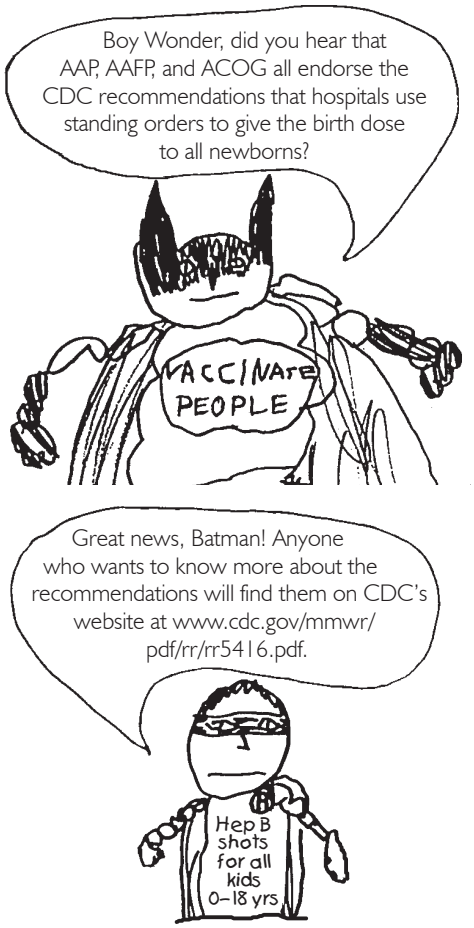
Volume 16 – Number 1 May 2006

NEEDLE TIPS

and the Hepatitis B Coalition News

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



WHAT YOU'LL FIND INSIDE:

Ask the Experts

The Immunization Action Coalition (IAC) extends thanks to our experts: William L. Atkinson, MD, MPH, medical epidemiologist; and Andrew T. Kroger, MD, MPH, medical officer. Both are with the National Immunization Program, Centers for Disease Control and Prevention (CDC). Eric E. Mast, MD, MPH, is chief, Prevention Branch, CDC's Division of Viral Hepatitis (DVH); and Linda A. Moyer, RN, who until her recent 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

by William L. Atkinson, MD, MPH, and Andrew T. Kroger, MD, MPH

Can we give Tdap to adolescents and teens who received Td previously?

Yes. Any adolescent ages 11–18 years who received a dose of Td (but not Tdap) is encouraged to receive a single dose of Tdap to provide protection against pertussis. A 5-year interval is encouraged to reduce the risk of a local adverse reaction. However, if pertussis immunity is needed, Tdap can be given any time after a dose of Td. If less than 5 years have elapsed since the last dose of Td, the recipient should be advised about the increased risk of a local reaction and given instructions on what to do should this occur.

Do the same precautions that apply to DTaP also apply to Tdap?

No, many of the precautions to DTaP—including temperature of 105° F or higher, collapse or shock-like state, persistent crying lasting 3 hours or longer, convulsions with or without fever—do not apply to Tdap. This issue is discussed in the Tdap ACIP recommendations, available at www.cdc.gov/mmwr/pdf/rr/rr5503.pdf.

If a child between the ages of 7 and 10 years has no record of DTaP immunization, can a dose of Tdap be given as part of the primary series?

Tdap is not FDA approved for children ages 7–9 years, and ACIP does not recommend off-label use of Tdap in children this age. Children ages 7–9 years should complete a series of 3 doses of Td. They can then be boosted with Tdap 5 years after they complete the series. If a child reaches age 10 years before completing the primary 3-dose series, a dose of Tdap should replace one of the doses.

(continued on page 19)

Sign up for IAC Express!

To subscribe, send an email message to **express@immunize.org** and place the word SUBSCRIBE in the "Subject:" field. You'll receive timely immunization news via email on Mondays.

Needle Tips

Immunization Action Coalition
Hepatitis B Coalition
1573 Selby Avenue, Suite 234
St. Paul, MN 55104
Phone: (651) 647-9009
Fax: (651) 647-9131
Email: admin@immunize.org
Websites: www.immunize.org
www.vaccineinformation.org
www.hepprograms.org
www.izcoalitions.org

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Publication Staff
Editor: Deborah L. Wexler, MD
Associate Editor: Diane C. Peterson
Managing Editor: Dale Thompson
Editorial Asst.: Janelle Tangonan Anderson
Consultants: Teresa Anderson, DDS, MPH
Linda A. Moyer, RN
Layout: Kathy Cohen
Artwork: Leo Wexler-Mann

IAC Staff
Assistant to the Director: Becky Payne
Office Administrator: Robin VanOss
Administrative Asst.: Susan Broadribb
Website Design: Lantern Web™

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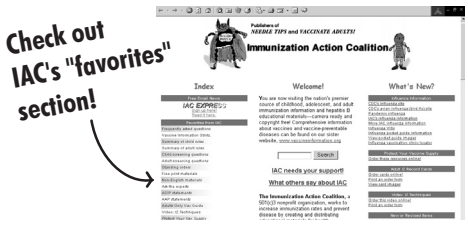
IAC, a 501(c)3 nonprofit organization, publishes practical immunization information for health professionals to help increase immunization rates and prevent disease.

The Hepatitis B Coalition, a program of IAC, promotes hepatitis B vaccination for all persons 0–25 years; HBsAg screening for all pregnant women; testing and vaccination for high-risk groups; and education and treatment for people chronically infected with hepatitis B.

Top immunize.org resources—check them out!

Each month, tens of thousands of health professionals use IAC's website **www.immunize.org.** To save visitors' time, IAC has grouped the most important resources on this huge website into a section, "Favorites from IAC," located in the top left corner of the homepage. Following is a guide to these favorite resources. Please visit this section of our website to check them out.



Frequently Asked Questions
This page includes the most frequently asked questions from people calling or emailing IAC. You may find the answer to your question here!

Vaccine Information Statements (VISs)
The VIS page includes information about using VISs correctly, and lists VISs organized by disease and language (33 languages available!). Every month, visitors download approximately 350,000 VISs.

Summary of Recommendations for Childhood and Adolescent Immunization
This three-page reference table summarizes the appropriate use, scheduling, and contraindications of childhood vaccines.

Summary of Recommendations for Adult Immunization
This three-page reference table summarizes the appropriate use, scheduling, and contraindications of adult vaccines.

Screening Questionnaire for Child and Teen Immunization
A form for your patients' parents/guardians to complete to help staff evaluate which vaccines can be safely given on the day of the patient visit.

Screening Questionnaire for Adult Immunization
A form for your adult patients to complete to help staff evaluate which vaccines can be safely given on the day of the patient visit.

Standing Orders
IAC offers CDC-reviewed sample standing orders for administering vaccines commonly given to adults and children. This link brings you to a page with all available standing orders, as well as to a protocol for medical management of vaccine reactions (including anaphylaxis) in adults.

Free Print Materials
This link brings you to a catalog of all of IAC's copyright-free print materials, many in both PDF (ready-to-print) and HTML (web-text) formats.

Non-English Materials
This page lists all the translated print materials available on the website. It's organized by language, with 32 choices ranging from Amharic to Vietnamese.

Ask the Experts
Medical experts from CDC's National Immunization Program and Division of Viral Hepatitis answer technical questions about vaccines and vaccine-preventable diseases.

ACIP Recommendations
Advisory Committee on Immunization Practices (ACIP) recommendations are official federal guidance for using vaccines and immune globulins in the U.S. Access current recommendations from this index page.

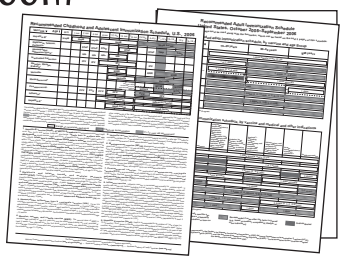
AAP Statements
This page links to all American Academy of Pediatrics (AAP) immunization policy statements, clinical reports, and technical reports related to vaccination.

Immunization Resource Directory
This online directory is a compendium of helpful immunization resources from a variety of organizations: government, professional associations, nonprofit organizations, private industry, and others.

More about "Favorites from IAC"
This section of our homepage also includes links to ordering information for popular resources such as IAC's adult immunization guide; administration, storage, and handling videos; adult immunization record cards; and laminated child and adult immunization schedules.

Please explore the useful resources available in the upper left corner of www.immunize.org!

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



IAC's versions of the ACIP/AAP/AAFP-approved childhood/adolescent immunization schedule and the ACIP/AAFP/ACOG-approved adult schedule are laminated for heavy-duty use, complete with essential footnotes, and printed in color for easy reading. The cost is $4 each for the 2-sided childhood/adolescent schedule and $5 each for the 4-sided adult schedule. For five or more copies, contact us for discount pricing. For more information or to order online, go to www.immunize.org/immschedules. To order by fax or mail, use the order form on page 23.

Do you vaccinate children or adults?

Then your practice needs this training video!

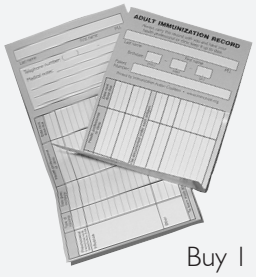
"Immunization Techniques: Safe, Effective, Caring"

developed by California Dept. of Health Services Immunization Branch

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

Cost is $30 for VHS video; $35 for DVD. For 20 or more copies, contact us for discount pricing. For more information or to order online, visit www.immunize.org/iztech.
To order by fax or mail, use the order form on page 23.
Questions? Email admin@immunize.org or call (651) 647-9009.

Immunization record cards for adults!



Give all your adult patients a permanent vaccination record card from IAC. Printed on rip-proof, smudge-proof, water-proof paper, this durable canary-yellow card is sized to fit in a wallet alongside other important cards. To view the card, visit www.immunize.org/adultizcards/adultizcard.pdf.

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

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

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

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

Vaccine Highlights

Recommendations, schedules, and more

Editor's note: The information on these pages is current as of April 21, 2006.

The next ACIP meetings

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

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

ACIP recommendations

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

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

Looking for your state health department immunization and hepatitis consultants?

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

www.immunize.org/coordinators

Recently published ACIP recommendations:

- "Preventing Tetanus, Diphtheria, and Pertussis Among Adolescents: Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis Vaccines" (3/24/06)
- "A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States. Part I: Immunization of Infants, Children, and Adolescents" (12/23/05)
- "Influenza Vaccination of Health-Care Personnel" (2/9/06; issued jointly by ACIP and the Healthcare Infection Control Practices Advisory Committee)

CDC has begun posting provisional ACIP recommendations at www.cdc.gov/nip/recs/provisional_recs. 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 not yet published in *MMWR.*

Immunization schedules

In Jan. 2006, CDC published "Recommended Childhood and Adolescent Immunization Schedule—United States, 2006." Issued jointly by ACIP, AAFP, and AAP, it is available at www.cdc.gov/nip/recs/child-schedule.htm. A Spanish version is also available. *Needle Tips* has a reformatted English version on pages 14–15.

Rotavirus news

On Feb. 21, ACIP voted to recommend the use of the newly licensed rotavirus vaccine RotaTeq® in infants at ages 2, 4, and 6 months. As of this writing, the recommendation has not yet been made official by publication in *MMWR.*

On Feb. 3, FDA licensed RotaTeq (Merck), a live, oral vaccine for use in preventing rotavirus gastroenteritis in infants and children. To view the product insert, go to: www.fda.gov/cber/label/rotamer020306LB.pdf.

Influenza news

On Feb. 23, ACIP voted to recommend an expansion for yearly influenza vaccination for children. The expanded recommendation is to give all children ages 6–59 months yearly vaccination. The previous recommendation was yearly vaccination for children ages 6–23 months. As of this writing, the expanded recommendation has not yet been made official by publication in *MMWR.*

On Feb. 17, FDA's Vaccines and Related Biological Products Advisory Committee (VRBPAC) selected the influenza virus strains for 2006–07: A/New Caledonia (H1N1), A/Wisconsin (H3N2), and B/Malaysia. For further information, go to: www.fda.gov/cber/flu/flu2006.htm.

