several large scientific studies have determined that thimerosal in vaccines does not lead to neurologic problems, such as autism. Nonetheless, because we generally try to reduce people's exposure to mercury if at all possible, vaccine manufacturers have voluntarily changed their production methods to produce vaccines that are now free of thimerosal or have only trace amounts. They have done this because it is possible to do, not because there was any evidence that the thimerosal was harmful.

What are the newly expanded recommendations for the use of meningococcal conjugate vaccine (MCV4)?

ACIP recommends routine use of MCV4 vaccine in all persons age 11–18 years, as well as for other people at increased risk of meningococcal disease (i.e., college freshmen living in dorms, military recruits, person with certain health conditions, and certain travelers). The expanded age range recommendations for teenagers were published in *MMWR* in August 2007, and are available at www.cdc.gov/mmwr/preview/mmwrhtml/mm5631a3.htm.

If a child received a previous dose of Menomune®, should they be given Menactra® (MCV4) as a teenager?

Revaccination with Menactra is not indicated unless vaccination occurred 5 years previously and the person still remains at increased risk for meningococcal disease. Persons who attend college and live in dormitories are considered at increased risk for meningococcal disease.

To which patients should I recommend human papillomavirus (HPV) vaccine?

ACIP recommends that females age 11–12 years be vaccinated with 3 doses of HPV vaccine. Additionally, HPV vaccine is recommended for all females age 13–26 years who have not been previously vaccinated or who have not completed the full series. The vaccination series can be started as young as age 9 years. Ideally, vaccine should be administered before potential exposure to HPV through sexual contact; however, females who are sexually active or who have had HPV infection or an abnormal Pap test should also be vaccinated. The official recommendations are available at www.cdc.gov/mmwr/pdf/rr/rr56e312.pdf.

What are the dosing intervals when using HPV vaccine?

ACIP recommends the second dose be given 2 months after the first, and the third dose be given 6 months after the first. The minimum intervals are 4 weeks between dose 1 and dose 2, and 12 weeks between dose 2 and dose 3. If necessary the series can be completed in 16 weeks.

If a woman has had HPV infection, can she still be vaccinated?

Yes. Women who have evidence of present or past HPV infection and who are younger than age 27 years should be vaccinated. They should be advised that the vaccine will not have a therapeutic effect on existing HPV infection or any cervical lesions.

If a 30-year-old patient insists that she wants to be given HPV vaccine, can I give it to her?

HPV vaccine is not FDA-licensed for use in women older than age 26 years at this time. Studies are currently being conducted in women age 27 years and older. ACIP does not recommend the use of this vaccine outside the FDA licensing guidelines; however, many physicians administer this vaccine as off-label use. There is no reason to believe the vaccine would be any less safe for women in this age group than for younger women. Clinicians should decide if the benefit of the vaccine outweighs the hypothetical risk.

When will CDC publish its official recommendations for the use of Zostavax®? Until then, what should I use to guide me?

CDC has posted the provisional recommendations of ACIP at www.cdc.gov/vaccines/recs/provisional/default.htm. The official recommendations are expected to be published in *MMWR* in early 2008. However, zoster vaccine will be included in the 2007–08 Recommended Adult Immunization Schedule, which CDC plans to release in *MMWR* in October 2007.

To whom should shingles vaccine be given?

A single dose of zoster vaccine is recommended for adults age 60 years and older whether or not they report a prior episode of herpes zoster. Persons with chronic medical conditions may be vaccinated unless a contraindication or precaution exists for their condition.

Will administering Zostavax prevent postherpetic neuralgia (PHN)?

In pre-licensure trials, Zostavax was 66.5% effective in preventing PHN. It is also believed to lessen the severity of both shingles and PHN if a person should acquire the disease after vaccination.

Hepatitis A and B

Our hospital has no system to ensure that all infants receive hepatitis B vaccine prior to discharge, so some newborns are missed. What should we do to make sure all newborns receive the birth dose before discharge?

