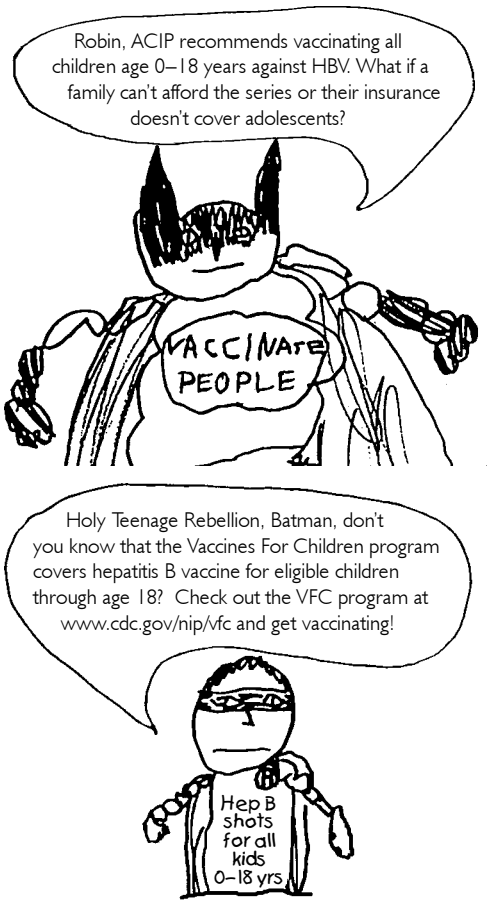
Volume 14 – Number 1 January 2004

NEEDLE TIPS

and the Hepatitis B Coalition News

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



WHAT YOU'LL FIND INSIDE:

Ask the Experts

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 National 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

What are the best places to get answers to my questions about immunization?

There are many excellent sources of information available for health professionals as well as the public. You can get a personal response to your questions regarding vaccines and practice issues by contacting immunization staff at your local or state health department. You'll find answers to almost all questions about vaccines and the diseases they prevent by reading the appropriate ACIP statement. Although these may appear to be overwhelming documents, they are all organized in much the same manner and are easy to navigate and understand. IAC maintains an online library of ACIP statements at www.immunize.org/acip Every office or clinic providing vaccinations should have a copy of all relevant ACIP statements for easy reference. You can order print or electronic versions (on CD-ROM) of ACIP statements from the National Immunization Program (NIP) online system at https://www2.cdc.gov/nchstp_od/PIWeb/niporderform.asp You can also contact CDC's Immunization Hotline at (800) 232-2522, or you can send your questions to NIP by email at nipinfo@cdc.gov

Is it true that pertussis in children is increasing? Are more infants dying from the disease?

Since the 1980s, the incidence of reported pertussis cases has increased. The increase has been primarily among infants age less than 4 months and among adolescents and adults. An increase in the number of reported deaths from pertussis among very young infants has paralleled the increase in the number of reported cases. Reasons for the increases in pertussis are not completely

(continued on page 19)

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NEEDLE TIPS

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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.

Prevent Viral Hepatitis: Vaccinate!

Since the licensure of the first vaccine against hepatitis B virus (HBV) in 1981, much progress has been made toward eliminating HBV transmission in children and reducing the risk for HBV infection in adults. Substantial declines in the incidence of acute hepatitis B have occurred among highly vaccinated populations, such as young children and health care workers.

However, nearly 80,000 persons become infected with HBV each year in the United States. Vaccinating adults at high risk of HBV infection has been recommended since June 1982, but the rate of vaccine utilization among these individuals remains low.

High-risk adults—those with multiple sex partners, those with a history of recent sexually transmitted disease (STD), men who have sex with men, and injection drug users—still account for more than 75% of new cases of HBV infection each year. Studies have shown that 70% of persons newly infected with HBV have had a missed opportunity for vaccination.

Recommendations for certain individuals at high risk

1. **Give hepatitis B vaccine to persons with multiple sex partners or a recent STD.**
   - Heterosexual activity is now the predominant source of HBV infection among U.S. adults.
   - Fewer than 1% of persons at risk for sexually transmitted HBV seeking care in the private sector are vaccinated against hepatitis B.
2. **Give hepatitis B and hepatitis A vaccine to men who have sex with men.**
   - A high prevalence (5%–20%) of HBV infection has been documented among men who have sex with men (MSM), a group with low rates of hepatitis B immunization (3%–28%).
   - In a study of MSM ages 15–22 years recruited at public venues in seven U.S. metropolitan areas during 1994–98, only 9% had serologic evidence of hepatitis B vaccination.
3. **Give hepatitis B and hepatitis A vaccine to injecting drug users.**
   - Within 5 years of beginning injection drug use, 50%–70% of injection drug users become infected with HBV.
   - In one study, only 13%–25% of injection drug users in the United States reported being offered hepatitis B vaccination.
   - During outbreak years, up to 10% of nationally reported cases of hepatitis A occur among users of injecting and noninjecting drugs and among men who have sex with men.
4. **Vaccinate prison inmates against hepatitis B.**
   - Approximately 0.7% of the U.S. population (2 million people) is incarcerated in a correctional system.
   - Up to 47% of prison inmates have evidence of current or past HBV infection.
   - It is estimated that 12%–39% of all Americans with chronic HBV or hepatitis C virus (HCV) infection were released from a correctional facility during the previous year.
5. **Give hepatitis B and hepatitis A vaccine to persons with chronic liver disease from HCV.**
   - HCV infection is the most common chronic bloodborne viral infection in the United States. Approximately 2.7 million people in the U.S. are infected with HCV.

We can do better!

Our success in vaccinating health care workers proves that the goal of protecting high-risk adults against hepatitis B can be accomplished. What is stopping us from vaccinating others at risk of HBV infection?

Targeting high-risk U.S. adults for hepatitis B vaccination has been found to be cost effective even assuming a less-than-50% completion rate of the three-dose series. While providing three doses of hepatitis B vaccine is desirable, protective levels of antibodies develop in 32%–56% of adults after one dose and in more than 70% of adults after two doses. For this reason, certainty of completion of the vaccine series should not be a prerequisite for starting to vaccinate high-risk adults.

The national health objectives for 2010 call for a reduction of 75%–90% of acute hepatitis B cases among high-risk adults. Unless we begin to identify and vaccinate adults with behavioral risk factors for HBV infection, significant reduction will not be possible.

Sources

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Incidence and risk factors for acute hepatitis B in the United States, 1982–1998: implications for vaccination programs. *J Infect Dis* 185:713-19, 2002.

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Prevention and control of infections with hepatitis viruses in correctional settings. *MMWR* 52(RR-1):1-44, 2003.

Prevention of hepatitis A through active or passive immunization:ACIP. *MMWR* 48(RR-12):1-37, 1999.

IAC's newest website is a reliable source of vaccine information for your patients!

✶✶ www.vaccineinformation.org ✶✶

Dear Colleagues:

Are you unable to keep up with all the misinformation parents and patients acquire on the Internet? Now, you can help your concerned patients and yourself by directing them to IAC's new website for the public and the media, www.vaccineinformation.org

IAC developed the website to be a one-stop source of comprehensive, clear, reliable immunization information for patients, parents, and the media. It contains factual, science-based data about 18 vaccine-preventable diseases (VPDs), including a Q&A section for each disease and its vaccine, case reports, photographs, and links to other organizations and resources.

In addition, the "Concerned about vaccines?" section offers those who question vaccines some useful tools to help them evaluate immunization information on the Internet. Other sections cover broader topics such as vaccine safety and the importance of vaccination. The site also provides links to good websites and resources from other organizations.

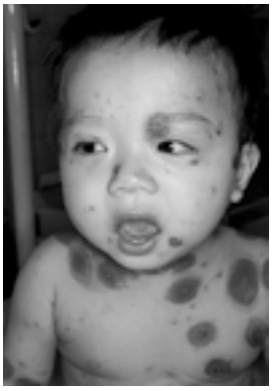
Lastly, keeping in mind that a picture is worth a thousand words, the website currently features more than 200 photographs of VPDs and 25 video clips gathered from around the world. These stark images drive home the point that VPDs are still with us—endangering and claiming millions of lives.

I hope you will find time to preview IAC's newest website, www.vaccine information.org, and will refer your patients to it when they have questions about vaccines.

Sincerely,

Teresa Asper Anderson, DDS, MPH
Consulting Epidemiologist, IAC

Tetanus, Bangladesh
Courtesy World Health Organization



Bulbous varicella, Hong Kong
Copyright Princess Margaret Hospital

To view hundreds of photos, visit www.vaccineinformation.org/photos

Polio, Kenya
Courtesy Remote Medicine

1918 Influenza Epidemic, Kansas, USA
Courtesy National Museum of Health and Medicine

Vaccine Highlights

Recommendations, schedules, and more

Editor's note: The information on these pages is current as of December 29, 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 Feb. 24–25 and June 23–24, 2004. For more information, visit www.cdc.gov/nip/acip

ACIP statements

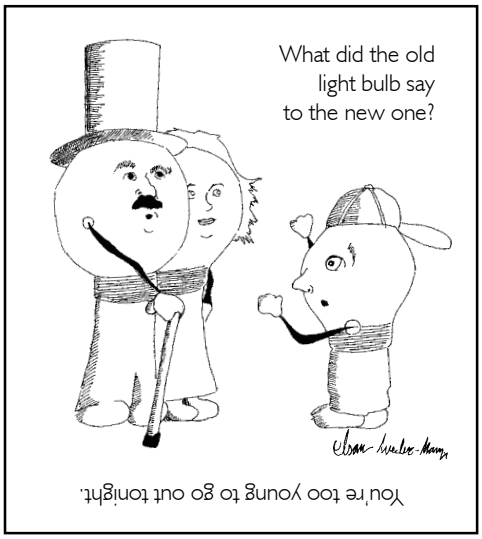
All clinicians should have a set of ACIP statements, the public health recommendations on vaccines, published in the *Morbidity and Mortality Weekly Report (MMWR).* Free continuing education credits are available for reading many of the statements and completing the brief test at the end of the statement.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

