Volume 19 – Number 2

September 2009
(content current as of Sept. 8)

NEEDLE TIPS

Visit www.immunize.org for up-to-date immunization information from the Immunization Action Coalition

What's Inside?

Vital Immunization News from IAC

Where to Get the Latest Updates on 2009 H1N1 Influenza

As was the case when we published the most recent issue of *Needle Tips* in July, the situation regarding H1N1 influenza continues to evolve quickly. The following links will provide the most up-to-date information:

CDC's main H1N1 webpage	**www.cdc.gov/h1n1flu**
Latest information from CDC	**www.cdc.gov/h1n1flu/whatsnew.htm**
Guidance for clinicians	**www.cdc.gov/h1n1flu/guidance**
H1N1 influenza vaccination resources	**www.cdc.gov/h1n1flu/vaccination**
General information for the public	**www.cdc.gov/h1n1flu/general_info.htm**
Subscribe to CDC's email updates	**www.cdc.gov/emailupdates/index.html**

We continue to update our H1N1 information page, www.immunize.org/h1n1, with highlights of officially released information, partner resources, and news and journal articles. New material is posted daily.

Don't Miss an Issue of *Needle Tips!*

If you found this issue of *Needle Tips* as a search result or while browsing www.immunize.org, consider signing up for free notifications of new issues. Each issue contains crucial, up-to-date resources for immunizers. When you sign up to be notified that an issue of *Needle Tips* has just been published, you will have the most current immunization information delivered to you the moment it becomes available.

Subscribe using the form on this page: www.immunize.org/subscribe

Subscribe to IAC Express for Weekly Updates

We also invite you to subscribe to *IAC Express,* our weekly email news and information bulletin. Like *Needle Tips,* this free publication covers developments in immunization science and policy—it is useful for everyone from clinic personnel to public health officials. New ACIP vaccine recommendations, new FDA vaccine licensures, new immunization resources, and other newsworthy items will be delivered directly to your email box.The link above will give you the option of subscribing to *IAC Express* in addition to *Needle Tips.*

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).

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)

General vaccine questions

If a patient faints following vaccination, should we submit a report to the federal Vaccine Adverse Event Reporting System (VAERS)?

Yes. Any occurrence of medical significance warrants a VAERS report. You can obtain more information about VAERS at http://vaers.hhs.gov or by calling (800) 822-7967.

We understand that it is advisable to observe patients for 15 minutes after vaccination—can the patient sit in the waiting room for 15 minutes before leaving or do they have to be observed by a nurse?

Although syncope can occur in anyone, it is more common among adolescents and young adults. It can result in serious injury, and the 15-minute guideline is therefore advised. There are no specific guidelines as to who should watch the patient. The main goal is to avoid a situation where the patient suffers injury from a fall.

What should we do if we give a dose of vaccine at less than the minimum interval since the previous dose?

If vaccines are given too close together (or to a child younger than the minimum recommended age), it can result in a less than optimal immune response. However, in most instances, a difference of a few days is unlikely to have a negative effect on immune response. With the exception of rabies vaccine, CDC recommends that vaccine doses given 4 or fewer days before the minimum interval or age be counted as valid, unless local or state requirements specify otherwise. If the dose needs to be repeated, the repeat dose should be

(continued on page 19)

Needle Tips

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IAC maintains strict editorial independence in its publications.

Are you hooked on IAC's Video of the Week yet?

It's a "must-see" feature of www.immunize.org

IAC's Video of the Week feature is a "YouTube" of immunization footage. Each week, the staff of the Immunization Action Coalition (IAC) chooses from diverse options, so that over several weeks, we showcase videos that cover a range of topics and appeal to different audiences. This is in keeping with the purpose of the Video of the Week feature, which is to promote education and awareness of immunization issues to health professionals, their patients, the public, and the media. We then make the selected video easily accessible from the www.immunize.org home page.

CDC Webcast (H1N1) with Dr. Joseph Bresee; Run time: 60 min

The Girl Who Survived Rabies
Run time: 47 min

Pertussis Makes a Comeback PSA with Jennifer Lopez; Run time: 1 min

In Memory of Heather Burcham
Run time: 2 min

Since launching Video of the Week in December 2008, IAC has presented television programs and films in which vaccine and immunization topics figure prominently, relevant webcasts from government agencies, and immunization-specific continuing education programs and public service announcements. To view the complete collection of IAC's Videos of the Week from the past, go to the video archive at www.immunize.org/votw.

To get a taste of all that the Video of the Week offers, we suggest you view the four highlights from the past year that appear on this page. They run the gamut from a timely CDC webcast on H1N1 influenza, to the remarkable account of the only person ever to have survived rabies, to Jennifer Lopez talking about pertussis, to a woman with cervical cancer encouraging HPV vaccination. Each can be accessed by clicking the title that appears under the image.

