Volume 13 – Number 2 October 2003

NEEDLE TIPS

and the Hepatitis B Coalition News

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

WHAT'S ON THE INSIDE:

Ask the Experts

Editor's note: The Immunization Action Coalition thanks William L. Atkinson, MD, MPH; Linda A. Moyer, RN; and Eric E. Mast, MD, of the Centers for Disease Control and Prevention (CDC) for answering the following questions for our readers. Dr. Atkinson, medical epidemiologist at the National Immunization Program, serves as a CDC liaison to the Coalition. Ms. Moyer is an epidemiologist and Dr. Mast is a medical epidemiologist, both at CDC's Division of Viral Hepatitis.

Immunization questions?

- Email nipinfo@cdc.gov
- Call CDC's Immunization Information Hotline at (800) 232-2522
- Call your state health dept. (phone numbers at: www.immunize.org/coordinators)

Immunization questions

by William L. Atkinson, MD, MPH

How can we quickly determine how to "catch up" children who have fallen behind on their shots, and can we still use combination vaccines while doing so?

As a general rule, infants or children who are more than one month or one dose behind schedule should be on an accelerated schedule, which means the intervals between doses should be reduced to the minimum allowable. Beginning with the 2003 "Recommended Childhood and Adolescent Immunization Schedule" issued by ACIP, AAP, and AAFP, a "catch-up" schedule is now included on the second page. To obtain a copy, go to www.immunize.org/cdc/child-schedule.pdf

Combination vaccines can also be used on an accelerated schedule. The minimum intervals between doses are determined by the individual components that have the longest minimum interval.

What should we do if we give an injection by the wrong route (e.g., IM instead of SC)?

Vaccines should always be given by the route recommended by the manufacturer because data regarding safety and efficacy of alternate routes are limited. However, ACIP recommends that vaccines given by the wrong route be counted as valid with two exceptions: hepatitis B or rabies vaccine given by any route other than IM should not be

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NEEDLE TIPS

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NEEDLE TIPS is a semiannual publication of the Immunization Action Coalition (IAC) written for health professionals. All content is reviewed by the Centers for Disease Control and Prevention (CDC) for technical accuracy, with the exception of opinion pieces written by non-CDC authors. This publication is supported in part by CDC Grant Nos. U66/CCU518372-03 and U50/CCU518789-03. The content is solely the responsibility of IAC and does not necessarily represent the official views of CDC. Circulation is approximately 150,000. ISSN 1526-1816.

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IAC EXPRESS is the Coalition's free email news and announcement service. To subscribe, simply send an email to express@immunize.org with the word SUBSCRIBE in the "Subject" field.

The **Immunization Action Coalition (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 children 0–18 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.

What others say about IAC

It is with great pleasure and pride that we reproduce in this column a sampling of comments culled from letters of support for our work from highly respected individuals and organizations. We share these because we want you to feel comfortable placing your trust in the information IAC provides. Many thanks to those who gave us permission to share their kind words.

"I have had more than a dozen years of experience in collaborating with the dedicated IAC directors and staff in shaping and delivering messages about vaccine-preventable diseases . . . IAC has a proven track record for utilizing a broad range of communication venues to reach health professionals. These include well-written and entertaining newsletters, electronic e-mail messaging for instant updates, durable vaccine use reference tables for posting in offices for ready access by nurses, and omnibus website design with excellent links to reliable secondary sites. . . . To put it simply, no organization does it better."

Thomas N. Saari, MD, FAAP
Prof. of Pediatrics, Div. of Pediatric Inf. Disease
University of Wisconsin Medical School

"IAC is extremely effective because it has its fingers on the pulse of the immunization system in the U.S. IAC tailors its output to be useful to parents and health workers, dealing with issues of concern in real time, with practical information and advice, using a variety of media (conferences, four websites, listservs, printed materials, references, videos, Q & As, etc.). Whether the issue is a vaccine safety concern, practical problems in delivering a birth dose of hepatitis B vaccine, or the best ways to immunize difficult-to-access high-risk groups, IAC has more than a decade of experience in translating health policy into useful advice, and backing that up with the most relevant information."

Mark A. Kane, MD, MPH
Director, Children's Vaccine Program at PATH

"Of special note has been your ability to prepare materials in many different languages so that families, health care workers, and the media are able to avail themselves of the most reliable information. Your collaborations with CDC as well as other groups concerned with infant, child, adolescent, and adult immunization are legendary and we constantly stand in awe of the productivity of IAC."

Samuel L. Katz, MD
Wilburt C. Davison Professor & Chairman Emeritus
Duke Children's Hospital and Health Center

"Because the goals of the Asian Liver Center are to provide health education and blood screening for Asian populations at risk for hepatitis B, we commend the IAC's efforts to reach out to diverse populations by providing Vaccine Information Statements (VISs) in 28 languages . . . IAC is uniquely situated to distribute materials to inform and motivate the health care community to meet the needs of underserved populations, high-risk groups, and the general public."

Samuel So, MD
The Lui Hac Minh Professor
Director, Asian Liver Center at Stanford University

"The Immunization Action Coalition is one of our department's most valuable partners! They help to evaluate, translate, and condense research and educational data into usable tools. They are a professional resource that we use daily because we can depend on their reliability. The IAC has helped us increase our immunization rates and prevent disease."

Marci Eckerson, RN
Nurse Consultant and Hepatitis B Coordinator
Montana Dept. of Public Health & Human Services

"Potentially harmful misinformation about immunization is circulating on the Internet, in the media, and in congressional hearings related to vaccine safety . . . IAC consistently has been an effective voice in addressing these misconceptions. IAC's publications, websites, and other educational materials are up-to-date, understandable, and effective resources for parents and the health professionals who communicate with them. . . We look forward to continuing to collaborate with IAC to provide up-to-date, science-based information about immunization to health professionals, the media, policy makers, and the public . . ."

Louis Z. Cooper, MD, FAAP
National Network for Immunization Information

"The AMA's Group on Science, Quality, and Public Health has been collaborating with the not-for-profit IAC for more than five years. . . . The AMA has found the many materials on immunization and viral hepatitis provided by the IAC such as *NEEDLE TIPS*. . . to be remarkably useful and well designed. In fact, we promote the availability of these publications on our Infectious Disease website. Our collaborations with Dr. Wexler, her staff, and IAC have been very productive and useful to both organizations."

Michael J. Scotti, Jr., MD
Senior Vice President, Professional Standards
American Medical Association

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

Every medical practice delivering vaccination services should regularly use this 35-minute video for training staff members who administer vaccines. Each video comes with presenter's notes and a skills checklist.

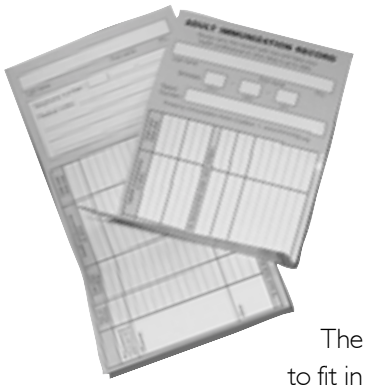
Cost is $25 per copy. For 20 or more copies, contact us for discount pricing.

Call (651) 647-9009 or email admin@immunize.org

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.

Immunization record cards for adults!



Give all your adult patients a permanent vaccination record card from IAC. With this card, they'll always know their vaccination status—and next-dose due dates.

The bright canary-yellow card comes pre-folded to fit in a wallet alongside other important cards. Printed on rip-proof, smudge-proof, water-proof paper, it's meant to last.

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 September 22, 2003.

The next ACIP meetings

The Advisory Committee on Immunization Practices (ACIP) is a committee of 15 national experts that provides advice and guidance to the Centers for Disease Control and Prevention (CDC) regarding the most appropriate use of vaccines. ACIP meetings are held three times a year in Atlanta, Ga., and are open to the public. The next meetings will be held on Oct. 15–16, 2003, and Feb. 25–26, 2004. For more information, visit www.cdc.gov/nip/acip

ACIP statements

All clinicians should have a set of ACIP statements, the public health recommendations on vaccines, published in the *Morbidity and Mortality Weekly Report (MMWR).* Free continuing education credits are available for reading many of the statements and completing the brief test at the end of the statement.

To obtain ACIP statements:

- Download individual statements from links on IAC's website: www.immunize.org/acip
- Download individual statements from links on CDC's website: www.cdc.gov/mmwr
- Call CDC's Immunization Information Hotline: (800) 232-2522.
- Order the "Immunization Works" CD (CDC, 2003). It contains all ACIP statements, VISs, and *The Pink Book.* Use CDC's free online ordering system: https://www2.cdc.gov/nchstp_od/PIWeb/niporderform.asp

Vaccine news

On July 7, FDA approved a supplement to the license application for Infanrix (DTaP; GlaxoSmithKline) to allow providers to give the vaccine as a fifth consecutive DTaP dose to children age 4–6 years.

On June 17, FDA approved a license application for FluMist, live attenuated influenza vaccine (LAIV). LAIV is indicated for active immunization against influenza A and B viruses in healthy persons 5–49 years of age. FluMist is a product of MedImmune Vaccines and is distributed by Wyeth Vaccines.

On June 16, Aventis Pasteur began shipping single-dose vials of Menomune (meningococcal vaccine) to its customers once again. Earlier in the year, FDA extended the shelf life of the 10-dose vials of Menomune to 35 days after reconstitution; the shelf life of single-dose reconstituted vaccine remains at 30 minutes.

On May 16, CDC announced the end of the shortage of Prevnar (pneumococcal conjugate vaccine). Providers are urged to initiate catch-up vaccination efforts to reach children who are incompletely vaccinated. The priority for catch-up is 1) to vaccinate children less than 5 years of age who are at high risk for invasive pneumococcal disease because of medical conditions and 2) to vaccinate healthy children less than 24 months who have not received any doses of PCV and those less than 12 months who have not yet received 3 doses.

On April 25, CDC published a Notice to Readers (NTR) in *MMWR* that clarified a previously published NTR concerning the use of Pediarix. The 2nd NTR clarified that according to ACIP, Pediarix may be administered to infants born to women who are hepatitis B surface antigen (HBsAg) positive or whose HBsAg status is unknown, following the birth dose of single-antigen hepatitis B vaccine. This allows for broader use of Pediarix than is included in the prescribing information.

Influenza news

In September, CDC published two influenza VISs—an updated 2003–04 Inactivated Influenza VIS and a new Live, Intranasal Influenza VIS. We have included reduced-size copies of both on pages 18–19. Full-size copies are available on the Immunization Action Coalition website at www.immunize.org/vis

On August 22, CDC announced that sufficient supplies of influenza vaccine will be available during October and November; consequently, influenza vaccination efforts can proceed this fall at the same time for all persons (high-risk as well as healthy persons). A tiered approach for vaccine delivery (vaccinating only high-risk persons first) will not be necessary this year.

In August, AMA's CPT Editorial Panel made a special exemption to allow two new CPT codes, part of the Category I Vaccine Codes for 2004, to be available during the upcoming influenza vaccination season. The panel agreed to place an effective date of November 15, 2003, on CPT code 90655 (preservative-free vaccine for individuals age 6–35 months) and CPT code 90656 (preservative-free vaccine for individuals age 3 years and older). Health professionals who will be administering preservative-free influenza vaccine should first check with their health plans to see when they will be ready to accept claims using these two new CPT codes. Other influenza CPT codes are as follows:

- Inactivated, for those 6–35 mos. of age: 90657
- Inactivated, for those ≥3 yrs of age: 90658
- Live, for intranasal use: 90660
- For CPT codes of preservative-free influenza vaccine, see the paragraph above.

On April 25, the ACIP statement "Prevention and Control of Influenza" was published in *MMWR* (Vol. 52, No. RR-8). The primary target groups recommended for vaccination remain the same as for the 2002–03 vaccination season. Vaccination of children age 6–23 months continues to be encouraged owing to their substantially increased risk for influenza-related hospitalization.

A supplemental ACIP statement concerning live attenuated influenza vaccine will be published in *MMWR* on September 26, 2003.

Flu & PPV news from CMS

Effective October 1, Medicare will increase maximum allowable reimbursement for pneumococcal vaccine to $18.62 per dose (previously $13.10).

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 program, or hepatitis A, B, or C, visit:

www.immunize.org/coordinators

For influenza vaccine, maximum reimbursement will be $9.95 per dose (previously $8.02). Medicare administration-fee allowances for influenza, pneumococcal, and hepatitis B vaccines are available from the Centers for Medicare & Medicaid Services (CMS) website at www.cms.hhs.gov/medlearn/2003adminrates.pdf

On August 15, the Department of Health and Human Services published the Final Rule for Electronic Submission of Medicare Claims. The Administrative Simplification Compliance Act requires nearly all claims sent to the Medicare Program be submitted electronically beginning October 16, 2003. However, providers wishing to submit paper roster bills for vaccinations are exempt from this requirement. Review the rule and the few exceptions to these requirements at http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2003/pdf/03-20955.pdf

New vaccine resources

On August 22, CDC released the 2003–04 edition of *Health Information for International Travel* (the Yellow Book). It is available from the Public Health Foundation at http://bookstore.phf.org/cat24.htm or by calling (877) 252-1200.