On Feb. 9, CDC published "Influenza Vaccination of Health-Care Personnel," a joint publication of ACIP and the Healthcare Infection Control Practices Advisory Committee. These recommendations apply to healthcare workers in hospitals, nursing homes, skilled nursing facilities, physicians' offices, urgent care centers, and outpatient clinics, and to persons who provide home health care and emergency medical services. The recommendations are available at www.cdc.gov/mmwr/pdf/rr/rr55e209.pdf.

Tdap vaccine news

On Mar. 24, CDC published the ACIP recommendation "Preventing Tetanus, Diphtheria, and Pertussis Among Adolescents: Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertus-

sis Vaccines." The recommendation is available at www.cdc.gov/mmwr/pdf/rr/rr5503.pdf.

In Oct. 2005, ACIP voted to recommend that adults ages 19–64 years be vaccinated with the newly licensed adult booster tetanus, diphtheria, and pertussis vaccine (Tdap). Under the ACIP recommendation, Tdap would replace one dose in the currently recommended tetanus-diphtheria vaccine used as the adult booster. The new recommendation to vaccinate adults has not yet been made official by publication in *MMWR;* the provisional recommendation is available at www.cdc.gov/nip/vaccine/tdap/tdap_adult_recs.pdf.

On Dec.12, AAP's Committee on Infectious Diseases released a policy statement, "Prevention of Pertussis Among Adolescents: Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis (Tdap) Vaccine." To read it, go to: www.aap.org/advocacy/releases/Tdap121205.pdf.

Hepatitis A news

In Oct. 2005, ACIP voted that all children at age 1 year be vaccinated against hepatitis A virus infection. This new recommendation has been included in the Recommended Childhood and Adolescent Immunization Schedule in 2006. For more details on the recommendations, see Ask the Experts, page 21.

On Oct. 17, 2005, FDA approved the use of GlaxoSmithKline's HAVRIX® hepatitis A vaccine for persons ages 12 months and older. In the original licensure, the age indication was for persons ages 2 years and older. To view the supplemental license approval information on the FDA website, go to: www.fda.gov/cber/products/havgsk101705.htm. In Aug. 2005, FDA expanded the use of Merck's hepatitis A vaccine, VAQTA®, to include children as young as age 12 months (reported in *Needle Tips* 10/05).

Hepatitis B news

On Dec. 23, 2005, CDC published the ACIP recommendations "A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States: Part I: Immunization of Infants, Children, and Adolescents." It outlines a plan to improve prevention of perinatal and early childhood hepatitis B virus (HBV) transmission and to increase vaccination rates among unvaccinated children and adolescents. Specific strategies include (1) establishing standing orders for administering hepatitis B vaccine at birth; (2) instituting policies and procedures in delivery hospitals and case-management programs to improve identification of infants born to mothers who are hepatitis B surface antigen (HBsAg) positive or whose HBsAg status is unknown at time of delivery and administration of immunoprophylaxis to such infants; and (3) implementing vaccination record reviews of children ages 11–12 years and adolescents younger than 19 years born in countries with intermediate or high levels of HBV endemicity, adopting hepatitis B vaccine requirements for school entry, and integrating hepatitis B vaccination services into settings that serve adolescents. For a copy of the complete recommendations, go to www.cdc.gov/mmwr/pdf/rr/rr5416.pdf.

In Oct. 2005, ACIP voted to recommend hepatitis B vaccination for all unvaccinated adults at risk for HBV infection and for all adults seeking protection from HBV infection. This new recommendation has not yet been made official by publication in *MMWR;* the provisional recommendation is available at www.cdc.gov/nip/recs/provisional_recs/hepB_adult.pdf.

Mumps news

On April 14, CDC released a health advisory about the ongoing mumps outbreak in Iowa and other states. Links to the Health Advisory and mumps outbreak and control information are available at www.cdc.gov/nip/diseases/mumps/default.htm.

Meningococcal news

In the April 7 *MMWR,* CDC reported on 3 cases of Guillain-Barre Syndrome (GBS) among recent recipients of Menactra™ meningococcal conjugate vaccine. Previously (*MMWR Dispatch,* 10/6/05), CDC had reported on 5 GBS cases among Menactra recipients, stating: "To date evidence is insufficient to conclude that MCV4 causes GBS. An ongoing risk for serious meningococcal disease exists. Therefore, CDC is recommending continuation of current vaccination strategies. Whether receipt of MCV4 vaccine might increase the risk for recurrence of GBS is unknown; avoiding vaccinating persons who are not at high risk for meningococcal disease and who are known to have experienced GBS previously is prudent." The April 7 report states: "CDC continues to recommend use of MCV4 for persons for whom vaccination is indicated; the additional reported cases have not resulted in any changes to that recommendation." To access the April 7 article, go to www.cdc.gov/mmwr/preview/mmwrhtml/mm5513a2.htm. To access the Oct. 6, 2005, article, go to www.cdc.gov/mmwr/pdf/wk/mm54d1006.pdf.

Information about GBS has been added to an interim VIS for meningococcal vaccine, dated 10/7/05; it can be accessed at www.immunize.org/vis/menin05.pdf.

CDC resources

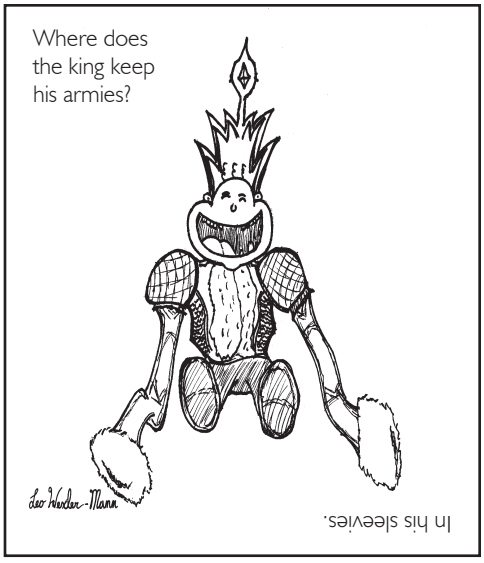
The 9th Edition of NIP's textbook, "Epidemiology and Prevention of Vaccine-Preventable Diseases" (the Pink Book) is now available online at www.cdc.gov/nip/publications/pink/default.htm (please refer to www.cdc.gov/nip/publications/pink/def_pink_errata.htm for a listing of errata and updates that have been identified since this edition was published in January 2006). The Pink Book gives immunization providers comprehensive information about routinely recommended vaccines, vaccine-preventable diseases, and more. A hard copy is available from the Public Health Foundation for $29. For ordering information, go to: bookstore.phf.org/product_info.php?cPath=45&products_id=463.

A CD-ROM titled "Immunization Works" is available from the National Immunization Program. The CD contains all ACIP recommendations published before Jan. 1, 2006; the Pink Book; a complete set of VISs; and much more. It can be ordered online until July 1 at www2.cdc.gov/nchstp_od/PIWeb/niporderform.asp.

Current VIS dates

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

DTaP/DT/DTP.....7/30/01	PCV..... 9/30/02
hepatitis A.....3/21/06	PPV.....7/29/97
hepatitis B 7/11/01	polio 1/1/00
Hib 12/16/98	rabies 1/12/06
influenza (LAIV) 10/20/05	Td 6/10/94
influenza (TIV)...10/20/05	Tdap 9/22/05
Japan. enceph. ..5/11/05	typhoid 5/19/04
meningococcal... 10/7/05	varicella..... 12/16/98
MMR.....1/15/03	yellow fever 11/9/04



When Do Children and Teens Need Vaccinations?

Age	Hep B Hepatitis B	DTaP/Tdap Diphtheria, tetanus, pertussis	Hib *Haemophilus influenzae* type b	Polio	PCV Pneumococcal conjugate	RV Rotavirus	MMR Measles, mumps, rubella	Varicella Chickenpox	Hep A Hepatitis A	MCV4 Meningococcal conjugate	Influenza
Birth	✓										
1 month	✓										
2 months		✓	✓	✓	✓	✓					
4 months	✓[1]	✓	✓	✓	✓	✓					
6 months	✓	✓	✓[2]	✓	✓	✓					✓[3] (6–59 mos) (given for each influenza season)
12–18 months		✓ (15–18 mos)	✓ (12–15 mos)		✓ (12–15 mos)		✓ (12–15 mos)	✓	✓✓ 2 doses 6–18 mos apart		
19–23 months	Catch-up[4]	Catch-up[4]	Catch-up[4] (to 5 years)	Catch-up[4]	Catch-up[4] (to 5 years)		Catch-up[4]	Catch-up[4]			
24–47 months											
4–6 years		✓		✓			✓				
11–12 years		✓ Tdap		Catch-up[4]			Catch-up[4]			✓	
13–14 years		Catch-up[4] (Tdap/Td)						(unvaccinated teens ages 13 yrs and older need 2 doses)			
15 years										Catch-up[4]	
16–18 years										College bound?[5]	

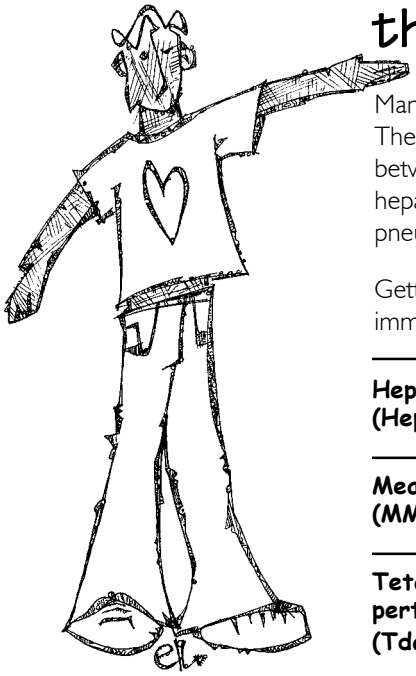
1. Your infant may not need a dose of Hep B at 4 months of age depending on the type of vaccine that your healthcare provider uses.
2. Your infant may not need a dose of Hib vaccine at 6 months of age depending on the type of vaccine that your healthcare provider uses.
3. If your child is younger than 9 years and is getting vaccinated against influenza for the first time, they should get 2 doses spaced at least 4 weeks apart.
4. If your child's vaccinations are delayed or missed entirely, they should be given as soon as possible.
5. If you have a teenager who is enrolling in college and planning to live in a dormitory, they should also be vaccinated against meningococcal disease.

Please note: Some children may need additional vaccines. Talk to your healthcare provider.

www.immunize.org/catg.d/when1.pdf • Item #P4050 (4/06)

Are you 11–19 years old?

Then you need to be vaccinated against these serious diseases!



Many people between the ages of 11 and 19 think they are done with their vaccinations. They think vaccinations are just for little kids. But guess what? There are millions of people between the ages of 11 and 19 who need vaccinations to prevent whooping cough, tetanus, diphtheria, hepatitis B, hepatitis A, chickenpox, measles, mumps, rubella, polio, influenza, meningococcal disease, or pneumococcal disease. Are you one of them?

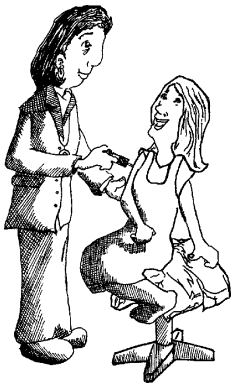
Getting immunized is a lifelong, life-protecting job. Make sure you and your healthcare provider keep your immunizations up to date. Check to be sure you've had all the vaccinations you need.