In August, IAC offered viewers the chance to watch a re-cast of CDC's July 16 Current Issues in Immunization Net Conference. It featured presenters from CDC discussing aspects of H1N1 influenza—its epidemiology and clinical features, vaccine development and manufacturing processes, and vaccine program implementation.

One of the July offerings chronicles the story of Wisconsin teenager Jeanna Giese, the only unvaccinated person ever recorded to have survived rabies. The video, which originally aired on the TV program "Extraordinary People," follows Giese's case and the medical treatment protocol that led to her survival.

In May, a Video of the Week featured a 1-minute public service announcement (PSA) of Jennifer Lopez promoting immunization against pertussis.

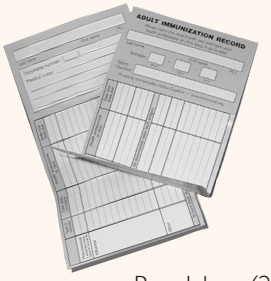
In a powerful video, featured in January, 31-year-old Heather Burcham urges young women to get the human papillomavirus vaccine (HPV). Ms. Burcham, who suffered from cervical cancer, became a national spokesperson and advocate for HPV vaccination. The video was recorded 2 months before her death.

If you have trouble viewing the videos, click on the Video Help link to get useful tips. Unfortunately, because streaming video websites (e.g., YouTube) consume a large amount of bandwidth, some organizations find it necessary to restrict access to these sites.

Do you have a video about immunization or vaccine-preventable diseases to share with our website users on Video of the Week? Please submit it to us by email: admin@immunize.org.

Visit IAC's website for health professionals at www.immunize.org

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



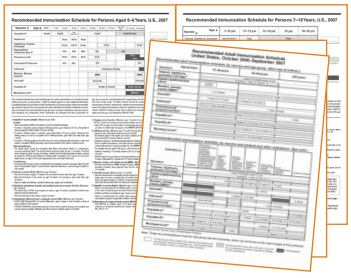
Now you can give any patient a permanent vaccination record card designed specifically for their age group: child & teen, adult, or lifetime. The three cards list all vaccines recommended for each age. The cards are printed on durable rip-, smudge-, and water-proof paper. Wallet-sized when folded, the 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 $37.50 (first order of a 250-card box comes with a 30-day, money-back guarantee). Discounts for larger orders: 2 boxes $35 each; 3 boxes $32.50 each; 4 boxes $30 each

To order, visit www.immunize.org/shop, or use the order form on page 23.
To receive sample cards, contact us: admininfo@immunize.org

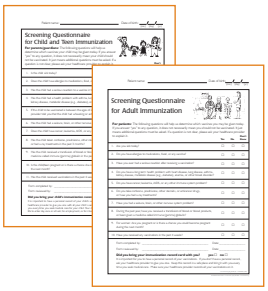
Laminated child and adult immunization schedules Order one of each for every exam room

Here are the ACIP/AAP/AAFP-approved immunization schedule for people ages 0 through 18 years and the ACIP/AAFP/ACOG/ACP-approved schedule for adults. Both are laminated for heavy-duty use, complete with essential footnotes, and printed in color for easy reading. The cost is $10 for each schedule and only $6.50 each for five or more copies.



To order, visit www.immunize.org/shop, or use the order form on page 23.
For 20 or more copies, contact us for discount pricing: admininfo@immunize.org

Immunization screening questionnaires for contraindications! Now with English on front/Spanish on back; in pads of 100 sheets



Save valuable staff time and make sure your patients are fully screened by using these simple 1-page questionnaires (one for child/teen immunization, another for adults). Patients respond to questions by checking off "yes" and "no" boxes while waiting to be seen. Staff reviews answers during the visit. These pads are priced at $16 per 100-sheet pad. Prices drop to $12 each for 2 pads, $11 each for 3 pads, $10 each for 4–9 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 23.
For 10 or more pads, contact us for discount pricing: admininfo@immunize.org

Vaccine Highlights

Recommendations, schedules, and more

Editor's note: The information in "Vaccine Highlights" is current as of September 8, 2009.

H1N1 influenza

Because H1N1 influenza is a complex, rapidly emerging health concern, the Immunization Action Coalition (IAC) will not attempt to summarize H1N1 influenza developments in the Vaccine Highlights section of *Needle Tips.* Instead, on page 1 of this issue, we've listed links to excellent sources of up-to-date H1N1 influenza information. Also, see pages 19–20 and 24 for more H1N1 information.