In July, the American Academy of Pediatrics (AAP) released *Red Book: 2003 Report of the Committee on Infectious Diseases*. It is available in several formats, including soft cover, CD-ROM, and PDA. Cost: $95–$175. To order, call customer service at (888) 227-1770 or visit AAP's website at www.aap.org

Current VIS dates

Here are the most current VISs and the issue date printed at the bottom of each. Make sure you are using the current ones. Please recycle old copies.

DTaP/DT/DTP	7/30/01	MMR	1/15/03
Td	6/10/94	varicella	12/16/98
polio	1/1/00	Hib	12/16/98
hepatitis A	8/25/98	hepatitis B	7/11/01
pneumo (PCV)	9/30/02	meningococcal	7/28/03
pneumo (PPV)	7/29/97	smallpox	1/16/03
yellow fever	3/14/03	anthrax	4/24/03
influenza, inactivated			5/6/03
influenza, live intranasal			9/4/03

VISs and instructions on how to use them can be obtained from CDC's website: www.cdc.gov/nip/publications/vis or from your state health department (for contact information see box on page 4). The VISs, some in 28 languages, and the VIS instruction sheet are also available on IAC's website: www.immunize.org/vis

IAC EXPRESS: Continuing education in immunization

Every Monday, ***IAC EXPRESS*** adds to the knowledge of its 18,000 subscribers. If you're not among them, you're missing out on a great opportunity: free, ongoing immunization education.

The email news service ***IAC EXPRESS*** has a reputation among physicians, nurses, and other health professionals for consistently delivering authoritative, up-to-the-minute immunization information, including the following:

- CDC and AAP recommendations
- Vaccine Information Statement revisions
- Current *MMWR* vaccine articles
- Vaccine safety information
- Patient- and staff-education materials
- Videos, websites, books, and other resources

To start receiving ***IAC EXPRESS*** every Monday, email us at express@immunize.org and type SUBSCRIBE in the "Subject" field, or sign up on the Web at www.immunize.org/express

To view the archives of ***IAC EXPRESS,***
visit www.immunize.org/express

HEP EXPRESS: Continuing education in hepatitis prevention and treatment

If you need reliable, up-to-date viral hepatitis information, and have limited time to search for it, be sure to subscribe to the free email news service ***HEP EXPRESS.***

The result of our ongoing review of numerous web and print resources, each issue of ***HEP EXPRESS*** (delivered every 3-4 weeks) keeps subscribers informed about a range of current hepatitis issues:

- Hepatitis A, B, and C prevention strategies
- Hepatitis C recommendations
- Treatment updates
- Patient- and staff-education materials
- Videos, websites, books, and other resources

To subscribe, go to: www.hepprograms.org/hepexpress

Give these people influenza vaccine!

WHY? This year, influenza is again expected to kill more than 35,000 people in the United States.

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

☐ **ALL persons 50 years of age and older**

☐ **Persons with certain high-risk medical conditions**

Any person (6 months of age or older) who is at increased risk for complications from influenza because of underlying medical conditions, including

- ✓ residents of nursing homes and other chronic-care facilities that house persons of any age who have chronic medical conditions
- ✓ adults and children who have chronic disorders of the pulmonary or cardiovascular systems, including asthma
- ✓ adults and children who have required regular medical follow-up or hospitalization during the past year because of chronic metabolic diseases (including diabetes mellitus), renal dysfunction, hemoglobinopathies, or immunosuppression
- ✓ children and adolescents (age 6 months to 18 years) who are receiving long-term aspirin therapy and therefore might be at risk for developing Reye's syndrome after influenza illness
- ✓ all women who will be in the second or third trimester of pregnancy (greater than 14 weeks gestation) during the influenza season. Pregnant women who have medical conditions that increase their risk for complications from influenza should be vaccinated before the influenza season—regardless of the stage of pregnancy.

☐ **Household contacts of high-risk persons (listed above) and of children 0–23 months of age**

☐ **ALL children age 6–23 months are encouraged to be vaccinated because of their increased risk for influenza-related hospitalization**

☐ **ANY person who wishes to reduce the likelihood of becoming ill with influenza as long as the person has no contraindications to the vaccine and is at least 6 months of age**

☐ **Health care workers**

Health care workers and others in close contact with persons in high-risk groups should be vaccinated to decrease the risk of transmitting infection to persons for whom influenza could be a serious, life-threatening disease. Those who should be vaccinated include the following:

- ✓ physicians, nurses, receptionists, and other personnel who have contact with patients in both hospital and outpatient settings, including medical emergency response workers
- ✓ employees of nursing homes and chronic-care facilities who have contact with patients or residents
- ✓ employees of assisted living and other residences for persons in high-risk groups
- ✓ persons who provide home care to people in high-risk groups

☐ **Other groups to consider:**

- ✓ travelers at high risk for influenza complications who were not vaccinated in the previous fall or winter and who plan to travel to the Southern hemisphere between April and September, to the tropics, or with a large tourist group at any time of the year
- ✓ persons who provide essential community services (e.g., firefighters, police)
- ✓ students or other persons in institutional settings (e.g., those who reside in dormitories)

Persons who should not be vaccinated:

Consult the current recommendations from CDC for guidance on contraindications and precautions for use of inactivated influenza vaccine and live attenuated influenza vaccine.

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

Sources: "Prevention and Control of Influenza—Recommendations of ACIP," MMWR, *April 25, 2003, Vol. 52, No. RR-8; and "Using Live, Attenuated Influenza Vaccine for Prevention and Control of Influenza. Supplemental Recommendations of ACIP," anticipated publication date in* MMWR: *Sept 26, 2003.*

www.immunize.org/catg.d/2013flu.pdf • Item #P2013 (09/03)

Summary of Rules for Childhood Immunization*

Adapted from ACIP, AAP, and AAFP by Immunization Action Coalition, September 2003

Vaccine	Ages usually given and other guidelines	If child falls behind	Contraindications
Hepatitis B *Give IM*	• Vaccinate all newborns prior to hospital discharge. Give dose #2 at 1–4m and dose #3 at 6–18m. After the first dose, the series may be completed with single-antigen vaccine or up to 3 doses of Comvax (2m, 4m, 12–15m of age) or Pediarix (2m, 4m, 6m of age). Dose #1 can be given as late as age 2m if the mother is known to be HBsAg negative, but this is not the preferred schedule. • Vaccinate all children 0 through 18yrs of age. • For older children, schedules include: 0-, 1-, 6m; 0-, 2-, 4m; 0-, 1-, 4m. • Children born (or whose parents were born) in countries where hepatitis B virus infection is highly endemic should be vaccinated ASAP. • **If mother is HBsAg-positive:** give the newborn HBIG + dose #1 within 12hrs of birth, #2 at 1–2m, and #3 at 6m of age. • **If mother's HBsAg status is unknown:** give the newborn dose #1 within 12hrs of birth, #2 at 1–2m, and #3 at 6m of age. If mother is subsequently found to be HBsAg positive, give infant HBIG within 7d of birth. • **Note:** For premature infants, hepatitis B vaccination recommendations may be different. Consult the *2003 AAP Red Book* (pp. 66–68). • May give with all other vaccines.	• Do not restart series, no matter how long since previous dose. • 3-dose series can be started at any age. • Minimum spacing for children and teens: 4wks between #1 & #2, and 8wks between #2 & #3. Overall there must be ≥16wks between #1 & #3. • The last dose in infant hepatitis B series should not be given earlier than age 6m.	**Special Notes on Hepatitis B Vaccine** **Dosing of hepatitis B vaccines:** Vaccine brands are interchangeable for 3-dose schedules. For Engerix-B, use 10mcg for 0 through 19yrs of age. For Recombivax HB, use 5mcg for 0 through 19yrs of age. **Alternative dosing schedule for unvaccinated adolescents age 11 through 15yrs:** Give Recombivax HB two 10mcg doses (adult dosage) spaced 4–6m apart. (Engerix-B is not licensed for a 2-dose schedule.)
DTaP (Diphtheria, tetanus, acellular pertussis) *Give IM*	• Give at 2m, 4m, 6m, 15–18m, 4–6yrs of age. • May give dose #1 as early as 6wks of age. • May give #4 as early as 12m of age if 6m have elapsed since #3 and the child is unlikely to return at age 15–18m. • Do not give DTaP to children ≥7yrs of age (give Td). • May give with all other vaccines. • It is preferable but not mandatory to use the same DTaP product for all doses.	• #2 & #3 may be given 4wks after previous dose. • #4 may be given 6m after #3. • If #4 is given before 4th birthday, wait at least 6m for #5 (4–6yrs of age). • If #4 is given after 4th birthday, #5 is not needed.	**Contraindication for DTaP only:** Previous encephalopathy within 7d after DTP/DTaP. **Precautions for DTaP:** The following are precautions, not contraindications. When these conditions are present, the individual child's disease risk should be carefully assessed. In situations when the benefit outweighs the risk (e.g., community pertussis outbreak), vaccination should be considered. • T≥105°F (40.5°C) within 48hrs after previous dose. • Continuous crying lasting ≥3hrs within 48hrs after previous dose. • Previous convulsion within 3d after immunization. • Pale or limp episode or collapse within 48hrs after previous dose. • Unstable progressive neurologic problem (defer until stable).
DT *Give IM*	• Give to children <7yrs of age if child had a serious reaction to "P" in DTaP/DTP or if parents refuse the pertussis component. • May give with all other vaccines.		
Td *Give IM*	• Use Td, not tetanus toxoid (TT), for persons ≥7yrs of age for all indications. • A booster dose is recommended for children 11–12yrs of age if 5yrs have elapsed since last dose. Then boost every 10yrs. • May give with all other vaccines.	• For unvaccinated patients: give dose #1 now, give 2nd dose 4wks later, give 3rd dose 6m after #2, then give booster every 10yrs.	
MMR (Measles, mumps, rubella) *Give SC*	• Give #1 at 12–15m of age. Give #2 at 4–6yrs of age. • Make sure that all children and teens over 4–6yrs of age have received both doses of MMR. • If a dose was given before 12m of age, it doesn't count as the first dose, so give #1 at 12–15m of age with a minimum interval of 4wks between the invalid dose and dose #1. • May give with all other vaccines. • If MMR and Var (and/or yellow fever vaccine) are not given on the same day, space them ≥28d apart. • 2 doses of MMR are recommended for all children ≤18yrs of age.	• Dose should be given whenever it is noted that a child is behind. Exception: If MMR and Var (and/or yellow fever vaccine) are not given on the same day, space them ≥28d apart. • Dose #2 can be given at any time if at least 28d have elapsed since dose #1 and both doses are administered after 1yr of age.	• Pregnancy or possibility of pregnancy within 4 weeks. • If blood, plasma, and/or immune globulin were given in past 11m, see ACIP statement *General Recommendations on Immunization*† regarding time to wait before vaccinating. • HIV is NOT a contraindication unless severely immunocompromised. • Immunocompromised persons (e.g., because of cancer, leukemia, lymphoma). **Note:** For patients on high-dose immunosuppressive therapy, consult ACIP recommendations† regarding delay time. **Note:** MMR is not contraindicated if a PPD test was recently applied. If PPD and MMR not given on same day, delay PPD for 4–6wks after MMR.
Varicella (Var) (Chickenpox) *Give SC*	• Give at 12–18m of age. • Vaccinate all children ≥12m of age including all adolescents who have not had chickenpox. • May use as postexposure prophylaxis if given within 3–5d. • May give with all other vaccines. • If Var and MMR (and/or yellow fever vaccine) are not given on the same day, space them ≥28d apart. • Do not withhold vaccine from children of pregnant women.	• Do not give to children <12m of age. • Susceptible children <13yrs of age should receive 1 dose. • Susceptible persons ≥13yrs of age should receive 2 doses 4–8wks apart.	• Pregnancy or possibility of pregnancy within 4 weeks. • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement *General Recommendations on Immunization*† regarding time to wait before vaccinating. • Persons immunocompromised because of high doses of systemic steroids, cancer, leukemia, lymphoma, or immunodeficiency. **Note:** For patients with humoral immunodeficiency, HIV infection, or leukemia, or for patients on high doses of systemic steroids, see ACIP recommendations.† • For children taking salicylates, see ACIP recommendations.†

Do not give if patient (1) has had an anaphylactic reaction to a prior dose or to any vaccine component or (2) has a moderate or severe acute illness. (Minor illness is not a reason to postpone vaccination.)