Immunization schedule news

In January 2004, the "Recommended Childhood and Adolescent Immunization Schedule—U.S., January–June 2004" was issued jointly by ACIP, the American Academy of Family Physicians, and the American Academy of Pediatrics. There will be two schedules issued during the year. The July–December 2004 version will include a new recommendation for influenza vaccination of all children 6–23 months of age. The catch-up schedules remain unchanged from 2003. A black-and-white copy of the schedule is found on pages 6–7 of *NEEDLE TIPS.* It can also be accessed in color at www.immunize.org/cdc/child-schedule.pdf

In October 2003, CDC published the second edition of the "Recommended Adult Immunization Schedule by Age and Medical Conditions, U.S., 2003–2004." The schedule is available at www.cdc.gov/nip/recs/adult-schedule.htm



New (revised) standards

In October 2003, the revised "Standards for Child and Adolescent Immunization Practices" were published in *Pediatrics*. The standards, released by the National Vaccine Advisory Committee, identify 17 strategies for effective immunization practices, including availability of vaccines, assessment of vaccination status, effective communication about vaccine benefits and risks, proper storage, administration, and documentation of vaccines, as well as implementation of strategies to improve vaccination coverage. To view the standards, including the article in *Pediatrics,* visit www.cdc.gov/nip/recs/rev-immz-stds.htm

In August 2003, the revised "Standards for Adult Immunization Practices" were published in the *American Journal of Preventive Medicine (AJPM)*. The National Vaccine Advisory Committee led the revision effort, in collaboration with more than 60 organizations. The standards also provide links to tools and websites accessible in provider offices. To view the standards, including the article in *AJPM,* visit www.cdc.gov/nip/recs/rev-immz-stds.htm

Influenza news

In December 2003, CDC issued multiple updates on the current year's influenza activity. Surveillance data indicated that the 2003–04 influenza season began unusually early, with community activity first reported in early October. Reports of severe pediatric illnesses and deaths due to influenza created an unusually high demand for vaccine. The majority of the viruses identified have been type A (H3N2) viruses of the A/Fujian strain, although different influenza viruses might predominate later in the season. Influenza seasons dominated by type A (H3N2) viruses typically are associated with higher levels of severe illness and death than seasons when other types of viruses predominate. Although this year's vaccine contains the Panama strain of influenza A (H3N2), it is expected to provide some cross-protection against the Fujian-like viruses that are currently circulating. The other two virus strains in the vaccine (influenza A [H1N1] and influenza B) closely match their circulating counterparts. For more information about influenza, visit www.cdc.gov/flu

CDC recommends targeting remaining trivalent inactivated vaccine (TIV) to persons at high risk for complications from influenza: healthy children ages 6–23 months, adults ≥65 years of age, pregnant women in their 2nd or 3rd trimesters during the influenza season, persons ≥2 years of age with underlying chronic conditions (e.g., chronic heart or lung conditions, including asthma, metabolic diseases [e.g., diabetes], chronic kidney disease, or weakened immune system), residents of nursing homes and other long-term care facilities, children and teenagers (6 months to 18 years of age) who are on long-term aspirin therapy and therefore could develop Reye's syndrome after influenza. Healthy persons ages 5–49 years who want to be vaccinated should be encouraged to receive live attenuated influenza vaccine (LAIV) if they have no contraindications.

On September 26, 2003, CDC published "Using Live, Attenuated Influenza Vaccine for Prevention and Control of Influenza: Supplemental Recommendations of the ACIP" in *MMWR*. LAIV is currently approved for use among healthy persons (i.e., those not at high risk for complications from influenza infection) age 5–49 years. To obtain the recommendations, visit www.immunize.org/acip

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

Hepatitis A news

On November 15, 2003, CDC issued an official Health Advisory concerning hepatitis A outbreaks associated with green onions. At that time, the outbreaks were confined to restaurants in Tennessee, North Carolina, and Georgia in September. On

November 28, CDC reported green onions as the source of another outbreak of hepatitis A among patrons of a single restaurant in Pennsylvania. Three deaths have been associated with this outbreak. To read the *MMWR* article about the hepatitis A outbreak in Pennsylvania, visit www.cdc.gov/mmwr/preview/mmwrhtml/mm5247a5.htm

New vaccine resources

Revised textbook! ***Vaccines,*** 4th ed., by S.A. Plotkin, and W.A. Orenstein (Elsevier, 2004). This book offers authoritative information on vaccine production, available preparations, efficacy and safety of vaccines, recommendations for vaccine use, data on the impact of vaccination programs on morbidity and mortality, and more. Hardbound, 1696 pages, $249. For more information or to place an online order, go to www.us.elsevierhealth.com/product.jsp?isbn=0721696880 To place a phone order, call (800) 545-2522.

New! Web-based Personal Immunization Scheduler. This new tool enables parents to create and print out a schedule for their preschooler by entering the child's birth date. Regular updates are incorporated as changes to the routine schedules occur. To view the scheduler, go to www2a.cdc.gov/nip/scheduler_le/default.asp

Free CDC video coming soon!

An updated "How to Protect Your Vaccine Supply!" will be available in spring 2004.

Watch *IAC EXPRESS* for an announcement. (See page 1 for *IAC EXPRESS* subscription information.)

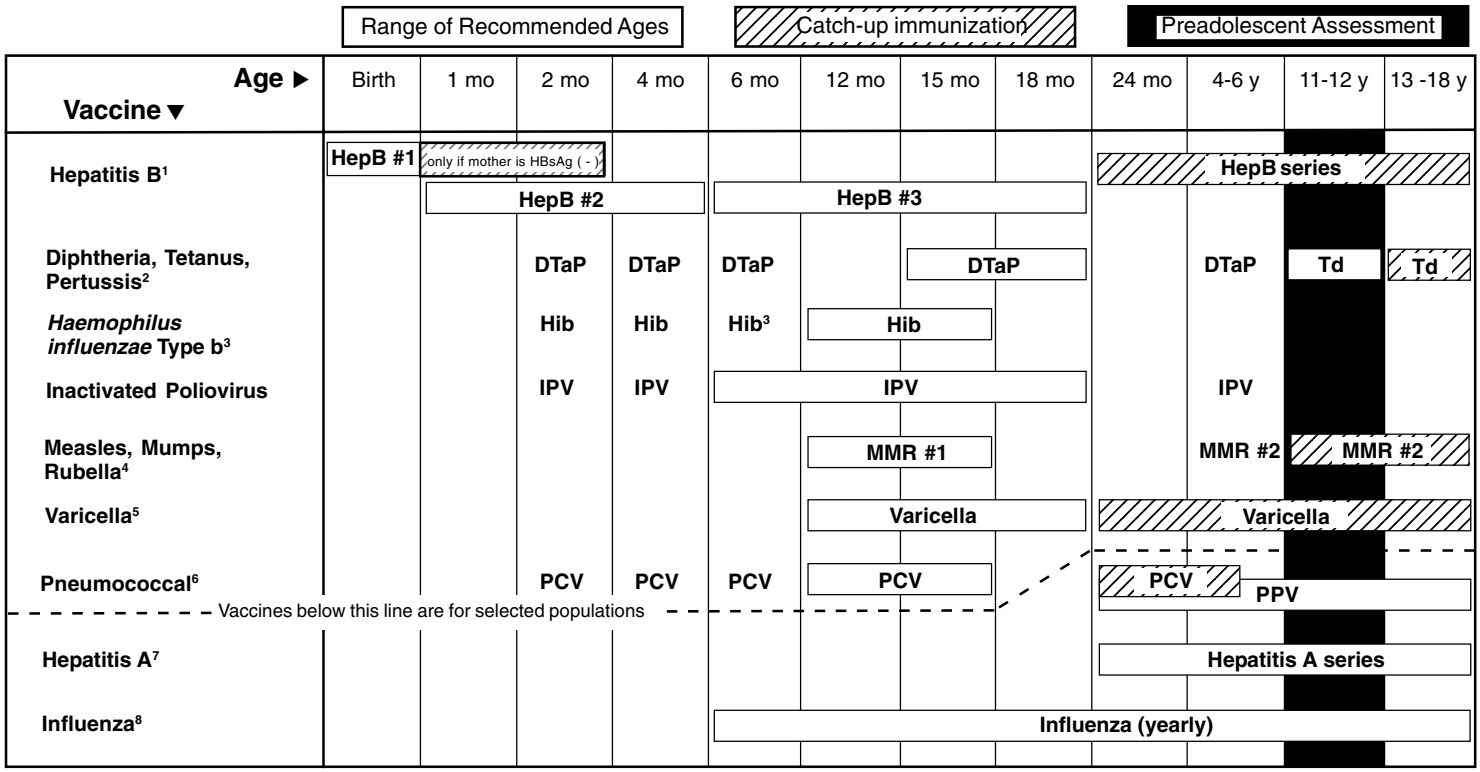
Current VIS dates

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	hepatitis A	8/25/98
hepatitis B	7/11/01	influenza (LAIV)	9/4/03
Hib	12/16/98	influenza (TIV)	5/6/03
MMR	1/15/03	meningococcal	7/28/03
PCV	9/30/02	PPV	7/29/97
polio	1/1/00	rabies	11/4/03
Td	6/10/94	yellow fever	3/14/03
varicella	12/16/98		

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 30 languages, and the VIS instruction sheet are also available on IAC's website: www.immunize.org/vis

Recommended Childhood and Adolescent Immunization Schedule — United States, January – June 2004



This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2003, for children through age 18 years. Any dose not given at the recommended age should be given at any subsequent visit when indicated and feasible. ▨ Indicates age groups that warrant special effort to administer those vaccines not previously given. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturers' package inserts for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form can be found on the Internet: www.vaers.org or by calling (800) 822-7967.

1. Hepatitis B (HepB) vaccine. All infants should receive the first dose of hepatitis B vaccine soon after birth and before hospital discharge; the first dose may also be given by age 2 months if the infant's mother is hepatitis B surface antigen (HBsAg) negative. Only monovalent HepB can be used for the birth dose. Monovalent or combination vaccine containing HepB may be used to complete the series. Four doses of vaccine may be administered when a birth dose is given. The second dose of vaccine should be given at least 4 weeks after the first dose, except for combination vaccines which cannot be administered before age 6 weeks. The third dose should be given at least 16 weeks after the first dose and at least 8 weeks after the second dose. The last dose in the vaccination series (third or fourth dose) should not be administered before age 24 weeks.

