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March 2008
(content current as of Feb. 25)

VACCINATE ADULTS!

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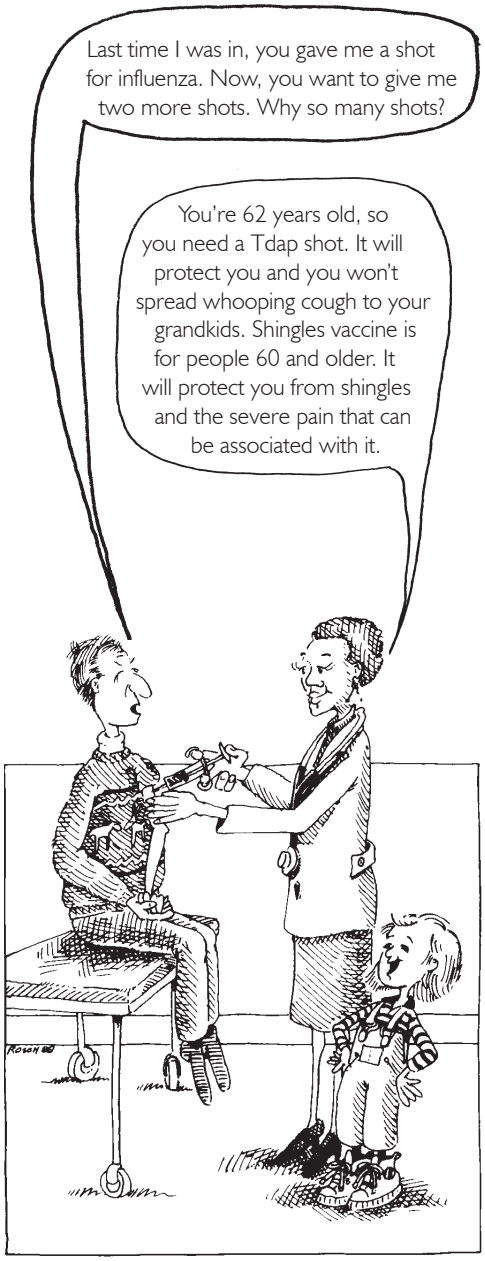
Highlighting the latest developments in adult immunization and hepatitis B prevention and screening



Artwork courtesy of New York State Department of Health

What's Inside?

Ask the Experts

IAC extends thanks to our experts, William L. Atkinson, MD, MPH, and Andrew T. Kroger, MD, MPH, medical epidemiologists at the National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention (CDC); and Joanna Buffington, MD, MPH, medical epidemiologist, Division of Viral Hepatitis (DVH), CDC; and Linda A. Moyer, RN, IAC consultant, who until her retirement, was an epidemiologist and chief, Education and Training Team, at DVH.

Immunization questions

Our hospital gives vaccinations to employees and patients. Are we required to use Vaccine Information Statements (VISs), or does that apply only to patients seen in outpatient settings?

VISs must be given to all persons, including adults, before administering any vaccine that is routinely administered to children. This includes Td, Tdap, MMR, varicella, hepatitis A, hepatitis B, influenza, and others. Current VISs are available from the CDC's website at www.cdc.gov/vaccines/pubs/vis and from the Immunization Action Coalition's (IAC) website at www.immunize.org/vis. You'll also find many VIS translations on IAC's website.

Immunization questions?

- Call the CDC-INFO Contact Center at (800) 232-4636 or (800) CDC-INFO
- Email nipinfo@cdc.gov
- Call your state health dept. (phone numbers at www.immunize.org/coordinators)

Sometimes I have to give 3 vaccines like Tdap, HepA, and HepB at the same visit. Can I put them in the same syringe?

No. Individual vaccines should never be mixed in the same syringe unless they are approved specifically for combined use as indicated in the package insert.

Please review which adults should be given Tdap and the timing of the dose.

All adults through age 64 years are recommended to receive a one-time dose of tetanus-diphtheria-pertussis containing vaccine (Tdap; ADACEL® [sanofi pasteur]). Except in the instances detailed below, no urgent effort needs to be made to administer the one-time Tdap dose. It should simply replace a patient's next routinely scheduled Td booster dose (booster doses should be given every 10 years). Three instances call for giving the one-time dose as soon as feasible: (1) when an adult has or anticipates having close contact with an infant younger than age 12 months (e.g., parents, grandparents, and child care providers); (2) when healthcare personnel in hospitals and ambulatory-care settings have direct patient contact, especially with infants; and (3) during a pertussis outbreak. Though CDC recommends the one-time Tdap dose be given at an interval of 5 or more years after Td, CDC has not defined an absolute minimum interval between Td and Tdap. In the three instances stated previously, Tdap can be administered regardless of the interval since the last Td, because the risk of pertussis infection/transmission is greater than the risk of a sore arm. This is a decision that must be made by the clinician on a case-by-case basis. To obtain a copy of CDC's "Preventing Tetanus, Diphtheria, and Pertussis Among Adults," go to www.cdc.gov/mmwr/PDF/rr/rr5517.pdf.

Can Tdap be given to persons age 65 years and older?

No brand of Tdap is approved for persons age 65 years or older. ACIP does not recommend off-label use of Tdap for this age group. However, a clinician may choose to administer Tdap to a person age 65 years or older if both patient and clinician agree that the benefit of Tdap outweighs the risk of a local adverse event.

Should people who haven't had chickenpox be vaccinated with zoster vaccine?