Summary of Rules for Childhood Immunization* (continued)

Vaccine	Ages usually given and other guidelines	If child falls behind	Contraindications
Polio (IPV) *Give SC or IM*	• Give at 2m, 4m, 6–18m, and 4–6yrs of age. • May give #1 as early as 6wks of age. • Not routinely recommended for those ≥18yrs of age (except certain travelers). • May give with all other vaccines.	• All doses should be separated by at least 4wks. • If #3 of an all-IPV series is given at ≥4yrs of age, dose #4 is not needed. • Those who receive a combination of IPV and OPV doses should receive all 4 doses.	Do not give if patient (1) has had an anaphylactic reaction to a prior dose or to any vaccine component or (2) has a moderate or severe acute illness. (Minor illness is not a reason to postpone vaccination.)
Hib (*Haemophilus influenzae* type b) *Give IM*	• HibTITER (HbOC) & ActHib (PRP-T): give at 2m, 4m, 6m, 12–15m (booster dose). • PedvaxHIB or Comvax (containing PRP-OMP): give at 2m, 4m, 12–15m. • Dose #1 of Hib vaccine may be given as early as 6wks of age but no earlier. • The last dose (booster dose) is given no earlier than 12m of age and a minimum of 8wks after the previous dose. • May give with all other vaccines. • Hib vaccines are interchangeable; however, if different brands of Hib vaccines are administered, a total of three doses are necessary to complete the primary series in infants. • Any Hib vaccine may be used for the booster dose. • Hib is not routinely given to children ≥5yrs of age.	**Rules for all Hib vaccines:** • If #1 was given at 12–14m, give a booster dose in 8wks. • Give only 1 dose to unvaccinated children ≥15m and <5yrs of age. **Rules for HibTITER and ActHib:** • #2 and #3 may be given 4 wks after previous dose. • If #1 was given at 7–11m, only 3 doses are needed; #2 is given 4–8wks after #1, then boost at 12–15m. **Rules for PedvaxHiB and Comvax:** • #2 may be given 4wks after dose #1	
Hepatitis A *Give IM*	• Vaccinate children ≥2yrs old who live in areas with consistently elevated rates of hepatitis A, as well as children who have specific risk factors. (See ACIP statement† and column to right for details.) • Children who travel outside of the U.S. (except to Western Europe, New Zealand, Australia, Canada, or Japan). • Dose #2 is given a minimum of 6m after dose #1. • Dose #1 may not be given earlier than 2yrs of age. • May give with all other vaccines.	• Do not restart series, no matter how long since previous dose. • Hepatitis A vaccine brands are interchangeable. • Consult your local/state public health authority for information regarding your city, county, or state hepatitis A rates. States with consistently elevated rates (average ≥10 cases per 100,000 population from 1987-1997) include the following: AL, AZ, AK, CA, CO, ID, MO, MT, NV, NM, OK, OR, SD, TX, UT, WA, and WY.	
Pneumococcal — **PCV** *Give IM*	• Give at 2m, 4m, 6m, and 12–15m of age. • Dose #1 may be given as early as 6wks of age. • For unvaccinated high-risk children (defined below) 24–59m of age, give 2 doses. If PPV not previously given, administer ≥8wks after final dose of PCV. • For unvaccinated moderate-risk children (defined below) 24–59m of age, consider giving 1 dose. • May give 1 dose to unvaccinated healthy children 24–59m. • PCV is not routinely given to children ≥5yrs of age. • May give with all other vaccines.	• Minimum interval between doses for infants <12m of age is 4wks, for ≥12m of age is 8wks. • For infants 7–11m of age: If unvaccinated, give dose #1 now, give 2nd dose 4–8wks later, and boost at 12–15m. If infant has had 1 or 2 previous doses, give next dose now, and boost at 12–15m. • For children 12–23m: If not previously vaccinated or only one previous dose before 12m, give 2 doses ≥8wks apart. If child previously had 2 doses, give booster dose ≥8wks after previous dose.	
	High-risk children: Those with sickle cell disease; anatomic/functional asplenia; chronic cardiac, pulmonary, or renal disease; diabetes mellitus; CSF leak; HIV infection; or immunosuppression. **Moderate-risk children:** Children age 24–35m; children age 24–59m who attend group day care centers or are of Alaska Native, American Indian, or African American descent.		
Pneumococcal — **PPV** *IM or SC*	Give PPV to high-risk children ≥2yrs of age as recommended in the ACIP statement *Prevention of Pneumococcal Disease* (4/4/97).†		
Influenza *Give IM or intranasally*	Vaccinate children ≥6m of age with risk factors and encourage vaccination of all children age 6–23m. Inactivated influenza vaccine (IIV) may be used for children ≥6m of age who have no contraindications. Live attenuated influenza vaccine (LAIV) may be used for children ≥5yrs of age who have no contraindications. For details, see the *2003 AAP Red Book* or CDC's current ACIP statement on influenza.†		
Meningococcal *Give SC*	Vaccinate children ≥2yrs of age with risk factors. Discuss disease risk and vaccine availability with college students. Consult ACIP statement on meningococcal disease (6/30/00) for details.†		

* Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. The following combination vaccines are currently licensed: Hib-HepB (Comvax), DTaP-HepB-IPV (Pediarix), DTaP-Hib (Trihibit), and HepA-HepB (Twinrix). Rules for use of combination vaccines consist of those applicable to each of the components.

† For more complete information, see the ACIP statements, which are published in the *MMWR*. To obtain them, visit www.cdc.gov/nip/publications/ACIP-list.htm or visit the Immunization Action Coalition's (IAC) website at www.immunize.org/acip For recommendations of the American Academy of Pediatrics (AAP), consult AAP's *2003 Red Book* and the journal *Pediatrics,* or visit www.immunize.org/aap To view the AAFP/AAP/CDC Recommended Childhood and Adolescent Immunization Schedule—U.S., visit www.immunize.org/cdc/child-schedule.pdf

This table is published annually by the Immunization Action Coalition, 1573 Selby Ave., St. Paul, MN 55104, (651) 647-9009. The most recent edition is found on IAC's website at www.immunize.org/childrules IAC extends thanks to William Atkinson, MD, MPH, and Linda Moyer, RN, of the Centers for Disease Control and Prevention for their assistance.

Summary of Recommendations for Adult Immunization

Adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP)* by the Immunization Action Coalition, September 2003

Vaccine name and route	For whom it is recommended	Schedule for routine and "catch-up" administration	Contraindications (mild illness is not a contraindication)
Influenza Inactivated influenza vaccine (IIV) *Give IM* Live attenuated influenza vaccine (LAIV) *Give intranasally*	• All adults who are 50yrs of age or older. • People 6m–50yrs of age with medical problems (e.g., heart disease, lung disease, diabetes, renal dysfunction, hemoglobinopathies, immunosuppression) and/or people living in chronic-care facilities. • People (≥6m of age) working or living with at-risk people. • Pregnant women who have underlying medical conditions should be vaccinated before influenza season, regardless of the stage of pregnancy. • Healthy pregnant women who will be in their 2nd or 3rd trimesters during influenza season. • All health care workers and those who provide essential community services. • Travelers who go to areas where influenza activity exists or who may be among people from areas of the world where there is current influenza activity (e.g., on organized tours). • Anyone wishing to reduce the likelihood of becoming ill with influenza. **Special Note on Influenza Vaccines:** Inactivated influenza vaccine (IIV) may be given to any person ≥6 months of age for whom the vaccine is not contraindicated. Live attenuated influenza vaccine (LAIV) may be given to healthy, non-pregnant persons 5–49 years of age for whom the vaccine is not contraindicated.	• Given every year. • October through November is the *optimal* time to receive an annual influenza shot to maximize protection. • Influenza vaccine may be given at any time during the influenza season (typically December through March) or at other times when the risk of influenza exists. • May give with all other vaccines.	• Previous anaphylactic reaction to this vaccine, to any of its components, or to eggs. • Moderate or severe acute illness. • Do not give live attenuated influenza vaccine (LAIV) to persons ≥50 years of age, pregnant women, or to persons who have: asthma, reactive airway disease or other chronic disorder of the pulmonary or cardiovascular systems; an underlying medical condition, including metabolic diseases such as diabetes, renal dysfunction, and hemoglobinopathies; a known or suspected immune deficiency disease or who are receiving immunosuppressive therapy; a history of Guillain-Barré syndrome. **Note:** Use of inactivated influenza vaccine (IIV) is preferred for persons in close contact with immunosuppressed persons.
Pneumococcal polysaccharide (PPV23) *Give IM or SC*	• Adults who are 65yrs of age or older. • People 2–64yrs of age who have chronic illness or other risk factors, including chronic cardiac or pulmonary diseases, chronic liver disease, alcoholism, diabetes mellitus, CSF leaks, candidate for or recipient of cochlear implant, as well as people living in special environments or social settings (including Alaska Natives and certain American Indian populations). Those at highest risk of fatal pneumococcal infection are people with anatomic asplenia, functional asplenia, or sickle cell disease; immunocompromised persons including those with HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure, or nephrotic syndrome; persons receiving immunosuppressive chemotherapy (including corticosteroids); and those who received an organ or bone marrow transplant. Pregnant women with high-risk conditions should be vaccinated if not done previously.	• Routinely given as a one-time dose; administer if previous vaccination history is unknown. • One-time revaccination is recommended 5yrs later for people at highest risk of fatal pneumococcal infection or rapid antibody loss (e.g., renal disease) and for people ≥65yrs of age if the 1st dose was given prior to age 65 and ≥5yrs have elapsed since previous dose. • May give with all other vaccines.	• Previous anaphylactic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. **Note:** Pregnancy and breastfeeding are not contraindications to the use of this vaccine.
Hepatitis B (Hep B) *Give IM* Brands may be used interchangeably.	• All adolescents. • High-risk adults, including household contacts and sex partners of HBsAg-positive persons; users of illicit injectable drugs; heterosexuals with more than one sex partner in 6 months; men who have sex with men; people with recently diagnosed STDs; patients receiving hemodialysis and patients with renal disease that may result in dialysis; recipients of certain blood products; health care workers and public safety workers who are exposed to blood; clients and staff of institutions for the developmentally disabled; inmates of long-term correctional facilities; and certain international travelers. **Note:** Prior serologic testing may be recommended depending on the specific level of risk and/or likelihood of previous exposure. **Note:** In 1997, the NIH Consensus Development Conference, a panel of national experts, recommended that hepatitis B vaccination be given to all anti-HCV positive persons. **Ed. note:** Provide serologic screening for immigrants from endemic areas. When HBsAg-positive persons are identified, offer appropriate disease management. In addition, screen their sex partners and household members and, if found susceptible, vaccinate.	• Three doses are needed on a 0, 1, 6m schedule. • Alternative timing options for vaccination include 0, 2, 4m and 0, 1, 4m. • There must be 4wks between doses #1 and #2, and 8wks between doses #2 and #3. Overall there must be at least 16wks between doses #1 and #3. • **Schedule for those who have fallen behind:** If the series is delayed between doses, DO NOT start the series over. Continue from where you left off. • May give with all other vaccines. For Twinrix™ (hepatitis A and B combination vaccine [GSK]), three doses are needed on a 0, 1, 6m schedule.	• Previous anaphylactic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. **Note:** Pregnancy and breastfeeding are not contraindications to the use of this vaccine.
Hepatitis A (Hep A) *Give IM* Brands may be used interchangeably.	• People who travel outside of the U.S. (except for Western Europe, New Zealand, Australia, Canada, and Japan). • People with chronic liver disease, including people with hepatitis C; people with hepatitis B who have chronic liver disease; illicit drug users; men who have sex with men; people with clotting-factor disorders; people who work with hepatitis A virus in experimental lab settings (not routine medical laboratories); and food handlers when health authorities or private employers determine vaccination to be cost effective. **Note:** Prevaccination testing is likely to be cost effective for persons >40yrs of age as well as for younger persons in certain groups with a high prevalence of hepatitis A virus infection.	• Two doses are needed. • The minimum interval between dose #1 and #2 is 6m. • If dose #2 is delayed, do not repeat dose #1. Just give dose #2. • May give with all other vaccines.	• Previous anaphylactic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. • Safety during pregnancy has not been determined, so benefits must be weighed against potential risk. **Note:** Breastfeeding is not a contraindication to the use of this vaccine.