Infants born to HBsAg-positive mothers should receive HepB and 0.5 mL of Hepatitis B Immune Globulin (HBIG) within 12 hours of birth at separate sites. The second dose is recommended at age 1 to 2 months. The last dose in the immunization series should not be administered before age 24 weeks. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) at age 9 to15 months.

Infants born to mothers whose HBsAg status is unknown should receive the first dose of the HepB series within 12 hours of birth. Maternal blood should be drawn as soon as possible to determine the mother's HBsAg status; if the HBsAg test is positive, the infant should receive HBIG as soon as possible (no later than age 1 week). The second dose is recommended at age 1 to 2 months. The last dose in the immunization series should not be administered before age 24 weeks.

2. Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15 to 18 months. The final dose in the series should be given at age ≥4 years. **Tetanus and diphtheria toxoids (Td)** is recommended at age 11 to 12 years if at least 5 years have elapsed since the last dose of tetanus and diphtheria toxoid-containing vaccine. Subsequent routine Td boosters are recommended every 10 years.

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

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

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

6. Pneumococcal vaccine. The heptavalent **pneumococcal conjugate vaccine (PCV)** is recommended for all children age 2 to 23 months. It is also recommended for certain children age 24 to 59 months. The final dose in the series should be given at age ≥12 months. **Pneumococcal polysaccharide vaccine (PPV)** is recommended in addition to PCV for certain high-risk groups. See *MMWR* 2000;49(RR-9):1-38.

7. Hepatitis A vaccine. Hepatitis A vaccine is recommended for children and adolescents in selected states and regions and for certain high-risk groups; consult your local public health authority. Children and adolescents in these states, regions, and high-risk groups who have not been immunized against hepatitis A can begin the hepatitis A immunization series during any visit. The 2 doses in the series should be administered at least 6 months apart. See *MMWR* 1999;48(RR-12):1-37.

8. Influenza vaccine. Influenza vaccine is recommended annually for children age ≥6 months with certain risk factors (including but not limited to children with asthma, cardiac disease, sickle cell disease, human immunodeficiency virus infection, and diabetes; and household members of persons in high risk groups [see *MMWR* 2003;52 (RR-8):1-36]) and can be administered to all others wishing to obtain immunity. In addition, healthy children age 6 to 23 months are encouraged to receive influenza vaccine if feasible, because children in this age group are at substantially increased risk of influenza-related hospitalizations. For healthy persons age 5 to 49 years, the intranasally administered live-attenuated influenza vaccine (LAIV) is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine (TIV). See MMWR 2003;(RR-13):1-8. Children receiving TIV should be administered a dosage appropriate for their age (0.25 mL if age 6 to 35 months or 0.5 mL if age ≥3 years). Children age ≤8 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by at least 4 weeks for TIV and at least 6 weeks for LAIV).

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Web site at www.cdc.gov/nip or call the National Immunization Information Hotline at (800) 232-2522 (English) or (800) 232-0233 (Spanish).

Approved by the Advisory Committee on Immunization Practices (www.cdc.gov/nip/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

For Children and Adolescents Who Start Late or Who Are >1 Month Behind

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

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

Dose 1 (Minimum age)	Minimum Interval Between Doses			
	Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
DTaP (6 wk)	**4 wk**	**4 wk**	**6 mo**	**6 mo**[1]
IPV (6 wk)	**4 wk**	**4 wk**	**4 wk**[2]	
HepB[3] (birth)	**4 wk**	**8 wk** (and 16 wk after first dose)		
MMR (12 mo)	**4 wk**[4]			
Varicella (12 mo)				
Hib[5](6 wk)	**4 wk:** if first dose given at age <12 mo **8 wk (as final dose):** if first dose given at age 12-14 mo **No further doses needed:** if first dose given at age ≥15 mo	**4 wk**[6]**:** if current age <12 mo **8 wk (as final dose)**[6]**:** if current age ≥12 mo and second dose given at age <15 mo **No further doses needed:** if previous dose given at age ≥15 mo	**8 wk (as final dose)**: this dose only necessary for children age 12 mo–5 y who received 3 doses before age 12 mo	
PCV[7](6 wk)	**4 wk:** if first dose given at age <12 mo and current age <24 mo **8 wk (as final dose):** if first dose given at age ≥12 mo or current age 24-59 mo **No further doses needed:** for healthy children if first dose given at age ≥24 mo	**4 wk:** if current age <12 mo **8 wk (as final dose):** if current age ≥12 mo **No further doses needed:** for healthy children if previous dose given at age ≥24 mo	**8 wk (as final dose)**: this dose only necessary for children age 12 mo–5 y who received 3 doses before age 12 mo	

Catch-up schedule for children age 7 through 18 years

Minimum Interval Between Doses		
Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Booster Dose
Td: **4 wk**	**Td: 6 mo**	**Td**[8]**: 6 mo:** if first dose given at age <12 mo and current age <11 y **5 y:** if first dose given at age ≥12 mo and third dose given at age <7 y and current age ≥11 y **10 y:** if third dose given at age ≥7 y
IPV[9]**:** **4 wk**	**IPV**[9]**: 4 wk**	**IPV**[2,9]
HepB: **4 wk**	**HepB: 8 wk** (and 16 wk after first dose)	
MMR: **4 wk**		
Varicella[10]**:** **4 wk**		

1. **DTaP**: The fifth dose is not necessary if the fourth dose was given after the fourth birthday.
2. **IPV:** For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was given at age ≥4 years. If both OPV and IPV were given as part of a series, a total of 4 doses should be given, regardless of the child's current age.
3. **HepB:** All children and adolescents who have not been immunized against hepatitis B should begin the HepB immunization series during any visit. Providers should make special efforts to immunize children who were born in, or whose parents were born in, areas of the world where hepatitis B virus infection is moderately or highly endemic.
4. **MMR:** The second dose of MMR is recommended routinely at age 4 to 6 years but may be given earlier if desired.
5. **Hib:** Vaccine is not generally recommended for children age ≥5 years.
6. **Hib**: If current age <12 months and the first 2 doses were PRP-OMP (PedvaxHIB or ComVax[Merck]), the third (and final) dose should be given at age 12 to 15 months and at least 8 weeks after the second dose.
7. **PCV**: Vaccine is not generally recommended for children age ≥5 years.
8. **Td:** For children age 7 to 10 years, the interval between the third and booster dose is determined by the age when the first dose was given. For adolescents age 11 to 18 years, the interval is determined by the age when the third dose was given.
9. **IPV:** Vaccine is not generally recommended for persons age ≥18 years.
10. **Varicella:** Give 2-dose series to all susceptible adolescents age ≥13 years.

Reporting Adverse Reactions

Report adverse reactions to vaccines through the federal Vaccine Adverse Event Reporting System. For information on reporting reactions following immunization, please visit www.vaers.org or call the 24-hour national toll-free information line (800) 822-7967.

Disease Reporting

Report suspected cases of vaccine-preventable diseases to your state or local health department.

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Web site at www.cdc.gov/nip or call the National Immunization Information Hotline at (800) 232-2522 (English) or (800) 232-0233 (Spanish).

Administering Vaccines: Dose, Route, Site, and Needle Size

Vaccines	Dose	Route	Site	Needle Size
Diphtheria, Tetanus, Pertussis (DTaP, DT, Td)	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1–2"
***Haemophilus influenzae* type b (Hib)**	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers & children	22–25g, 1–2"
Hepatitis A (HepA)	≤18 yrs.: 0.5 mL ≥19 yrs.: 1.0 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1–2"
Hepatitis B (HepB)	≤19 yrs.: 0.5 mL* ≥20 yrs.: 1.0 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1–2"
Influenza, live attenuated (LAIV)	0.5 mL	Intranasal spray	Administer 0.25 mL dose into each nostril while patient is in an upright position	NA
Influenza, trivalent inactivated (TIV)	6–35 mos: 0.25 mL ≥3 yrs.: 0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1–2"
Measles, mumps, rubella (MMR)	0.5 mL	SC	**Anterolateral fat of thigh:** for young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"
Meningococcal (Men)	0.5 mL	SC	**Anterolateral fat of thigh:** for young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"
Pneumococcal conjugate (PCV)	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers & children	22–25g, 1–2"
Pneumococcal polysaccharide (PPV)	0.5 mL	IM	**Deltoid**	22–25g, 1–2"
		SC	**Anterolateral fat of thigh:** for young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"
Polio, inactivated (IPV)	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers, children & adults	22–25g, 1–2"
		SC	**Anterolateral fat of thigh:** for infants & young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"
Varicella (Var)	0.5 mL	SC	**Anterolateral fat of thigh:** for young children **Posterolateral fat of upper arm:** for children & adults	23–25g, 5/8"

*Persons 11 through 15 years of age may be given Recombivax HB® (Merck) 1.0 mL (adult formulation) on a 2–dose schedule.

Combination Vaccines

DTaP+HepB+IPV (Pediarix™) **DTaP+Hib (Trihibit™)** **Hib+HepB (Comvax™)**	0.5 mL	IM	**Vastus lateralis:** for infants (& toddlers lacking adequate deltoid mass); **Deltoid:** for toddlers & children	22–25g, 1–2"
HepA+HepB (Twinrix™)	≥18 yrs.: 1.0 mL	IM	**Deltoid**	22–25g, 1–2"

Please note: Always refer to the package insert included with each biologic for complete vaccine administration information. The Advisory Committee on Immunization Practices (ACIP) statement for the particular vaccine should be reviewed as well.

www.immunize.org/catg.d/p3085.pdf • Item #P3085 (11/03)

then . . .

- *your child will be left at risk of catching the disease*
- *your child will be a threat to others*
- *your child at times must be kept out of school or child care*

- **Without immunizations your child may have to be excluded at times from school or child care.**

During disease outbreaks, unimmunized children may be excluded from school or child care until the outbreak is over, both for their own protection and for the protection of others. This causes hardship for the child and parent.

what to do . . .

We strongly encourage you to immunize your child, but ultimately the decision is yours. Please discuss any concerns you have with a trusted health care provider or call the immunization coordinator at your local or state health department. Your final decision affects not only the health of your child, but also the rest of your family, the health of your child's friends and their families, classmates, neighbors, and community.