Serologic surveys indicate that almost everyone born in the United States before 1980 has had chickenpox. As a result, there is no need to ask patients age 60 years and older for their varicella disease history or to conduct lab tests for serologic evidence of prior varicella disease. A person age 60 years or older who has no medical contraindications, is eligible for zoster vaccine regardless of their memory of having had chickenpox.

Can someone who has experienced an episode of shingles be vaccinated with the zoster vaccine?

Yes. Shingles vaccine is routinely recommended

(continued on page 10)

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Vaccinate Adults!

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

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

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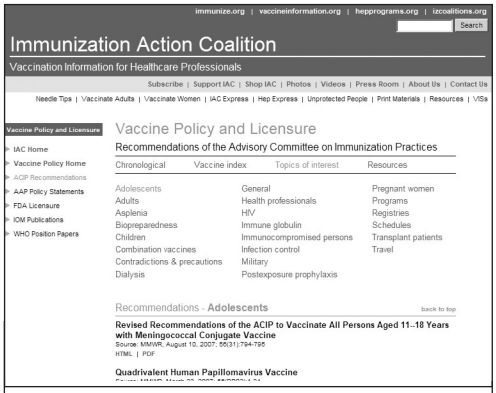
Immunization Action Coalition redesigns its online resources to benefit healthcare professionals. Visit www.immunize.org often!

With its redesign well underway, the Immunization Action Coalition's (IAC's) website for healthcare professionals offers users three new indexes of online resources:

Directory of Immunization Resources is where you'll find the practical information you need to educate patients and update staff about immunization resources. It includes everything from immunization textbooks and periodicals to telephone hotline numbers and email news services to DVDs and CD-ROMs.

Vaccine-Related Journal Articles, a chronological catalog of published articles, will link you to just the article you're looking for—in no time at all.

Vaccine Policy and Licensure is your source for vaccine recommendations and licensing information from national and international organizations such as the Centers for Disease Control and Prevention (CDC), the Institute of Medicine, the World Health Organization (WHO), and the Food and Drug Administration (FDA). Details on each index follow.



www.immunize.org/vacpolicy

Directory of Immunization Resources

An online compendium, IAC's Directory of Immunization Resources brings together helpful resources from government, professional associations, nonprofit organizations, industry, and others. Directory sections include Books and Periodicals, CDC Materials, Continuing Education, Email News Services, Government Agencies, Hotlines, IAC Educational Materials, Partner Organizations, International Organizations, and Multimedia Resources. Each resource comes complete with detailed information and a live link or telephone number. To visit, go to **www.immunize.org/resources.**

We apologize for omissions to the directory. Please let us know your suggestions for additions or changes.

Vaccine-Related Journal Articles

This section offers users live links to the abstract or full text of thousands of practical, clinical, and programmatic journal articles on vaccine-related topics. Organized by topics and chronologically within topic, the section includes articles on 20 vaccine-preventable diseases; vaccination procedures and storage and handling; vaccination laws and exemptions; vaccination needs of groups such as healthcare personnel, pregnant women, and travelers; vaccine concerns such as thimerosal, autism, and MMR; and dozens of other topics. To find articles in your areas of interest go to **www.immunize.org/journalarticles.**

Vaccine Policy and Licensure

The newly expanded Vaccine Policy and Licensure web section includes vaccine recommendations, policy papers, and licensing information from CDC's Advisory Committee on Immunization Practices (ACIP), AAP, FDA, the Institute of Medicine, and WHO. To access IAC's section on policy and licensure, go to **www.immunize.org/vacpolicy.**

We urge you to take 15 minutes to check out these indexes and bookmark them. You'll find yourself returning to them often and relying on them for their easily accessible and continually updated information.

We also suggest you subscribe to our weekly email news service, ***IAC Express.*** Once you fill out the sign-up form at **www.immunize.org/subscribe**, you'll start receiving FREE email announcements about important developments related to immunization and viral hepatitis—as well as updates on IAC's latest redesigned web sections. ◆

Visit IAC's redesigned web sections!

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Vaccine Policy and Licensure
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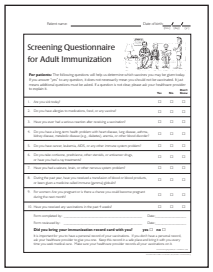
DISCLAIMER: *Vaccinate Adults!* is available to all readers free of charge. Some of the information in this issue is supplied to us by the Centers for Disease Control and Prevention in Atlanta, Georgia, and some information is supplied by third-party sources. The Immunization Action Coalition (IAC) has used its best efforts to accurately publish all of this information, but IAC cannot guarantee that the original information as supplied by others is correct or complete, or that it has been accurately published. Some of the information in this issue is created or compiled by IAC. All of the information in this issue is of a time-critical nature, and we cannot guarantee that some of the information is not now outdated, inaccurate, or incomplete. IAC cannot guarantee that reliance on the information in this issue will cause no injury. Before you rely on the information in this issue, you should first independently verify its current accuracy and completeness. IAC is not licensed to practice medicine or pharmacology, and the providing of the information in this issue does not constitute such practice. Any claim against IAC must be submitted to binding arbitration under the auspices of the American Arbitration Association in St. Paul, Minnesota.

A screening questionnaire for vaccine contraindications: Now in convenient tear-off pads of 100 sheets!

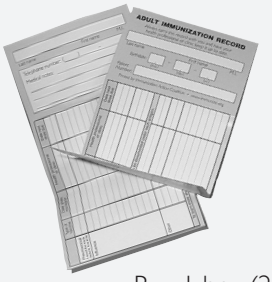

Screening Questionnaire for Adult Immunization

Save valuable staff time and make sure your patients are fully screened by using this simple 1-page questionnaire. Patients respond to questions by checking off "yes" and "no" boxes while waiting to be seen. Staff reviews answers during the visit. Priced at $16 per 100-sheet pad, price drops to $12 each for 2 pads, $11 each for 3 pads, $10 each for 4 pads. Keep pads at the receptionist's desk, the nurses' station, and in every exam room. To view the pads or for more details, visit IAC's website at www.immunize.org/shop.