Summary of Recommendations for Adult Immunization (continued)

Vaccine name and route	For whom it is recommended	Schedule for routine and "catch-up" administration	Contraindications (mild illness is not a contraindication)
Td (Tetanus, diphtheria) *Give IM*	• All adolescents and adults. • After the primary series has been completed, a booster dose is recommended every 10yrs. Make sure your patients have received a primary series of 3 doses. • A booster dose as early as 5yrs later may be needed for the purpose of wound management, so consult ACIP recommendations.* • Use Td, not tetanus toxoid (TT), for all indications.	• Give booster dose every 10yrs after the primary series has been completed. • For those who are unvaccinated or behind, complete the primary series (spaced at 0, 1–2m, 6–12m intervals). Don't restart the series, no matter how long since the previous dose. • May give with all other vaccines.	• Previous anaphylactic or neurologic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. **Note:** Pregnancy and breastfeeding are not contraindications to the use of this vaccine.
MMR (Measles, mumps, rubella) *Give SC*	• Adults born in 1957 or later who are ≥18yrs of age (including those born outside the U.S.) should receive at least one dose of MMR if there is no serologic proof of immunity or documentation of a dose given on or after the first birthday. • Adults in high-risk groups, such as health care workers, students entering colleges and other post–high school educational institutions, and international travelers, should receive a total of two doses. • Adults born before 1957 are usually considered immune but proof of immunity may be desirable for health care workers. • All women of childbearing age (i.e., adolescent girls and premenopausal adult women) who do not have acceptable evidence of rubella immunity or vaccination. • Special attention should be given to immunizing women born outside the United States in 1957 or later.	• One or two doses are needed. • If dose #2 is recommended, give it no sooner than 4wks after dose #1. • May give with all other vaccines. • If varicella vaccine and MMR are both needed and are not administered on the same day, space them at least 4wks apart. • If a pregnant woman is found to be rubella-susceptible, administer MMR postpartum.	• Previous anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4 weeks (use contraception). • Persons immunocompromised because of cancer, leukemia, lymphoma, immunosuppressive drug therapy, including high-dose steroids or radiation therapy. **Note:** HIV positivity is NOT a contraindication to MMR except for those who are severely immunocompromised. • If blood, plasma, and/or immune globulin were given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating. • Moderate or severe acute illness. **Note:** Breastfeeding is not a contraindication to the use of this vaccine. **Note:** MMR is not contraindicated if a tuberculin skin test (i.e., PPD) was recently applied. If PPD and MMR not given on same day, delay PPD for 4–6wks after MMR.
Varicella (Var) (Chickenpox) *Give SC*	All susceptible adults and adolescents should be vaccinated. It is especially important to ensure vaccination of the following groups: susceptible persons who have close contact with persons at high risk for serious complications (e.g., health care workers and family contacts of immunocompromised persons) and susceptible persons who are at high risk of exposure (e.g., teachers of young children, day care employees, residents and staff in institutional settings such as colleges and correctional institutions, military personnel, adolescents and adults living with children, non-pregnant women of childbearing age, and international travelers who do not have evidence of immunity). **Note:** People with reliable histories of chickenpox (such as self or parental report of disease) can be assumed to be immune. For adults who have no reliable history, serologic testing may be cost effective since most adults with a negative or uncertain history of varicella are immune.	• Two doses are needed. • Dose #2 is given 4–8wks after dose #1. • May give with all other vaccines. • If varicella vaccine and MMR are both needed and are not administered on the same day, space them at least 4wks apart. • If the second dose is delayed, do not repeat dose #1. Just give dose #2.	• Previous anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4 weeks (use contraception). • Persons immunocompromised because of malignancies and primary or acquired cellular immunodeficiency including HIV/AIDS. (See *MMWR* 1999, Vol. 48, No. RR-6.) **Note:** For those on high-dose immunosuppressive therapy, consult ACIP recommendations regarding delay time.* • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating. • Moderate or severe acute illness. **Note:** Breastfeeding is not a contraindication to the use of this vaccine. **Note:** Manufacturer recommends that salicylates be avoided for 6wks after receiving varicella vaccine because of a theoretical risk of Reye's syndrome.
Polio (IPV) *Give IM or SC*	Not routinely recommended for persons 18yrs of age and older. **Note:** Adults living in the U.S. who never received or completed a primary series of polio vaccine need not be vaccinated unless they intend to travel to areas where exposure to wild-type virus is likely. Previously vaccinated adults can receive one booster dose if traveling to polio endemic areas.	• Refer to ACIP recommendations* regarding unique situations, schedules, and dosing information. • May give with all other vaccines.	• Previous anaphylactic or neurologic reaction to this vaccine or to any of its components. • Moderate or severe acute illness. **Note:** Pregnancy and breastfeeding are not contraindications to the use of this vaccine.
Meningococcal *Give SC*	Vaccinate people with risk factors. Discuss disease risk and vaccine availability with college students. Consult ACIP statement* on meningococcal disease (6/30/00) for details.		

* For specific ACIP immunization recommendations, refer to the statements, which are published in *MMWR*. To obtain a complete set of ACIP statements, call (800) 232-2522, or to access individual statements, visit CDC's website: www.cdc.gov/nip/publications/ACIP-list.htm or visit IAC's website: www.immunize.org/acip

This table is revised yearly because of the changing nature of U.S. immunization recommendations. Visit the Immunization Action Coalition's website at www.immunize.org/adultrules to make sure you have the most current version. We extend our thanks to William Atkinson, MD, MPH, from CDC's National Immunization Program, and Linda Moyer, RN, from the Division of Viral Hepatitis, at CDC's National Center for Infectious Diseases for their assistance. This table is published by the Immunization Action Coalition, 1573 Selby Avenue, St. Paul, MN 55104, (651) 647-9009. Email: admin@immunize.org

Hepatitis B and the health care worker

CDC answers frequently asked questions about how to protect health care workers

Editor's note: The Immunization Action Coalition thanks Linda A. Moyer, RN, epidemiologist, and Eric E. Mast, MD, medical epidemiologist, both from the Division of Viral Hepatitis, National Center for Infectious Diseases, Centers for Disease Control and Prevention, for reviewing and updating the following questions and answers about hepatitis B and the health care worker.

You may need more shots than just hepatitis B! To find which ones, read the ACIP statement "Immunization of Health-Care Workers."

It's available online at ftp://ftp.cdc.gov/pub/Publications/mmwr/rr/rr4618.pdf or by calling CDC's National Immunization Information Hotline at (800) 232-2522

Which workers in the health care setting need hepatitis B vaccine?

Health care workers (HCWs) who have a reasonable expectation of being exposed to blood on the job should be offered hepatitis B vaccine. This does not include receptionists, clerical and billing staff, etc., as these individuals are not expected to be at risk for blood exposure.

What is the appropriate administration site for hepatitis B vaccine and what needle size should be used?

A deep intramuscular (IM) injection into the deltoid muscle is recommended for adult hepatitis B vaccination. A 22–25 gauge, 1–1½" needle should be used, but a longer needle may be needed to reach deep into the muscle of obese persons.

If a HCW's only dose of hepatitis B vaccine was four months ago, should the series be restarted?

No. The hepatitis B vaccine series should not be restarted when doses are delayed; rather, the series should be continued from where it left off. The vaccine recipient should receive the second dose of vaccine now and the third dose 2–5 months later.

Is it safe for HCWs to be vaccinated during pregnancy?

Yes. Pregnant women in occupations with a high risk of hepatitis B virus (HBV) infection (e.g., HCWs who have a potential for exposure to blood) should be vaccinated. Hepatitis B vaccine contains no components that have been shown to pose a risk to the fetus at any time during gestation. An acute (or chronic) HBV infection in a pregnant woman poses a significant risk to the fetus or newborn for perinatal or *in utero* infection.

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

All HCWs should have serologic testing 1–2 months following the final dose of the hepatitis B vaccine series. An anti-HBs serologic test result of ≥10mIU/mL indicates immunity. No further routine doses or testing are indicated.

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

You should repeat the 3-dose series and then test for anti-HBs 1–2 months after the last dose of vaccine. If the HCW is still negative after the second vaccine series, the HCW is considered a non-responder to hepatitis B vaccination. The HCW should be counseled that non-response to the vaccination series most likely means the HCW is susceptible to HBV infection. The HCW should then be counseled to discuss what non-response to the vaccination series means for that specific HCW and what steps should be taken in the future to protect his/her health. It is also possible that the non-responder is chronically infected with HBV. HBsAg testing can be offered or suggested to determine if this is the case. HBsAg test results should remain confidential.

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

Postvaccination testing should be done 1–2 months after the last dose of hepatitis B vaccine.

(continued on page 12)

Recommended postexposure prophylaxis for exposure to hepatitis B virus

Vaccination and antibody response status of exposed workers*	Treatment		
	Source HBsAg† positive	Source HBsAg negative	Source unknown or not available for testing
Unvaccinated	HBIG§ x 1 and initiate HB vaccine series¶	Initiate HB vaccine series	Initiate HB vaccine series
Previously vaccinated			
Known responder**	No treatment	No treatment	No treatment
Known nonresponder††	HBIG x 1 and initiate revaccination or HBIG x 2§§	No treatment	If known high risk source, treat as if source were HBsAg positive
Antibody response unknown	Test exposed person for anti-HBs¶¶ 1. If adequate,** no treatment is necessary 2. If inadequate,†† administer HBIG x 1 and vaccine booster	No treatment	Test exposed person for anti-HBs 1. If adequate,** no treatment is necessary 2. If inadequate,†† administer vaccine booster and recheck titer in 1–2 months

* Persons who have previously been infected with HBV are immune to reinfection and do not require postexposure prophylaxis.

† Hepatitis B surface antigen

§ Hepatitis B immune globulin; dose is 0.06 mL/kg intramuscularly.

¶ Hepatitis B vaccine

**A responder is a person with adequate levels of serum antibody to HBsAg (i.e., anti-HBs ≥10 mIU/mL).

††A nonresponder is a person with inadequate response to vaccination (i.e., serum anti-HBs <10 mIU/mL).

§§The option of giving one dose of HBIG and reinitiating the vaccine series is preferred for nonresponders who have not completed a second 3-dose vaccine series. For persons who previously completed a second vaccine series but failed to respond, two doses of HBIG are preferred.

¶¶ Antibody to HBsAg

Source: "Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis," MMWR, *June 29, 2001, Vol. 50 (RR-11): 22*

If adequate anti-HBs is present (≥10mIU/mL), nothing more needs to be done. Periodic testing or boosting is not needed. If the postvaccination test result is less than 10 mIU/mL, the vaccine series should be repeated and testing done 1–2 months after the second series. This information should be recorded in the person's health record.

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

No. Postvaccination testing needs to be done only once at 1–2 months after the vaccine series is completed. If a HCW's test result indicated protection (anti-HBs ≥10mIU/mL) as a result of the original vaccination series, no further serologic testing is indicated. Data show that adequate response to the 3-dose series of hepatitis B vaccine provides long-term immunologic memory that gives long-term protection. Only immunocompromised persons (e.g., hemodialysis patients, HIV-positive persons) need to have anti-HBs testing and booster doses of vaccine to maintain their anti-HBs concentrations of at least 10mIU/mL to be protected against HBV infection.

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

No. In this scenario, a HCW does not need to be tested unless he or she has an exposure. If an exposure occurs, refer to the table on the first page for management guidelines. In addition to following these guidelines, if prophylaxis (HBIG and a booster dose of vaccine) is indicated, the person should receive postvaccination testing 3–6 months afterwards. It is necessary to do postvaccination testing at 3–6 months because testing earlier may only measure antibody from HBIG. This postvaccination test result should be recorded in the person's health record.

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

Unfortunately, inadequate documentation of vaccination is common. Even if these physicians think they may have been fully vaccinated, but it is not documented, the three-dose vaccination series should be administered. Postvaccination testing should be performed 1–2 months after the three-dose series. There is no harm in receiving extra doses of vaccine.

Some might suggest giving only one dose of vaccine followed by postvaccination testing. Although 30% of previously unvaccinated healthy adults will have a protective antibody response after only one dose of vaccine, these individuals will not have the long-term protection afforded by the three-dose series.

Each organization (hospital, clinic, etc.) should develop policies or guidelines about the documentation required to demonstrate valid hepatitis B vaccination. If policies are in place and documentation is not present, revaccination should be instituted. Care should always be taken to document vaccine lot, date, manufacturer, route, and vaccine dosages. Postvaccination testing results should also be documented, including the date serologic testing was performed.

I'm a nurse who received the hepatitis B vaccine series over 10 years ago and had a positive follow-up titer. At present, my titer is negative. What should I do now?

You don't need to do anything further. Current data show that vaccine-induced anti-HBs levels may decline over time; however, immune memory (anamnestic anti-HBs response) remains intact indefinitely following immunization. Persons with declining antibody levels are still protected against clinical illness and chronic disease. For health care workers with normal immune status who have demonstrated an anti-HBs response following vaccination, booster doses of vaccine are not recommended nor is periodic anti-HBs testing.