Hepatitis B (Hep B)	You need a series of doses of hepatitis B vaccine if you have not already received them.
Measles, Mumps, Rubella (MMR)	Check with your healthcare provider to make sure you've had two doses of MMR.
Tetanus, diphtheria, pertussis (whooping cough) (Tdap, Td)	You need a booster dose of Tdap after your 11th birthday (if it has been five years or more since your last dose). After that you will need a Td booster dose every ten years. A "tetanus shot" is not just something you get when you step on a nail!
Polio	If you haven't completed your series of polio vaccine doses and you are not yet 18, you should complete them now.
Varicella (Var) ("chickenpox shot")	If you have not been previously vaccinated and have not had chickenpox, you should get vaccinated against this disease. Children 12 years of age and younger need one dose. Teens 13 years of age and older need two doses.
Hepatitis A (Hep A)	Many teens need protection from hepatitis A. Do you travel outside the United States?* Do you live in a community with a high rate of hepatitis A? Are you a male who has sex with other males? Do you use illegal drugs? Do you have a clotting factor disorder or chronic liver disease? Or, do you just want to be protected against hepatitis A? Talk to your healthcare provider about this 2-dose series of shots.
Influenza	Do you have a chronic health problem such as asthma, diabetes, heart disease, etc.? Vaccination against influenza is especially recommended every fall for people with chronic diseases. Anyone who wants to avoid getting influenza should get vaccinated each year.
Pneumococcal disease ("pneumococcal shot")	Do you have a chronic health problem? Talk to your healthcare provider about whether you should receive a "pneumococcal shot."
Meningococcal disease	All 11–12-year-olds, teens about to enter high school (or at about age15), and older teens who are college bound and planning to live in a dormitory should get vaccinated against meningococcal disease. People with certain medical conditions should also receive this vaccine.

*** Do you travel outside the United States?**

If so, you may need additional vaccines. The Centers for Disease Control and Prevention (CDC) operates an international traveler's health information line. Call (877) 394-8747 or visit CDC's website at www.cdc.gov/travel for information about your destination. You may also consult a travel clinic or your healthcare professional.

www.immunize.org/catg.d/11teens8.pdf • Item #P4020 (2/06)



Vaccinations for Adults

You're NEVER too old to get immunized!

Getting immunized is a lifelong, life-protecting job. Don't leave your healthcare professional's office without making sure you've had all the vaccinations you need.

Vaccine ▼ Age ►	19–49 years	50–64 years	65 years & older
Influenza	You need a dose yearly if you have a chronic health problem,* are a healthcare worker, have close contact with certain individuals,* or you just want to avoid getting influenza.	You need a dose every fall (or winter).	
Pneumococcal	You need 1–2 doses if you have certain chronic medical conditions.*		You need 1 dose at age 65 (or older) if you've never been vaccinated. You may also need a 2nd dose.*
Tetanus, diphtheria, pertussis (Td, Tdap)	If you haven't had at least 3 tetanus-and-diphtheria-containing shots sometime in your life, you need to get them now. Start with dose #1, followed by dose #2 in 1 month, and dose #3 in 6 months. All adults need Td booster doses every 10 years. If you're younger than 65 years and haven't had pertussis-containing vaccine as an adult, one of the doses that you receive should have pertussis (whooping cough) vaccine in it—known as Tdap. Be sure to consult your health professional if you have a deep or dirty wound.		
Hepatitis B (HepB)	You need this vaccine if you have a specific risk factor for hepatitis B virus infection* or you simply wish to be protected from this disease. The vaccine is given as a 3-dose series (dose #1 now, followed by dose #2 in 1 month, and dose #3, usually given 5 months later).		
Hepatitis A (HepA)	You need this vaccine if you have a specific risk factor for hepatitis A virus infection* or you simply wish to be protected from this disease. The vaccine is given as 2 doses, 6–18 months apart.		
Measles, mumps, rubella (MMR)	You need at least 1 dose of MMR if born in 1957 or later. You may also need a 2nd dose.*		
Varicella (Chickenpox)	If you've never had chickenpox, you should get vaccinated now (2 doses, 1–2 months apart).		
Meningococcal	If you are a young adult going to college and plan to live in a dormitory, you need to get vaccinated against meningococcal disease. People with certain medical conditions should also receive this vaccine.		

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

Do you travel outside the United States? If so, you may need additional vaccines. The Centers for Disease Control and Prevention (CDC) operates an international traveler's health information line. Call (877) 394-8747 or visit CDC's website at www.cdc.gov/travel for information about your destination. You may also consult a travel clinic or your healthcare professional.

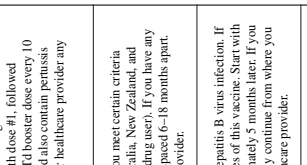
www.immunize.org/catg.d/p4030a.pdf • Item #P4030 (2/06)

Are your adult patients with HIV and hepatitis C getting all the vaccinations they need?

Sometimes vaccinations are overlooked when managing patients with complex medical conditions. Please give your HIV- or HCV-infected patients copies of the educational pieces below to help them stay informed about the vaccines they need.

For a ready-to-copy 8½ x 11" version of this piece, visit www.immunize.org/catg.d/p4041hiv.pdf.

If you have HIV infection, which vaccinations do you need?



The chart below shows which vaccinations you should have to protect your health. Make sure you and your healthcare provider keep your vaccinations up to date.

Influenza	***Yes!*** Because your immune system is weakened, you have a greater risk of developing complications from influenza. You should get this vaccine each fall.
Pneumococcal	***Yes!*** This vaccine is specifically recommended for you because of your HIV infection. If you haven't been vaccinated, you should get one dose now. If you were vaccinated when you were younger than age 65 and you are 65 years or older now, you should get another dose now, provided at least 5 years have passed since your first dose.
Tetanus, diphtheria, pertussis (Td, Tdap)	***Yes!*** If you haven't had at least 3 doses of tetanus-and-diphtheria-containing shots sometime in your life, you need to start or complete a 3-dose series now. Start with dose #1, followed by dose #2 in 1 month, and dose #3 in 6 months. You'll also need a Td booster dose every 10 years. If you're younger than 65 years, your next booster dose should also contain pertussis (whooping cough) vaccine—known as Tdap. Be sure to consult your healthcare provider any time you get a deep or dirty wound.
Hepatitis A (Hep A)	***Maybe.*** You may be at higher risk for hepatitis A virus infection if you meet certain criteria (e.g., plan to travel outside the U.S. [except for Canada, Japan, Australia, New Zealand, and Western Europe], are a man who has sex with men, are an injecting drug user). If you have any of the risk factors listed above, you'll need 2 doses of this vaccine, spaced 6–18 months apart. Discuss your need for a screening blood test with your healthcare provider.
Hepatitis B (Hep B)	***Maybe.*** Because you are HIV positive, you may also be at risk for hepatitis B virus infection. If you haven't had a series of hepatitis B vaccinations, you need 3 doses of this vaccine. Start with dose #1 now, followed by dose #2 in 1 month, and dose #3 approximately 5 months later. If you started the 3-dose series earlier but didn't complete it, you can simply continue from where you left off. Discuss your need for screening blood tests with your healthcare provider.
Measles, mumps, rubella (MMR)	***Maybe.*** Most adults are already protected because they got MMR vaccine as children or had measles, mumps, and rubella. If you weren't previously protected, were born in 1957 or later, and have no HIV symptoms or only mild symptoms, you need at least 1 dose of MMR. If you have moderate or severe symptoms from HIV, you should not receive MMR. If you are exposed to measles, call your healthcare provider right away. If you get measles, you are at risk of developing severe complications because of your HIV infection.
Meningococcal	***Maybe.*** Because of your HIV infection, you may be at increased risk for meningococcal disease, a rare but sometimes fatal bacterial infection. Talk to your healthcare provider about getting vaccinated against this disease.
Varicella (Chickenpox)	***No!*** Most adults are already protected because they had chickenpox as children (once you've had chickenpox, you're unlikely to get it again). If you never had chickenpox or the vaccine, you cannot receive varicella vaccine now because you are HIV infected. If you come in contact with a person who has chickenpox, call your healthcare provider right away.

Do you travel outside the United States? If so, you may need additional vaccines. The Centers for Disease Control and Prevention (CDC) operates an international traveler's health information line. Call (877) 394-8747 or visit CDC's website at www.cdc.gov/travel for information about your destination. You may also consult a travel clinic or your healthcare professional.

www.immunize.org/catg.d/p4041.pdf • Item #P4041 (2/06)

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For a ready-to-copy 8½ x 11" version of this piece, visit www.immunize.org/catg.d/4042hepc.pdf.

If you have hepatitis C, which vaccinations do you need?

The chart below shows which vaccinations you should have to protect your health. Make sure you and your healthcare provider keep your vaccinations up to date.

Influenza	***Probably.*** You should receive one dose of the injectable influenza vaccine every year if you want to avoid getting sick with influenza.
Pneumococcal	***Yes!*** This vaccine is specifically recommended for you if you have liver disease. If you haven't been vaccinated, you should get one dose now. If you've already been vaccinated and you were younger than age 65 when you got your shot, you should get another dose now, provided at least 5 years have passed since your first dose.
Tetanus, diphtheria, pertussis (Td, Tdap)	***Yes!*** If you haven't had at least 3 tetanus-and-diphtheria-containing shots sometime in your life, you need to start or complete a 3-dose series now. Start with dose #1, followed by dose #2 in 1 month, and dose #3 in 6 months. You'll also need a Td booster dose every 10 years. If you're younger than 65 years, your next booster dose should also contain pertussis (whooping cough) vaccine—known as Tdap. Be sure to consult your healthcare provider any time you get a deep or dirty wound.
Hepatitis A (Hep A)	***Yes!*** Chronic liver disease puts you at risk for serious complications if you get infected with the hepatitis A virus. If you've never been vaccinated against hepatitis A, you need 2 doses of this vaccine, spaced 6–18 months apart.
Hepatitis B (Hep B)	***Probably.*** Most people with hepatitis C virus infection want to be protected against all forms of viral hepatitis to avoid liver disease complications. And if you have a risk factor for contracting hepatitis B, you should definitely be vaccinated. Discuss risk factors and vaccination with your healthcare provider. You need 3 doses of this vaccine. Start with dose #1 now, followed by dose #2 in 1 month, and dose #3 approximately 5 months later.
Measles, mumps, rubella (MMR)	***Maybe.*** If you are an adult who was born in 1957 or later, you need at least 1 dose of MMR. Discuss your need for vaccination with your healthcare provider.
Varicella (Chickenpox)	***Maybe.*** If you've never had the chickenpox disease, you should get vaccinated now (2 doses, 1–2 months apart).

For more information about hepatitis C, call the CDC-INFO Contact Center at (800) CDC-INFO (800) 232-4636], visit www.cdc.gov/hepatitis, or go to www.hepprograms.org for a listing of hepatitis C organizations. You can also call the American Liver Foundation at (800) 465-4837 (www.liverfoundation.org) or the Hepatitis Foundation International at (800) 891-0707 (www.hepfi.org).

Do you travel outside the United States? If so, you may need additional vaccines. The Centers for Disease Control and Prevention (CDC) operates an international traveler's health information line. Call (877) 394-8747 or visit CDC's website at www.cdc.gov/travel for information about your destination. You may also consult a travel clinic or your healthcare professional.

www.immunize.org/catg.d/4042hepc.pdf • Item #4042 (2/06)

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Medical errors put infants at risk for chronic hepatitis B virus infection—six case reports

Since 1990, New York state has had a law mandating hepatitis B surface antigen (HBsAg) testing of all pregnant women, reporting of positive HBsAg results, and treatment of infants born to HBsAg-positive women. Compliance with these mandates and current Advisory Committee for Immunization Practices (ACIP) recommendations for perinatal hepatitis B prevention is closely monitored through routine visits to birthing hospitals to conduct record reviews and provide education for hospital staff. Despite these efforts, medical errors continue to be made that put infants at risk for chronic hepatitis B virus (HBV) infection. These errors underscore the importance of administering the first dose of hepatitis B vaccine at birth.

Although 90 percent of perinatal hepatitis B virus infections can be prevented by appropriate prophylactic treatment, many newborns don't receive such prophylaxis. Up to 90 percent of infants who become infected will develop chronic HBV infection with all its serious potential sequelae, including possible cirrhosis and liver cancer later in life. To better protect newborns against chronic HBV infection, the New York State Department of Health Immunization Program provides state-funded hepatitis B vaccine, free of charge, to any birthing hospital that institutes a universal hepatitis B birth dose policy.

