Volume 7 – Number 2 November 2003

VACCINATE ADULTS!

A bulletin for adult medicine specialists from the Immunization Action Coalition

Highlighting the latest developments in routine adult immunization and chronic hepatitis B virus infection.

What's 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

by William L. Atkinson, MD, MPH

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 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).

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 (inac-

(continued on page 2)

VACCINATE ADULTS!

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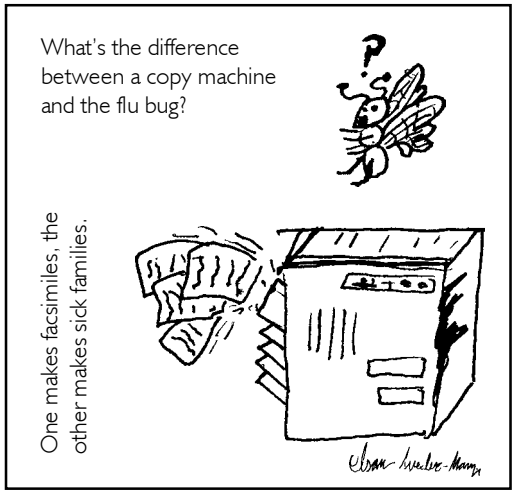
The **Immunization Action Coalition (IAC),** a 501(c)3 nonprofit organization, publishes practical immunization information for health professionals to help increase immunization rates and prevent disease.

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.

tivated 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.

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)

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 GlaxoSmith-Kline), 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.

VACCINATE ADULTS 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 helpful review of our content. If you find an error, please notify us immediately. We publish notification of significant errors in ***VACCINATE ADULTS!*** and on our free email announcement service ***IAC EXPRESS.*** Be sure you're signed up for this service. Visit www.immunize.org/express to sign up. Alternatively, you can subscribe by sending an email message to express@immunize.org Then enter the word SUBSCRIBE in the "Subject:" field.

Vaccine highlights

Latest recommendations and schedules

Editor's note: The information on this page is current as of October 10, 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 meeting will be held on 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.

Vaccine news

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.

Influenza news

In September, CDC published two influenza VISs—an updated 2003–04 Inactivated Influenza VIS and a new Live, Intranasal Influenza VIS. For a ready-to-print copy, visit 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.

The CPT codes for influenza vaccine given to adults for this vaccination season are as follows:
- Inactivated, for those ≥3 yrs of age: 90658
- Live, for intranasal use: 90660

Note: CPT code 90659 for inactivated, whole virus, influenza vaccine has been deleted and should ***not*** *be used.*

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.

On September 26, a supplemental ACIP statement "Using Live, Attenuated Influenza Vaccine for Prevention and Control of Influenza" was published in *MMWR* (Vol. 52, No. RR-13).

Flu & PPV news from CMS

On October 1, Medicare maximum allowable reimbursement for pneumococcal vaccine increased to $18.62 per dose (previously $13.10). For influenza vaccine, maximum reimbursement is $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

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,"* MMWR: *Sept 26, 2003, Vol. 52, No. RR-13.*

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

Standing Orders for Administering Influenza Vaccine to Adults

Purpose: To reduce morbidity and mortality from influenza by vaccinating all patients who meet the criteria established by the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices.

Policy: Under these standing orders, eligible nurses may vaccinate patients who meet the criteria below.

Procedure:

1. Identify adults in need of influenza vaccination based on the following criteria:
   a. Age 50 years or older
   b. Age less than 50 years with any of the following conditions:
      - chronic disorder of the pulmonary or cardiovascular system, including asthma
      - chronic metabolic disease (e.g., diabetes mellitus), renal dysfunction, hemoglobinopathy, or immunosuppression (e.g., caused by medications, HIV) that has required regular medical follow-up or hospitalization during the preceding year
      - will be in the second or third trimester of pregnancy during the influenza season
   c. Residence in a nursing home or other chronic-care facility that houses persons of any age who have chronic medical conditions
   d. In an occupation or living situation that puts one in proximity to persons at high risk, including:
      - a health care worker, caregiver, or household member in contact with person(s) at high risk of developing complications from influenza
      - a household contact or out-of-home caretaker of a child 0–23 months of age
   e. Wish to reduce the likelihood of becoming ill with influenza
2. Screen all patients for contraindications and precautions to influenza vaccine:
   a. **Contraindications:** serious reaction (e.g., anaphylaxis) after ingesting eggs or after receiving a previous dose of influenza vaccine or an influenza vaccine component. For a list of vaccine components, go to www.cdc.gov/nip/publications/pink/appendices/a/excipient.pdf. Do not give live attenuated influenza vaccine (LAIV) to pregnant women or immunosuppressed persons. Use of inactivated influenza vaccine is preferred over LAIV for close contacts of immunosuppressed persons (e.g., health care workers or household contacts).
   b. **Precautions:** moderate or severe acute illness with or without fever
3. Provide all patients with a copy of the most current federal Vaccine Information Statement (VIS). Although not required by federal law, it is prudent to document in the patient's medical record or office log, the publication date of the VIS and the date it was given to the patient. Provide non-English speakers with a VIS in their native language if available; these can be found at www.immunize.org/vis
4. Administer 0.5 mL inactivated influenza vaccine IM (22–25g, 1–1½" needle) in the deltoid muscle. Alternatively, healthy persons 5–49 years of age without contraindications may be given 0.5 mL of LAIV; 0.25 mL is sprayed into each nostril while the patient is in an upright position.
5. Document each patient's vaccine administration information and follow up in the following places:
   a. **Medical chart:** Record the date the vaccine was administered, the manufacturer and lot number, the vaccination site and route, and the name and title of the person administering the vaccine. If vaccine was not given, record the reason(s) for non-receipt of the vaccine (e.g., medical contraindication, patient refusal).
   b. **Personal immunization record card:** Record the date of vaccination and the name/location of the administering clinic.
6. Be prepared for management of a medical emergency related to the administration of vaccine by having a written emergency medical protocol available, as well as equipment and medications.
7. Report all adverse reactions to influenza vaccine to the federal Vaccine Adverse Event Reporting System (VAERS) at www.vaers.org or (800) 822-7967. VAERS report forms are available at www.vaers.org

This policy and procedure shall remain in effect for all patients of the_____until rescinded or until _____ (date).
(name of practice or clinic)

Medical Director's signature: _____ Effective date: _____

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 nonresponder 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 nonresponder 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 7)

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 nonresponder 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 nonresponder (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 nonresponders. 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 CDC 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 8.

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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

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Deborah L. Wexler, MD
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