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

If the person is a true non-responder (i.e., failed to produce adequate anti-HBs after two full vaccine series), it seems illogical to give a third hepatitis B vaccine series. The two-dose HBIG regimen would be the better choice. The first dose of HBIG (0.06ml/kg) should be given as soon as possible after exposure and the second dose (same dosage)given one month later. If the person has failed only one hepatitis B vaccine series, the second option (HBIG x 1 and initiate revaccination) should be used. Postvaccination testing with anti-HBs should be done 1–2 months after the second series of vaccine.

If an employee does not respond to hepatitis B vaccination, does s/he need to be removed from activities that expose her/him to blood-borne pathogens? Does the employer have a responsibility in this area beyond providing the vaccine? Where can I get further information on this subject?

No regulations demand removal from the job situations described. It is up to each organization to develop a policy concerning non-responders. The Occupational Safety and Health Administration (OSHA) requires that employees in jobs where there is a reasonable risk of exposure to blood be offered hepatitis B vaccine. In addition, the regulation states that adequate personal protective equipment be provided and that standard precautions be followed. Check with your state OSHA regarding more stringent requirements. If there is no state OSHA, federal OSHA regulations should be followed. Adequate documentation should be placed in the employee record regarding non-response to vaccination. The employee should be counseled that non-response to the vaccination series most likely means the employee is susceptible to HBV infection, and if an exposure to HBV occurs, HBIG should be used for postexposure prophylaxis. HBsAg testing should be recommended as it is possible the employee is chronically infected with HBV. The employee should then be counseled to discuss what non-response to the vaccination series means for her/him and what steps should be taken in the future to protect her/his health.

Does being chronically infected with HBV preclude one from becoming a health professional?

No. All health professionals should practice standard precautions. However, there is one caveat concerning HBV-infected health professionals. Those who are HBsAg-positive and HBeAg-positive should not perform exposure-prone invasive procedures (e.g., gynecologic, cardiothoracic surgery) unless they have been counseled by an expert review panel and been advised under what circumstances, if any, they may perform these procedures.

Such circumstances might include notifying prospective patients of the health professional's seropositivity before they undergo exposure-prone invasive procedures. For more information on this issue, see the 1991 *MMWR Recommendations and Report* "Recommendations for Preventing Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Patients During Exposure-Prone Invasive Procedures." This document is available at www.cdc.gov/mmwr/preview/mmwrhtml/00014845.htm

www.immunize.org/catg.d/2109hcw.pdf • Item #P2109 (9/03)

Keep your own vaccination history!

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

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

See ad for IAC adult vaccination record cards on page 3.

Hepatitis B
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QUESTIONS FREQUENTLY ASKED ABOUT HEPATITIS B

What is hepatitis B?

Hepatitis B is a serious public health problem that affects people of all ages in the United States and around the world. In 2001, an estimated 78,000 people contracted hepatitis B virus (HBV) infection in the United States. Hepatitis B is caused by a highly infectious virus that attacks the liver and can lead to severe illness, liver damage, and in some cases, death.

The best way to be protected from hepatitis B is to be vaccinated with hepatitis B vaccine, a vaccine used in the U.S. for more than two decades and proven safe and effective.

Who is at risk for HBV infection?

About 5% of people in the U.S. will get infected with HBV sometime during their lives. If you engage in certain behaviors, your risk may be much higher. You may be at risk if you:

- have a job that exposes you to human blood
- share a household with someone who has lifelong HBV infection
- inject drugs
- have sex with a person infected with HBV
- have sex with more than one partner during a six-month period
- received blood transfusions in the past before excellent blood testing was available (1975)
- are a person whose parents were born in Asia, Africa, the Amazon Basin in South America, the Pacific Islands, Eastern Europe, or the Middle East
- were born in an area listed above
- were adopted from an area listed above
- are an Alaska native
- have hemophilia
- are a patient or worker in an institution for the developmentally disabled
- are an inmate of a long-term correctional facility
- travel internationally to areas with a high prevalence of hepatitis B

The largest outbreak of hepatitis B in the U.S. occurred in 1942 in military personnel who were given vaccine to protect them from yellow fever. It was unknown at the time that this vaccine contained a human blood component that was contaminated with HBV. The outbreak caused 28,585 cases of hepatitis B with jaundice.

How is HBV spread?

HBV is found in blood and certain body fluids—such as serum, semen, and vaginal secretions—of people infected with HBV. HBV is *not* found in sweat, tears, urine, or respiratory secretions. Contact with even small amounts of infected blood can cause infection.

Hepatitis B virus can be spread by:

- unprotected sex
- injecting drug use
- an infected mother to her child during birth
- contact with the blood or open sores of an infected person
- human bites
- sharing a household with a chronically infected person
- sharing items such as razors, toothbrushes, or washcloths
- pre-chewing food for babies or sharing chewing gum
- using unsterilized needles in ear or body piercing, tattooing, or acupuncture
- using the same immunization needle on more than one person

Hepatitis B virus IS NOT spread by:

- casual contact like holding hands
- eating food prepared by an infected person
- kissing or hugging
- sharing silverware, plates, or cups
- visiting an infected person's home
- sneezing or coughing

What are the symptoms of hepatitis B?

Most people who get HBV infection as babies or children don't look or feel sick at all. Similarly, almost half of adults who get infected don't have any symptoms or signs of the disease. If people do have signs or symptoms, they may experience any or all of the following:

- loss of appetite
- yellowing of skin and eyes (jaundice)
- nausea, vomiting
- fever
- weakness, tiredness, inability to work for weeks or months
- abdominal pain and/or joint pain
- dark urine

I'm not in a risk group. How did I get HBV infection?

Many people don't know when or how they acquired the infection. When they get the blood test results indicating they've been infected with HBV, they are taken by surprise. Studies have demonstrated that 30–40% of people who acquire HBV infection are unable to iden-

(continued on next page)

tify their own risk factors explaining why they have the disease.

Do people usually recover from HBV infection?

Nearly 95% of adults recover after several months. They clear the infection from their bodies and become *immune*. This means they won't get infected with HBV again. They are no longer contagious and cannot pass HBV on to others.

Unfortunately, of those who become newly infected with HBV, about 5% of adults and up to 90% of children under age five are unable to clear the infection from their bodies; they become chronically infected.

How do I know if I have or have had HBV infection?

The only way to know if you are currently infected with HBV, have recovered, are chronically infected, or are susceptible, is by having blood tests. The three standard blood tests are the following:

HBsAg (hepatitis B surface antigen): when this is "positive" or "reactive," it means the person is currently infected with HBV and is able to pass the infection on to others.

Anti-HB*c* [or HB*c*-Ab] (antibody to hepatitis B *core* antigen): when this is "positive" or "reactive," it *may* mean the person has had contact with HBV. This is a very complicated test to explain because the "anti-HBc" could possibly be a "false-positive" test result. The interpretation of this positive test usually depends on the results of the other two blood tests (see Interpretation table at right). Blood banks routinely run an "anti-HBc," but they do not routinely run an "anti-HBs."

Anti-HB*s* [or HB*s*-Ab] (antibody to hepatitis B *surface* antigen): when this is "positive" or "reactive," it means the person is *immune* to HBV infection, either from vaccination or from past infection. If the person was previously infected, s/he cannot pass the disease on to others. (To repeat, this test is not routinely done by blood banks.)

Interpretation of the Hepatitis B Blood Test Results

Tests	Results	Interpretation
HBsAg anti-HBc anti-HBs	negative negative negative	susceptible
HBsAg anti-HBc anti-HBs	negative negative positive with ≥10mIU/mL*	immune due to vaccination
HBsAg anti-HBc anti-HBs	negative positive positive	immune due to natural infection
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive positive negative	newly infected
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive negative negative	chronically infected
HBsAg anti-HBc anti-HBs	negative positive negative	four interpretations possible†

*Postvaccination testing, when it is recommended, should be done 1–2 months after the final dose.

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

What does it mean if my blood bank said I tested positive for hepatitis B and can no longer donate blood?

If the blood bank told you your test was "positive," it is important to find out *which* test was positive. If the "HBsAg" was positive, this means that you are either *chronically infected* with HBV or were recently infected. If *only* the "anti-HBc" was positive, it is most likely that you either had a "false-positive" test or are *immune* to hepatitis B. It is important that you understand the full meaning of your test results. If you are not sure how to interpret these test results, call your blood bank for an explanation or have the blood bank send the test results to your physician. You may need to provide written permission for the blood bank to release these results to your physician. Your physician may want to repeat the blood tests or perform additional tests such as an "anti-HBs." Bring this information sheet along with you to your doctor visit.

And remember, you cannot contract HBV from donating blood because the equipment used during blood donation is sterile.

CHRONIC HEPATITIS B VIRUS INFECTION

What does it mean to be chronically infected with hepatitis B virus?

People who do not recover from HBV infection are chronically infected, and there are over one million chronically infected people in the United States today. A chronically infected person is someone who has had HBV in her/his blood for more than six months. While approximately 5% of adults who acquire HBV infection become chronically infected, children less than five years of age have a greater risk. The younger the child is at the time of infection, the greater the risk that the child will have a lifelong infection. Many babies born to chronically infected mothers will also become chronically infected with HBV unless the babies are given two shots in the hospital and at least two more during the 6 months after birth to protect them from the infection.

A chronically infected person usually has no signs or symptoms of HBV infection but remains infected for years or for a lifetime and is capable of passing HBV on to others. Sometimes chronically infected people will spontaneously clear the infection from their bodies, but most will not. Although most chronically infected people have no serious problems with hepatitis B and lead normal, healthy lives, some develop liver problems later. Chronically infected people are at significantly higher risk than the general population for liver failure or liver cancer.

(continued on next page)

How can I take care of myself if I am chronically infected with HBV?

A person with HBV infection should see a physician knowledgeable about the management of liver disease every 6–12 months. The physician will do blood tests to check the health of the liver as well as test for evidence of liver cancer. It is best for chronically infected people to avoid alcohol because alcohol can injure the liver. Additionally, your physician should know about all the medicines you are taking, even over-the-counter drugs, because some medicines can hurt the liver. If there are any liver test abnormalities, consultation with a liver specialist regarding your need for further testing and treatment is important.

If your liver disease has progressed...

If your physician tells you your liver disease has progressed, here are some extra precautions you should take:

- Get a yearly influenza vaccination. Patients with severe liver disease (cirrhosis) should also receive pneumococcal vaccine.
- Get vaccinated against hepatitis A. Hepatitis A can further damage your liver.
- Don't eat raw oysters. They may carry the bacteria *Vibrio vulnificus,* which can cause serious blood infections in people with liver disease. Approximately 40% of people with this blood infection die.

What can I do to protect others from HBV infection?

People with HBV infection might feel healthy but are still capable of passing the infection on to other people. To protect others from getting HBV infection, it is important to protect them from contact with your infected blood and other infectious body fluids, including semen and vaginal secretions. Sweat, tears, urine, and respiratory secretions do not contain hepatitis B virus. Hepatitis B virus transmission via saliva has only been documented through biting.

Important DOs and DON'Ts for people with chronic HBV infection

DO:

- Cover all cuts and open sores with a bandage.
- Discard used items such as bandaids and menstrual pads carefully so no one is accidentally exposed to your blood.
- Wash your hands well after touching your blood or infectious body fluids.
- Clean up blood spills. Then reclean the area with a bleach solution (one part household chlorine bleach to 10 parts water).
- Tell your sex partner(s) you have hepatitis B so they can be tested and vaccinated (if not already infected). Partners should be tested after the three doses are completed to be sure the vaccine worked.
- Use condoms (rubbers) during sex unless your sex partner has had hepatitis B or has been immunized and has had a blood test demonstrating immunity. (Condoms may also protect you from other sexually transmitted diseases.)
- Tell household members to see their doctors for testing and vaccination for hepatitis B.
- Tell your doctors that you are chronically infected with HBV.
- See your doctor every 6–12 months to check your liver for abnormalities including cancer.
- If you are pregnant, tell your doctor that you have HBV infection. It is critical that your baby is started on the hepatitis B shots within a few hours of birth.

DON'T:

- Share chewing gum, toothbrushes, razors, washcloths, needles for ear or body piercing, or anything that may have come in contact with your blood or infectious body fluids
- Pre-chew food for babies
- Share syringes and needles
- Donate blood, plasma, body organs, tissue, or sperm

What are the long-term effects of HBV infection?

Each year, approximately 5,000 people in the U.S. die of HBV-related liver failure and another 1,500 die from HBV-related liver cancer. HBV infection is the most common cause of liver cancer worldwide and ranks second only to cigarettes as the world's leading cause of cancer.

Is there a cure for hepatitis B?