The next ACIP meetings

A committee of 15 national experts, the Advisory Committee on Immunization Practices (ACIP) advises CDC on the appropriate use of vaccines. ACIP meets 3 times a year in Atlanta; meetings are open to the public. The next meetings will be held on Oct. 21–22, 2009, and Feb. 24–25, 2010. For more information, including details about registration procedures, visit www.cdc.gov/vaccines/recs/acip.

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

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

Recently published ACIP recommendations:

- "Use of Influenza A (H1N1) 2009 Monovalent Vaccine" (8/28/09)
- "Updated Recommendations of ACIP Regarding Routine Poliovirus Vaccination" (8/7/09)
- "Prevention and Control of Seasonal Influenza with Vaccines, 2009" (7/31/09)
- "Updated Recommendations for Use of *Haemophilus influenzae* type b (Hib) Vaccine: Reinstatement of the Booster Dose at Ages 12–15 Months" (6/26/09)

If you have a website, please link to the Immunization Action Coalition!

www.immunize.org

www.vaccineinformation.org

Influenza news

On Aug. 28, CDC published ACIP recommendations for the use of 2009 monovalent influenza A (H1N1) vaccine. The vaccine has not yet been licensed. Licensed vaccine is expected to be available by mid-October, however, and vaccination should begin as soon as it is. The recommendations specify 5 initial target groups for vaccination: (1) pregnant women; (2) persons who live with or provide care for infants younger than age 6 months (e.g., parents, siblings, day care providers); (3) healthcare and emergency medical services personnel; (4) persons ages 6 months through 24 years; and (5) persons ages 25 through 64 years who have medical conditions that put them at higher risk for influenza-related complications. To read the complete recommendations, go to www.cdc.gov/mmwr/PDF/rr/rr5810.pdf.

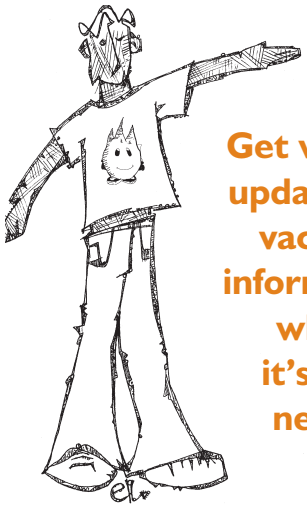
On July 31, CDC published ACIP recommendations for the prevention and control of seasonal influenza with vaccines, 2009. Seasonal influenza vaccine is now available; vaccination efforts are underway and should continue throughout the fall, winter, and spring months. The recommendations include 2 updates of note: (1) a recommendation to vaccinate all children and teens ages 6 months through 18 years and (2) a notice that recommendations for influenza diagnosis and antiviral use will be published before the 2009–10 influenza season begins. To read the complete recommendations, go to www.cdc.gov/mmwr/pdf/rr/rr5808.pdf.

On July 16, the American Academy of Pediatrics (AAP) released its influenza vaccine policy statement for 2009–10. To access it, go to http://aapredbook.aappublications.org/news/FluPolicy2009-10.pdf.

CDC released its 2009–10 VIS for trivalent inactivated influenza vaccine (TIV; injectable) and its VIS for live attenuated influenza vaccine LAIV; FluMist [Medimmune]). To access the VIS for TIV, go to www.immunize.org/vis/2flu.pdf. To access the VIS for LAIV, go to www.immunize.org/vis/liveflu.pdf.

IAC posted the package inserts for the 6 influenza vaccine formulations that FDA approved for use in the 2009–10 influenza season. The package insert for FluMist, the nasal-spray vaccine, is available at www.immunize.org/packageinserts/pi_laiv.asp. The package inserts for the 5 injectable vaccines are available at www.immunize.org/packageinserts/pi_tiv.asp.

Subscribe to IAC Express!



Get weekly updates on vaccine information while it's still news!

All the news we publish in "Vaccine Highlights" will be sent by email to you every Monday. Free! To sign up, visit

www.immunize.org/subscribe

At the same time, you'll be able to sign up to receive other free IAC publications!

Hib news

On Aug. 19, FDA announced it had approved a *Haemophilus influenzae* type b (Hib) vaccine (Hiberix; GlaxoSmithKline) for use as a booster dose in children ages 15 months through 4 years. To view the Hiberix package insert, go to www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM179530.pdf. To view a related press release, go to www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm179533.htm.

On June 26, CDC issued a recommendation for the immediate reinstatement of the booster dose of Hib vaccine for children ages 12–15 months who have completed the primary series. A recommendation to defer the booster dose for healthy children ages 12–15 months has been in effect since December 2007 because of a shortage of Hib vaccine.