To order, visit www.immunize.org/shop or use the order form on page 11.

For 5 or more pads, contact us for discount pricing at admininfo@immunize.org or call (651) 647-9009.

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

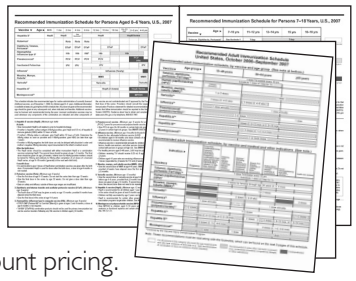


Now you can give your patients a permanent vaccination record card designed specifically for their age group: adult, child & teen, or lifetime. The three cards list all vaccines recommended for each age. The cards are printed on durable rip-, smudge-, and water-proof paper. Wallet-sized when folded,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

Buy 1 box (250 cards) for $35 (first order of a 250-card box comes with a 30-day, money-back guarantee). Discounts for larger orders: 2 boxes $32.50 each; 3 boxes $30 each; 4 boxes $27.50 each

To order, visit www.immunize.org/shop, or use the order form on page 11. To receive sample cards, email your request to admininfo@immunize.org.

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



Here are the CDC/AAFP/ACOG/ACP-approved schedule for adults and the CDC/AAP/AAFP-approved immunization schedule for people ages 0–18 years. Both are laminated for heavy-duty use, complete with essential footnotes, and printed in color for easy reading. The cost is $6 for each schedule and only $4 each for five or more copies. For 20 or more copies, contact us for discount pricing.

To order, visit www.immunize.org/shop, or use the order form on page 11.

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Vaccine Administration Record for Adults

Patient name: _____

Birthdate: _____

Chart number: _____

Before administering any vaccines, give the patient copies of all pertinent Vaccine Information Statements (VISs) and make sure he/she understands the risks and benefits of the vaccine(s). Update the patient's personal record card or provide a new one whenever you administer vaccine.

Vaccine	Type of Vaccine[1] (generic abbreviation)	Date given (mo/day/yr)	Source (F,S,P)[2]	Site[3]	Vaccine		Vaccine Information Statement		Signature/ initials of vaccinator
					Lot #	Mfr.	Date on VIS[4]	Date given[4]	
Tetanus, Diphtheria, Pertussis (e.g., Td, Tdap) Give IM.									
Hepatitis A[5] (e.g., HepA, HepA-HepB) Give IM.									
Hepatitis B[5] (e.g., HepB, HepA-HepB) Give IM.									
Human papillomavirus (HPV) Give IM.									
Measles, Mumps, Rubella (MMR) Give SC.									
Varicella (Var) Give SC.									
Pneumococcal, polysaccharide (PPV) Give SC or IM.									
Meningococcal (e.g., MCV4, conjugate; MPSV4, polysaccharide) Give MCV4 IM. Give MPSV4 SC.									
Zoster (Zos) Give SC.									
Influenza (e.g., TIV, inactivated; LAIV, live, attenuated) Give TIV IM. Give LAIV IN.									
Other									
Other									

1. Record the generic abbreviation for the type of vaccine given (e.g., PPV, HepA-HepB), *not* the trade name.
2. Record the source of the vaccine given as either F (Federally-supported), S (State-supported), or P (supported by Private insurance or other Private funds).
3. Record the site where vaccine was administered as either RA (Right Arm), LA (Left Arm), RT (Right Thigh), LT (Left Thigh), IN (Intranasal).
4. Record the publication date of each VIS as well as the date it is given to the patient.
5. For combination vaccines, fill in a row for each separate antigen in the combination.

Technical content reviewed by the Centers for Disease Control and Prevention, February 2008.

www.immunize.org/catg.d/p2023.pdf • Item #P2023 (2/08)

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Hepatitis B Facts: Testing and Vaccination

Who should be vaccinated?

The following persons should receive routine hepatitis B vaccination, according to the Centers for Disease Control and Prevention (CDC):

Routine vaccination:

- All newborns at birth prior to hospital discharge
- All children and teens ages 0 through 18 years
- All persons who wish to be protected from hepatitis B virus (HBV) infection. CDC states it is not necessary for the patient to disclose a risk factor to receive hepatitis B vaccine.

Persons who are at risk for sexual exposure:

- Sexually active persons who are not in long-term, mutually monogamous relationships
- Sex partners of HBsAg-positive persons
- Persons seeking evaluation or treatment for an STD
- Men who have sex with men

Persons at risk for infection by percutaneous or mucosal exposure to blood:

- Current or recent injection-drug users
- Household contacts of HBsAg-positive persons
- Residents and staff of facilities for developmentally challenged persons
- Healthcare and public safety workers with reasonably anticipated risk for exposure to blood or blood-contaminated body fluids
- Persons with end-stage renal disease and those receiving dialysis

Others:

- Travelers to areas with moderate or high rates of HBV infection
- Persons with chronic (life-long) liver disease
- Persons with HIV infection

Refugees, immigrants, and adoptees from countries where HBV infection is endemic should be screened. Adults should discuss their need or desire for hepatitis B vaccination with their healthcare providers.

For certain people at risk, postvaccination testing is recommended. Consult ACIP recommendations for details (see references).