As of this writing, there are three FDA-approved medications (interferon, lamivudine, and adefovir) that can help a person who is already infected with HBV. Their use is reserved for people who have certain blood test abnormalities. Be sure to ask your doctor if you are a candidate for treatment or if you might benefit from enrolling in a clinical trial. Researchers continue to seek additional cures for hepatitis B.

Why is hepatitis B so serious in pregnant women?

Pregnant women who are infected with HBV can transmit the disease to their babies. Many of these babies develop lifelong HBV infections, and up to 25% will develop liver failure or liver cancer later in life. All pregnant women should be tested early in pregnancy to determine if they are infected with HBV. If the blood test is positive, the baby should be vaccinated at birth with two shots, one of hepatitis B immune globulin (HBIG) and one of hepatitis B vaccine. The infant will need at least two additional doses of hepatitis B vaccine by 6 months of age.

How can hepatitis B be prevented?

The vaccine can provide protection in 90–95% of healthy young adults. The vaccine can be given safely to infants, children, and adults usually in three doses over an approximate 6-month period. Even pregnant women can be safely given these shots if their risk factors warrant it. Hepatitis B shots are very safe, and side effects are rare. Hepatitis B vaccine is our first vaccine that prevents cancer—liver cancer.

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At what age are hepatitis B shots routinely given?

In the U.S., hepatitis B shots are routinely recommended for all children 0–18 years of age. For babies, the first hepatitis B shot is recommended to be given in the hospital at birth. Older children and teens should be vaccinated at the earliest opportunity. Any adult who is at risk for HBV infection should start the vaccine series immediately.

Where can I get hepatitis B shots?

Check with your clinic first. Children's health insurance usually covers the cost of this vaccine since it is routinely recommended for all U.S. children. If your child is uninsured, ask your local health department for assistance. For adults, contact your health provider first to find out if the vaccine is covered under your health plan. If you are uninsured, call your local health department for advice.

How many shots are needed?

Usually three shots are needed for the best protection against HBV, but some protection is provided from receiving as little as one dose. The shots are usually given on a schedule of 0, 1, and 6 months, but there is great flexibility in the timing of these injections. As with all other vaccines, if you fall behind on the schedule, you just continue from where you left off. Hepatitis B shots will not help or cure a person who is already infected with the hepatitis B virus.

What should I do if I'm in a risk group?

If you are in a risk group for hepatitis B (risk groups are listed on page 1), get vaccinated! All people in risk groups should protect themselves from HBV infection. Every day you delay getting vaccinated increases your chances of getting this highly contagious liver disease. The problems caused by hepatitis B—liver cancer and liver failure—are too great. See your doctor or visit your health department.

How does hepatitis B differ from hepatitis A and C?

Hepatitis A, B, and C are all viruses that attack and injure the liver, and all can cause similar symptoms. Usually, people get hepatitis A from household or sexual contact with a person who has hepatitis A. Hepatitis C, formerly known as hepatitis non-A non-B, is caused by the hepatitis C virus and is spread in much the same way as HBV. Both hepatitis B and C can cause lifelong liver problems while hepatitis A does not. Vaccines to prevent hepatitis A are now available. There is no vaccine yet for hepatitis C. If you've had hepatitis A or C in the past, it is still possible to get hepatitis B.

Where can I receive more information about hepatitis B?

Contact your local and state health departments for more information. You can also contact the following organizations:

Immunization Action Coalition
Hepatitis B Coalition
(651) 647-9009
www.immunize.org
www.vaccineinformation.org

American Liver Foundation
(800) 465-4837
www.liverfoundation.org

Centers for Disease Control and Prevention
(888) 443-7232 Hepatitis Hotline, automated
(800) 232-2522 Immunization Hotline
www.cdc.gov/hepatitis
www.cdc.gov/nip

Hepatitis B Foundation
(215) 489-4900
www.hepb.org

Hepatitis Foundation International
(800) 891-0707
www.hepfi.org

Parents of Kids with Infectious Diseases (PKIDS)
(877) 557-5437
www.pkids.org

What is the Immunization Action Coalition (IAC)?

The Immunization Action Coalition is a nonprofit organization that works to prevent hepatitis B and all other vaccine-preventable diseases in people of all ages. The Hepatitis B Coalition, a program of IAC, promotes vaccination for children 0–18 years of age, screening for all pregnant women, testing and vaccination for risk groups, and education and treatment for chronically infected people.

IAC relies on financial support from the Centers for Disease Control and Prevention, corporations, foundations, health professionals, and other private citizens to maintain its activities. Financial contributions are always needed, greatly appreciated, and tax-deductible. You can send your check to IAC at the address below or donate online at www.immunize.org/join

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www.immunize.org
www.vaccineinformation.org

This article was written in response to more than 5,000 letters sent to Dr. Wexler after she wrote a letter to "Dear Abby" about hepatitis B in 1993. It was updated in September 2003.

How's your state doing?

Current U.S. immunization information by state

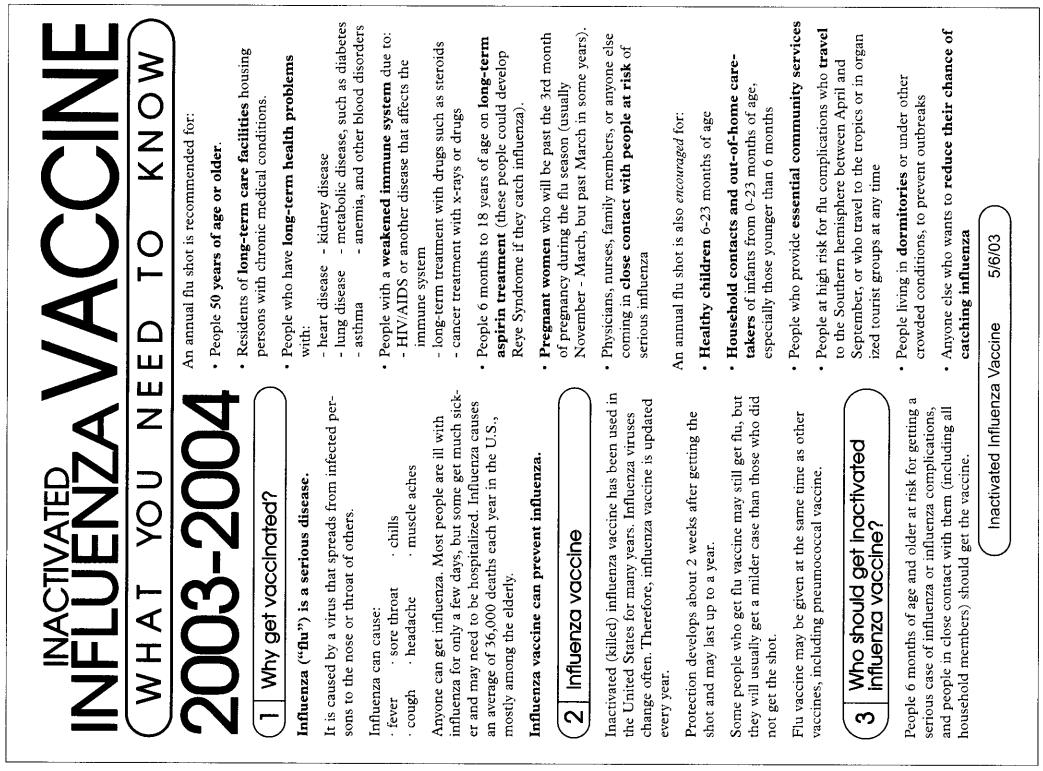
State	% of children with 4:3:1:3:3:1 series complete*†	% of children with ≥3 doses of hepatitis B vaccine*	% of children given ≥1 dose of varicella vaccine*	Hepatitis B childhood vaccination mandates, with year implemented‡				Varicella childhood vaccination mandates, with implementation dates‡			
				Mandate?	Daycare	Elementary School	Middle School	Mandate?	Daycare	Elementary School	Middle School
AL	73.3	91.7	89.3					yes	2000	2001§	
AK	56.2	88.8	63.6	yes	2001	2001	2001	yes	2001		
AZ	59.0	89.2	78.6	yes	1997	1997	2000				
AR	68.3	91.6	88.7	yes	2000	2000	2000	yes	2000	2000	
CA	67.1	88.2	85.1	yes	1997	1997	1999	yes	2001	2001	
CO	56.1	92.4	79.8	yes	1997	1997	1997	yes	2000	2000	2006
CT	72.8	91.4	86.5	yes	1995	1996	2000	yes	2000	2000	2000
DE	69.7	92.4	86.0	yes	1999	1999	1999	yes	9/02	9/03	9/03
DC	68.3	91.0	91.1	yes	1997	1997§	1997§	yes	1997	1997§	1997§
FL	66.4	89.9	80.8	yes		1998§	1997§	yes	2001	2001§	
GA	76.5	92.4	89.2	yes	1997	1997		yes	2000	2000	2001
HI	69.1	90.7	81.6	yes	1998	1998	7/02	yes	2002	2002	2002
ID	52.6	89.5	65.9	yes	1995	1995	born >11/22/91				
IL	58.1	92.5	69.9	yes	1997	1997§	1997§	yes	7/02	7/02§	
IN	59.4	93.2	70.0	yes		1999		yes	1/03	9/04	
IA	58.2	90.6	66.5	yes		1999		yes	1/04	1/04	
KS	55.1	86.9	76.2								
KY	63.6	90.5	78.3	yes	1998	1998	2001	yes	2001	2001	
LA	61.9	90.7	83.4	yes	1998	1998		yes	9/03	9/03	
ME	62.1	93.7	73.0	yes	2002			yes	11/02	9/03§	9/04§
MD	70.7	93.0	87.7	yes	2000	2001§	2007§	yes	2000	2001§	2007§
MA	78.0	93.7	87.0	yes	1993	1997§	1999§	yes	1998	1999§	1999§
MI	71.7	93.1	83.0	yes	1997	2001	9/02	yes	2000	9/02	9/02
MN	61.5	87.9	73.6	yes		2000	2001	yes	9/04	9/04	9/04
MS	63.9	88.3	77.5	yes		1999		yes	9/02	9/02	
MO	60.1	87.7	77.1	yes	1995	1997	1999	yes	2001		
MT	49.4	82.0	59.2								
NE	64.3	91.2	74.8	yes		1999	2000				
NV	65.3	90.1	74.7	yes		7/02		yes		7/03	
NH	66.2	93.7	73.9	yes	1996	born >1/1/93	born >1/1/93	yes	1/03	9/03	9/03
NJ	65.5	90.5	80.2	yes		2001	2001				
NM	59.1	85.9	80.5	yes	2000	9/02	1999	yes	2000	9/02	
NY	67.3	92.3	81.0	yes	1995	1998	2000	yes	2001	9/03	
NC	69.7	91.4	81.8	yes	1994	1999	9/05	yes	4/02	2006	2012
ND	56.3	93.5	67.4	yes		2000§		yes	tbd¶	tbd¶	
OH	63.5	88.0	75.4	yes	1999	1999					
OK	60.3	86.5	81.0	yes	1999	1998§	1997§	yes	1998	1998§	2004§
OR	60.3	85.5	73.7	yes	1998	1998	2000	yes	2000	2000	2000
PA	67.6	92.1	84.7	yes	1994	1997	2002	yes	1997	9/02	9/02
RI	80.7	97.0	88.9	yes	1998	1999	2000	yes	1999	1999§	2000§
SC	73.8	93.8	86.0	yes	1994	1998	1998	yes	2000	2001	2007§
SD	62.0	90.6	71.2					yes		2000	
TN	67.3	93.0	81.1	yes	1998	1999	7/02	yes	1999	7/02	
TX	65.0	86.2	82.9	yes	1998	1998	2000	yes	2000	2000§	2000§
UT	61.4	92.1	78.1	yes		1999§		yes		7/02§	
VT	57.7	89.8	66.5	yes			1999				
VA	64.8	83.2	83.0	yes	1994	1994	2001	yes	born >1/97	born >1/97	
WA	51.9	84.9	65.1	yes	1997§	1997§					
WV	65.8	89.9	81.8	yes	2000			yes	2000		
WI	67.5	93.3	79.8	yes	1997	1997	1997§	yes	2001§	2001§	2004§
WY	54.1	88.8	65.2	yes	1999	1999	1998				

*From the 2001 National Immunization Survey (NIS). *MMWR,* 8/8/03, Vol. 52, No. 31, pp. 728–732.
† Comprises ≥4 doses of DTP/DT/DTaP, ≥3 doses of polio, ≥1 dose of measles-containing vaccine, ≥3 doses of Hib, ≥3 doses of hepatitis B, and ≥1 dose of varicella vaccine.
‡ Immunization Action Coalition (IAC) data; updates appear on the IAC website throughout the year at www.immunize.org/laws
§ Signifies a "progressive" law in which a successive grade becomes covered by the law in each new school year (e.g., grade 7 in 2000, grades 7–8 in 2001)
¶ tbd = Date to be determined

Vaccine Information Statement (VIS): Inactivated Influenza Vaccine

CDC recommends that all providers use the VIS shown below when administering inactivated influenza vaccine to patients. Translations of this VIS and instructions for use are available at www.immunize.org/vis

To obtain a ready-to-copy 8½" x 11" version of this VIS, visit www.immunize.org/vis/2flu.pdf



INACTIVATED
INFLUENZA VACCINE

WHAT YOU NEED TO KNOW

2003-2004

1 Why get vaccinated?

Influenza ("flu") is a serious disease.