The June recommendation advises that infants should continue to receive the primary Hib vaccine series at ages 2, 4, and 6 months. Children ages 12–15 months should receive the booster dose on time. Older children for whom the booster dose was

deferred should receive their Hib booster dose at the next routinely scheduled visit or medical encounter. Although supply is sufficient to reinstate the booster dose and begin catch-up vaccination, supply is not yet ample enough to support a mass notification process to contact all children with deferred Hib booster doses. To access the complete recommendation, go to www.cdc.gov/mmwr/preview/mmwrhtml/mm5824a5.htm.

In a related move, on July 1, CDC released a Q&A for providers about the return to the Hib booster dose. To access it, go to www.cdc.gov/vaccines/vpd-vac/hib/faqs-return-to-booster-hcp.htm.

In July, CDC released this information on the supply of Hib vaccine and combination Hib-hepatitis B (HepB) vaccine: Merck is working with regulatory authorities with a goal of making a limited supply of its Hib vaccine, PedvaxHIB, available in fourth quarter 2009, with full availability of product in first quarter 2010. The market return of its Hib-HepB vaccine (Comvax) will depend on the supply situation for both the Hib and HepB vaccine components. For continuing vaccine supply information, go to www.cdc.gov/vaccines/vac-gen/shortages/default.htm.

Polio news

On Aug. 7, CDC published updated ACIP recommendations for routine poliovirus vaccination. The update (1) emphasizes the importance of administering the final (booster) dose at age 4 years or older, regardless of the number of previous doses administered, (2) extends the minimum interval between the next-to-last dose (usually dose #3) and last dose (usually dose #4) from 4 weeks to 6 months, (3) adds a precaution for the use of minimum intervals in the first 6 months of life, and (4) clarifies the poliovirus vaccination schedule when specific combination vaccines are used. To read the complete recommendations, go to www.cdc.gov/mmwr/preview/mmwrhtml/mm5830a3.htm.

Hepatitis A and B news

On July 10, CDC published, "Hepatitis B (HepB) Vaccine Supply Constraints: Questions and answers for infant, children, and adult providers." The document discusses (1) the use of monovalent HepB and the combination vaccines Pediarix (GlaxoSmithKline) and Pentacel (sanofi pasteur) in infants and children and (2) the use of adult HepB formulations, including combination and dialysis formulations. To access the document, go to www.cdc.gov/print.do?url=http://www.cdc.gov/vaccines/vac-gen/shortages/hepb-supply-07-10-09.htm.

In July, CDC updated information on the supply of adult formulations of hepatitis A (HepA) vaccine. Merck's adult HepA (adult Vaqta) will not be available in 2009. GSK's production and supply of its adult HepA (adult Havrix) and its adult HepA/HepB combination vaccine (Twinrix) are adequate to meet current demand for adult HepA vaccination. For continuing vaccine supply information, go to www.cdc.gov/vaccines/vac-gen/shortages/default.htm.

MMR and MMRV news

On Aug. 28, CDC issued provisional ACIP recommendations for evidence of immunity to measles, mumps, and rubella for healthcare personnel. Documentation of physician-diagnosed measles and mumps is no longer considered evidence of immunity for this occupational group. Physician-diagnosed rubella has never been considered evidence of immunity. The provisional recommendations for MMR evidence of immunity for healthcare personnel are available at www.cdc.gov/vaccines/recs/provisional.

In July, CDC communicated that Merck does not anticipate its monovalent measles (Attenuvax), mumps (Mumpsvax), and rubella (Meruvax) vaccines to be available for at least 2 years given its current expectations regarding vaccine manufacturing capacity. Also, Merck expects its MMRV vaccine (ProQuad) to be fully available to the U.S. market in the first half of 2010. For continuing vaccine supply information, go to www.cdc.gov/vaccines/vac-gen/shortages/default.htm.

Rabies news

On July 10, ACIP posted provisional recommendations for the prevention of human rabies. It calls for administering 4 doses of vaccine as post-exposure prophylaxis to unvaccinated people. Previously, 5 doses were recommended. Provisional recommendations become final after approval by CDC and the Department of Health and Human Services and publication in *MMWR*. The provisional rabies recommendations are available at www.cdc.gov/vaccines/recs/provisional.

Japanese encephalitis news

On July 14, ACIP posted provisional recommendations for use of Japanese encephalitis vaccine. It advises all travelers to countries with Japanese encephalitis endemicity to take personal protective measures to reduce the risk of mosquito bites and advises certain travelers to be vaccinated. The provisional Japanese encephalitis recommendations are available at www.cdc.gov/vaccines/recs/provisional.

Combination vaccine news

On Aug. 28, CDC issued provisional ACIP recommendations for the use of combination vaccines in patients of all ages. The document is available at www.cdc.gov/vaccines/recs/provisional.