Hepatitis B lab nomenclature

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

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

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

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

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

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

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

Screening before vaccination

Serologic testing prior to vaccination may be undertaken based on your assessment of your patient's level of risk and your or your patient's need for definitive information (see information in the left column). If you decide to test, draw the blood first, and then give the first dose of vaccine at the same office visit. Vaccination can then be continued, if needed, based on the results of the tests. If you are not sure who needs hepatitis B screening, consult your state or local health department.

Tests	Results	Interpretation	Vaccinate?
HBsAg anti-HBc anti-HBs	negative negative negative	susceptible	vaccinate if indicated
HBsAg anti-HBc anti-HBs	negative negative positive with ≥10mIU/mL	immune due to vaccination	no vaccination necessary
HBsAg anti-HBc anti-HBs	negative positive positive	immune due to natural infection	no vaccination necessary
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive positive negative	acutely infected	no vaccination necessary
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive negative negative	chronically infected	no vaccination necessary (may need treatment)
HBsAg anti-HBc anti-HBs	negative positive negative	four interpretations possible*	use clinical judgment

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

Managing chronic HBV infection

When you identify a patient who is chronically infected with HBV, make sure you consult a specialist knowledgeable in the treatment of liver disease so your patient's care is optimized. Chronically infected persons need medical evaluation every 6–12 mos to assess the status of their liver health and their need for antiviral therapy, as well as to screen for liver cancer. In addition, persons with chronic HBV infection should be educated about their disease and how to protect others.

Household members and sex partners should be tested for HBV infection and given the first dose of hepatitis B vaccine at the same visit. (Vaccinating a person who has already been infected will do no harm). If testing indicates HBV susceptibility, complete the hepatitis B vaccination series. If testing indicates HBV infection, consultation and further care with a physician knowledgeable about chronic hepatitis B is needed.

References

1. A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the U.S.: Recommendations of the ACIP, Part 1: Immunization of Infants, Children and Adolescents, *MMWR,* Dec. 23, 2005, Vol. 54(RR-16)
2. A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the U.S.: Recommendations of the ACIP, Part II: Immunization of Adults, *MMWR,* Dec. 8, 2006, Vol. 55(RR-16)

www.immunize.org/catg.d/p2110.pdf • Item #P2110 (2/08)

Recommended Adult Immunization Schedule
United States, October 2007–September 2008

Note: These recommendations must be read with the footnotes that follow.

Figure 1. Recommended adult immunization schedule, by vaccine and age group

Vaccine ▼ / Age group ▶	19–49 years	50–64 years	≥65 years
Tetanus, diphtheria, pertussis (Td/Tdap)[1,*]	1-dose Td booster every 10 yrs; Substitute 1 dose of Tdap for Td		
Human papillomavirus (HPV)[2,*]	3 doses (females) (0,2,6 mos)		
Measles, mumps, rubella (MMR)[3,*]	1 or 2 doses	1 dose	
Varicella[4,*]	2 doses (0, 4–8 wks)		
Influenza[5,*]	1 dose annually	1 dose annually	
Pneumococcal (polysaccharide)[6,7]	1–2 doses		1 dose
Hepatitis A[8,*]	2 doses (0, 6–12 mos, or 0, 6–18 mos)		
Hepatitis B[9,*]	3 doses (0, 1–2, 4–6 mos)		
Meningococcal[10,*]	1 or more doses		
Zoster[11]		1 dose	

*Covered by the Vaccine Injury Compensation Program.

Figure 2. Vaccines that might be indicated for adults based on medical and other indications

Indication ▶ / Vaccine ▼	Pregnancy	Immunocompromising conditions (excluding human immunodeficiency virus [HIV]), medications, radiation[13]	(HIV) infection[3,12,13] CD4+ T lymphocyte count <200 cells/μL	(HIV) infection[3,12,13] CD4+ T lymphocyte count ≥200 cells/μL	Diabetes, heart disease, chronic pulmonary disease, chronic alcoholism	Asplenia[12] (including elective splenectomy and terminal complement component deficiencies)	Chronic liver disease	Kidney failure, end-stage renal disease, recipients of hemodialysis	Healthcare personnel
Tetanus, diphtheria, pertussis (Td/Tdap)[1,*]	1-dose Td booster every 10 yrs; Substitute 1 dose of Tdap for Td								
Human papillomavirus (HPV)[2,*]		3 doses for females through age 26 years (0, 2, 6 mos)							
Measles, mumps, rubella (MMR)[3,*]	Contraindicated			1 or 2 doses					
Varicella[4,*]	Contraindicated			2 doses (0, 4–8 wks)					
Influenza[5,*]	1 dose TIV annually								1 dose TIV or LAIV annually
Pneumococcal (polysaccharide)[6,7]		1–2 doses							
Hepatitis A[8,*]	2 doses (0, 6–12 mos, or 0, 6–18 mos)								
Hepatitis B[9,*]				3 doses (0, 1–2, 4–6 mos)					
Meningococcal[10,*]	1 or more doses								
Zoster[11]	Contraindicated			1 dose					

*Covered by the Vaccine Injury Compensation Program.

For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection)

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)

The recommendations in this schedule were approved by the Advisory Committee on Immunization Practices, the American Academy of Family Physicians, the American College of Obstetricians and Gynecologists, and the American College of Physicians.

These schedules indicate the recommended age groups and medical indications for routine administration of currently licensed vaccines for persons aged ≥19 years, as of October 1, 2007. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or those issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/pubs/acip-list.htm).

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

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

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

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.