The following six cases from New York were reported in April 2005 by Elizabeth J. Herlihy, RN, BSN, MS, hepatitis B coordinator, New York State Department of Health. The cases illustrate a variety of medical errors that led to high-risk infants not receiving the recommended hepatitis B prophylaxis (0.5 mL hepatitis B vaccine and 0.5 mL hepatitis B immune globulin [HBIG] within 12 hours of birth).

Case Study #1

A woman known to be chronically infected with hepatitis B virus (HBV) delivered her third infant a month early at a birthing hospital. Unfortunately, her HBsAg status was incorrectly recorded in her hospital record as negative. The hospital did not have a universal birth dose policy, so the infant received no hepatitis B vaccine at birth. The mother assumed that the baby was vaccinated because her other two infants had been treated appropriately. A few weeks later (at the time of the mother's original due date), the public health department contacted her to make sure the infant had been vaccinated. They discovered the mother had not been given a shot record for her newborn upon discharge, nor had vaccines ever been discussed with her at the hospital. The hospital was contacted, and it was discovered that the infant had not received *any* prophylaxis. The first dose of vaccine was immediately administered, but by then the infant was already one month old.

Case Study #2

A woman in labor presented to a suburban birthing hospital. The hospital staff found that she had not been tested for HBsAg this pregnancy because her family practice physician said she was negative two years ago so "not to worry about it." The hospital correctly ordered a test, but did not ask the test to be done as quickly as possible and did not give the infant hepatitis B vaccine dose #1 within 12 hours of birth. The infant was discharged two days after birth; the mother's HBsAg test came back positive three days after birth. That same day, public health representatives tracked down the family and made sure the infant immediately received vaccine dose #1 and HBIG. Hepatitis vaccine doses #2 and #3 were given according to the recommended schedule.

Case Study #3

An infant born to an HBsAg-positive mother at a birthing hospital received HBIG at birth but not hepatitis B vaccine. Upon investigation, it was learned that the physician forgot to write an order for the vaccine. The hospital did not have standing orders in effect for the universal hepatitis B birth dose, so the infant did not routinely receive hepatitis B vaccine. Public health staff uncovered the error when the infant was two weeks of age, and the infant was immediately vaccinated.

Case Study #4

Staff from the New York State Department of Health conducted a perinatal hepatitis B record review at a birthing hospital. The hospital had failed a record review the prior year, and one of the corrective actions recommended was to include a hard copy of the maternal HBsAg test result in the record. Upon review, it was discovered that the wrong hepatitis test (hepatitis B surface antibody [HBsAb], rather than hepatitis B surface antigen [HBsAg]) had been ordered in three out of the 35 records reviewed. Furthermore, this same error had been made by three different Ob/Gyn physicians. The Ob/Gyn department head was very surprised to learn of this error and immediately issued a memorandum of clarification to the physicians that HBsAg must be ordered for all pregnant women.

Case Study #5

A woman known to be chronically infected with HBV delivered her second infant five weeks prematurely. Her first infant had received appropriate prophylaxis, and postvaccination serology revealed that child to be immune. The woman was tested during her current pregnancy and again found to be HBsAg positive. She was referred to a gastroenterologist who ordered further serology including hepatitis B e antigen and viral load tests. The e antigen was non-reactive and the viral load was low (which is often the case in persons chronically infected with HBV).

The infant was born five weeks early and transferred to the neonatal intensive care unit (NICU). The neonatologist at the NICU consulted the mother's gastroenterologist. The two decided that the infant did not need to receive hepatitis B prophylaxis, even though it was clearly documented on the hospital record that the mother was HBsAg positive. Neither HBIG nor hepatitis B vaccine was given to the infant. The hospital did not have a universal birth dose policy, so vaccine was not routinely administered.

The county health department, assuming the appropriate treatment had been given at birth, discovered this error when following up to make sure the infant was scheduled to receive a second dose of vaccine. The infant's pediatrician was not aware that the mother was chronically infected with HBV and was very disturbed to learn that the infant had not received prophylaxis at birth. The infant was immediately seen in the pediatric office and given the first dose of vaccine at two months of age.

Case Study #6

A multipara woman sought late prenatal care for her current pregnancy. She had been HBsAg positive during all prior pregnancies, but her current HBsAg test result was negative. Suspecting this could be a false negative HBsAg result, the provider ordered another specimen to be drawn and sent to the state laboratory. Before the results were known, the woman delivered at a birthing hospital that had been sent the prenatal file, which included negative HBsAg results. Since the mother was incorrectly thought to be HBsAg negative, no HBIG was administered to the infant. Fortunately, the hospital recently had adopted a universal hepatitis B birth dose policy, so the infant was administered a routine birth dose of hepatitis B vaccine.

www.immunize.org/catg.d/p2128.pdf • Item #P2128 (1/06)

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

In December 2005, the Centers for Disease Control and Prevention (CDC) published updated recommendations of the Advisory Committee on Immunization Practices (ACIP) for prevention of hepatitis B virus (HBV) infections in infants, children, and adolescents. 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.

CDC recommends that all delivery hospitals institute standing orders to ensure

- Administration of hepatitis B vaccine to all medically stable newborns weighing at least 2 kg (4.4 lb) at birth before discharge from the nursery.
- Identification of infants born to hepatitis B surface antigen (HBsAg)-positive mothers and infants born to mothers with unknown HBsAg status and administration of appropriate immunoprophylaxis to these infants.

The guidance below has been developed to help your hospital establish standing orders in the labor and delivery and nursery units and has been reviewed by CDC staff for consistency with ACIP recommendations.

Labor and Delivery (L&D)

- Upon admission, review the HBsAg[1] status of all pregnant women. You must 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!

Women with a documented HBsAg test result

- 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 and is at risk for HBV infection during this pregnancy (e.g., had more than one sex partner in the previous 6 months; 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.

Women without a documented HBsAg test result

- 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 HBsAg test result ASAP.

Nursery

All newborns

- Review a copy of the mother's original HBsAg[1] lab report. Provide appropriate management based on (1) the mother's HBsAg status and (2) the infant's birth weight. Manage those who weigh less than 2 kg differently from those who weigh 2 kg or more (see below and footnotes 2, 5, 6).
- Ensure that a copy of the original maternal HBsAg[1] laboratory report is in the infant's medical record.

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 appropriately in the infant's medical record, including date and time of administration.
- Give the mother an immunization record card that includes the hepatitis B vaccination date, and explain the need for a complete hepatitis B vaccine series to fully protect her baby. Remind the mother to bring the card with her each time her baby sees a provider.

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.
- Give the mother an immunization record card that includes the hepatitis B vaccination date. Explain the need for further doses to fully protect her baby. Remind the mother to bring the card with her each time her baby sees a provider.
- 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 comes back positive
  - 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 provider.
  - Notify the mother's and the infant's healthcare provider that the mother's HBsAg test result is pending.

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, including date and time of administration.
- Give the mother an immunization record card that includes the date of the hepatitis B vaccine and HBIG doses, and explain the need for further doses of hepatitis B vaccine to fully protect her baby. Remind the mother to bring the card with her each time her baby sees a provider.
- 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
  - About the importance of her infant completing the full hepatitis B vaccine series on schedule
  - About modes of HBV transmission and the need for vaccination of her susceptible household, sexual, and needle-sharing contacts
  - That she may breast-feed her infant upon delivery, even before hepatitis B vaccine and HBIG are given
  - 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
  - That she needs to have a medical evaluation for chronic hepatitis B, including an assessment of whether she is eligible for antiviral treatment

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 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.
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.

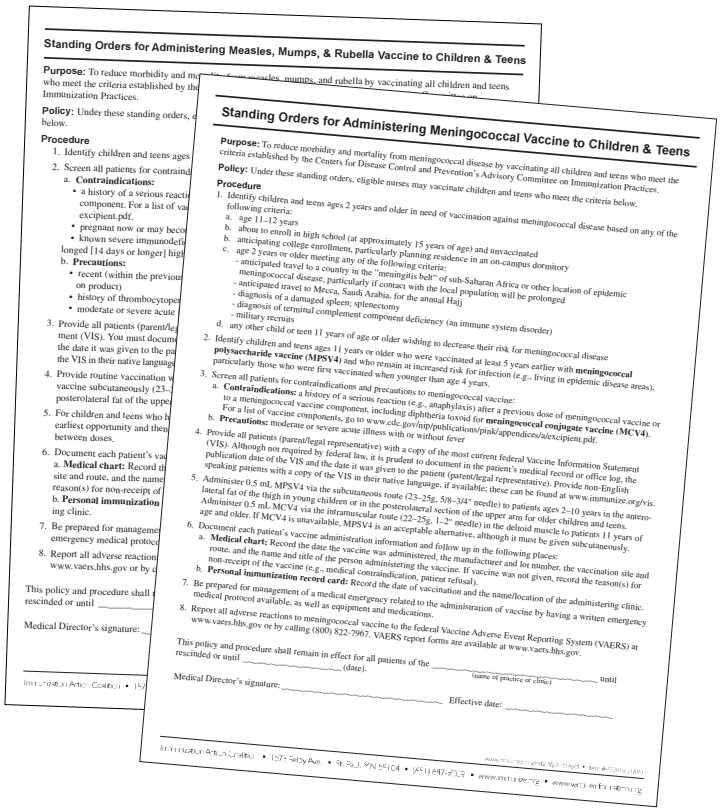
www.immunize.org/catg.d/p2130per.pdf • Item #2130 (4/06)

STANDING ORDERS for administering vaccines to children and adults

Adapt these standing orders for use in your practice setting!

A few years ago, the Immunization Action Coalition (IAC) developed examples of standing orders for administering vaccines to adults. We've recently added standing orders for children and teens. Healthcare providers can easily adapt these standing orders for use in their own facilities.

The Centers for Disease Control and Prevention has reviewed all examples of IAC's standing orders for technical accuracy. All are available on IAC's website at www.immunize.org/standingorders.



Read what others have said about the use of standing orders:

The Advisory Committee on Immunization Practices (ACIP): "Standing orders programs authorize nurses and pharmacists to administer vaccinations according to an institution- or physician-approved protocol without a physician's exam. Standing orders programs can be used in inpatient and outpatient facilities, long-term-care facilities, managed-care organizations, assisted living facilities, correctional facilities, pharmacies, adult workplaces, and home health-care agencies to vaccinate patient, client, resident, and employee populations."

CDC. Use of Standing Orders Programs to Increase Adult Vaccination Rates: Recommendations of the Advisory Committee on Immunization Practices. *MMWR* 2000; 49 (RR01).

The Task Force on Community Preventive Services, convened by DHHS with support from the CDC, analyzed the peer-reviewed published evidence on interventions designed to improve the timely immunization of children and adults. Among others, the task force found the following intervention to be proven effective for office practices to improve vaccine delivery:

"Standing orders for registered nurses, physician assistants, and medical assistants that allow staff to independently screen patients, identify opportunities for immunization, and administer vaccines under physician supervision (where permissible by local regulations) are effective at raising immunization rates."

Committee on Community Health Services and Committee on Practice and Ambulatory Medicine. Increasing Immunization Coverage. *Pediatrics* 2003; 112; 994.

The following standing orders are now (or soon will be) available at www.immunize.org/standingorders:

Standing Orders	Children	Adults
Diphtheria, tetanus & acellular pertussis (DTaP) vaccine	*coming soon*	
Haemophilus influenzae type b (Hib) vaccine	*coming soon*	
Hepatitis A (HepA) vaccine	*coming soon*	✔
Hepatitis B (HepB) vaccine	*coming soon*	✔
Inactivated poliovirus vaccine (IPV)	✔	
Influenza vaccines (TIV and LAIV)	✔	✔
Measles, mumps, rubella (MMR) vaccine	✔	✔
Meningococcal vaccines (MCV and MPSV)	✔	✔
Pneumococcal conjugate vaccine (PCV)	*coming soon*	
Pneumococcal polysaccharide vaccine (PPV)	✔	✔
Tetanus, diphtheria & acellular pertussis (Td,Tdap) vaccine	*coming soon*	✔
Varicella (VAR) vaccine	✔	✔
Medical management of vaccine reactions	*coming soon*	✔

Vaccines and Related Products Distributed in the United States

This product listing is current as of October 2005.