The most important thing you can do to ensure that all newborns receive the needed protection of hepatitis B vaccine is to make sure your hospital has policies and procedures in alignment with the recommendations of CDC, AAP, and AAFP, which include establishing standing orders for administration of hepatitis B vaccine as part of routine medical care of all medically stable infants weighing 2 kg (4.4 lb) or more. By putting this policy into place, you are ensuring that every newborn will receive the birth dose prior to hospital discharge (unless an order is written in the infant's chart by the healthcare provider to NOT give it). According to the official recommendations, an order to delay the birth dose until after hospital discharge may be done, on a case-by-case basis, and only in rare circumstances. Guidelines for implementing birth dose policies are found in the official CDC recommendations on hepatitis B prevention in children available at www.cdc.gov/mmwr/PDF/rr/rr5416.pdf. You can also use the labor and delivery and nursery guidelines from the Immunization Action Coalition (IAC) available at www.immunize.org/catg.d/p2130.pdf.

Why is it recommended to have a copy of the mother's original hepatitis B surface antigen (HBsAg) lab report in the prenatal and nursery chart, rather than a simple transcribed result?

We know that errors in maternal HBsAg testing and reporting have left many unvaccinated newborns exposed to hepatitis B virus (HBV) infection. In two surveys the Immunization Action Coalition conducted from July 1999 to October 2002, state and local hepatitis B coordinators reported more than 500 medical errors discovered through their perinatal hepatitis B prevention programs. Many of these errors involved misinterpreting or mistranscribing hepatitis screening test results, or ordering the wrong hepatitis B screening test. For this reason, a copy of the original laboratory report indicating the pregnant woman's HBsAg status should be provided to the hospital where the delivery is planned so that nurses and doctors involved in the care of the mother and infant will be able to review the content of the original laboratory report. Examples of errors in maternal testing and subsequent management are documented at www.immunize.org/catg.d/p2128.pdf, and in both IAC surveys available online at www.immunize.org/birthdose/survey.htm and www.immunize.org/birthdose/survey02.htm. See question 4 of both surveys.

Which adults are recommended to receive hepatitis B vaccine?

The following groups are recommended for hepa-

(continued on page 21)

titis B vaccination:

- Sexually active persons who are not in long-term, mutually monogamous relationships
- Sex partners of HBsAg-positive persons
- Persons seeking evaluation or treatment for a sexually transmitted disease
- Men who have sex with men
- Current or recent injection-drug users
- Household contacts of HBsAg-positive persons
- Residents and staff of facilities for developmentally disabled persons
- Healthcare and public safety workers with reasonably anticipated risk for exposure to blood or blood-contaminated body fluids
- Persons with end-stage renal disease, including predialysis, hemo-, peritoneal-, and home-dialysis patients
- International travelers to regions with intermediate or high levels (i.e., ≥2% of HBsAg positivity; see Figure 4 in ACIP recommendations). The new recommendations do not specify the length of the trip.
- Persons with chronic liver disease
- Persons with HIV infection
- All other persons who wish to be protected from HBV infection

Acknowledgement of a specific risk factor is NOT a requirement for vaccination. The official ACIP recommendations for hepatitis B vaccination of adults are available at www.cdc.gov/mmwr/PDF/rr/rr5516.pdf. For your use, a hepatitis B vaccination screening questionnaire is available from IAC at www.immunize.org/catg.d/2191hepb.pdf. Standing orders for administering hepatitis B vaccine to adults are also available from IAC at www.immunize.org/catg.d/p3076.pdf.

What does ACIP recommend regarding screening and vaccination of Asian Americans and Pacific Islanders and people from other hepatitis B endemic areas?

All foreign-born people (including immigrants, refugees, asylum seekers, and internationally adopted children) born in Asia, the Pacific Islands, Africa, and other regions with high endemicity of HBV infection should be tested for HBsAg, regardless of vaccination status.

In addition, hepatitis B vaccination is recommended for all children age 0–18 years, and for all unvaccinated adults at risk for HBV infection, as well as for all adults requesting protection from HBV infection.