Footnotes

Note: Immunization recommendations from ACIP are available at www.cdc.gov/vaccines/pubs/ACIP-list.htm

1. Tetanus, diphtheria, and acellular pertussis (Td/Tdap) vaccination. Tdap should replace a single dose of Td for adults aged <65 years who have not previously received a dose of Tdap. Only one of two Tdap products (Adacel® [Sanofi Pasteur]) is licensed for use in adults.

Adults with uncertain histories of a complete primary vaccination series with diphtheria and tetanus toxoid–containing vaccines should begin or complete a primary vaccination series. A primary series for adults is 3 doses of tetanus and diphtheria toxoid-containing vaccines; administer the first 2 doses at least 4 weeks apart and the third dose 6–12 months after the second. However, Tdap can substitute for any one of the doses of Td in the 3-dose primary series. The booster dose of tetanus and diphtheria toxoid–containing vaccine should be administered to adults who have completed a primary series and if the last vaccination was received ≥10 years previously. Tdap or Td vaccine may be used, as indicated.

If the person is pregnant and received the last Td vaccination ≥10 years previously, administer Td during the second or third trimester; if the person received the last Td vaccination in <10 years, administer Tdap during the immediate postpartum period. A one-time administration of 1 dose of Tdap with an interval as short as 2 years from a previous Td vaccination is recommended for postpartum women, close contacts of infants aged <12 months, and all healthcare workers with direct patient contact. In certain situations, Td can be deferred during pregnancy and Tdap substituted in the immediate postpartum period, or Tdap can be administered instead of Td to a pregnant woman after an informed discussion with the woman.

Consult the ACIP statement for recommendations for administering Td as prophylaxis in wound management.

2. Human papillomavirus (HPV) vaccination. HPV vaccination is recommended for all females aged ≤26 years who have not completed the vaccine series. History of genital warts, abnormal Papanicolaou test, or positive HPV DNA test is not evidence of prior infection with all vaccine HPV types; HPV vaccination is still recommended for these persons.

Ideally, vaccine should be administered before potential exposure to HPV through sexual activity; however, females who are sexually active should still be vaccinated. Sexually active females who have not been infected with any of the HPV vaccine types receive the full benefit of the vaccination. Vaccination is less beneficial for females who have already been infected with one or more of the HPV vaccine types.

A complete series consists of 3 doses. The second dose should be administered 2 months after the first dose; the third dose should be administered 6 months after the first dose.

Although HPV vaccination is not specifically recommended for females with the medical indications described in Figure 2, "Vaccines that might be indicated for adults based on medical and other indications," it is not a live-virus vaccine and can be administered. However, immune response and vaccine efficacy might be less than in persons who do not have the medical indications described or who are immunocompetent.

3. Measles, mumps, rubella (MMR) vaccination. *Measles component:* adults born before 1957 can be considered immune to measles. Adults born during or after 1957 should receive ≥1 dose of MMR unless they have a medical contraindication, documentation of ≥1 dose, history of measles based on healthcare provider diagnosis, or laboratory evidence of immunity.

A second dose of MMR is recommended for adults who 1) have been recently exposed to measles or in an outbreak setting; 2) have been previously vaccinated with killed measles vaccine; 3) have been vaccinated with an unknown type of measles vaccine during 1963–1967; 4) are students in postsecondary educational institutions; 5) work in a healthcare facility, or 6) plan to travel internationally.

Mumps component: adults born before 1957 can generally be considered immune to mumps. Adults born during or after 1957 should receive 1 dose of MMR unless they have a medical contraindication, history of mumps based on healthcare provider diagnosis, or laboratory evidence of immunity.

A second dose of MMR is recommended for adults who 1) are in an age group that is affected during a mumps outbreak; 2) are students in postsecondary educational institutions; 3) work in a healthcare facility; or 4) plan to travel internationally. For unvaccinated healthcare workers born before 1957 who do not have other evidence of mumps immunity, consider administering

Footnotes (continued)

Note: Immunization recommendations from ACIP are available at www.cdc.gov/vaccines/pubs/ACIP-list.htm

1 dose on a routine basis and strongly consider administering a second dose during an outbreak.

Rubella component: administer 1 dose of MMR vaccine to women whose rubella vaccination history is unreliable or who lack laboratory evidence of immunity. For women of childbearing age, regardless of birth year, routinely determine rubella immunity and counsel women regarding congenital rubella syndrome. Women who do not have evidence of immunity should receive MMR vaccine on completion or termination of pregnancy and before discharge from the healthcare facility.

4. Varicella vaccination. All adults without evidence of immunity to varicella should receive 2 doses of single-antigen varicella vaccine unless they have a medical contraindication. Special consideration should be given to those who 1) have close contact with persons at high risk for severe disease (e.g., healthcare personnel and family contacts of immunocompromised persons) or 2) are at high risk for exposure or transmission (e.g., teachers; child care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; nonpregnant women of childbearing age; and international travelers).

Evidence of immunity to varicella in adults includes any of the following: 1) documentation of 2 doses of varicella vaccine at least 4 weeks apart; 2) U.S.–born before 1980 (although for healthcare personnel and pregnant women, birth before 1980 should not be considered evidence of immunity); 3) history of varicella based on diagnosis or verification of varicella by a healthcare provider (for a patient reporting a history of or presenting with an atypical case, a mild case, or both, healthcare providers should seek either an epidemiologic link with a typical varicella case or to a laboratory-confirmed case or evidence of laboratory confirmation, if it was performed at the time of acute disease); 4) history of herpes zoster based on healthcare provider diagnosis; or 5) laboratory evidence of immunity or laboratory confirmation of disease.