For more information about vaccines, go to:

- Immunization Action Coalition: www.vaccineinformation.org and www.immunize.org
- Centers for Disease Control and Prevention: www.cdc.gov/nip CDC's Immunization Information Hotline: (800) 232-2522 (English) or (800) 232-0233 (Spanish)
- American Academy of Pediatrics: www.cispimmunize.org
- National Network for Immunization Information: www.immunizationinfo.org
- Vaccine Education Center: www.vaccine.chop.edu

Immunization Action Coalition
1573 Selby Avenue, Suite 234
Saint Paul, MN 55104
phone: (651) 647-9009
fax: (651) 647-9131
www.immunize.org
www.vaccineinformation.org

www.immunize.org/catg.d/p4017.pdf • Item #P4017 (11/03)

what if . . . *you don't immunize your child*?

What if . . .

What if you don't immunize your child? While most state laws provide for religious or personal exemptions to required immunizations, concerned parents should still consider the consequences of not immunizing their children.

Without immunizations your child is at greater risk of catching one of the vaccine-preventable diseases.

Vaccines were developed to protect individuals from dangerous and sometimes deadly diseases. Vaccines are safe and effective, and such diseases are still a threat.

- Pertussis or "whooping cough" is an extremely dangerous disease for infants. It is not easily treated and can result in permanent brain damage or death. During 1997–2000, nearly 30,000 cases of pertussis were reported in the United States, including 62 pertussis-related deaths. Of infected infants younger than age 6 months, two-thirds needed to be hospitalized. In 2002, 9,771 cases and 22 deaths from pertussis were reported—the most cases since 1964.
- Measles is dangerous and very contagious. During the 1989–1991 U.S. measles epidemic, approximately 55,000 cases and 132 deaths (mostly children) were reported. Worldwide, measles kills approximately 745,000 children each year.
- Diphtheria is an infectious disease of the nose and throat that can lead to serious breathing problems, heart failure, paralysis, and even death. In recent years, there have been few cases of diphtheria in the United States. However, the disease has not been eliminated from the world. A diphtheria epidemic recently occurred in countries of the former Soviet Union, where many children and adults had not been immunized. Their reported cases of diphtheria rose from 839 in 1989 to 47,802 in 1994, when 1,746 persons died. At least 20 infected individuals exported the disease along the way.
- Before the availability of a chickenpox vaccine, almost every child suffered from this disease. During 1988–1995, up to 10,000 people were hospitalized each year from complications of chickenpox—most of them previously healthy children. An average of 43 children died from chickenpox each year during 1990–1994.

Without immunizations your child can infect others.

Children who are not immunized can transmit vaccine-preventable diseases throughout the community.

- Unvaccinated people can pass diseases on to babies who are too young to be fully immunized.
- Unvaccinated people pose a threat to children and adults who can't be immunized for medical reasons. This includes people with leukemia and other cancers, HIV/AIDS and other immune system problems, and persons receiving chemotherapy, radiation therapy, or large doses of corticosteroids.
- Unvaccinated people can infect the small percentage of children whose immunizations did not "take."

How do I know if I've already been infected?

The only way to know if you've been infected is to have your blood tested.

Should I have a blood test before I start the hepatitis B vaccine series?

Talk to your health professional about whether you need this testing. Most people do not need a blood test. If you and your doctor decide you need testing, start the vaccine series at the same visit. That way, you will be closer to being protected from HBV.

Will hepatitis B vaccine protect me from hepatitis A or hepatitis C?

No. Hepatitis A and hepatitis C are different diseases caused by different viruses. There is a vaccine for hepatitis A, but there is no vaccine for hepatitis C at this time. For information on hepatitis A and hepatitis C, talk to your health professional or call your local health department.

How can I pay for these shots?

If you have insurance, the cost of hepatitis B vaccination may be covered. If not, sometimes these shots are available free or at low cost through special clinics or health departments. Call your local health department for details. And, while you're at it, find out what other vaccinations you need, too!

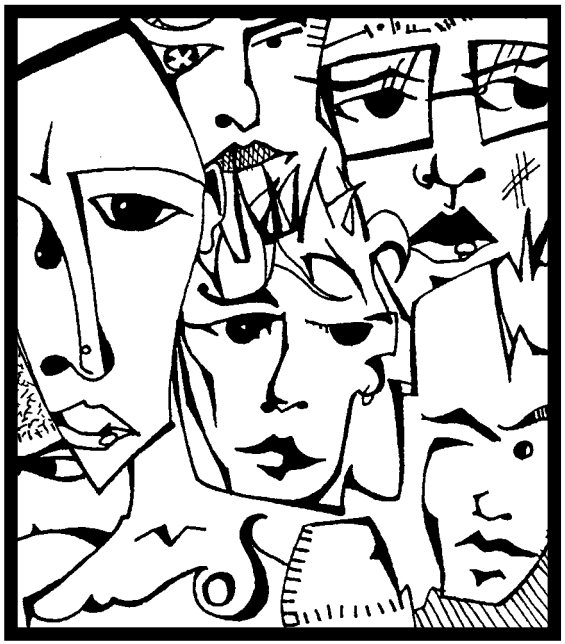
Everyone needs vaccinations!

If you can't afford shots or don't know where to get them, contact your city, county, or state health department, or call CDC's National Immunization Information Hotline: (800) 232-2522.

Immunization Action Coalition
1573 Selby Avenue, Suite 234
St. Paul, MN 55104
(651) 647-9009
www.immunize.org
www.vaccineinformation.org
www.hepprograms.org

www.immunize.org/catg.d/4112std.pdf • Item #P4112 (11/03)

Every week hundreds of sexually active people get hepatitis B



Get protected! Get vaccinated!

What is hepatitis B?

Hepatitis B is a sexually transmitted disease. It is a liver infection caused by the hepatitis B virus (HBV). HBV is spread much like HIV, the virus that causes AIDS. HBV is found in the blood, semen, and vaginal secretions of an infected person. HBV is easier to catch than HIV because it is more than 100 times more concentrated in an infected person's blood.

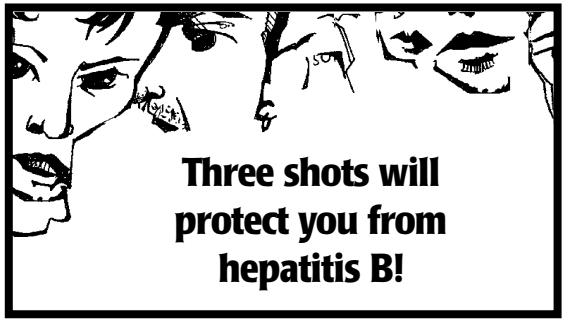
How serious is hepatitis B?

Hepatitis B can cause long-term (chronic) infection that can lead to liver scarring (cirrhosis) and liver cancer. More than 5,000 people in the United States die every year from hepatitis B-related liver disease. Fortunately, there is a vaccine to prevent this disease.

How great is my risk of getting HBV infection from sex?

If you answer "yes" to any of the following questions, you are at risk for HBV infection and need to be vaccinated!

Do you have more than one sex partner?	yes □	no □
During any six-month period, have you, or your partner, had sex with more than one person?	yes □	no □
Do you or your sex partner have a sexually transmitted disease at this time or have you had one recently?	yes □	no □



Is sex the only way I can get hepatitis B?

No. Hepatitis B is a sexually transmitted disease, but it is spread in other ways, too. HBV is a hardy virus that can exist on almost any surface for up to one month. You can get hepatitis B by

- unprotected vaginal or anal sex
- sharing needles or paraphernalia (works) for illegal drug use
- contact with an infected person's blood or body fluids
- living in a household with a person with long-term HBV infection
- tattooing with unsterile equipment
- sharing toothbrushes, razors, nail clippers, or washcloths
- human bites
- mother-to-infant transmission during birth

You do not get hepatitis B from sneezing, coughing, dry lip kissing, or holding hands.

How do I protect myself from hepatitis B?

Get vaccinated against hepatitis B! Three shots are usually given over a period of six months.

Tell your sex partner(s) to get vaccinated too, and always follow "safer sex" practices.

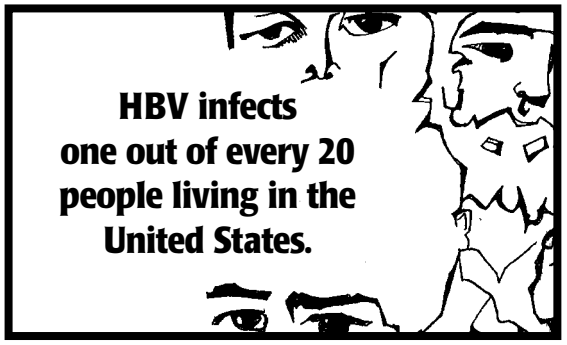
What are the symptoms of hepatitis B?

Only about half of the people who are infected with HBV get symptoms. Symptoms might include

- loss of appetite
- nausea
- fever
- dark-colored urine
- yellowing of skin and whites of eyes
- extreme tiredness
- pain in joints
- bloated and tender belly

Do people fully recover from hepatitis B?

Most people who get hepatitis B as adults will fully recover. However, 6–10% will remain infectious and carry HBV in their bodies for life. Chronically infected people do not necessarily look or feel ill, but they are at increased risk for liver failure and liver cancer and need ongoing medical care. They can also spread the virus to others.