Vaccine coverage 2008

On Aug. 28, CDC published "National, State, and Local Area Vaccination Coverage Among Children Aged 19–35 Months—United States, 2008" in *MMWR,* Vol. 58 (33). The National Immunization Survey provides vaccination coverage estimates for children ages 19–35 months for each of the 50 states and 17 selected urban areas. Data from the survey indicate that childhood vaccination rates remain stable at high levels. Among racial/ethnic groups, little variation in coverage was observed. Coverage for most vaccines remained lower for children living below the poverty rate than for children living at or above the poverty rate. To access the report, go to www.cdc.gov/mmwr/preview/mmwrhtml/mm5833a3.htm.

Related resources

In July, CDC announced the availability of the 2010 edition of its travel-health guide, known as the Yellow Book. For information, go to wwwn.cdc.gov/travel/content/yellowbook/home-2010.aspx.

In June, AAP announced the publication of the 2010 edition of the Red Book. It is available in print, online, and for mobile devices. For information, go to http://aapredbook.aappublications.org.

In May, CDC announced the publication of the eleventh edition of the Pink Book. It is available for downloading and ordering at www.cdc.gov/vaccines/pubs/pinkbook.◆

Current VIS dates

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

DTaP/DT/DTP.....5/17/07	PCV.....12/9/08
hepatitis A.....3/21/06	PPSV.....4/16/09
hepatitis B 7/18/07	polio 1/1/00
Hib 12/16/98	rabies 1/12/06
HPV (H. papillomavirus)...2/2/07	rotavirus 8/28/08
influenza (LAIV) ..8/11/09	shingles.....9/11/06
influenza (TIV).....8/11/09	Td/Tdap 11/18/08
Japan. enceph. ..5/11/05	typhoid 5/19/04
meningococcal.... 1/28/08	varicella 3/13/08
MMR.....3/13/08	yellow fever 11/9/04

Multi-vaccine VIS 9/18/08
(for 6 vaccines given to infants/children: DTaP, IPV, Hib, HepB, PCV, RV)

Unprotected people . . .

Influenza ends Martin McGowan's life

The Immunization Action Coalition (IAC) publishes Unprotected People Reports about people who have suffered or died from vaccine-preventable diseases.

Families Fighting Flu (FFF) was established in the memory of the children who die each year from the complications of influenza. FFF member families have experienced first-hand the severity of influenza in a child, with many of the members having suffered the devastating loss of an infant, child, or teen. The mission of the non-profit organization, which is made up of families and healthcare professionals, is to reduce childhood deaths due to influenza by raising awareness about the importance of annual influenza vaccination for children. The following report is reprinted courtesy of Families Fighting Flu.

To read more articles and case reports about people who have suffered or died from vaccine-preventable diseases, visit IAC's web section Unprotected People Reports

www.immunize.org/reports

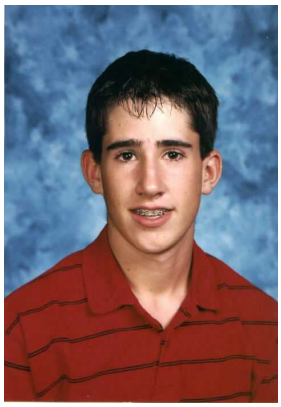
It includes more than 100 reports.

By Diane McGowan, Martin's mother and a Families Fighting Flu board member

On February 27, 2008, the CDC's Advisory Committee on Immunization Practices voted to expand the influenza vaccination recommendations to include all children ages 6 months through 18 years. We at Families Fighting Flu were overjoyed. We had worked tirelessly to make certain that the members of the advisory committee had heard our message that the previous influenza recommendation, which had been to vaccinate children ages 6 months to 5 years, meant that healthy school-age children were dying from this vaccine-preventable disease. We could now be assured that doctors would begin to vaccinate more children older than age 5, and as a result, more people would be protected.

But, as exuberant as I felt on that day, my heart was saddened. My thoughts took me back to my son, Martin, who 3 years before, on January 4, 2005, had celebrated his 15th birthday. He had asked to have some friends sleep over at our house. I had said yes, even though my husband was reluctant. After listening to them watching videos, running up and down the steps, throwing popcorn, and unleashing their gut-busting laughter, we were relieved to hear them settle down and fall asleep. Martin had a great bunch of friends from a diverse group—his basketball and baseball teams, Catholic elementary school, and a few new ones that he had just met in his freshman year of high school. Martin had always been very outgoing. He loved interacting with people and making people laugh. I don't know how many times he had me laughing so hard at the dinner table that I was crying.