Assess pregnant women for evidence of varicella immunity. Women who do not have evidence of immunity should receive the first dose of varicella vaccine upon completion or termination of pregnancy and before discharge from the healthcare facility. The second dose should be administered 4–8 weeks after the first dose.

5. Influenza vaccination: *Medical indications:* chronic disorders of the cardiovascular or pulmonary systems, including asthma; chronic metabolic diseases, including diabetes mellitus, renal or hepatic dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications or human immunodeficiency virus [HIV]); any condition that compromises respiratory function or the handling of respiratory secretions or that can increase the risk of aspiration (e.g., cognitive dysfunction, spinal cord injury, or seizure disorder or other neuromuscular disorder); and pregnancy during the influenza season. No data exist on the risk for severe or complicated influenza disease among persons with asplenia; however, influenza is a risk factor for secondary bacterial infections that can cause severe disease among persons with asplenia.

Occupational indications: healthcare personnel and employees of long-term–care and assisted-living facilities.

Other indications: residents of nursing homes and other long-term–care and assisted-living facilities; persons likely to transmit influenza to persons at high risk (e.g., in-home household contacts and caregivers of children aged 0–59 months, or persons of all ages with high-risk conditions); and anyone who would like to be vaccinated. Healthy, nonpregnant adults aged ≤49 years without high-risk medical conditions who are not contacts of severely immunocompromised persons in special care units can receive either intranasally administered live, attenuated influenza vaccine (FluMist®) or inactivated vaccine. Other persons should receive the inactivated vaccine.

6. Pneumococcal polysaccharide vaccination. *Medical indications:* chronic pulmonary disease (excluding asthma); chronic cardiovascular diseases; diabetes mellitus; chronic liver diseases, including liver disease as a result of alcohol abuse (e.g., cirrhosis); chronic alcoholism; chronic renal failure, or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]); immunosuppressive conditions; and cochlear implants and cerebrospinal fluid leaks. Vaccinate as close to HIV diagnosis as possible.

Other indications: Alaska Natives and certain American Indian populations and residents of nursing homes or other long-term–care facilities.

7. Revaccination with pneumococcal polysaccharide vaccine. One-time revaccination after 5 years for persons with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); or immunosuppressive conditions. For persons aged ≥65 years, one-time revaccination if they were vaccinated ≥5 years previously and were aged <65 years at the time of primary vaccination.

8. Hepatitis A vaccination. *Medical indications:* persons with chronic liver disease and persons who receive clotting factor concentrates.

Behavioral indications: men who have sex with men and persons who use illegal drugs.

Occupational indications: persons working with hepatitis A virus (HAV)–infected primates or with HAV in a research laboratory setting.

Other indications: persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A (a list of countries is available at wwwn.cdc.gov/travel/contentdiseases.aspx) and any person seeking protection from HAV infection.

Single-antigen vaccine formulations should be administered in a 2-dose schedule at either 0 and 6–12 months (Havrix®), or 0 and 6–18 months (Vaqta®). If the combined hepatitis A and hepatitis B vaccine (Twinrix®) is used, administer 3 doses at 0, 1, and 6 months.

9. Hepatitis B vaccination. *Medical indications:* persons with end-stage renal disease, including patients receiving hemodialysis; persons seeking evaluation or treatment for a sexually transmitted disease (STD); persons with HIV infection; and persons with chronic liver disease.

Occupational indications: healthcare personnel and public-safety workers who are exposed to blood or other potentially infectious body fluids.

Behavioral indications: sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., persons with more than one sex partner during the previous 6 months); current or recent injection-drug users; and men who have sex with men.

Other indications: household contacts and sex partners of persons with chronic hepatitis B virus (HBV) infection; clients and staff members of institu-

Footnotes (continued)

Note: Immunization recommendations from ACIP are available at www.cdc.gov/vaccines/pubs/ACIP-list.htm

tions for persons with developmental disabilities; international travelers to countries with high or intermediate prevalence of chronic HBV infection (a list of countries is available at wwwn.cdc.gov/travel/contentdiseases.aspx); and any adult seeking protection from HBV infection.

Settings where hepatitis B vaccination is recommended for all adults: STD treatment facilities; HIV testing and treatment facilities; facilities providing drug-abuse treatment and prevention services; healthcare settings targeting services to injection-drug users or men who have sex with men; correctional facilities; end-stage renal disease programs and facilities for chronic hemodialysis patients; and institutions and nonresidential day care facilities for persons with developmental disabilities.

Special formulation indications: for adult patients receiving hemodialysis and other immunocompromised adults, 1 dose of 40 µg/mL (Recombivax HB®) or 2 doses of 20 µg/mL (Engerix-B®), administered simultaneously.

10. Meningococcal vaccination. *Medical indications:* adults with anatomic or functional asplenia or terminal complement component deficiencies.

Other indications: first-year college students living in dormitories; microbiologists who are routinely exposed to isolates of *Neisseria meningitidis;* military recruits; and persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of sub-Saharan Africa during the dry season [December–June]), particularly if their contact with local populations will be prolonged. Vaccination is required by the government of Saudi Arabia for all travelers to Mecca during the annual Hajj.

Meningococcal conjugate vaccine is preferred for adults with any of the preceding indications who are aged ≤55 years, although meningococcal polysaccharide vaccine (MPSV4) is an acceptable alternative. Revaccination after 3–5 years might be indicated for adults previously vaccinated with MPSV4 who remain at increased risk for infection (e.g., persons residing in areas in which disease is epidemic).