Standing Orders for Administering Hepatitis B Vaccine to Adolescents and Adults

Purpose: To reduce morbidity and mortality from hepatitis B virus (HBV) infection 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 adolescents and adults in need of hepatitis B vaccination based on the following criteria:
   a. Persons less than 19 years of age who have not received the vaccine
   b. Age 19 years or older meeting any of the following criteria:
      - having had more than one sex partner in the previous 6 months, a recently acquired sexually transmitted disease, or recent treatment for a sexually transmitted disease
      - male who has had sex with males
      - injection drug user
      - sex partner or household member of a person who is chronically infected with HBV
      - at occupational risk of infection through exposure to blood or serous fluid (e.g., health care worker, public safety worker, trainee in a health professional or allied health school)
      - client or staff of an institution for the developmentally disabled
      - hemodialysis patient or patient with early renal failure (who will become a dialysis patient)
      - receiving clotting-factor concentrate
      - planning to travel to or live in a high endemic area of the world for more than 6 months and will have close contact with the local population; also short-term travelers who are likely to have contact with blood (e.g., in a medical setting) or sexual contact with residents of areas with high or intermediate levels of endemic disease
      - housed in a long-term correctional facility
2. Screen all patients for contraindications and precautions to hepatitis B vaccine:
   a. **Contraindications:** a history of a serious reaction (e.g., anaphylaxis) after a previous dose of hepatitis B vaccine or to a hepatitis B vaccine component. For a list of vaccine components, go to www.cdc.gov/nip/publications/pink/appendices/a/excipient.pdf
   b. **Precautions:** a 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). You must 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 the VIS in their native language if available; these can be found at www.immunize.org/vis
4. For persons 20 years of age or older, administer 1.0 mL hepatitis B vaccine IM (22–25g, 1–1½" needle) in the deltoid muscle. For persons 19 years of age or younger, administer 0.5 mL hepatitis B vaccine IM (22–25g, 1–1½" needle) in the deltoid muscle. (For persons 11–15 years of age, a 2-dose schedule, spaced 4–6 months apart, using 1.0 mL Recombivax [adult] can be used.)
5. Provide subsequent doses of hepatitis B vaccine to complete each patient's 3-dose schedule by observing a minimum interval of 4 weeks between the first and second doses, 8 weeks between the second and third doses, and at least 4 months between the first and third doses.
6. 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.
7. 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.
8. Report all adverse reactions to hepatitis B vaccine to the federal Vaccine Adverse Event Reporting System (VAERS) at www.vaers.org or by calling (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: _____

CDC's Guidelines for Maintaining and Managing the Vaccine Cold Chain

Editor's note: The following article is reprinted from the Centers for Disease Control and Prevention's Morbidity and Mortality Weekly Report, *October 24, 2003, Vol. 52(42):1023–25.*

For more information on vaccine handling and storage, visit:

www.immunize.org/izpractices

www.cdc.gov/nip/menus/vaccines.htm#Storage

or call (800) 232-2522

In February 2002, the Advisory Committee on Immunization Practices (ACIP) and American Academy of Family Physicians (AAFP) released their revised General Recommendations on Immunization (1), which included recommendations on the storage and handling of immunobiologics. Because of increased concern over the potential for errors with the vaccine cold chain (i.e., maintaining proper vaccine temperatures during storage and handling to preserve potency), this notice advises vaccine providers of the importance of proper cold chain management practices. This report describes proper storage units and storage temperatures, outlines appropriate temperature-monitoring practices, and recommends steps for evaluating a temperature-monitoring program. The success of efforts against vaccine-preventable diseases is attributable in part to proper storage and handling of vaccines. Exposure of vaccines to temperatures outside the recommended ranges can affect potency adversely, thereby reducing protection from vaccine-preventable diseases (1). Good practices to maintain proper vaccine storage and handling can ensure that the full benefit of immunization is realized.

Recommended Storage Temperatures

The majority of commonly recommended vaccines require storage temperatures of 35°F–46°F (2°C–8°C) and must not be exposed to freezing temperatures. Introduction of varicella vaccine in 1995 and of live attenuated influenza vaccine (LAIV) more recently increased the complexity of vaccine storage. Both varicella vaccine and LAIV must be stored in a continuously frozen state ≤5°F (-15°C) with no freeze-thaw cycles (Table 1). In recent years, instances of improper vaccine storage have been reported. An estimated 17%–37% of providers expose vaccines to improper storage temperatures, and refrigerator temperatures are more commonly kept too cold than too warm (2,3).

Freezing temperatures can irreversibly reduce the potency of vaccines required to be stored at 35°F–46°F (2°C–8°C). Certain freeze-sensitive vaccines contain an aluminum adjuvant that precipitates when exposed to freezing temperatures. This results in loss of the adjuvant effect and vaccine potency (4). Physical changes are not always apparent after exposure to freezing temperatures and visible signs of freezing are not necessary to result in a decrease in vaccine potency.

Although the potency of the majority of vaccines can be affected adversely by storage temperatures that are too warm, these effects are usually more gradual, predictable, and smaller in magnitude than losses from temperatures that are too cold. In contrast, varicella vaccine and LAIV are required to be stored in continuously frozen states and lose potency when stored above the recommended temperature range.

Vaccine Storage Requirements

Vaccine storage units must be selected carefully and used properly. A combination refrigerator/freezer unit sold for home use is acceptable for vaccine storage if the refrigerator and freezer compartments each have a separate door. However, vaccines should not be stored near the cold air outlet from the freezer to the refrigerator. Many combination units cool the refrigerator compartment by using air from the freezer compartment. In these units, the freezer thermostat controls freezer temperature while the refrigerator thermostat con-

TABLE 1. Vaccine storage temperature requirements

35°F–46°F (2°C–8°C)		≤5°F (–15°C)	
Instructions	**Vaccine**	**Instructions**	**Vaccine**
Do not freeze or expose to freezing temperatures. Contact state or local health department or manufacturer for guidance on vaccines exposed to temperatures above or below the recommended range.	Diphtheria-, tetanus-, or pertussis-containing vaccines (DT, DTaP, Td) Haemophilus conjugate vaccine (Hib)* Hepatitis A (HepA) and hepatitis B (HepB) vaccines Inactivated polio vaccine (IPV) Measles, mumps, and rubella vaccine (MMR) in the lyophilized (freeze-dried) state† Meningococcal polysaccharide vaccine Pneumococcal conjugate vaccine (PCV) Pneumococcal polysaccharide vaccine (PPV) Trivalent inactivated influenza vaccine (TIV)	Maintain in continuously frozen state with no freeze-thaw cycles. Contact state or local health department or manufacturer for guidance on vaccines exposed to temperatures above the recommended range.	Live attenuated influenza vaccine (LAIV) Varicella vaccine

*ActHIB® (Aventis Pasteur, Lyon, France) in the lyophilized state is not expected to be affected detrimentally by freezing temperatures, although no data are available.
†MMR in the lyophilized state is not affected detrimentally by freezing temperatures.

trols the volume of freezer temperature air entering the refrigerator. This can result in different temperature zones within the refrigerator.

Refrigerators without freezers and stand-alone freezers usually perform better at maintaining the precise temperatures required for vaccine storage, and such single-purpose units sold for home use are less expensive alternatives to medical specialty equipment. Any refrigerator or freezer used for vaccine storage must maintain the required temperature range year-round, be large enough to hold the year's largest inventory, and be dedicated to storage of biologics (i.e., food or beverages should not be stored in vaccine storage units). In addition, vaccines should be stored centrally in the refrigerator or freezer, not in the door or on the bottom of the storage unit, and sufficiently away from walls to allow air to circulate.

Temperature Monitoring

Proper temperature monitoring is key to proper cold chain management. Thermometers should be placed in a central location in the storage unit, adjacent to the vaccine. Temperatures should be read and documented twice each day, once when the office or clinic opens and once at the end of the day. Temperature logs should be kept on file for ≥3 years, unless state statutes or rules require a longer period. Immediate action must be taken to correct storage temperatures that are outside the recommended ranges. Mishandled vaccines should not be administered.

One person should be assigned primary responsibility for maintaining temperature logs, along with one backup person. Temperature logs should be reviewed by the backup person at least weekly. All staff members working with vaccines should be familiar with proper temperature monitoring.

Different types of thermometers can be used, including standard fluid-filled, min-max, and continuous chart recorder thermometers (Table 2). Standard fluid-filled thermometers are the simplest and least expensive products, but some models might perform poorly. Product temperature thermometers (i.e., those encased in biosafe liquids) might reflect vaccine temperature more accurately. Min-max thermometers monitor the temperature range. Continuous chart recorder thermometers monitor temperature range and duration and can be recalibrated at specified intervals. All thermometers used for monitoring vaccine storage temperatures should be calibrated and certified by an appropriate agency (e.g., National Institute of Standards and Technology). In addition, temperature indicators (e.g., Freeze Watch™ [3M, St. Paul, Minnesota] or ColdMark™ [Cold Ice, Inc., Oakland, California]) can be considered as a backup monitoring system (5); however, such indicators should not be used as a substitute for twice daily temperature readings and documentation.

All medical care providers who administer vaccines should evaluate their cold chain maintenance and management to ensure that 1) designated personnel and backup personnel have written duties and are trained in vaccine storage and handling; 2) accurate thermometers are placed properly in all vaccine storage units and any limitations of the storage system are fully known; 3) vaccines are placed properly within the refrigerator or freezer in which proper temperatures are maintained; 4) temperature logs are reviewed for completeness and any deviations from recommended temperature ranges; 5) any out-of-range temperatures prompt immediate action to fix the problem, with results of these actions documented; 6) any vaccines exposed to out-of-range temperatures are marked "do not use" and isolated physically; 7) when a problem is discovered, the exposed vaccine is maintained at proper temperatures while state or local health departments, or the vaccine manufacturers, are contacted for guidance; and 8) written emergency retrieval and storage procedures are in place in case of equipment failures or power outages. Around-the-clock monitoring systems might be considered to alert staff to after-hours emergencies, particularly if large vaccine inventories are maintained.

Additional information on vaccine storage and handling is available from the Immunization Action Coalition at http://www.immunize.org/izpractices/index.htm Links to state and local health departments are available at http://www.cdc.gov/other.htm Especially detailed guidelines from the Commonwealth of Australia on vaccine storage and handling, vaccine storage units, temperature monitoring, and stability of vaccines at different temperatures (6) are available at http://immunise.health.gov.au/cool.pdf

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(Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.)