Now, my tears are tears of sadness—tears for the loss of memories of events that I will never experience because my 15-year-old Martin died suddenly from complications of influenza on February 9, 2005. The day is forever tattooed on my heart. The night before, Martin had baseball tryout practice, and when I picked him up, he complained that his legs hurt and he was tired. I just



assumed that the coaches had a hard practice to quickly weed out the kids that weren't qualified for the team. But then at 2:30 a.m., Martin woke up and vomited; he also had a fever of 102 degrees. I gave him medication and sent him back to bed. Two hours later he woke up again and vomited; he was still complaining that his legs really hurt. In the morning, I called the doctor's office. They suggested that he come in for an appointment that afternoon or that I take him to the emergency room. Since Martin was old enough to understand the difference, I asked him what he wanted to do. He looked at me and said, "Mom, I think I need to go to the ER." What a moment that was for me.

When we arrived at the hospital, they started Martin on an IV for dehydration and took a swab from his throat. The doctor said that Martin tested positive for influenza A, so they were going to keep him hydrated and monitor him. They also gave him a mild medication for leg pain. But as the day progressed, Martin was getting more agitated because the pain in his legs was unbearable. Finally, a new set of doctors examined him and determined that they needed to do further testing to figure out what was wrong with his legs. This involved injecting long needles into his legs to test the pressure of his muscles. If the pressure was too great, they would have to perform surgery to cut open his legs and expose the muscles until the swelling went down, or they might have to amputate. They eventually took Martin in for emergency surgery because he was diagnosed with compartment syndrome, a disease that attacks the muscles, limiting blood circulation and causing severe pain. The intense running that Martin did the night before escalated his condition from muscle aches to compartment syndrome. But shortly after surgery began, the doctor came out and told me that his heart had stopped and they could not revive him. An autopsy was performed, and the cause of death was noted as "complications from influenza."

There is where my memories of Martin end and my journey begins—my journey to prevent another family from experiencing the tragedy of losing a child to this vaccine-preventable illness.

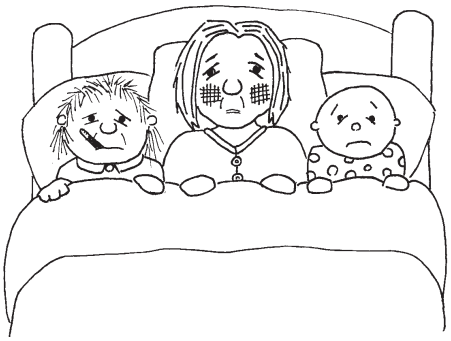
After Martin's death, I quickly learned that influenza is a very serious disease. In fact, on average, nearly 100 children younger than age 5 die in the U.S. from influenza and its complications every year. Additionally, more than 20,000 children younger than age 5 are hospitalized annually because of influenza. And if you consider the entire U.S. population, complications from influenza cause 36,000 deaths and more than 200,000 hospitalizations on average each year. What compounds this tragedy is that much of the serious illness and death caused by influenza is preventable.

The reality is that what happened to Martin can happen to any child. As parents, we do not know how our child's immune system will react the first time they contract influenza, so why take a chance with their health or their lives? It's our responsibility as parents to protect our children. Don't even think twice—get your kids vaccinated against influenza each and every year.

For more information, visit Families Fighting Flu's website at

www.familiesfightingflu.org

Don't take chances with your family's health – make sure you all get vaccinated against influenza every year!



Here's how influenza can hurt your family . . .

Influenza can make you, your children, or your parents really sick.

Influenza usually comes on suddenly. Symptoms can include high fever, chills, headaches, exhaustion, sore throat, cough, and all-over body aches. Some people say, "It felt like a truck hit me!" Symptoms can also be mild. Regardless, when influenza strikes your family, the result is lost time from work and school.

Influenza spreads easily from person to person.

An infected person can spread influenza when they cough, sneeze, or just talk near others. They can also spread it by touching or sneezing on an object that someone else touches later. And, an infected person doesn't have to feel sick to be contagious: they can spread influenza to others when they feel well – before their symptoms have even begun.

Influenza and its complications can be so serious that they can put you, your children, or your parents in the hospital – or lead to death.

Each year, more than 200,000 people are hospitalized in the U.S. from influenza and its complications. And 36,000 die, including many children. The people who have the highest probability of being hospitalized and of dying are infants, young children, older adults, and people of all ages who have medical conditions such as heart or lung disease. But remember, it's not only the youngest, oldest, or sickest who die: every year influenza kills people who were otherwise healthy.

Influenza can be a very serious disease for you, your family, and friends – but you can all be protected by getting vaccinated.