If a person is in a risk group for hepatitis B and testing is recommended, why is it recommended to test and vaccinate on the same visit? Shouldn't I test them and wait for the lab results to return?

It's better to give an at-risk person some protection against hepatitis B by giving a single dose of vaccine than by giving no dose and then having them not return for follow-up. You should draw the blood sample for testing and then give the first dose of vaccine. When the test results are returned, you can determine if further vaccination is warranted and contact the patient for follow-up.

The 3-dose vaccine series administered intramuscularly at 0, 1, and 6 months produces a protective antibody response in approximately 30%–55% of healthy adults age 40 years or younger after the first dose, 75% after the second dose, and greater than 90% after the third dose. For long-term protection, the patient should receive the full vaccine series.

How do you serologically define chronic HBV infection?

A person is considered to have chronic HBV infection if he or she is (1) HBsAg positive on two occasions at least 6 months apart, or (2) HBsAg positive and IgM class antiHBc (antibody to hepatitis B core antigen) negative on a single blood draw. (An IgM class antiHBc test will be positive for 4–6 months after acute HBV infection.)

Which HBsAg-positive patients should be considered infectious?

All HBsAg-positive persons should be considered infectious, regardless of HBeAg (hepatitis B e antigen) status. (See lab nomenclature on page 22 for HBeAg definition.)

How long might a person be falsely HBsAg positive after a dose of hepatitis B vaccine?

Studies published in the last several years have found that transient HBsAg positivity (lasting less than 21 days) can be detected in certain people after vaccination. Because of these findings, it is recommended that people wait at least 1 month to donate blood after receiving a dose of hepatitis B vaccine. This waiting period prevents a false-positive HBsAg result being reported from the blood donation center and subsequent permanent deferral from further donation.

Should hepatitis B immune globulin (HBIG) be given along with hepatitis B vaccine to victims of sexual assault?

No, unless the attacker is known to be HBsAg positive. In almost all instances, the HBsAg status of the attacker is not known, and the attacker is most likely not acutely infected with large amounts of HBV in his blood. Unvaccinated victims of sexual assault should receive the hepatitis B vaccine series with the first dose administered as soon as possible, but not longer than 14 days after exposure. The vaccine series should be completed in accordance with the age-appropriate dose and schedule. Hepatitis B vaccine alone has been shown to be highly effective in preventing infection after HBV exposure.

Is HBV spread through saliva?

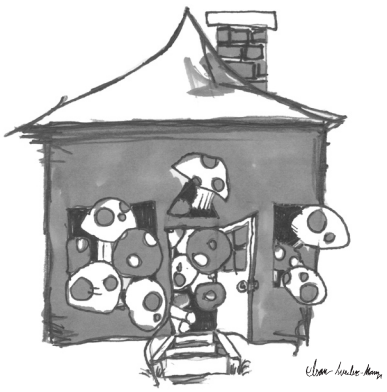
Though HBV has been found in saliva, there are no data to suggest that saliva alone transmits HBV infection. There have been reports of HBV transmission when an HBV-infected person bites another person. In these reports, bloody saliva was usually present in the infected person's mouth and the blood was more likely the vehicle of transmission. HBV is not spread by kissing, hugging, sneezing, coughing, food or water, sharing eating utensils or drinking glasses, or casual contact.

What is Twinrix® vaccine? Who can receive it?

Twinrix (GlaxoSmithKline) is an inactivated combination vaccine containing both hepatitis A virus (HAV) and HBV antigens. The vaccine contains 720 EL.U. of hepatitis A antigen (half of the Havrix® adult dose) and 20µg of hepatitis B antigen (the full Engerix-B® adult dose). In the U.S., Twinrix is licensed for use in people who are age 18 years

(continued on page 22)

Why did the fungi leave the party?



Cuz there wasn't mushroom!

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

www.immunize.org

www.vaccineinformation.org

Do you have patients who are HBsAg-positive?

They need medical monitoring, including liver cancer screening; many can benefit from treatment.

The FDA licenses several medications for treatment in the United States.