TABLE 2. Comparison of thermometers used to monitor vaccine temperatures

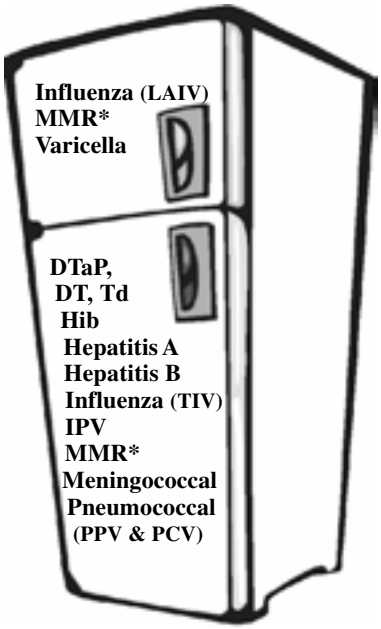
Thermometer type	Advantages	Disadvantages
Standard fluid-filled	• Inexpensive and simple to use. • Thermometers encased in biosafe liquids can reflect vaccine temperatures more accurately.	• Less accurate (+/-1°C). • No information on duration of out of specification exposure. • No information on mini-max temperatures. • Cannot be recalibrated. • Inexpensive models might perform poorly.
Min-max	• Inexpensive. • Monitors temperature range.	• Less accurate (+/-1°C). • No information on duration of out of specification exposure. • Cannot be recalibrated.
Continuous chart recorder	• Most accurate. • Continuous 24-hour readings of temperature range and duration. • Can be recalibrated at regular intervals.	• Most expensive. • Requires most training and maintenance.

Vaccine Handling Tips

Outdated or improperly stored vaccines won't protect patients!

Maintain freezer temperature at 5°F (-15°C) or colder

Maintain refrigerator temperature at 35–46°F (2–8°C)



Order vaccine carefully.
Inventory your vaccine at least monthly and before placing an order. Expired vaccine must never be used and is money wasted!

Store vaccine correctly.†
Refrigerate or freeze immediately upon receiving shipment. Do not store vaccine in the door of the refrigerator or freezer. Inactivated vaccines should always be placed in the middle of the refrigerator far enough away from the freezer compartment to protect them from freezing.

Always use the vaccine with the earliest expiration date first.
Move vaccine with the earliest expiration date to the front and mark it to be used first. Keep vials in their boxes. Never use outdated vaccine.

Stabilize temperatures.
Store ice packs in the freezer and large jugs of water in the refrigerator along with the vaccine. This will help maintain a stable, cold temperature in case of a power failure or if the refrigerator or freezer doors are opened frequently or left open. Frequent opening of the refrigerator unit's doors can lead to temperature variations inside, which could affect vaccine efficacy. For this reason you should not store food or beverages in the refrigerator or freezer.

Safeguard the electrical supply to the refrigerator.
Make sure the refrigerator is plugged into an outlet in a protected area where it cannot be disconnected accidentally. Label the refrigerator, electrical outlets, fuses, and circuit breakers on the power circuit with information that clearly identifies the perishable nature of vaccines and the immediate steps to be taken in case of interruption of power (use DO NOT UNPLUG stickers). If your building has auxiliary power, use the outlet supplied by that system.

*MMR may be stored in either the freezer or the refrigerator.

†Refer to package insert for specific instructions on the storage of each vaccine. If you have questions about the condition of the vaccine, you should immediately place the vaccine in recommended storage and call the vaccine manufacturer(s) to determine whether the potency of the vaccine(s) has been affected. For other questions, call the immunization program at your state or local health department.

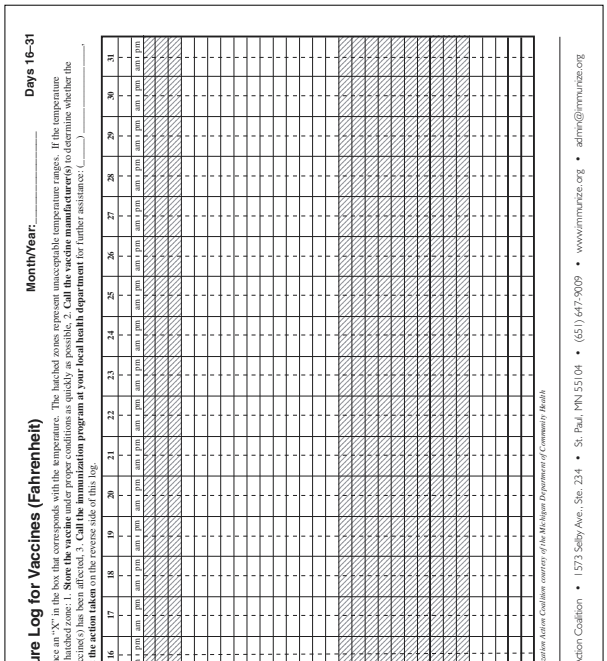
Record your health department's phone number here:_____

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

www.immunize.org/catg.d/p3048.pdf • Item #P3048 (11/03)

Temperature Logs (Fº and Cº) for Vaccines

Fahrenheit Temperature Log: To obtain a ready-to-copy, full-size (8½" x 11") version of this 2-page document, visit www.immunize.org/catg.d/p3039.pdf



Temperature Log for Vaccines (Fahrenheit) Month/Year:_____ Days 16–31

Instructions: Place an "X" in the box that corresponds with the temperature. The hatched zones represent unacceptable temperature ranges. If the temperature recorded is in the hatched zone: 1. **Store the vaccine** under proper conditions as quickly as possible, 2. **Call the vaccine manufacturer(s)** to determine whether the potency of the vaccine(s) has been affected, 3. **Call the immunization program at your local health department** for further assistance: (____) _____, and 4. **Document the action taken** on the reverse side of this log.

Day of Month	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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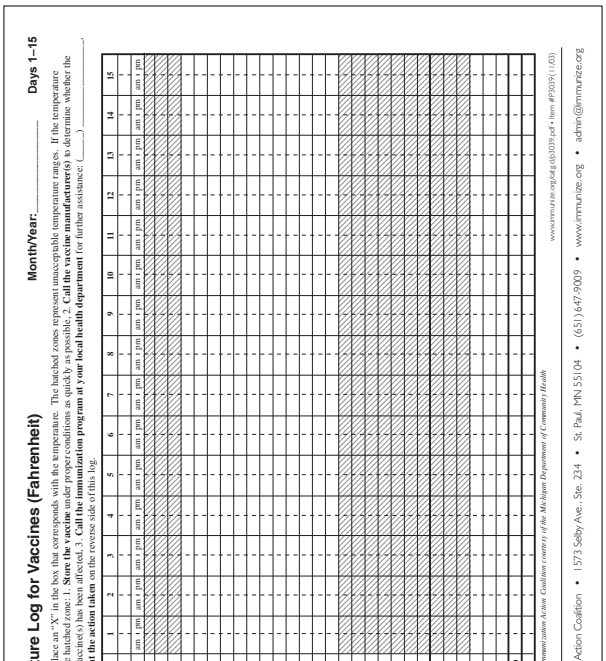

Temperature Log for Vaccines (Fahrenheit) Month/Year:_____ Days 1–15

Instructions: Place an "X" in the box that corresponds with the temperature. The hatched zones represent unacceptable temperature ranges. If the temperature recorded is in the hatched zone: 1. **Store the vaccine** under proper conditions as quickly as possible, 2. **Call the vaccine manufacturer(s)** to determine whether the potency of the vaccine(s) has been affected, 3. **Call the immunization program at your local health department** for further assistance: (____) _____, and 4. **Document the action taken** on the reverse side of this log.

Day of Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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www.immunize.org/catg.d/p3039.pdf • Item #P3039 (1/03)

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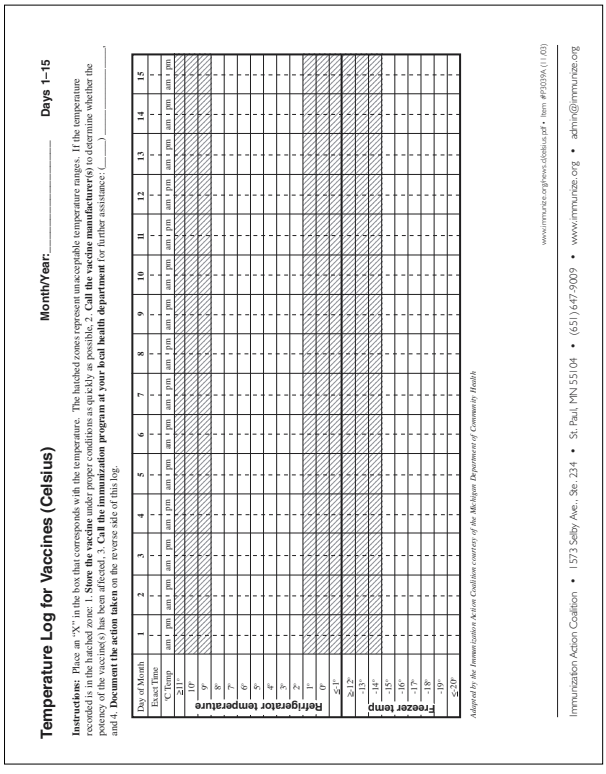
Celsius Temperature Log: To obtain a ready-to-copy, full-size (8½" x 11") version of this 2-page document, visit www.immunize.org/news.d/celsius.pdf



Temperature Log for Vaccines (Celsius) Month/Year:_____ Days 16–31

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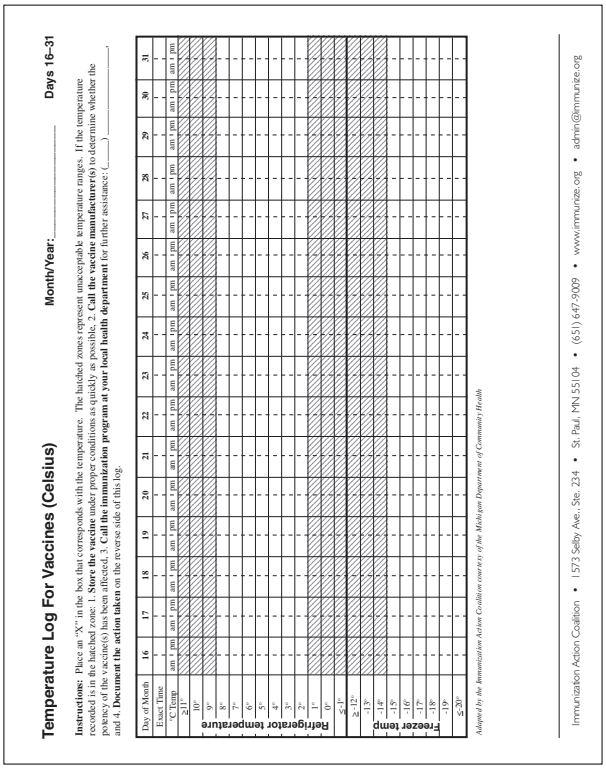

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www.immunize.org/news.d/celsius.pdf • Item #P3039c (1/03)

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How's your state doing?