There's no substitute for yearly vaccination in protecting the people you love from influenza. Either type of influenza vaccine (the "shot" or nasal spray) will help keep you and your loved ones safe from a potentially deadly disease. Get vaccinated every year, and make sure your children and your parents are vaccinated, too.

Get vaccinated every year! Get your children vaccinated! Be sure your parents get vaccinated, too!

Technical content reviewed by the Centers for Disease Control and Prevention, September 2009.

Immunization Action Coalition 1573 Selby Avenue • St. Paul, MN 55104 • 651 647-9009 • www.vaccineinformation.org • www.immunize.org

www.immunize.org/catg.d/p4069.pdf • Item #P4069 (9/09)

Use these materials for your healthcare personnel influenza vaccination campaign

Free and CDC-reviewed, they're ready for you to download, copy, and distribute!

For a ready-to-copy 8½" x 11" version of this piece, visit www.immunize.org/catg.d/p2014.pdf

First do no harm

Protect patients by making sure all staff receive yearly influenza vaccine!

Healthcare employers are not only strongly encouraged to increase their employees' influenza immunization rates, in some instances, their organization's accreditation depends on it! The Centers for Disease Control and Prevention (CDC) published recommendations for healthcare settings, and the Joint Commission (formerly known as the Joint Commission on Accreditation of Healthcare Organizations [JCAHO]) has established influenza infection control standards.

Big changes have taken place in influenza vaccination of healthcare personnel (HCP). The responsibility for increasing the rates of HCP influenza vaccination is rapidly shifting from the employee to the employer.

What's happened?

At CDC: In February 2006, CDC published "Influenza Vaccination of Health-Care Personnel." These recommendations "apply to HCP in acute care hospitals, nursing homes, skilled nursing facilities, physician offices, urgent care centers, and outpatient clinics, and to persons who provide home healthcare and emergency medical services." They were issued jointly by HICPAC (the Healthcare Infection Control Practices Advisory Committee) and ACIP (the Advisory Committee on Immunization Practices). The summary box in the right column presents an overview, including the recommendation that employers vaccinate employees at the work site at no cost. To obtain a copy of the complete recommendations, go to: www.cdc.gov/mmwr/PDF/rr/rr5502.pdf.

At the Joint Commission: In January 2007, a new infection control standard of the Joint Commission became effective that requires accredited organizations to offer influenza vaccinations to staff, volunteers, and licensed independent practitioners who have close patient contact. The standard is an accreditation requirement for the Critical Access Hospital, Hospital, and Long Term Care accreditation programs.

Why is it happening?

The short answer is because HCP influenza vaccination rates remain appallingly low, and unvaccinated HCP are infecting vulnerable patients with influenza. Only half (49%) of HCP were vaccinated against influenza in the 2007–08 season, even though ACIP has urged annual influenza vaccination for HCP since 1981. Further, influenza transmission has been documented among patients in a variety of clinical settings, and infections have been linked to unvaccinated HCP. Clearly, we are doing our patients harm.

What should your healthcare facility do to comply?

In the box below are practical online resources healthcare organizations will find valuable in creating influenza vaccination programs for employees.

Practical resources for vaccinating HCP against influenza

Centers for Disease Control and Prevention
Read "Influenza Vaccination of Health-Care Personnel" at www.cdc.gov/mmwr/PDF/rr/rr5502.pdf. Access CDC's influenza web page: www.cdc.gov/flu.

National Influenza Vaccine Summit (NIVS)
(Co-sponsored by the American Medical Association and CDC). See the NIVS Healthcare Workers home page: www.preventinfluenza.org/profs_workers.asp.

The Joint Commission
"Strategies for Implementing Successful Influenza Immunization Programs for Healthcare Personnel Project" at www.jointcommission.org/PatientSafety/InfectionControl/flu_monograph.htm

U.S. Dept. of Health & Human Services (HHS)
See the HHS' "Health Care Personnel Initiative to Improve Influenza Vaccination Toolkit" at www.hhs.gov/ophs/programs/initiativesVaccinetoolkit

Immunization Action Coalition
Get these IAC print materials online:
- "Standing Orders for Administering Influenza Vaccine to Adults." www.immunize.org/catg.d/p3074.pdf
- "Screening Questionnaire for Injectable Influenza Vaccination" www.immunize.org/catg.d/p4066.pdf
- "Screening Questionnaire for Intranasal Influenza Vaccination" www.immunize.org/catg.d/p4067.pdf
- "Declination of Influenza Vaccination" form www.immunize.org/catg.d/p4068.pdf