Vaccine/Biologic	Brand name	Manufacturer	Type	How supplied
Diphtheria, Tetanus, acellular Pertussis	Infanrix	GlaxoSmithKline	Inactivated	single-dose vial or syringe
Diphtheria, Tetanus, acellular Pertussis	Tripedia	sanofi pasteur	Inactivated	single-dose vial
Diphtheria, Tetanus, acellular Pertussis	Daptacel	sanofi pasteur	Inactivated	single-dose vial
Diphtheria, Tetanus, acellular Pertussis + Hib	TriHIBit	sanofi pasteur	Inactivated	single-dose vial
Diphtheria, Tetanus, acellular Pertussis + Hep B + IPV	Pediarix	GlaxoSmithKline	Inactivated	single-dose vial or syringe
Diphtheria, Tetanus (DT; ped <7yrs, P-free)	generic	sanofi pasteur	Inactivated	single-dose vial
Tetanus, diphtheria, adsorbed (Td; ≥7 yrs, P-free)	Decavac	sanofi pasteur	Inactivated	single-dose syringe
Tetanus, diphtheria, adsorbed (Td; ≥7 yrs)	generic	Mass. Biologic Labs[1]	Inactivated	15-dose vial
Tetanus, diphtheria, acellular Pertussis (Tdap; 10–18 yrs)	Boostrix	GlaxoSmithKline	Inactivated	single-dose vial or syringe
Tetanus, diphtheria, acellular Pertussis (Tdap; 11–64 yrs)	Adacel	sanofi pasteur	Inactivated	single-dose vial
Tetanus toxoid (TT; ≥7 yrs), adsorbed	generic	sanofi pasteur	Inactivated	10-dose vial
Tetanus toxoid (TT; adult booster use only)	generic	sanofi pasteur	Inactivated	15-dose vial
Tetanus immune globulin (TIG)	HyperTET	Talecris	Human immunoglobulin	single-dose syringe
Haemophilus influenzae type b (PRP-T)	ActHIB	sanofi pasteur	Inactivated	single-dose vial
Haemophilus influenzae type b (HbOC)	HibTITER	Wyeth	Inactivated	single-dose vial
Haemophilus influenzae type b (PRP-OMP)	PedvaxHIB	Merck	Inactivated	single-dose vial
Haemophilus influenzae type b (PRP-OMP) + Hep B	Comvax	Merck	Inactivated	single-dose vial
Hepatitis A: ped/adol & adult formulations	Havrix	GlaxoSmithKline	Inactivated	single-dose vial or syringe
Hepatitis A: ped/adol & adult formulations	Vaqta	Merck	Inactivated	single-dose vial or syringe
Hepatitis A immune globulin	GamaSTAN	Talecris	Human immunoglobulin	2 mL and 10 mL vials
Hepatitis B: ped/adol & adult formulations	Engerix-B	GlaxoSmithKline	Inactivated	single-dose vial or syringe
Hepatitis B: ped/adol & adult formulations	Recombivax HB	Merck	Inactivated	single-dose vial
Hepatitis B: dialysis formulation	Recombivax HB	Merck	Inactivated	single-dose vial
Hepatitis B immune globulin (HBIG)	HyperHEP B	Talecris	Human immunoglobulin	1 mL syringe, 1 mL or 5 mL vial
Hepatitis B immune globulin (HBIG): ped formulation	HyperHEP B	Talecris	Human immunoglobulin	single-dose 0.5 mL neonatal syringe
Hepatitis B immune globulin (HBIG)	Nabi-HB	Nabi	Human immunoglobulin	single-dose vial
Hepatitis A & B: adult formulation	Twinrix	GlaxoSmithKline	Inactivated	single-dose vial or syringe
Influenza (trivalent inactivated influenza vaccine [TIV])	Fluarix	GlaxoSmithKline	Inactivated	10 single-dose syringes
Influenza (live attenuated influenza vaccine [LAIV])	FluMist	MedImmune	Live, intranasal	10 single-use sprayers
Influenza (TIV)	Fluvirin	Chiron	Inactivated	single-dose syringe and 10-dose vial
Influenza (TIV)	Fluzone	sanofi pasteur	Inactivated	10-dose vial
Influenza: (TIV; ≥36 mos; no preservative)	Fluzone	sanofi pasteur	Inactivated	single-dose syringe (0.5 mL)
Influenza: (TIV; ped 6–35 mos; no preservative)	Fluzone	sanofi pasteur	Inactivated	single-dose syringe (0.25 mL)
Measles, Mumps, Rubella (MMR)	M-M-R II	Merck	Live attenuated	single-dose vial
Measles	Attenuvax	Merck	Live attenuated	single-dose vial
Mumps	Mumpsvax	Merck	Live attenuated	single-dose vial
Rubella	Meruvax II	Merck	Live attenuated	single-dose vial
Measles, Mumps, Rubella + Varicella (MMRV)	ProQuad	Merck	Live attenuated	single-dose vial
Meningococcal conjugate (A/C/Y/W-135)	Menactra	sanofi pasteur	Inactivated	single-dose vial
Meningococcal polysaccharide (A/C/Y/W-135)	Menomune	sanofi pasteur	Inactivated	single-dose vial
Pneumococcal conjugate, 7-valent	Prevnar	Wyeth	Inactivated	single-dose vial
Pneumococcal polysaccharide, 23-valent	Pneumovax 23	Merck	Inactivated	single-dose vial or 5-dose vial
Polio (IPV)	IPOL	sanofi pasteur	Inactivated	single-dose syringe and 10-dose vial
Varicella	Varivax	Merck	Live attenuated	single-dose vial
Varicella-zoster immune globulin (VZIG)	generic	Mass. Biologic Labs[2]	Human immunoglobulin	125-unit and 625-unit vials
Anthrax, adsorbed	BioThrax	BioPort	Inactivated	multi-dose vial
Japanese encephalitis	JE-VAX	sanofi pasteur	Inactivated	single-dose vial
Rabies	Imovax	sanofi pasteur	Inactivated	single-dose vial
Rabies	RabAvert	Chiron	Inactivated	single-dose vial
Rabies immune globulin (RIG)	Imogam Rabies-HT	sanofi pasteur	Human immunoglobulin	2 mL and 10 mL vials
Rabies immune globulin (RIG)	HyperRAB	Talecris	Human immunoglobulin	2 mL and 10 mL vials
Typhoid Vi polysaccharide	Typhim Vi	sanofi pasteur	Inactivated	single-dose syringe and 20-dose vial
Typhoid, live oral Ty21a	Vivotif	Berna	Live attenuated	4-capsule package
Yellow fever	YF-Vax	sanofi pasteur	Live attenuated	single- and 5-dose vial

[1]Distributed by General Injectables and Vaccines (800) 521-7468
[2]Distributed by FFF Enterprises (800) 843-7477

Vaccine Company Contact Information

Berna Products Corporation (www.bernaproducts.com) ..... (800) 533-5899
BioPort Corporation (www.bioport.com) ..... (877) 246-8472
Chiron Corporation (www.chiron.com & www.rabavert.com) ..... (800) 244-7668
GlaxoSmithKline (www.gskvaccines.com) ..... (866) 475-8222
MedImmune Vaccines, Inc. (www.medimmune.com) ..... (877) 633-4411
Merck & Co., Inc. (www.merckvaccines.com) ..... (800) 637-2579
Nabi Biopharmaceuticals (www.nabi.com) ..... (800) 327-7106
sanofi pasteur (www.us.sanofipasteur.com) ..... (800) 822-2463
Talecris Biotherapeutics (www.talecris.com) ..... (800) 243-4153
Wyeth Vaccines (www.wyeth.com) ..... (800) 572-8221

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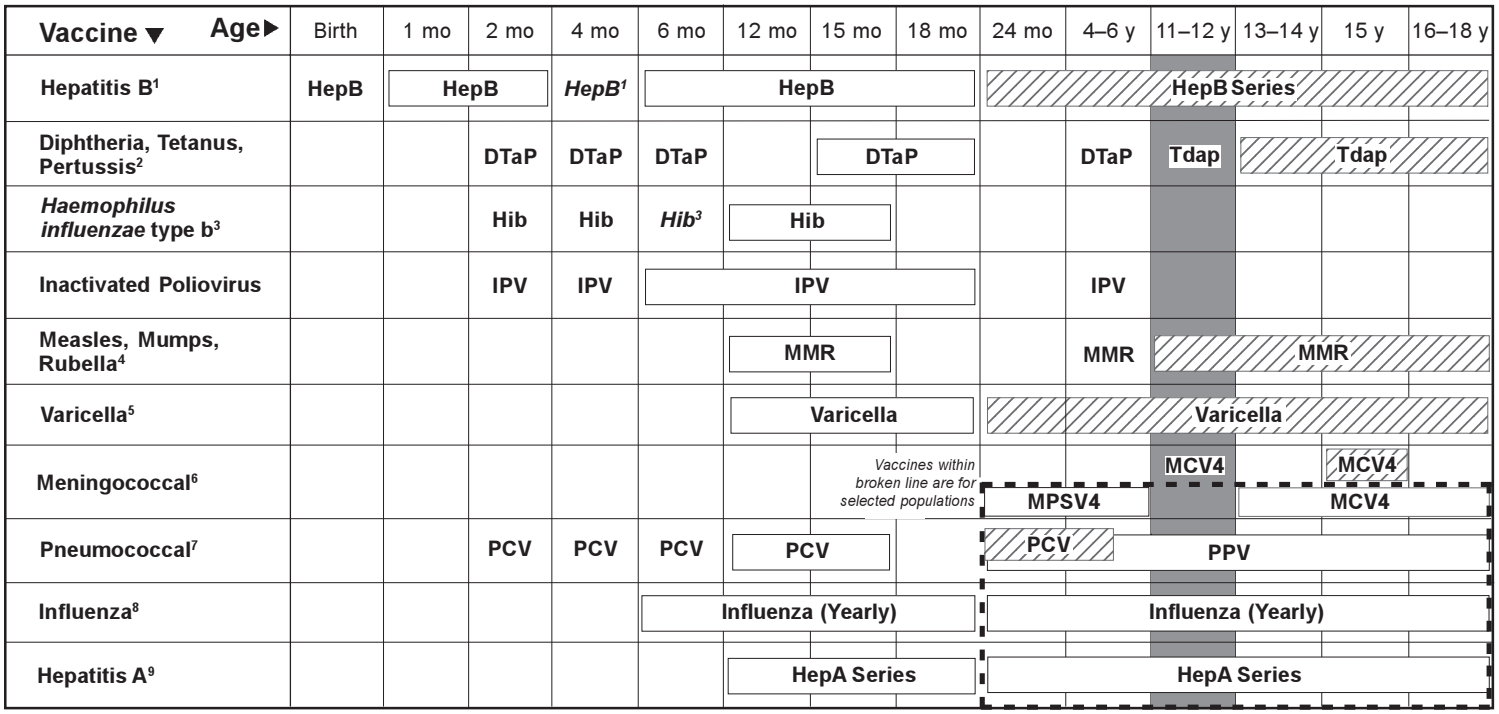
Recommended Childhood and Adolescent Immunization Schedule, U.S., 2006



This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2005, for children through age 18 years. Any dose not administered at the recommended age should be administered at any subsequent visit when indicated and feasible. ▨ Indicates age groups that warrant special effort to administer those vaccines not previously administered. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective ACIP statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at www.vaers.hhs.gov or by telephone, 800-822-7967.

□ Range of recommended ages ▨ Catch-up immunization ■ 11–12 year old assessment

1. Hepatitis B vaccine (HepB). ***AT BIRTH:*** **All newborns** should receive monovalent HepB soon after birth and before hospital discharge. **Infants born to mothers who are HBsAg-positive** should receive HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth. **Infants born to mothers whose HBsAg status is unknown** should receive HepB within 12 hours of birth. The mother should have blood drawn as soon as possible to determine her HBsAg status; if HBsAg-positive, the infant should receive HBIG as soon as possible (no later than age 1 week). **For infants born to HBsAg-negative mothers,** the birth dose can be delayed in rare circumstances but only if a physician's order to withhold the vaccine and a copy of the mother's original HBsAg-negative laboratory report are documented in the infant's medical record. ***FOLLOWING THE BIRTH DOSE:*** The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1–2 months. The final dose should be administered at age ≥24 weeks. It is permissible to administer 4 doses of HepB (e.g., when combination vaccines are given after the birth dose); however, if monovalent HepB is used, a dose at age 4 months is not needed. **Infants born to HBsAg-positive mothers** should be tested for HBsAg and antibody to HBsAg after completion of the HepB series, at age 9–18 months (generally at the next well-child visit after completion of the vaccine series).

2. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP). The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15–18 months. The final dose in the series should be given at age ≥4 years. **Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap – adolescent preparation)** is recommended at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a Td booster dose. Adolescents 13–18 years who missed the 11–12-year Td/Tdap booster dose should receive a single dose of Tdap if they have completed the recommended childhood DTP/DTaP vaccination series. Subsequent **tetanus and diphtheria toxoids (Td)** are recommended every 10 years.

3. *Haemophilus influenzae* type b conjugate vaccine (Hib). Three Hib conjugate vaccines are licensed for infant use. If PRP-OMP (PedvaxHIB® or ComVax® [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required. DTaP/Hib combination products should not be used for primary immunization in infants at ages 2, 4 or 6 months but can be used as boosters following any Hib vaccine. The final dose in the series should be administered at age ≥12 months.

4. Measles, mumps, and rubella vaccine (MMR). The second dose of MMR is recommended routinely at age 4–6 years but may be administered during any visit, provided at least 4 weeks have elapsed since the first dose and both doses are administered beginning at or after age 12 months. Those who have not previously received the second dose should complete the schedule by age 11–12 years.

5. Varicella vaccine. Varicella vaccine is recommended at any visit at or after age 12 months for susceptible children (i.e., those who lack a reliable history of chickenpox). Susceptible persons aged ≥13 years should receive 2 doses administered at least 4 weeks apart.

6. Meningococcal vaccine (MCV4). Meningococcal conjugate vaccine (MCV4) should be given to all children at the 11–12 year old visit as well as to unvaccinated adolescents at high school entry (15 years of age). Other adolescents who wish to decrease their risk for meningococcal disease may also be vaccinated. All college freshmen living in dormitories should also be vaccinated, preferably with MCV4, although **meningococcal polysaccharide vaccine (MPSV4)** is an acceptable alternative. Vaccination against invasive meningococcal disease is recommended for children and adolescents aged ≥2 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high risk groups (see *MMWR* 2005;54[RR-7]:1-21); use MPSV4 for children aged 2–10 years and MCV4 for older children, although MPSV4 is an acceptable alternative.

7. Pneumococcal vaccine. The heptavalent **pneumococcal conjugate vaccine (PCV)** is recommended for all children aged 2–23 months and for certain children aged 24–59 months. The final dose in the series should be given at age ≥12 months. **Pneumococcal polysaccharide vaccine (PPV)** is recommended in addition to PCV for certain high-risk groups. See *MMWR* 2000;49(RR-9):1-35.

8. Influenza vaccine. Influenza vaccine is recommended annually for children aged ≥6 months with certain risk factors (including, but not limited to, asthma, cardiac disease, sickle cell disease, human immunodeficiency virus [HIV], diabetes, and conditions that can compromise respiratory function or handling of respiratory secretions or that can increase the risk for aspiration), healthcare workers, and other persons (including household members) in close contact with persons in groups at high risk (see *MMWR* 2005;54[RR-8]:1-55). In addition, healthy children aged 6–23 months and close contacts of healthy children aged 0–5 months are recommended to receive influenza vaccine because children in this age group are at substantially increased risk for influenza-related hospitalizations. For healthy persons aged 5–49 years, the intranasally administered, live, attenuated influenza vaccine (LAIV) is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine (TIV). See *MMWR* 2005;54(RR-8):1-55. Children receiving TIV should be administered a dosage appropriate for their age (0.25 mL if aged 6–35 months or 0.5 mL if aged ≥3 years). Children aged ≤8 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by at least 4 weeks for TIV and at least 6 weeks for LAIV).

9. Hepatitis A vaccine (HepA). HepA is recommended for all children at 1 year of age (i.e., 12–23 months). The 2 doses in the series should be administered at least 6 months apart. States, counties, and communities with existing HepA vaccination programs for children 2–18 years of age are encouraged to maintain these programs. In these areas, new efforts focused on routine vaccination of 1-year-old children should enhance, not replace, ongoing programs directed at a broader population of children. HepA is also recommended for certain high-risk groups (see *MMWR* 1999;48[RR-12]:1-37).

The Recommended Childhood and Adolescent Immunization Schedule is approved by:
Advisory Committee on Immunization Practices **(www.cdc.gov/nip/acip)** • American Academy of Pediatrics **(www.aap.org)** • American Academy of Family Physicians **(www.aafp.org)**

Recommended Immunization Schedule for Children and Adolescents Who Start Late or Who Are More Than 1 Month Behind, U.S., 2006

The tables below give catch-up schedules and minimum intervals between doses for children who have delayed immunizations. There is no need to restart a vaccine series regardless of the time that has elapsed between doses. Use the chart appropriate for the child's age.

Catch-up schedule for children aged 4 months through 6 years

Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
Diphtheria, Tetanus, Pertussis	**6 wks**	**4 weeks**	**4 weeks**	**6 months**	**6 months**[1]
Inactivated Poliovirus	**6 wks**	**4 weeks**	**4 weeks**	**4 weeks**[2]	
Hepatitis B[3]	**Birth**	**4 weeks**	**8 weeks** (and 16 weeks after first dose)		
Measles, Mumps, Rubella	**12 mo**	**4 weeks**[4]			
Varicella	**12 mo**				
***Haemophilus influenzae* type b**[5]	**6 wks**	**4 weeks** if first dose given at age <12 months **8 weeks (as final dose)** if first dose given at age 12–14 months **No further doses needed** if first dose given at age ≥15 months	**4 weeks**[6] if current age <12 months **8 weeks (as final dose)**[6] if current age ≥12months and second dose given at age <15 months **No further doses needed** if previous dose given at age ≥15months	**8 weeks (as final dose)** This dose only necessary for children aged 12 months–5 years who received 3 doses before age 12 months	
Pneumococcal[7]	**6 wks**	**4 weeks** if first dose given at age <12 months and current age <24 months **8 weeks (as final dose)** if first dose given at age ≥12 mo or current age 24–59 months **No further doses needed** for healthy children if first dose given at age ≥24 months	**4 weeks** if current age <12 months **8 weeks (as final dose)** if current age ≥12 months **No further doses needed** for healthy children if previous dose given at age ≥24 months	**8 weeks (as final dose)** This dose only necessary for children aged 12 months–5 years who received 3 doses before age 12 months	

Catch-up schedule for children aged 7 years through 18 years

Vaccine	Minimum Interval Between Doses		
	Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Booster Dose
Tetanus, Diphtheria[8]	**4 weeks**	**6 months**	**6 months** if first dose given at age <12 months and current age <11 years; otherwise **5 years**
Inactivated Poliovirus[9]	**4 weeks**	**4 weeks**	**IPV**[2,9]
Hepatitis B	**4 weeks**	**8 weeks** (and 16 weeks after first dose)	
Measles, Mumps, Rubella	**4 weeks**		
Varicella[10]	**4 weeks**		

1. **DTaP.** The fifth dose is not necessary if the fourth dose was administered after the fourth birthday.
2. **IPV.** For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was administered at age ≥ 4 years. If both OPV and IPV were administered as part of a series, a total of 4 doses should be given, regardless of the child's current age.
3. **HepB.** Administer the 3-dose series to all children and adolescents <19 years of age if they were not previously vaccinated.
4. **MMR.** The second dose of MMR is recommended routinely at age 4–6 years but may be administered earlier if desired.
5. **Hib.** Vaccine is not generally recommended for children aged ≥5 years.
6. **Hib.** If current age <12 months and the first 2 doses were PRP-OMP (PedvaxHIB® or ComVax® [Merck]), the third (and final) dose should be administered at age 12–15 months and at least 8 weeks after the second dose.
7. **PCV.** Vaccine is not generally recommended for children aged ≥5 years.
8. **Td.** Adolescent tetanus, diphtheria, and pertussis vaccine (Tdap) may be substituted for any dose in a primary catch-up series or as a booster if age appropriate for Tdap. A five-year interval from the last Td dose is encouraged when Tdap is used as a booster dose. See ACIP recommendations for further information.
9. **IPV.** Vaccine is not generally recommended for persons aged ≥18 years.
10. **Varicella.** Administer the 2-dose series to all susceptible adolescents aged ≥13 years.

Report adverse reactions to vaccines through the federal Vaccine Adverse Event Reporting System. For information on reporting reactions following immunization, please visit **www.vaers.hhs.gov** or call the 24-hour national toll-free information line 800- 822-7967. Report suspected cases of vaccine-preventable diseases to your state or local health department.

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Website at **www.cdc.gov/nip** or contact **800-CDC-INFO (800-232-4636)** (In English, En Español — 24/7)

Recommended Adult Immunization Schedule
United States, October 2005–September 2006

The recommendations on this page must be read along with the footnotes, which can be found on the next 2 pages of this schedule.

Recommended adult immunization schedule, by vaccine and age group

Vaccine ▼ / Age group ▶	19–49 years	50–64 years	≥65 years
Tetanus, diphtheria (Td)[1]*	1-dose booster every 10 yrs		
Measles, mumps, rubella (MMR)[2]*	1 or 2 doses	1 dose	
Varicella[3]*	2 doses (0, 4–8 wks)	2 doses (0, 4–8 wks)	
Vaccines below broken line are for selected populations			
Influenza[4]*	1 dose annually	1 dose annually	
Pneumococcal (polysaccharide)[5,6]	1–2 doses		1 dose
Hepatitis A[7]*	2 doses (0, 6–12 mos, or 0, 6–18 mos)		
Hepatitis B[8]*	3 doses (0, 1–2, 4–6 mos)		
Meningococcal[9]	1 or more doses		

*Covered by the Vaccine Injury Compensation Program

Recommended adult immunization schedule, by vaccine and medical and other indications

Vaccine ▼ / Indication ▶	Pregnancy	Congenital immunodeficiency; leukemia;[10] lymphoma; generalized malignancy; cerebrospinal fluid leaks; therapy with alkylating agents, antimetabolites, radiation, or high-dose, long-term corticosteroids	Diabetes; heart disease; chronic pulmonary disease; chronic liver disease, including chronic alcoholism	Asplenia[10] (including elective splenectomy and terminal complement component deficiencies)	Kidney failure, end-stage renal disease, recipients of hemodialysis or clotting factor concentrates	Human immunodeficiency virus (HIV) infection[2,10]	Healthcare workers
Tetanus, diphtheria (Td)[1]*	1-dose booster every 10 yrs						
Measles, mumps, rubella (MMR)[2]*			1 or 2 doses				
Varicella[3]*			2 doses (0, 4–8 wks)				2 doses
Influenza[4]*	1 dose annually			1 dose annually	1 dose annually		
Pneumococcal (polysaccharide)[5,6]	1–2 doses	1–2 doses					1–2 doses
Hepatitis A[7]*	2 doses (0, 6–12 mos, or 0, 6–18 mos)						
Hepatitis B[8]*	3 doses (0, 1–2, 4–6 mos)				3 doses (0, 1–2, 4–6 mos)		
Meningococcal[9]	1 dose			1 dose		1 dose	

*Covered by the Vaccine Injury Compensation Program

- For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection)
- Recommended if some other risk factor is present (e.g., based on medical, occupational, lifestyle, or other indications)
- Contraindicated

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American College of Obstetricians and Gynecologists (ACOG), and the American Academy of Family Physicians (AAFP). The Immunization Action Coalition adapted the design of this schedule from CDC.