11. Herpes zoster vaccination. A single dose of zoster vaccine is recommended for adults ≥60 years regardless of whether they report a prior episode of herpes zoster. Persons with chronic medical conditions may be vaccinated unless a contraindication or precaution exists for their condition.

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

13. Immunocompromising conditions. Inactivated vaccines are generally acceptable (e.g., pneumococcal, meningococcal, influenza [trivalent inactivated influenza vaccine]) and live vaccines generally are avoided in persons with immune deficiencies or immune suppressive conditions. Information on specific conditions is available at www.cdc.gov/vaccines/pubs/acip-list.htm.

The Immunization Action Coalition created this document based on the **Recommended Adult Immunization Schedule, United States, October 2007–September 2008,** published in the *Morbidity and Mortality Weekly Report* on October 19, 2007 *(MMWR* 2007;56:Q1–Q4). This document contains indications for adult immunization based on age (see Figure 1), as well as medical condition and profession (i.e., specific guidance for vaccination of healthcare personnel; see Figure 2). It is also available as a 6-page, 8½" x 11" tri-fold booklet, containing a list of contraindications and precautions for adult immunization, and is laminated and in full color (see ordering information below).

Please note that vaccination recommendations issued by Centers for Disease Control and Prevention (CDC) after the Adult Immunization Schedule's October 2007 publication date are official even though they are not reflected in this document.

To be sure you have the most current versions of vaccination recommendations, visit the following web pages:

Official ACIP recommendations
www.cdc.gov/vaccines/pubs/acip-list.htm (alphabetical order)
www.immunize.org/acip (chronological order)

Provisional ACIP recommendations
www.cdc.gov/vaccines/recs/provisional/default.htm
www.immunize.org/acip

For other versions of CDC's adult immunization schedule,
go to www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm

To order copies of the laminated, full-color tri-fold booklet described above,
visit www.immunize.org/shop, call (651) 647-9009, or email admin@immunize.org.

for all persons age 60 years and older who do not have contraindications.

How soon after experiencing a case of shingles can a person age 60 years or older receive zoster vaccine?

The general guideline for any vaccine is to wait until the acute stage of the illness is over and symptoms abate.

Can you give zoster vaccine to persons younger than age 60?

FDA has licensed the vaccine only for persons age 60 years and older. CDC does not recommend off-label use of zoster vaccine among persons younger than 60 years.

When reconstituted, the volume of zoster vaccine is 0.65 mL. Should 0.65 mL or 0.5 mL be administered to the patient?

The recommended dose for zoster vaccine is the fully reconstituted amount, 0.65 mL.

Is there an upper age limit for receipt of the zoster vaccine? Some clinicians are reluctant to give the vaccine to persons age 80-plus years.

There is no upper age limit for zoster vaccine. The incidence of herpes zoster increases with age. It is known that about 50% of persons living until age 85 years will develop zoster.

People are picking up zoster vaccine at local pharmacies and transporting it to the physician's office to be given. Should this vaccine be given?

Zoster vaccine must be stored in the freezer at 5° F (-15° C) or colder at all times until ready for use.If the vaccine has been out of the freezer for more than 30 minutes, it should not be used unless a state health department or Merck has authorized its use.

Hepatitis B and A

When I see a patient in my practice with an STD such as chlamydia, trichomonas, or genital warts, do I need to administer hepatitis B vaccine? What if it's a pregnant woman?

Vaccinate without fail. Hepatitis B vaccine is recommended for all previously unvaccinated persons with a current or recent history of an STD. Pregnancy is not a contraindication for hepatitis B vaccination.

I understand that the hepatitis B vaccination recommendations for travel outside the U.S. changed in 2006. Would you please review what has changed?

Hepatitis B vaccination is recommended for international travel of any duration to areas that have high or intermediate levels of hepatitis B virus (HBV) endemicity. The previous recommendation qualified the length of stay. For specific CDC information about the travel destinations for which hepatitis B vaccination is recommended, go to wwwn.cdc.gov/travel/yellowBookCh4-HepB.aspx.

Looking for answers to immunization questions you don't find here?
Visit "Ask the Experts" online
www.immunize.org/askexperts

Which adults should receive hepatitis B post-vaccination testing after vaccination?

Postvaccination testing is recommended for the following groups: healthcare and public safety workers at increased risk of continued exposure to blood on the job; immune compromised persons; and needle-sharing and sex partners of HBsAg-positive persons. Testing should be performed 1–2 months after the last dose of vaccine.

What are the new recommendations for post-exposure prophylaxis for hepatitis A?

The new CDC recommendations published in October 2007 (www.cdc.gov/mmwr/preview/mmwrhtml/mm5641a3.htm), state that hepatitis A vaccine is preferred over immune globulin (IG) for postexposure prophylaxis for persons age 12 months–40 years who have recently been exposed to hepatitis A virus (HAV) and who have not previously received hepatitis A vaccine. Previously, IG was preferred. Persons age 12 months–40 years should receive a single dose of single-antigen hepatitis A vaccine or immune globulin (0.02 mL/kg) as soon as possible after exposure. For persons older than 40 years, IG is preferred, although vaccine can be used if IG is unavailable. It is important to note that IG should be given within 2 weeks of exposure to HAV. IG should also be used for children younger than age 12 months, immunocompromised persons, persons who have chronic liver disease or other chronic medical conditions, and persons for whom vaccine is contraindicated. The following are situations in which postexposure treatment is indicated:

- Having close, ongoing personal contact with an HAV-infected person
- Working in or attending a child care center where hepatitis A cases are occurring
- Having common-source exposure (e.g., eating HAV-infected food in a restaurant)
- Having close contact with index patients in schools, hospitals, and work settings when an epidemiological investigation indicates that a common-source exposure has occurred

Persons who have received a dose of hepatitis A vaccine before exposure to HAV do not need to receive a second dose of vaccine until at least 6 months following the first dose.