Current U.S. immunization information by state

State	Influenza vaccination rates[1]		Pneumococcal vaccination rates[1] for adults ages ≥65 years	Does a mandate exist in long-term care facilities?[2]						Pharmacist authorized to vaccinate?[2,4]
				Influenza vaccination			Pneumococcal vaccination			
	Adults ages 50–64 years	Adults ages ≥65 years		Mandate?[3]	Mandatory vaccination?	Must be offered?	Mandate?[3]	Mandatory vaccination?	Must be offered?	
AL	37.3	64.8	58.5	yes		yes	yes		yes	yes
AK	37.5	69.5	59.8							yes
AZ	36.6	69.7	68.0	yes		yes	yes		yes	
AR	39.0	69.0	58.7	yes		yes	yes		yes	yes
CA	33.9	71.5	66.7							yes
CO	45.3	73.3	68.1							yes
CT	39.9	71.4	64.5	yes	yes		yes	yes		
DE	44.0	71.5	64.3	yes	yes		yes	yes		yes
DC	35.1	58.7	48.0							
FL	27.3	57.0	57.2	yes	yes		yes	yes		
GA	32.6	59.3	57.3							yes
HI	36.7	73.9	59.5							yes
ID	35.6	65.1	57.5							yes
IL	33.1	61.1	56.7	yes	yes		yes	yes		yes
IN	40.6	66.3	61.2	yes	yes		yes	yes		yes
IA	45.1	73.5	66.2							yes
KS	41.2	68.6	62.1							yes
KY	38.6	65.7	56.6	yes	yes		yes	yes		yes
LA	28.8	57.3	56.3							
ME	43.6	73.8	66.8	yes		yes	yes		yes	
MD	39.8	65.9	63.4	yes	yes		yes	yes		
MA	39.2	72.6	63.4							yes
MI	32.1	67.7	63.0							yes
MN	43.9	76.6	70.4							yes
MS	35.3	63.0	58.9							yes
MO	40.6	68.7	60.8							yes
MT	42.5	67.6	67.3							yes
NE	44.3	68.2	61.3							yes
NV	29.2	60.3	65.0							yes
NH	38.4	72.3	63.8							
NJ	35.4	69.1	63.1	yes		yes	yes		yes	
NM	38.0	66.6	62.7							yes
NY	37.5	64.7	62.4	yes		yes	yes		yes	
NC	39.6	68.1	63.0	yes	yes		yes	yes		yes
ND	39.5	73.9	72.5							yes
OH	33.9	66.6	63.7							yes
OK	44.8	72.7	65.5	yes		yes	yes		yes	yes
OR	37.7	68.0	65.0							yes
PA	38.3	70.5	63.5	yes	yes		yes	yes		yes
RI	41.4	73.7	67.6	yes		yes	yes		yes	
SC	37.3	69.4	64.9							yes
SD	49.0	74.2	56.7	yes		yes	yes		yes	yes
TN	43.0	71.6	61.4	yes	yes		yes	yes		yes
TX	37.7	61.0	56.9	yes		yes	yes		yes	yes
UT	40.1	71.1	65.0	yes		yes	yes		yes	yes
VT	37.1	73.6	66.3							
VA	39.9	65.3	60.8							yes
WA	38.8	65.1	63.0	yes		yes	yes		yes	yes
WV	38.7	65.8	61.2							
WI	38.1	74.0	70.6							yes
WY	40.8	70.6	68.2							

[1]From the 2002 Behavioral Risk Factor Surveillance System survey. *MMWR,* 10/17/03, Vol. 52, No. 41, pp. 987–992.
[2]Immunization Action Coalition (IAC) data; updates appear on the IAC website throughout the year at www.immunize.org/laws
[3]A requirement exists either by statute or regulation for (1) residents to be vaccinated or (2) the facility to offer vaccination to all residents.
[4]Information provided by the American Pharmacists Association.

IAC's "Ask the Experts" team from CDC

William L. Atkinson, MD, MPH

Linda A. Moyer, RN

Eric E. Mast, MD

clear; improvements in diagnosis and reporting of pertussis in adolescents and adults appear to be important factors contributing to the overall increase.

I've noted that more adults are being diagnosed with pertussis. When will we see a pertussis vaccine licensed for adults?
It's likely there will be a product licensed for older children and adults in the future. This vaccine is already available in Canada and is being studied in the U.S. If the Food and Drug Administration approves the vaccine, ACIP will then make recommendations regarding the use of the vaccine, including who should receive it, and how often.

I have a patient who received single-antigen tetanus (TT) in the emergency room rather than Td. Should he be revaccinated?
ACIP recommends that patients always receive Td rather than TT, as long as there is no contraindication to the diphtheria component. However, since it's already been given, you can wait until his next scheduled booster dose is due and administer Td at that time. The exception is if he plans to travel internationally, in which case you should give him Td before he travels.

How soon after delivery can MMR be given?
MMR can be administered any time after delivery. The vaccine should be administered to a woman who is susceptible to measles, mumps, or rubella before hospital discharge, even if she has received RhoGAM during the hospital stay, leaves in less than 24 hours, or is breastfeeding.

NEEDLE TIPS correction policy

The Immunization Action Coalition works tirelessly to ensure the accuracy of the information we make available. At times, however, mistakes occur. If you find an error, please notify us immediately. We publish notification of significant errors in ***NEEDLE TIPS*** and on our email announcement service ***IAC EXPRESS.*** Be sure you're signed up for this service. See the box at the bottom of page 1 for sign-up information.

I've heard there's a change in influenza recommendations for children. What is it?
At its October 2003 meeting, ACIP recommended routine influenza vaccination for children age 6 to 23 months, starting in fall 2004. Studies have shown that children in this age group, both those with risk factors as well as those who are healthy, have higher rates of hospitalization than older children during influenza outbreaks.

If a child less than 9 years of age receiving influenza vaccine for the first time doesn't return for the second dose, how many doses should he or she receive in the next year?
One dose should be given in subsequent years.

Stay informed about influenza!
Visit CDC's influenza website at:
www.cdc.gov/flu
or call CDC's Immunization Hotline
at (800) 232-2522

Can I administer Evans influenza vaccine (Fluvirin) to children 6–23 months of age?
No. Evans influenza vaccine is approved only for persons 4 years of age and older. You must use Aventis Pasteur influenza vaccine (Fluzone) for children 6 to 47 months of age.

Should providers who have a contraindication to live attenuated influenza vaccine (LAIV; FluMist) administer it? For instance, should a nurse who has asthma or is immunosuppressed administer the vaccine?
Environmental contamination with live attenuated influenza vaccine virus is probably unavoidable. There are no data on the risk of infection with vaccine virus for the person administering the vaccine. Until such data are available, it seems prudent that providers who have a contraindication to LAIV avoid administering the vaccine.

How are we doing as a nation in vaccinating children and adolescents against varicella?
In 2002, 80.6% of 19–35 month old children included in the National Immunization Survey had received varicella vaccine. Surveillance data indicate that the number of varicella cases has declined more than 75% since the early 1990s (before licensure of varicella vaccine).

If a child develops a rash after receiving varicella vaccination, does he need to be isolated from susceptible persons who are either pregnant or immunosuppressed?
Transmission of varicella vaccine virus is rare. However, if a pregnant or immunosuppressed household contact of a vaccinated child is known to be susceptible to varicella, and if the vaccinated child develops a rash, it is prudent to avoid close contact between the child and the susceptible person until the rash resolves.

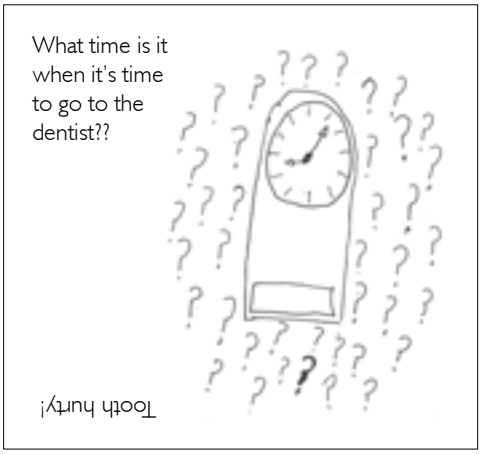
I'm confused about who needs to be revaccinated with PPV. Should I revaccinate a healthy 75-year-old patient who was given PPV at 65 years of age?
No, he would only need revaccination if he has developed a high-risk condition after receiving the first dose of PPV. An excellent fact sheet on pneumococcal polysaccharide vaccination and revaccination is available on the IAC website at www.immunize.org/catg.d/2015pne.pdf

Vaccine safety

by William L. Atkinson, MD, MPH

A few parents are asking that their children receive separate components of the MMR vaccine because they fear MMR may be linked to autism. What should I do?
You should educate parents about the lack of association between MMR and autism. If a parent still insists on separating the vaccine components, Merck has limited supplies of separate measles, mumps, and rubella vaccine available. It is preferable to administer separate components of MMR rather than not administer *any* measles, mumps, or rubella vaccines.
Editor's note: IAC has developed a new web page for parents titled "Does MMR vaccine cause autism? Examine the evidence." IAC encourages you to make and distribute copies of this web page. Find it at www.immunize.org/mmrautism

(continued on page 20)



A patient has expressed concern that some vaccines have been produced in fetal tissue. How can I address this concern?

The production of a few vaccines, including those for varicella, rubella, and hepatitis A, involves growing the viruses in human cell culture. Two human cell lines provide the cell cultures needed for producing vaccines; these lines were developed from two legally aborted fetuses in the 1960s. These cell lines are maintained to have an indefinite life span. No fetal tissue has been added since the cell lines were originally created.

Some parents are concerned about this issue because of untrue "facts" they have encountered on the Internet. Two such "facts" are that ongoing abortions are needed to manufacture vaccines and vaccines are contaminated with fetal tissue. Parents can read the real facts and several thought-provoking articles about this issue at www.vaccineinformation.org/concern.asp and then make an informed decision.