It is caused by a virus that spreads from infected persons to the nose or throat of others.

Influenza can cause:
· fever · sore throat · chills
· cough · headache · muscle aches

Anyone can get influenza. Most people are ill with influenza for only a few days, but some get much sicker and may need to be hospitalized. Influenza causes an average of 36,000 deaths each year in the U.S., mostly among the elderly.

Influenza vaccine can prevent influenza.

2 Influenza vaccine

Inactivated (killed) influenza vaccine has been used in the United States for many years. Influenza viruses change often. Therefore, influenza vaccine is updated every year.

Protection develops about 2 weeks after getting the shot and may last up to a year.

Some people who get flu vaccine may still get flu, but they will usually get a milder case than those who did not get the shot.

Flu vaccine may be given at the same time as other vaccines, including pneumococcal vaccine.

3 Who should get inactivated influenza vaccine?

People 6 months of age and older at risk for getting a serious case of influenza or influenza complications, and people in close contact with them (including all household members) should get the vaccine.

- People who have **long-term health problems** with:
  - heart disease - kidney disease
  - lung disease - metabolic disease, such as diabetes
  - asthma - anemia, and other blood disorders
- People with a **weakened immune system** due to:
  - HIV/AIDS or another disease that affects the immune system
  - long-term treatment with drugs such as steroids
  - cancer treatment with x-rays or drugs
- People 6 months to 18 years of age on **long-term aspirin treatment** (these people could develop Reye Syndrome if they catch influenza).
- **Pregnant women** who will be past the 3rd month of pregnancy during the flu season (usually November - March, but past March in some years).
- Physicians, nurses, family members, or anyone else coming in **close contact with people at risk** of serious influenza

An annual flu shot is also *encouraged* for:

- **Healthy children** 6-23 months of age
- **Household contacts and out-of-home caretakers** of infants from 0-23 months of age, especially those younger than 6 months
- People who provide **essential community services**
- People at high risk for flu complications who **travel** to the Southern hemisphere between April and September, or who travel to the tropics or in organized tourist groups at any time
- People living in **dormitories** or under other crowded conditions, to prevent outbreaks
- Anyone else who wants to **reduce their chance of catching influenza**

An annual flu shot is recommended for:

- People **50 years of age or older**.
- Residents of **long-term care facilities** housing persons with chronic medical conditions.

Inactivated Influenza Vaccine 5/6/03

4 When should I get influenza vaccine?

The best time to get a flu shot is in October or November.

Some people should get their flu shot in ***October*** or earlier: people **50 years of age and older**, younger people at **high risk** from flu and its complications (including **children from 6 through 23 months of age**), **household contacts** of persons at high risk, health care workers, and **children under 9** getting the flu shot for the first time.

Influenza vaccine is expected to be plentiful in 2003, so no one should have to wait to get the shot.

The flu season usually peaks between January and March, so getting the shot in ***December***, or even later, can be beneficial in most years.

Most people need only one flu shot each year to prevent influenza. Children under 9 years old getting flu vaccine *for the first time* should get 2 shots, one month apart.

5 Some people should talk with a doctor before getting influenza vaccine

Talk with a doctor before getting a flu shot if you:

1) ever had a serious allergic reaction to eggs or to a previous dose of influenza vaccine, or
2) have a history of Guillain-Barré Syndrome (GBS).

If you have a fever or are severely ill at the time the shot is scheduled, you should probably wait until you recover before getting influenza vaccine. Talk to your doctor or nurse about whether to reschedule the vaccination.

6 What are the risks from inactivated influenza vaccine?

A vaccine, like any medicine, is capable of causing serious problems, such as severe allergic reactions. The risk of a vaccine causing serious harm, or death, is extremely small. Serious problems from flu vaccine are very rare. The viruses in inactivated influenza vaccine have been killed, so you cannot get influenza from the vaccine.

Mild problems:
- soreness, redness, or swelling where the shot was given
- fever
- aches

If these problems occur, they usually begin soon after the shot and last 1-2 days.

Severe problems:
- Life-threatening allergic reactions are very rare. If they do occur, it is within a few minutes to a few hours after the shot.
- In 1976, swine flu vaccine was associated with a severe paralytic illness called Guillain-Barré Syndrome (GBS). Influenza vaccines since then have not been clearly linked to GBS. However, if there is a risk of GBS from current influenza vaccines, it is estimated at 1 or 2 cases per million persons vaccinated . . . much less than the risk of severe influenza, which can be prevented by vaccination.

7 What if there is a moderate or severe reaction?

What should I look for?
- Any unusual condition, such as a high fever or behavior changes. Signs of a serious allergic reaction can include difficulty breathing, hoarseness or wheezing, hives, paleness, weakness, a fast heart beat or dizziness.

What should I do?
- Call a doctor, or get the person to a doctor right away.
- Tell your doctor what happened, the date and time it happened, and when the vaccination was given.
- Ask your doctor, nurse, or health department to report the reaction by filing an Vaccine Adverse Event Reporting System (VAERS) form. Or call VAERS yourself at **1-800-822-7967**, or visit their website at **www.vaers.org**.

8 How can I learn more?

- Ask your doctor or nurse. They can give you the vaccine package insert or suggest other sources of information.
- Call your local or state health department.
- Contact the Centers for Disease Control and Prevention (CDC):
  - Call **1-800-232-2522** (English)
  - Call **1-800-232-0233** (Español)
  - Visit CDC websites at **www.cdc.gov/ncidod/diseases/flu/fluvirus.htm** or **www.cdc.gov/nip**

CDC

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL IMMUNIZATION PROGRAM

Inactivated Influenza Vaccine (5/6/03) Vaccine Information Statement

Vaccine Information Statement (VIS): Live Intranasal Influenza Vaccine

CDC recommends that all providers use the VIS shown below when administering live, intranasal influenza vaccine to patients. Instructions for its use are available at www.immunize.org/vis

To obtain a ready-to-copy 8½" x 11" version of this VIS, visit www.immunize.org/vis/liveflu03.pdf

LIVE, INTRANASAL
INFLUENZA VACCINE
WHAT YOU NEED TO KNOW
2003-2004

1 Why get vaccinated?

Influenza ("flu") is a serious disease.

It is caused by a virus that spreads from infected persons to the nose or throat of others.

Influenza can cause:
- fever
- sore throat
- chills
- cough
- headache
- muscle aches

Anyone can get influenza. Most people are ill with influenza for only a few days, but some get much sicker and may need to be hospitalized. Influenza causes an average of 36,000 deaths each year in the U.S., mostly among the elderly.

Influenza vaccine can prevent influenza.

2 Live, intranasal influenza vaccine

Two types of influenza vaccine are now available. Live, intranasal influenza vaccine (trade-name FluMist™) was licensed in 2003. FluMist is an attenuated (weakened) live vaccine. It is sprayed into the nostrils rather than injected into the muscle.

Inactivated (killed) influenza vaccine, sometimes called the "flu shot," has been used for many years, and is given by injection.

3 Who can get live, intranasal influenza vaccine?

Live, intranasal influenza vaccine is approved for healthy children and adults from 5 through 49 years of age, including household contacts of some people at high risk for influenza complications. However, because its safety has not yet been studied in some other groups, FluMist should not be used by many people at risk for flu or its complications (see Section 4).

4 Who should *not* get live, intranasal influenza vaccine?

The following people should not get intranasal influenza vaccine. They should check with their health care provider about getting **inactivated influenza vaccine.**

- **Adults 50 years of age or older** or **children younger than 5.**
- People who have **long-term health problems** with:
  - heart disease
  - kidney disease
  - lung disease
  - metabolic disease, such as diabetes
  - asthma
  - anemia, and other blood disorders
- People with a **weakened immune system** due to:
  - HIV/AIDS or another disease that affects the immune system
  - long-term treatment with drugs that weaken the immune system, such as steroids
  - cancer treatment with x-rays or drugs
- Children or adolescents on **long-term aspirin treatment** (these people could develop Reye syndrome if they catch influenza).
- **Pregnant women.**
- Anyone with a history of **Guillain-Barré Syndrome** (GBS).

The flu shot (inactivated vaccine) is preferred over live, intranasal influenza vaccine for physicians, nurses, family members, or anyone else coming **in close contact with anyone with a weakened immune system.**

The following people should talk with a doctor before getting *either* flu vaccine:

- Anyone who has ever had a serious allergic reaction to **eggs** or to a **previous dose** of influenza vaccine.
- If you have a fever or are severely ill at the time the vaccination is scheduled, you should probably wait until you recover before getting influenza vaccine. Talk to your doctor or nurse about whether to reschedule the vaccination.

Live, Intranasal Influenza Vaccine 9/4/03

5 When should I get influenza vaccine?

The best time to get flu vaccine is in **October** or **November.** But live, intranasal flu vaccine may be given as soon as the vaccine is available. The flu season usually peaks anywhere from January through March, so getting the vaccine in December, or even later, can be beneficial in most years.

Most people need only one flu vaccination each year to prevent influenza. But children through 8 years of age getting influenza vaccine *for the first time* should get 2 doses of vaccine. For the live, influenza vaccine, these doses should be 6-10 weeks apart. These children should get their first dose in October or earlier.

Live, intranasal flu vaccine may be given at the same time as other vaccines. This includes other live vaccines, such as MMR or chickenpox. But if two live vaccines are not given on the same day, they should be given at least 4 weeks apart.

Influenza viruses change often. Therefore, influenza vaccines are updated every year, and an annual vaccination is needed.

6 What are the risks from live, intranasal influenza vaccine?

A vaccine, like any medicine, is capable of causing serious problems, such as severe allergic reactions. The risk of a vaccine causing serious harm, or death, is extremely small.

Live, intranasal influenza vaccine can cause mild symptoms (see below).

Mild problems:
Some children and adolescents 5-17 years of age reported mild reactions during clinical studies, including:
- runny nose or nasal congestion
- fever
- headache and muscle aches
- abdominal pain or occasional vomiting

These problems usually happened after the first dose and went away on their own.

Some adults 18-49 years of age reported:
- runny nose or nasal congestion
- sore throat
- cough, chills, tiredness/weakness
- headache

During clinical studies with live, intranasal influenza vaccine, many of these symptoms occurred whether or not the person was vaccinated. Even when they occurred after vaccination, they may not have been caused by the vaccine.

Severe problems:
- Life-threatening allergic reactions are very rare. If they do occur, it would be within a few minutes to a few hours after the vaccination.
- No life-threatening reactions were reported during clinical trials of live, intranasal influenza vaccine. However, rare reactions may not be identified until thousands or millions of people have used any new product. Monitoring for unusual or severe problems is being done.

7 What if there is a moderate or severe reaction?

What should I look for?
- Any unusual condition, such as a high fever or behavior changes. Signs of a serious allergic reaction can include difficulty breathing, hoarseness or wheezing, hives, paleness, weakness, a fast heart beat or dizziness.

What should I do?
- Call a doctor, or get the person to a doctor right away.
- Tell your doctor what happened, the date and time it happened, and when the vaccination was given.
- Ask your doctor, nurse, or health department to report the reaction by filing an Vaccine Adverse Event Reporting System (VAERS) form. Or call VAERS yourself at **1-800-822-7967**, or visit their website at **www.vaers.org**.

8 How can I learn more?

- Ask your immunization provider. They can give you the vaccine package insert or suggest other sources of information.
- Call your local or state health department.
- Contact the Centers for Disease Control and Prevention (CDC):
  - Call **1-800-232-2522** (English)
  - Call **1-800-232-0233** (Español)
  - Visit CDC websites at **www.cdc.gov/nicdod/diseases/flu/fluvirus.htm** or **www.cdc.gov/nip**

CDC

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL IMMUNIZATION PROGRAM

Vaccine Information Statement
Live, Intranasal Influenza Vaccine (9/4/03)

IAC's "Ask the Experts" team from CDC

William L. Atkinson, MD, MPH

Linda A. Moyer, RN

Eric E. Mast, MD

counted as valid and should be repeated. This and other information on vaccine administration is available in the 2002 *General Recommendations on Immunization* (www.cdc.gov/mmwr/pdf/rr/rr5102.pdf).