Because HAV infection cannot be reliably diagnosed on clinical presentation alone, serologic confirmation of HAV infection in the index patient is recommended using the IgM anti-HAV serologic test. If the index patient tests positive, postexposure treatment of sex and household contacts is recommended (as described above). Serologic screening of contacts for HAV immunity before administering postexposure prophylaxis is not recommended because screening results in delayed prophylaxis.

It is critical that you contact your local or state health department to get guidance on when or if postexposure treatment is recommended.

What are the new recommendations for vaccination of travelers to protect them from HAV infection?

Editor's note: The following answer replaces the originally published incorrect answer. The new answer was posted online August 5, 2008.

The new recommendations (www.cdc.gov/mmwr/preview/mmwrhtml/mm5641a3.htm) state that (1) hepatitis A vaccine is recommended for healthy susceptible persons ages 1 through 40 years who travel to or work in regions where hepatitis A is endemic and (2) hepatitis A vaccine should be given as soon as travel is considered, but it can be given any time prior to departure. For optimal protection, persons older than age 40 years, immunocompromised persons, and persons with diagnosed chronic liver disease or other chronic medical conditions, if departure will take place within two weeks, should also receive IG simultaneously with the first dose of hepatitis A vaccine but at a different anatomic injection site. For travelers younger than age 1 year, IG alone is recommended because hepatitis A vaccine is not licensed for use in this age group. Hepatitis A is endemic in all regions except the United States, Western Europe, New Zealand, Australia, Canada, and Japan.

How do I complete the hepatitis A vaccine series after 1 or 2 doses of Twinrix® have already been given?

Twinrix is licensed as a 3-dose series for persons age 18 years and older. If Twinrix is not available or if you choose not to use Twinrix to complete the Twinrix series, you should do the following: If 1 dose of Twinrix was given, complete the series with 2 adult doses of hepatitis B vaccine and 2 adult doses of hepatitis A vaccine. If 2 doses of Twinrix were given, complete the schedule with 1 adult dose of hepatitis A vaccine and 1 adult dose of hepatitis B vaccine. ◆

Want to simplify administering vaccines in your practice? Use standing orders!
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Do you have patients who are HBsAg-positive?

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

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

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

Essential Immunization Resources from IAC

New! IAC's popular screening questionnaire for vaccine contraindications—now in convenient tear-off pads!

Do you need a quick, easy, and thorough way for you and your patients to determine if they have contraindications or precautions to vaccination? Look no further! IAC has a new product—a padded Screening Questionnaire for Adult Immunization—that solves the problem easily! Using this simple 1-page questionnaire, your patients check boxes "yes" or "no" while waiting to be seen. Their answers are then ready for your review. The questionnaire comes in convenient tear-off pads of 100 sheets. The price per pad is economical (discounts for 2 pads or more) so you'll be able to keep pads at the receptionist's desk, the nurses' station, and in every exam room. To order, use the form below. For detailed information or to place an online order, go to www.immunize.org/shop.

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Laminated Immunization Schedules (details p. 3; call for discounts on bulk orders)

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Patient Immunization Record Cards (details p. 3; call for discounts on bulk orders)

250 cards/box; 1 box–$35; 2 boxes–$32.50 each; 3 boxes–$30 each; 4 boxes–$27.50 each

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Influenza vaccination rates for healthcare workers stagnate at 42%

Success stories from your workplace need to be told

Deborah L. Wexler, MD
IAC Executive Director

Dear Colleagues,

Patient safety is being compromised by appallingly low healthcare worker influenza vaccination coverage. The latest statistics from the Centers for Disease Control and Prevention (CDC) indicate that 42% of healthcare personnel were vaccinated against influenza in 2006—no change since 2004. Healthcare professionals must do better in protecting patients from influenza, which infects up to 20% of the population and kills an estimated 36,000 people every year. A person with influenza does not have to be noticeably ill to be a source of infection to others. Therefore, it is critically important that healthcare workers be vaccinated, because an asymptomatic infected healthcare worker can transmit influenza virus virulent enough to cause serious disease in his or her patients.

It is good to know that there is a committed organization, the National Influenza Vaccine Summit (NIVS), that has been working successfully for eight years to coordinate communication among all the national partners who are involved in the production, distribution, and administration of influenza vaccine each season. The NIVS leadership is shared by CDC and the American Medical Association, and members include more than 100 major healthcare-related organizations, such as professional associations, vaccine manufacturers, distributors, community vaccinators, public health departments, the Immunization Action Coalition, and many others.

In addition to its communication responsibilities, the Summit works to improve vaccination rates. It is particularly concerned about what can be done to improve healthcare workers influenza immunization rates. The Summit's website at **www.preventinfluenza.org** is a great resource for those of you interested in planning strategies for next fall. It is not too early for healthcare organizations to begin, especially if they envision making significant improvements.

Also, the Summit would like to hear from organizations—including hospitals, nursing homes, health plans, medical offices, health departments, and other health settings—about strategies that have worked to increase influenza vaccination coverage of their staff. No activity is too small or too common to report. Please go to **www.preventinfluenza.org/success** and let the Summit know about your activities.

And thank you for all your continuing efforts to protect your patients from the annual threat of influenza.

Deborah L. Wexler, MD

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Thank you to CDC, our primary supporter!
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We greatly appreciate your financial support and your comments and suggestions.

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