A Catholic bishop's statement that Catholic parents have no general obligation to refuse permission for these vaccines can be accessed at www.cdc.gov/nip/vacsafe/concerns/gen/cathnews.htm

You can also refer parents to www.cdc.gov/nip/vacsafe/concerns/gen/humancell.htm for more information.

Where can I refer my patients who have concerns about vaccine safety?

There are many excellent websites that have abundant information about vaccine safety, including www.immunize.org/safety, www.cdc.gov/nip/menus/vacc_safety.htm, www.vaccineinformation.org, www.vaccine.chop.edu, and www.immunizationinfo.org

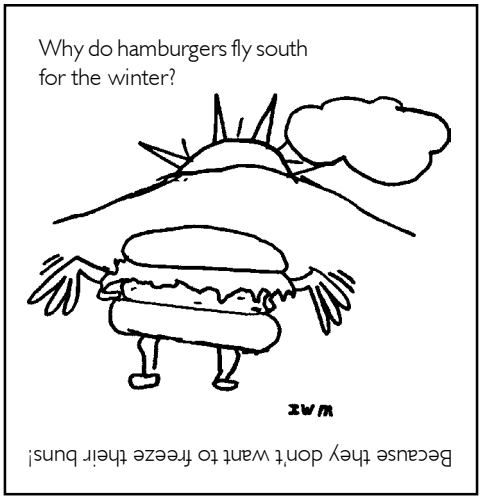
Do you have patients who are HBsAg-positive?

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

There are 3 medications licensed by the FDA for use in the United States.

1. interferon alfa-2b, recombinant (administered subcutaneously)
2. lamivudine (administered orally)
3. adefovir dipivoxil (administered orally)

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



Hepatitis A and B

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

In the newborn nursery, I've had a parent insist on Merck's hepatitis B vaccine for their infant because GlaxoSmithKline's (GSK) package insert reports the vaccine contains a "trace" amount of thimerosal. Does this have any clinical significance?

No. The pediatric/adolescent formulation of GSK's Engerix B hepatitis B vaccine contains less than 1 microgram of thimerosal per 0.5cc dose. (One microgram is one millionth of a gram.) This represents a greater than 96% reduction from the 12.5 micrograms in the previous version of the vaccine and is an amount of thimerosal that is considered clinically insignificant.

What is the earliest age the last dose of hepatitis B vaccine can be given to an infant?

While the last dose of hepatitis B vaccine for infants is routinely recommended no earlier than 6 months of age, the "minimum age" for the last dose was recently changed from 6 months of age to 24 weeks of age. (The minimum age is the youngest age that is acceptable for giving a vaccine and having it "count" as a valid dose.) At the ACIP meeting in October 2003, the Committee voted to make this change. This change allows health professionals more flexibility in administering hepatitis B vaccine should a parent bring an infant in for a well-baby check before the infant reaches 6 months of age. This new minimum age is a change from the information published in Table 1 in the ACIP's "General Recommendations on Immunization" *(MMWR* 2002; 51[RR02]:3).

This change is effective immediately. As with other vaccines, there is a 4-day grace period for this dose; therefore, the earliest age at which the last dose of hepatitis B vaccine is acceptable is 164 days of age (168 days [24 weeks] minus the 4-day grace period).

Which STD patients need vaccination against hepatitis A and B?

All people seeking or needing treatment at an STD clinic are candidates for hepatitis B vaccination, and certain persons with risk factors (e.g., men who have sex with men and injection-drug users) should be vaccinated against hepatitis A as well. Evaluation for vaccination is most effectively done through a risk assessment that inquires about risk factors for infection (e.g., sex partners, sexual preference, use of illegal drugs), educates patients about the importance of vaccination, and excludes persons who are not candidates for vaccination (e.g., those previously vaccinated.)

Looking for a brief sex history questionnaire to use with patients? Visit www.immunize.org/sxhx

When should I perform susceptibility testing before vaccinating with hepatitis B vaccine?

Prevaccination susceptibility testing might be cost-effective in some adult populations, but it should not be a requirement or a barrier to hepatitis B vaccination, especially in populations that are difficult to access. Prevaccination testing is NOT cost-effective in any infant or adolescent population. Vaccinating a person already immune to or infected with HBV will not help or harm the person.

Based on the current cost of hepatitis B vaccine, susceptibility testing before vaccination might be cost-effective in adult populations with a high prevalence of HBV infection (e.g., in settings where hepatitis B surface antigen [HBsAg] prevalence is >2%, or where antibody to hepatitis B core antigen [antiHBc] prevalence is >30%). When hepatitis B testing is indicated and funding is limited (e.g., in public health settings), antiHBc is the single test of choice. Anti-HBc testing alone will not differentiate persons with chronic infection (i.e., HBsAg-positive) from those with resolved infection. HBsAg testing is indicated for anti-HBc-positive persons to determine if they are currently infected. For persons found to be HBsAg-positive, testing may be needed to determine if they have acute or chronic infection. Persons with acute or chronic HBV infection should be given appropriate counseling and medical follow-up, and their sexual and/or household contacts should be vaccinated.

Hepatitis B testing should not be a barrier to vaccination. Those in high-risk populations should receive the first dose of vaccine during the visit at which they are tested; this will assure the patient receives some degree of protection. Vaccine should be administered after blood is drawn, not before.

Who should have an anti-HBs test after receiving hepatitis B vaccination?

It is only necessary to confirm the immune response for persons in the following risk groups:

- health care workers who are at risk of exposure to blood or body fluids in the workplace

- infants born to HBsAg-positive mothers
- immunocompromised persons, e.g., dialysis patients, AIDS patients
- sex partners of persons with chronic HBV infection

If postvaccination testing is indicated for persons other than infants, perform the testing 1–2 months after the last dose of vaccine. Infants born to HBsAg-positive mothers should be tested 3–9 months after the last dose. Testing is not recommended after routine vaccination of infants, children, or adolescents.

Is HBsAg detectable in the serum after vaccination with the hepatitis B vaccine?

Because hepatitis B vaccine contains noninfectious HBsAg particles, it is possible that a person might have detectable HBsAg in their serum for as long as 3 weeks after vaccination. This in no way indicates (or causes) infection. Because of this, people who receive hepatitis B vaccine should not donate blood for 30 days following vaccination. Otherwise, they might not be allowed to be a blood donor in the future.

What are the ages for adults to begin using adult formulations of hepatitis A and B vaccines?

The adult hepatitis A monovalent vaccine dosage is indicated for adults 19 years of age and older. The adult hepatitis B monovalent dosage is indicated for adults 20 years of age and older. Twinrix (hepatitis A and B combination) is licensed for use in persons 18 years of age and older.

Having read about food-related hepatitis A outbreaks, I wonder why food handlers are not required to be vaccinated against hepatitis A?

For two reasons: First, not all food-related hepatitis A outbreaks are caused by HAV-infected food handlers. Some outbreaks, such as the recent one in Pennsylvania, have been associated with food contaminated before reaching the food-service establishment. Second, given the rapid turnover of food service workers, vaccinating all new employees against hepatitis A would not be expected to be cost-effective.

Is there any reason not to give hepatitis A vaccine to a person who requests it, especially in light of recent deaths from hepatitis A from eating contaminated green onions?

Hepatitis A vaccine is safe and effective and is licensed for anyone 2 years of age or older. If someone requests hepatitis A vaccine for themselves or their children who are 2 years of age or older, there is no medical reason that it cannot be given. The cost of the vaccine might not be covered by insurance. Patients should be informed that they might have to pay out of pocket.

How do I interpret some of the common hepatitis B panel 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	acutely 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 performed 1–2 months following dose #3.

✞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.

Hepatitis A and B lab tests

Hepatitis A lab nomenclature

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

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

Hepatitis B lab nomenclature

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

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

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

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

IgG anti-HBc: *IgG antibody subclass of anti-HBc* is a marker of past or current infection with HBV. If it and HBsAg are both positive (in the absence of IgM anti-HBc), this indicates chronic HBV infection.

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

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

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

Q: What's just about the best investment an immunization provider can make?

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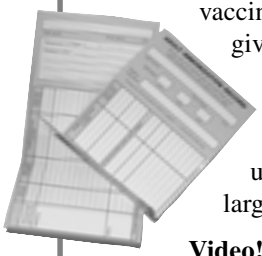

Adult Immunization Record Cards. The card lists the vaccines adults get, making it easy to discuss your patients' vaccination needs with them. At the end of a visit, give the card to your patients as a permanent record of their immunization status. Rip-proof, smudge-proof, and waterproof, the bright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

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Available in spring 2004! *How to Protect Your Vaccine Supply,* CDC, 2004 edition. This video offers practical information on vaccine handling and storage. Preorder through IAC for $15, or order a free copy from CDC in the spring. (Watch *IAC EXPRESS* for an announcement.)

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In October, "Dear Abby" published IAC's letter urging influenza vaccination, which IAC contributor dollars helped produce. Worldwide, 110 million people read "Dear Abby." When you think about putting your money to good use, you can hardly do better than this.

Deborah L. Wexler, MD
IAC Executive Director

Dear Colleague,

As the example above illustrates, when you contribute to IAC, you have the potential to affect individual immunization decisions profoundly. Think of it. A $60, $75, or $100 contribution to IAC helped tens of millions of people gain access to sound, up-to-date influenza information, influenced countless people to receive the vaccine, and saved untold numbers of lives.

And that's just one example of the good your money has done in the past year. Here's another: In the last six months alone, ***contributor generosity helped make it possible for our website visitors from around the world to download more than one million reliable, science-based immunization documents.*** This is significant because access to solid immunization information is essential in the battle to eliminate vaccine-preventable diseases.

For example, access to information about vaccine myths circulating on the Internet gives health professionals an effective way to address the concerns of vaccine-hesitant parents. Result: After consulting IAC's website resources, health professionals can counter parents' misconceptions with convincing pro-child vaccine information, influencing parents to have their children immunized.

Contributor dollars play a vital role in supporting everything IAC does. If you have never contributed or if it's been a year or more since you sent us a contribution (tax deductible because IAC is a non-profit 501[c]3 organization), please fill out the contribution form below and mail it in the enclosed envelope today.

Deborah L. Wexler MD

Deborah L. Wexler, MD
Executive Director

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

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Jan. 2004

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