We are unable to locate 7/8" needles for IM injections given to infants and young children. Should we use 5/8" or 1"?

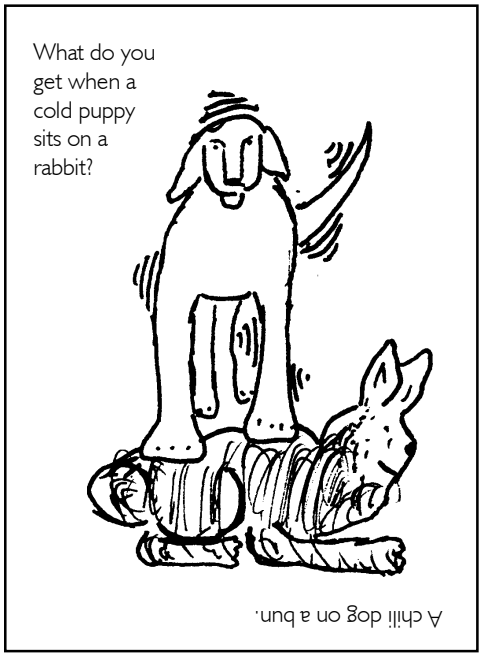
If 7/8" needles are not available, you should use a 1" needle.

Is a parent signature required for vaccination?

Usually not. Federal law mandates the recording of certain information about each vaccination (e.g., manufacturer, lot #) but does not require a parent signature to vaccinate. However, providers should check with their state immunization program to determine whether additional requirements exist under state law. For phone numbers, go to: www.immunize.org/coordinators

Where can I get the most up-to-date information on vaccination recommendations for people who travel outside the U.S.?

You can get this information from the CDC publication *Health Information for International Travel* ("Yellow Book") and biweekly updates, *Summary of Health Information for International Travel,* ("Blue Sheet"). Both are available on the CDC travel website, www.cdc.gov/travel To order a copy of the book, call (877) 252-1200.



Influenza

by William L. Atkinson, MD, MPH

How serious a problem is influenza in the U.S.?

Influenza is the most frequent cause of death from a vaccine-preventable disease in this country. From 1990 through 1999, an average of approximately 36,000 influenza-associated pulmonary and circulatory deaths occurred during each influenza season. In addition to fatalities, influenza is also responsible for an average of 114,000 hospitalizations per year.

Who should be vaccinated against influenza?

ACIP recommends annual influenza vaccination for all persons 50 years of age or older; persons ≥6 months of age with chronic cardiovascular or pulmonary disease (including asthma), a chronic disease of the blood, kidneys, or immune system (including HIV) or diabetes; residents of long-term care facilities; pregnant women who will be in the 2nd or 3rd trimester of pregnancy during the influenza season; and children and teens who are on long-term aspirin therapy. In addition, persons who are likely to transmit influenza to persons at high risk should be vaccinated (e.g., health care workers, caregivers, or household members) as well as household contacts and out-of-home caretakers of children 0–23 months of age. Vaccination of children 6–23 months of age is encouraged because of their higher risk of hospitalization from influenza. And, lastly, any other (healthy) person ≥6 months of age who wishes to reduce the likelihood of becoming ill with influenza may be vaccinated.

For whom can the new intranasal flu vaccine be used?

The new live attenuated influenza vaccine (LAIV), FluMist,™ is currently approved for use only for healthy non-pregnant persons 5–49 years of age. It should not be used for anyone with an underlying medical condition that increases the person's risk of complications of influenza (inactivated vaccine should be used for these groups). It also cannot be given to pregnant women or to immunosuppressed persons.

How is LAIV administered?

The vaccine dose (0.5mL) comes frozen inside a special sprayer device. A plastic clip on the plunger divides the dose into two equal parts. The vaccine is thawed by holding it in your hand for 3-5 minutes. Once the vaccine is thawed, the patient is seated in an upright position with head tilted back. Half of the contents of the sprayer (0.25mL) is sprayed into each nostril.

Are there special storage issues for LAIV vaccine?

Yes. The vaccine is extremely fragile so proper storage and handling are critical. The vaccine must be stored continuously at -15°C (+5°F) or below. The vaccine cannot tolerate the temperature fluctuations in a frost-free freezer, so it must be stored in a manual defrost freezer. If a manual defrost freezer is not available, you must store the vaccine in a special manufacturer-supplied container that is placed inside the self-defrosting freezer. The container is designed to maintain a constant internal temperature consistent with the freezer's own temperature. (If the freezer in which you store vaccine does not reach -15°C (+5°F) or lower, the container will not hold the vaccine at the proper temperature.) If the vaccine is removed from the freezer, it can be stored in the refrigerator for 24 hours; it must be discarded if not used within this time period.

Can LAIV be given to contacts of immunosuppressed patients?

Like other live vaccines, LAIV should not be administered to immunosuppressed persons. There are currently no data assessing the risk of transmission of LAIV from vaccine recipients to immunosuppressed contacts. As a result, ACIP has stated a preference for using inactivated influenza vaccine for household members, health care workers, and others who have close contact with immunosuppressed individuals because of the theoretical risk that the live attenuated vaccine virus could be transmitted to the immunosuppressed individual and cause disease.

Can LAIV be administered to persons with minor acute illnesses, such as a mild URI with or without fever?

Yes, however, if clinical judgment suggests nasal congestion is present that might impede delivery of the vaccine to the nasopharyngeal mucosa, deferral of administration should be considered until the congestion resolves.

Why do people who received a flu shot last year still need to get vaccinated this year when the viruses haven't changed?
Although the strains are the same as in last year's vaccine, you should NOT use the 2002–2003 vaccine you might still have in your refrigerator. All of last season's vaccine expired on June 30, 2003; expired vaccine should NEVER be administered. Secondly, antibody titers that persons might have achieved from last year's vaccination have waned and need to be boosted with a dose this year.

Hepatitis A and B

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

I have seen patients (adults ≥18 years old) who have had one or two doses of Twinrix® (HepA-HepB combination vaccine from GlaxoSmithKline), but we only carry single-antigen vaccine in our practice. How should we complete their vaccination series with single-antigen vaccines?
Twinrix is licensed as a 3-dose series.

If one dose of Twinrix® was given, complete the series with two adult doses of hepatitis B vaccine and two adult doses of hepatitis A vaccine.

If two doses of Twinrix® were given, the schedule can be completed with one adult dose of hepatitis A vaccine and one adult dose of hepatitis B vaccine.

How should we complete the series if a 12-year-old starts the 2-dose Recombivax HB® adult formulation (from Merck) series but fails to receive dose #2 before the 16th birthday?
The 2-dose Recombivax HB® schedule (using adult formulation vaccine) is only licensed for use in 11 through 15-year-olds. Thus, a 16-year-old would need two additional doses of pediatric hepatitis B vaccine to complete a 3-dose series.

I'm a pediatrician and support the use of the birth dose of hepatitis B vaccine. I give it routinely, but a few parents object. In my practice, almost 100% of my infant patients' mothers are tested for HBsAg and almost all are reported to be negative. Could you tell me how many cases of hepatitis B virus (HBV) infection occur each year in babies who are born to documented HBsAg-negative mothers?
Because infants born to "documented" HBsAg-negative mothers are usually not tested for HBV infection, and because virtually all HBV infections occurring among infants are asymptomatic, it is not possible to quantify the number of HBV-infected infants born to mothers believed to be HBsAg negative. However, we know that many unvaccinated newborns have been left needlessly at risk of infection because of errors in maternal hepatitis B testing and reporting. In two surveys conducted by IAC covering the period from July 1999 to October 2002, state and local hepatitis B coordinators reported more than 500 medical errors discovered through their perinatal hepatitis B prevention programs. Many of these errors involved misinterpreting or mistranscribing hepatitis screening test results, or ordering the wrong hepatitis B screening test. Such errors can lead to a mother being documented as HBsAg-negative, when she is actually HBsAg-positive.

Another issue is preventing possible transmission of HBV in early childhood. Seroprevalence data from the National Health and Nutrition Examination Surveys has provided estimates of the number of early HBV infections. Based on these data, approximately 16,000 children under 10 years of age were infected with HBV beyond the post-natal period each year before routine infant vaccination was recommended in 1991 (Armstrong GL, Mast EE, Wojczynski M, Margolis HS. Childhood hepatitis B virus infections in the United States before hepatitis B immunization. Ped. 200l;108(5):1123-28). Although these infections represented only 5%–10% of all persons with chronic infections in the United States at that time, it is estimated that 18% of all persons with chronic infection acquired their infections postnatally during early childhood. In some populations, childhood transmission was more important than perinatal transmission as a cause of chronic HBV infection before infant hepatitis B immunization was widely implemented. For example, in studies conducted among U.S.-born children of Southeast Asian refugees during the 1980s, approximately 60% of chronic infections in young children were among children born to HBsAg-negative mothers.

Use of the hepatitis B vaccine birth dose safeguards against maternal hepatitis B testing and reporting errors and also prevents early childhood HBV infections. The birth dose also protects the infants of women who become HBV infected after having been screened in early pregnancy and not tested later in pregnancy.

Natalie Joy Smith, MD, MPH
Dec. 28, 1961—Aug. 22, 2003

Our friend and colleague who worked tirelessly to expand the use of childhood and adult vaccines throughout the United States.

Dr. Smith died after a struggle with cancer while Deputy Director of the National Immunization Program, Centers for Disease Control and Prevention.

We will always remember Natalie for the dedication she brought to the field of immunization during her brief tenure at CDC, as Chief of the Immunization Branch at the California Department of Health Services, as a member of CDC's Advisory Committee on Immunization Practices, and as a member of many state and national committees focused on immunization.

NEEDLE TIPS correction policy

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

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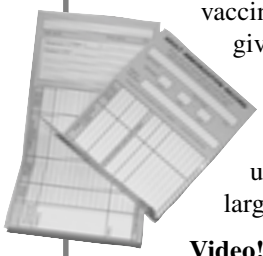

Adult Immunization Record Cards. The card lists the vaccines adults get, making it easy to discuss your patients' vaccination needs with them. At the end of a visit, give the card to your patients as a permanent record of their immunization status. Rip-proof, smudge-proof, and waterproof, the bright canary-yellow card fits into a wallet for lifelong use. $25 for a 250-card box; see page 23 for larger quantity discounts.

Video! Immunization Techniques: Safe, Effective, Caring. Developed by the California Immunization Program in 2001, this 35-minute video presents abundant practical information on how to vaccinate people of all ages. An excellent tool for training new staff and refreshing experienced staff. Comes with presenter notes and a skills checklist; $25.

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- Mail or fax your order to the Immunization Action Coalition, 1573 Selby Avenue, Suite 234, St. Paul, MN 55104. Fax (651) 647-9131. Our federal tax ID# is 41-1768237.
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Deborah L. Wexler, MD
IAC Executive Director

Dear Colleague,

As you know, in today's economy, there are few "extra" dollars. Therefore, to reduce our costs, we have had to trim our *NEEDLE TIPS'* mailing list, removing the names of people we haven't heard from in several years. By eliminating "out-of-touch" recipients, we are better able to serve readers we ***know*** value *NEEDLE TIPS'* up-to-date, practical immunization information. (See page 2 for some opinions about the value of our work.)

To ensure you continue to receive *NEEDLE TIPS* in 2003–04, please show your interest by supporting us during these difficult financial times. ***Your contribution is vital!***

The most helpful way to support us is to send a generous contribution today. You can contribute online at www.immunize.org/join, or you can fill out the form below and fax or mail it to us. Our fax number is (651) 647-9131, and an envelope is enclosed. Your contribution to IAC is tax deductible! (IAC is a non-profit 501[c]3 organization.) With a contribution of $60 or more, you'll receive our extensive collection of patient- and staff-education print materials.

Please keep in touch, and we'll keep *NEEDLE TIPS* coming!

Deborah L. Wexler MD

Deborah L. Wexler, MD
Executive Director

The Coalition needs thousands of contributors. Can we count on you?

Thank you to CDC!
The CDC's National Immunization Program and the Division of Viral Hepatitis, National Center for Infectious Diseases, provide invaluable technical and financial support.

Thank you, readers!
We greatly appreciate your financial support and your comments and suggestions.

A special thank you to the Mark and Muriel Wexler Foundation.

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Oct. 2003

IAC is with you throughout each day—in offices, public clinics, and hospitals—as you work hard to protect your patients from serious diseases. Please help us continue to be there for you—and others—by sending a tax-deductible contribution today. When you contribute $60 or more, you'll receive our complete collection of print education materials in English, and those available in the languages you select (see below).

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