Consult a liver specialist experienced in the treatment of viral hepatitis for appropriate monitoring guidelines and for help in determining which of your patients might benefit from treatment.

or older. It can be administered to persons who are at risk for both hepatitis A and hepatitis B, such as certain international travelers, men who have sex with men, illegal drug users, or to persons who simply want to be immune to both diseases.

Primary immunization consists of 3 doses given intramuscularly on a 0, 1, and 6 month schedule. In March 2007, the FDA also approved a 4-dose schedule for Twinrix. It consists of 3 doses given within 3 weeks, followed by a booster dose at 12 months (0, 7 days, 21–30 days, and 12 months). The 4-dose schedule could benefit individuals needing rapid protection from hepatitis A and hepatitis B, such as persons traveling to high-prevalence areas imminently and emergency responders, especially those being deployed to disaster areas overseas.

For which children is hepatitis A vaccine recommended?

All children should receive 2 doses of hepatitis A vaccine beginning at age 1 year (i.e., 12–23 months). The 2 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 age 2–18 years are encouraged to maintain these programs. 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.

For which adults is hepatitis A vaccine recommended?

Hepatitis A vaccine is recommended for all adults who

- travel to areas with increased rates of hepatitis A (everywhere EXCEPT Canada, Australia, New Zealand, Japan, and Western Europe)
- are men who have sex with men
- use either injecting or non-injecting illegal drugs (including "pot")
- have clotting-factor disorders, such as hemophilia
- have chronic liver disease
- desire immunity to hepatitis A virus infection

Adults should be given 2 doses of hepatitis A vaccine spaced at least 6 months apart.

How do I interpret the results of some of the commonly ordered panels of hepatitis B tests?

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

Since the cost of hepatitis A vaccine is covered under the Vaccines for Children (VFC) program for eligible 1-year-olds, is it also covered for older children who are VFC eligible?

Yes, VFC will cover the cost of hepatitis A vaccine for VFC-eligible children and teens through age 18 years. Under the VFC program guidelines, if ACIP recommends a vaccine routinely for children or teens, VFC will cover the cost of the vaccine for all VFC-eligible children and teens, as long as the vaccine isn't contraindicated in that age group.

When will the recommendations for the postexposure use of hepatitis A vaccine be published by CDC?

Publication is expected by fall of 2007. ◆

Want to read hundreds more "Ask the Experts" Q&As?

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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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Deborah L. Wexler, MD
IAC Executive Director

Dear Readers of *Needle Tips,*

Thanks so much to the many of you who took time to return the postcard survey included in the March 2007 issue of *Needle Tips*. All of us at IAC are inspired by the strong show of support reflected in your comments. Your responses indicate that *Needle Tips* continues to provide useful immunization and hepatitis B education materials to medical and nursing staff, as well as to patients.

I'm now asking for your help in providing feedback about specific ways in which you use *Needle Tips* content and about the impact its content has on your immunization knowledge and practices.

Our colleagues at the Centers for Disease Control and Prevention are asking us to find out precisely how *Needle Tips* influences the delivery of immunization services in the United States. For example, they want us to find out whether you, as a *Needle Tips* reader, not only read about changes in vaccination recommendations in *Needle Tips,* but then implement those changes in your practice. They would like to know that when you copy one of the educational pieces in *Needle Tips,* you then distribute it to an average of 20 patients per week (for example). They need to know what you learn from *Ask the Experts* and how you use our screening questionnaires, our summaries of recommendations for childhood or adult immunization, our standing orders, our vaccine storage and handling information, and . . . I hope you see what I mean. We really need to hear, for example, if your patients fill out screening questionnaires, if staff use the recommendations and standing orders when developing policies and procedures, if nurses use our materials in training new staff, and so forth.

To make it as easy as possible for you to send us your input, we have prepared a short online survey that should take no more than ten minutes to complete. Please go to **www.immunize.org/surveynt2** and let us know how you incorporate the information in *Needle Tips* into your work. Alternatively, I would love to hear from you by email (deborah@immunize.org) at any time because your feedback is extremely important to the continued success of this periodical.

Deborah L. Wexler, MD

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