Footnotes

1. Tetanus and Diphtheria (Td) vaccination: Adults with uncertain histories of a complete primary vaccination series with diphtheria and tetanus toxoid–containing vaccines should receive a primary series using combined Td toxoid. A primary series for adults is 3 doses; administer the first 2 doses at least 4 weeks apart and the third dose 6–12 months after the second. Administer 1 dose if the person received the primary series and if the last vaccination was received ≥10 years previously. Consult the ACIP statement for recommendations for administering Td as prophylaxis in wound management (www.cdc.gov/mmwr/preview/mmwrhtml/00041645.htm). The American College of Physicians Task Force on Adult Immunization supports a second option for Td use in adults: a single Td booster at age 50 years for persons who have completed the full pediatric series, including the teenage/young adult booster. A newly licensed tetanus-diphtheria-acellular pertussis vaccine is available for adults. ACIP recommendations for its use will be published.

2. Measles, Mumps, Rubella (MMR) vaccination. *Measles component:* adults born before 1957 can be considered immune to measles. Adults born during or after 1957 should receive ≥1 dose of MMR unless they have a medical contraindication, documentation of ≥1 dose, history of measles based on healthcare provider diagnosis, or laboratory evidence of immunity. A second dose of MMR is recommended for adults who 1) were recently exposed to measles or in an outbreak setting, 2) were previously vaccinated with killed measles vaccine, 3) were vaccinated with an unknown type of measles vaccine during 1963–1967, 4) are students in postsecondary educational institutions, 5) work in a healthcare facility, or 6) plan to travel internationally. Withhold MMR or other measles-containing vaccines from HIV-infected persons with severe immunosuppression. *Mumps component:* 1 dose of MMR vaccine should be adequate for protection for those born during or after 1957 who lack a history of mumps based on healthcare provider diagnosis or who lack laboratory evidence of immunity. *Rubella component:* administer 1 dose of MMR vaccine to women whose rubella vaccination history is unreliable or who lack laboratory evidence of immunity. For women of childbearing age, regardless of birth year, routinely determine rubella immunity and counsel women regarding congenital rubella syndrome. Do not vaccinate women who are pregnant or who might become pregnant within 4 weeks of receiving the vaccine. Women who do not have evidence of immunity should receive MMR vaccine upon completion or termination of pregnancy and before discharge from the healthcare facility.

3. Varicella vaccination. Varicella vaccination is recommended for all adults without evidence of immunity to varicella. Special consideration should be given to those who 1) have close contact with persons at high risk for severe disease (healthcare workers and family contacts of immunocompromised persons) or 2) are at high risk for exposure or transmission (e.g., teachers of young children; child care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; nonpregnant women of childbearing age; and international travelers). Evidence of immunity to varicella in adults includes any of the following: 1) documented age-appropriate varicella vaccinaton (i.e., receipt of 1 dose before age 13 years or receipt of 2 doses [administered at least 4 weeks apart] after age 13 years); 2) born in the United States before 1966; 3) history of varicella disease based on healthcare provider diagnosis or or self- or parental report of typical varicella disease for non–U.S.-born persons born before 1966 and all persons born during 1966–1997 (for a patient reporting a history of an atypical, mild case, healthcare providers should seek either an epidemiolgic link with a typical varicella case or evidence of laboratory confirmation, if it was performed at the time of acute disease); 4) history of herpes zoster based on healthcare provider diagnosis; or 5) laboratory evidence of immunity. Do not vaccinate women who are pregnant or might become pregnant within 4 weeks of receiving the vaccine. Assess pregnant women for evidence of varicella immunity. Women who do not have evidence of immunity should receive dose 1 of varicella vaccine upon completion or termination of pregnancy and before discharge from the healthcare facility. Dose 2 should be given 4–8 weeks after dose 1.

4. Influenza vaccination: *Medical indications:* chronic disorders of the cardiovascular or pulmonary systems, including asthma; chronic metabolic diseases, including diabetes mellitus, renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications or by HIV); any condition (e.g., cognitive dysfunction, spinal cord injury, seizure disorder or other neuromuscular disorder) that compromises respiratory function or the handling of respiratory secretions or that can increase the risk of aspiration; and pregnancy during the influenza season. No data exist on the risk for severe or complicated influenza disease among persons with asplenia; however, influenza is a risk factor for secondary bacterial infections that can cause severe disease among persons with asplenia. *Occupational indications:* healthcare workers and employees of long-term care and assisted living facilities. *Other indications:* residents of nursing homes and other long-term care and assisted living facilities; persons likely to transmit influenza to persons at high risk (i.e., in-home household contacts and caregivers of children birth through 23 months of age, or persons of all ages with high-risk conditions); and anyone who wishes to be vaccinated. For healthy, nonpregnant persons aged 5–49 years without high-risk conditions who are not contacts of severely immunocompromised persons in special care units, intranasally administered influenza vaccine (FluMist®) may be administered in lieu of inactivated vaccine.

5. Pneumococcal polysaccharide vaccination. *Medical indications:* chronic disorders of the pulmonary system (excluding asthma); cardiovascular diseases; diabetes mellitus; chronic liver diseases, including liver disease as a result of alcohol abuse (e.g.,cirrhosis); chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]); immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection [vaccinate as close to diagnosis as possible when CD4 cell counts are highest], leukemia, lymphoma, multiple myeloma, Hodgkin's disease, generalized malignancy, organ or bone marrow transplantation); chemotherapy with alkylating agents, antimetabolites, or high-dose, long-term corticosteroids; and cochlear implants. *Other indications:* Alaska Natives and certain American Indian populations; residents of nursing homes and other long-term care facilities.

Footnotes

6. Revaccination with pneumococcal polysaccharide vaccine. One-time revaccination after 5 years for persons with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection, leukemia, lymphoma, multiple myeloma, Hodgkin's disease, generalized malignancy, organ or bone marrow transplantation); or chemotherapy with alkylating agents, antimetabolites, or high-dose, long-term corticosteroids. For persons aged ≥65 years, one-time revaccination if they were vaccinated ≥5 years previously and were aged <65 years at the time of primary vaccination.

7. Hepatitis A vaccination. *Medical indications:* persons with clotting factor disorders or chronic liver disease. *Behavioral indications:* men who have sex with men or users of illegal drugs. *Occupational indications:* persons working with hepatitis A virus (HAV)-infected primates or with HAV in a research laboratory setting. *Other indications:* persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A (for list of countries, visit www.cdc.gov/travel/diseases.htm#hepa) as well as any person wishing to obtain immunity. Current vaccines should be given in a 2-dose series at either 0 and 6–12 months, or 0 and 6–18 months. If the combined hepatitis A and hepatitis B vaccine is used, administer 3 doses at 0, 1, and 6 months.

8. Hepatitis B vaccination. *Medical indications:* hemodialysis patients (use special formulation [40 μg/mL] or two 20-μg/mL doses) or patients who receive clotting factor concentrates. *Occupational indications:* healthcare workers and public-safety workers who have exposure to blood in the workplace; and persons in training in schools of medicine, dentistry, nursing, laboratory technology, and other allied health professions. *Behavioral indications:* injection-drug users; persons with more than one sex partner in the previous 6 months; persons with a recently acquired sexually transmitted disease (STD); and men who have sex with men. *Other indications:* household contacts and sex partners of persons with chronic hepatitis B virus (HBV) infection; clients and staff of institutions for the developmentally disabled; all clients of STD clinics; inmates of correctional facilities; or international travelers who will be in countries with high or intermediate prevalence of chronic HBV infection for more than 6 months (for list of countries, visit www.cdc.gov/travel/diseases.htm#hepa).

9. Meningococcal vaccination. *Medical indications:* adults with anatomic or functional asplenia, or terminal complement component deficiencies. *Other indications:* first-year college students living in dormitories; microbiologists who are routinely exposed to isolates of *Neisseria meningitidis*; military recruits; and 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 during the dry season [December–June]), particularly if contact with the local populations will be prolonged. Vaccination is required by the government of Saudi Arabia for all travelers to Mecca during the annual Hajj. Meningococcal conjugate vaccine is preferred for adults meeting any of the above indications who are aged ≤55 years, although meningococcal polysaccharide vaccine (MPSV4) is an acceptable alternative. Revaccination after 5 years may be indicated for adults previously vaccinated with MPSV4 who remain at high risk for infection (e.g., persons residing in areas in which disease is epidemic).

10. Selected conditions for which *Haemophilus influenzae* type b (Hib) vaccine may be used. *Haemophilus influenzae* type b conjugate vaccines are licensed for children aged 6 weeks–71 months. No efficacy data are available on which to base a recommendation concerning use of Hib vaccine for older children and adults with the chronic conditions associated with an increased risk for Hib disease. However, studies suggest good immunogenicity in patients who have sickle cell disease, leukemia, or HIV infection, or have had splenectomies; administering vaccine to these patients is not contraindicated.

This schedule indicates the recommended age groups and medical indications for routine administration of currently licensed vaccines for persons aged ≥19 years. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations, consult the manufacturers' package inserts and the complete statements from the ACIP (www.cdc.gov/nip/publications/acip-list.htm).

Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available by telephone, 800-822-7967, or from the VAERS website at www.vaers.hhs.gov.

Information on how to file a Vaccine Injury Compensation Program claim is available at www.hrsa.gov/osp/vicp or by telephone, 800-338-2382.To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005, telephone 202-357-6400.

Additional information about the vaccines listed above and contraindications for vaccination is also available at www.cdc.gov/nip or from the CDC-INFO Contact Center at 800-CDC-INFO (232-4636) in English and Spanish, 24 hours a day, 7 days a week.

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American College of Obstetricians and Gynecologists (ACOG), and the American Academy of Family Physicians (AAFP). The Immunization Action Coalition adapted the design of this schedule from CDC.

IAC's "Ask the Experts" team

William L. Atkinson, MD, MPH

Andrew T. Kroger, MD, MPH

Linda A. Moyer, RN

Eric E. Mast, MD, MPH

ACIP and AAP have different recommendations for spacing Tdap and MCV4 if they are not given simultaneously. Please discuss.

The ACIP Tdap recommendations published in the *MMWR* 3/24/06 (www.cdc.gov/mmwr/pdf/rr/rr5503.pdf), state that Tdap or Td can be administered at any time before or after MCV4. AAP's Committee on Infectious Diseases took a somewhat more conservative approach and suggested these vaccines be separated by a month if not given at the same visit. Providers may use either approach.

If patients have a history of pertussis disease, should they receive Td rather than Tdap?

No. Although well-documented (e.g., culture confirmed) pertussis disease is likely to confer at least temporary immunity against pertussis, the duration of such immunity is unknown, but is probably at least 5 years. As a general rule, persons with an indication for Tdap should receive it regardless of a history of pertussis disease. However, if the illness was recent (less than 5 years) and the diagnosis was certain (i.e., culture confirmed), it is reasonable to wait 3–5 years before administration of Tdap, unless tetanus and diphtheria toxoids are needed.

How many doses of Tdap can be given to an unimmunized adult?

The vaccine is licensed for just 1 dose for adults through age 64 years. Subsequent doses, as well as vaccine given to adults ages 65 years and older, should be Td.

What if we mistakenly give Tdap to an adult over age 65 or a child ages 7–9 years?

Use of Tdap in persons 65 years or older or in children ages 7–9 is considered off-label and is not recommended. However, the dose can be counted and does not need to be repeated with Td.

How can I use the recently licensed MMRV vaccine?

MMRV vaccine (ProQuad®, Merck) is a combination vaccine of MMR and varicella, and is licensed for use in persons ages 12 months through 12 years. ACIP has voted to recommend that it can be given whenever both MMR and varicella vaccines are indicated.

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Has anything new been learned about a possible relationship between receipt of MCV and Guillain-Barre Syndrome (GBS) that was reported last summer?

Only three additional reports of GBS following receipt of meningococcal conjugate vaccine have been received since the FDA/CDC issued an alert on this subject in October 2005 (8 total reports). The number of cases of GBS in adolescents who received MCV is no greater than would be expected in an unvaccinated adolescent population. An ongoing known risk for serious meningococcal disease exists, so CDC recommends continuation of current vaccination strategies, including routine vaccination of children at ages 11–12 years and at high school entry, and of college freshmen who will live in dormitories. See *MMWR,* 4/7/06, Vol. 55(13) for more information.

In the 2006 Childhood/Adolescent Schedule, it indicates 4 doses of hepatitis B vaccine are to be routinely given. Please comment.

Yes, 4 doses are indicated, but you may notice that the dose at 4 months is italicized, just as is the Hib dose at 6 months. The italics are intended to indicate that an additional dose of hepatitis B vaccine may be administered if the clinician chooses to use a combination vaccine that contains hepatitis B vaccine (i.e., COMVAX® or PEDIARIX®) beginning when the child is around 2 months old and the child received a birth dose.

What vaccines are in the "pipeline"?

Vaccines that are probably closest to licensure include vaccines for herpes zoster (shingles) and human papillomavirus (cervical cancer and genital warts). You can keep track of where they are in the process by going to http://aapredbook.aappublications.org/news/vaccstatus.shtml.

What are the recommendations for the use of rotavirus vaccine?

ACIP voted in February to recommend rotavirus vaccine for infants at ages 2, 4, and 6 months. Children should receive the first dose of the vaccine by age 12 weeks and all doses by age 32 weeks. The recommendations will be published in *MMWR* in mid-2006.

What is the evidence that RotaTeq® will not be followed by intussusception, as was the case with RotaShield®?

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.

When will rotavirus vaccine be covered by the Vaccines for Children (VFC) program?

Rotavirus vaccine is covered for VFC-eligible children at this time.

Hepatitis B

by Linda A. Moyer, RN, and Eric E. Mast, MD, MPH

Where can I obtain a copy of the new ACIP hepatitis B recommendations for infants, children, and teens?

These recommendations were published in *MMWR* on 12/23/05. The entire document is available at www.cdc.gov/mmwr/pdf/rr/rr5416.pdf. In addition, CDC released a "Dear Colleague" letter that summarizes succinctly the updated hepatitis B recommendations that prenatal care providers, delivery hospitals, newborn care providers, and health departments should follow to prevent perinatal and early childhood HBV transmission. To obtain the letter, go to www.immunize.org/acip/HBVinfant_dearcolleague.pdf.

Why is there now a strong recommendation to use the birth dose for *all* newborns?

There are a number of reasons for this recommendation:

- Administration of a birth dose of hepatitis B vaccine is required for effective postexposure immunoprophylaxis to prevent perinatal HBV

(continued on page 20)

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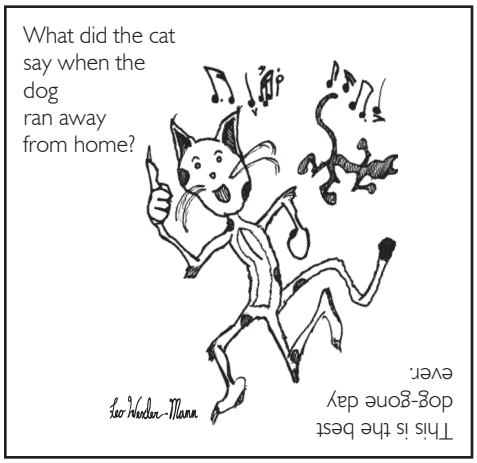
infection. Though maternal hepatitis B surface antigen (HBsAg) testing should identify all newborns who require postexposure immunoprophylaxis, it does not. Errors are sometimes made in testing maternal HBsAg status and in reporting test results. Administering a birth dose to all infants (even without hepatitis B immune globulin) serves as a "safety net," preventing perinatal infection among infants born to mothers who are not identified as HBsAg-positive.

- The birth dose provides early protection to infants at risk for infection after the perinatal period. Although infections in young children represented less than 10% of all HBV infections before implementation of routine childhood hepatitis B vaccination, childhood infections resulted in an estimated 30–40% of the chronic HBV infections among persons who acquired their infections in the United States. Many of these chronic infections would not have been prevented by a selective program of identification and immunization of only infants born to HBsAg-positive mothers.
- Administration of a birth dose has been associated with higher rates of on-time completion of the hepatitis B vaccine series. In certain populations, the birth dose has been associated with improved completion rates for all other infant vaccines.

Please explain how the universal birth dose recommendations have been strengthened.

The recommendations to administer hepatitis B vaccine at birth now include the following:

- All delivery hospitals should implement 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 at birth.
- All medically stable infants weighing 2 kg or more at birth and born to HBsAg-negative mothers should receive the first dose of vaccine before hospital discharge. Only single-antigen hepatitis B vaccine should be used for the birth dose.
- On a case-by-case basis and only in rare circumstances, the first dose may be delayed until after hospital discharge for an infant who weighs 2 kg or more and whose mother is HBsAg negative. When such a decision is made, a physician's order **not** to give the birth dose must be written, and a copy of the original laboratory report indicating that the mother was HBsAg negative during this pregnancy should be placed in the infant's medical record.



Is it possible to obtain free vaccine for vaccinating newborns in the hospital?

Yes, if the hospital applies for the Vaccines for Children (VFC) program, the program will furnish hepatitis B vaccine free of charge for VFC-eligible children. Information on VFC is available at www.cdc.gov/nip/vfc. In addition, birth hospitals can contact their state health department to determine if other methods for obtaining free vaccine are available. Some states have elected to provide their birth hospitals with free vaccine, and some states use their federal immunization grant monies (317 funds) for this purpose.

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Do AAP, AAFP, and ACOG all agree with the birth dose recommendations from CDC?

Yes.

What does CDC anticipate will be the greatest challenges to implementing the hepatitis B immunization strategy for infants, children, and adolescents?

- Despite major efforts, perinatal hepatitis B prevention programs identify only about 50% of the unborn infants of HBsAg-positive women for case management. Case management is important because it has been shown to maximize timely delivery of postexposure immunoprophylaxis to infants born to HBsAg-positive mothers. The new ACIP recommendations provide guidance for implementing delivery hospital policies and procedures and for improving case-management programs identifying and tracking infants born to HBsAg-positive mothers.
- Infants born to women with unknown HBsAg status often do not receive hepatitis B vaccine within 12 hours of birth. Appropriate management of these infants is important because women without prenatal care have a higher prevalence of HBsAg positivity than do women who are screened prenatally. The new ACIP recommendations provide guidance for implementing delivery hospital policies and procedures and for improving case-management programs identifying and tracking infants born to mothers with unknown HBsAg status.
- Hepatitis B vaccine birth dose coverage was only 46% in 2004. To increase birth dose coverage, ACIP now recommends that all delivery hospitals implement standing orders for administration of hepatitis B vaccine as part of routine medical care of all medically stable infants weighing 2 kg or more at birth.

- Efforts to prevent HBV transmission among adolescents are hampered by teenagers' low rate of healthcare visits. The new ACIP recommendations provide implementation guidance to ensure high vaccine coverage among adolescents.

What are the new recommendations for prenatal HBsAg testing and management of pregnant women?

- All pregnant women should be tested routinely for HBsAg during an early prenatal visit (e.g., first trimester) in **each** pregnancy, even if they have been previously vaccinated or tested.
- Women who were not screened prenatally, those with clinical hepatitis, and those who engage in behaviors that put them at increased risk for HBV infection (e.g., recent or current injection drug use, having had sex with more than one partner in the previous 6 months or with an HBsAg-positive partner, or evaluation or treatment for an STD) should be tested at the time of admission to the hospital for delivery.
- All laboratories that provide HBsAg testing of pregnant women should use an FDA-licensed or FDA-approved HBsAg test and should perform testing according to the manufacturer's labeling. This includes testing of initially reactive specimens with a licensed neutralizing confirmatory test.
- When pregnant women are tested for HBsAg at the time of admission for delivery, shortened testing protocols may be used and initially reactive results should be reported to expedite administration of immunoprophylaxis to infants.
- Women who are HBsAg positive should be referred to an appropriate case-management program to ensure that their infants receive timely postexposure prophylaxis and follow-up.
- A copy of the original lab report indicating the pregnant woman's HBsAg status should be provided to the hospital where delivery is planned and to the healthcare provider who will care for the newborn.
- Women who are HBsAg positive should be provided with or referred for appropriate counseling and medical evaluation and receive information

concerning hepatitis B that discusses
- modes of transmission;
- perinatal concerns (e.g., infants who are born to HBsAg-positive mothers may be breast-fed);
- prevention of HBV transmission to contacts, including the importance of postexposure immunoprophylaxis for the newborn infant and hepatitis B vaccination for household, sexual, and needle-sharing contacts;
- substance abuse treatment, if appropriate;
- medical evaluation and possible treatment of chronic hepatitis B.

- When HBsAg testing of pregnant women is not feasible (i.e., in remote areas without access to a laboratory), all infants should receive hepatitis B vaccine no later than 12 hours after birth and should complete the hepatitis B vaccine series according to a recommended schedule for infants born to HBsAg-positive mothers.

Are all HBsAg-positive test results for pregnant women supposed to be reported to the state health department?

Yes. This reporting is critical as it helps assure appropriate case management of infants born to HBV-infected mothers and counseling and medical evaluation for the infected mothers.

If a woman has risk factors for contracting HBV infection while she is pregnant, what actions should be taken to protect her and her newborn?

- Women at increased risk for HBV infection (e.g., recent or current injection drug use, having had sex with more than one partner in the previous 6 months or with an HBsAg-positive partner, or evaluation or treatment for an STD) should be vaccinated with hepatitis B vaccine during pregnancy and should be counseled about other methods to prevent HBV infection. Pregnancy is not a contraindication for the administration of hepatitis B vaccine.
- Women at increased risk for HBV infection and those with clinical hepatitis should be tested for HBsAg at the time of admission to the hospital for delivery (even if the test was done earlier in pregnancy).

Do you have patients who are HBsAg-positive?

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

The FDA licenses five medications for treatment in the United States. They are interferon alfa-2b and peginterferon alfa-2a (administered subcutaneously); and adefovir dipivoxil, entecavir, and lamivudine (administered orally).

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.

What percentage of infants with chronic HBV infection will eventually develop liver disease?

On the basis of data from follow-up studies of persons infected with HBV as infants or young children, approximately 25% of those with chronic infection die prematurely from cirrhosis or liver cancer, the majority of whom remain asymptomatic until onset of cirrhosis or endstage liver disease.

Why aren't adults included in the new ACIP hepatitis B recommendations?

ACIP decided to publish a two-part hepatitis B statement, Part 1 covering immunization of infants, children, and adolescents. Part 2, the adult immunization recommendations, is scheduled to be published in *MMWR* in late 2006. ACIP has already voted on the recommendations for adults. You can access the provisional ACIP recommendations for hepatitis B vaccination of adults at www.cdc.gov/nip/recs/provisional_recs/hepB_adult.pdf.

Hepatitis A

What has changed concerning the licensures of hepatitis A vaccines?

On Aug. 11, 2005, FDA approved the use of Merck's VAQTA® hepatitis A vaccine for children age 12 months and older. On Oct. 17, 2005, FDA approved the use of GlaxoSmithKline's HAVRIX® hepatitis A vaccine for persons age 12 months and older. These supplemental licensures have replaced the original licensures, both of which had age indications for persons age 2 years and older.

Is there a new hepatitis A recommendation for children?

ACIP voted to approve the following recommendations in October 2005; they have been reflected in the 2006 childhood immunization schedule:

- All children should receive hepatitis A vaccine at age 1 year (i.e., 12–23 months). Vaccination should be completed according to the licensed schedules and integrated into the routine childhood and adolescent vaccination schedule. Children who are not vaccinated by age 2 years can be vaccinated at subsequent visits.
- States, counties, and communities with existing hepatitis A vaccination programs for children ages 2–18 years are encouraged to maintain these programs. In these areas, new efforts focused on routinely vaccinating one-year-olds, should enhance, not replace, ongoing programs directed at a broader population of children.
- In areas without existing hepatitis A vaccination programs, catch-up vaccination of unvaccinated children ages 2–18 years can be considered. Such programs might be especially warranted in the context of rising incidence or ongoing outbreaks among children or adolescents.

Note: Existing hepatitis A vaccination recommendations for groups at increased risk remain unchanged.

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

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May 2006

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