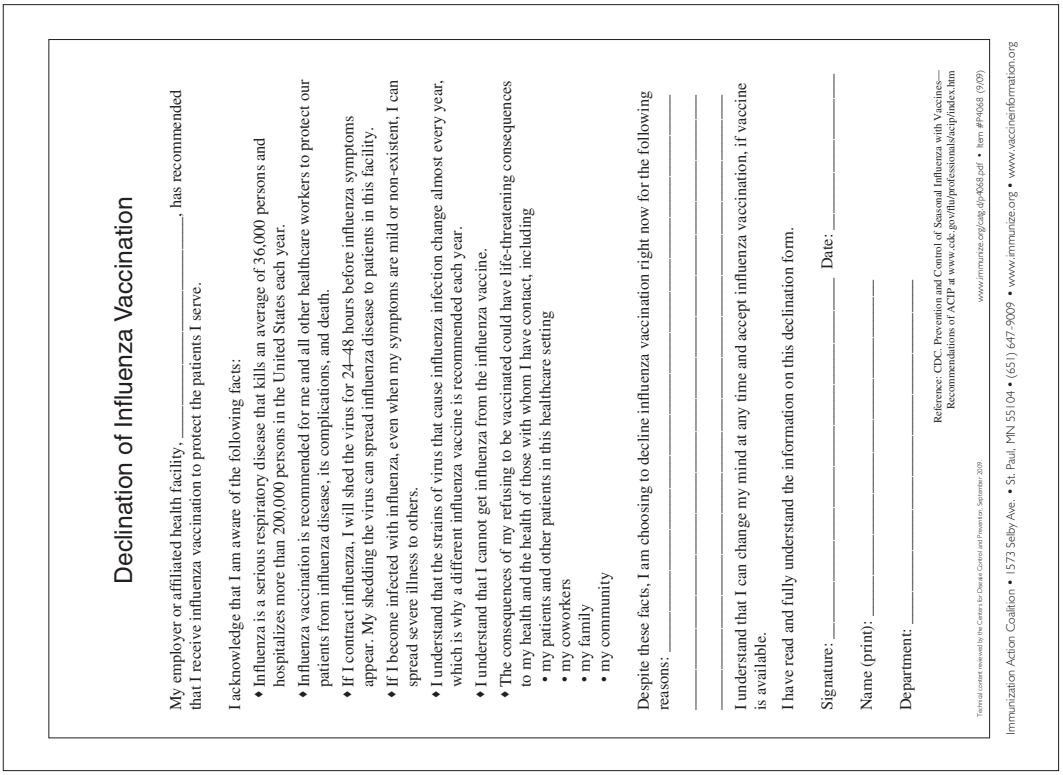
Summary of CDC's HICPAC / ACIP Recommendations

The committees that developed and endorsed these recommendations included persons with expertise in infectious diseases, infection control, pediatrics, vaccinology, internal medicine, and public health. The recommendations are as follows:

- **Educate HCP regarding the benefits of influenza vaccination** and the potential health consequences of influenza illness for themselves and their patients, the epidemiology and modes of transmission, diagnosis, treatment, and nonvaccine infection control strategies, in accordance with their level of responsibility in preventing health-care-associated influenza.
- **Offer influenza vaccine annually to all eligible HCP** to protect staff, patients, and family members and to decrease HCP absenteeism. Use of either available vaccine (inactivated [TIV] or live attenuated influenza vaccine [LAIV]) is recommended for eligible persons. During periods when TIV is in short supply, use of LAIV is especially encouraged when feasible for eligible HCP.
- **Provide influenza vaccination to HCP at the work site and at no cost** as one component of employee health programs. Use strategies that have been demonstrated to increase influenza vaccine acceptance, including vaccination clinics, mobile carts, vaccination access during all work shifts, and modeling and support by institutional leaders.
- **Obtain a signed declination from HCP who decline influenza vaccination** for reasons other than medical contraindications.
- **Monitor HCP influenza vaccination coverage and declination** at regular intervals during influenza season and provide feedback of ward-, unit-, and specialty-specific rates to staff and administration.
- **Use the level of HCP influenza vaccination coverage as one measure of a patient-safety quality program.**

Tactical content reviewed by the Centers for Disease Control and Prevention, September 2009.

For a ready-to-copy 8½" x 11" version of this piece, visit www.immunize.org/catg.d/p4068.pdf



Declination of Influenza Vaccination

My employer or affiliated health facility, _____, has recommended that I receive influenza vaccination to protect the patients I serve.

I acknowledge that I am aware of the following facts:

- Influenza is a serious respiratory disease that kills an average of 36,000 persons and hospitalizes more than 200,000 persons in the United States each year.
- Influenza vaccination is recommended for me and all other healthcare workers to protect our patients from influenza disease, its complications, and death.
- If I contract influenza, I will shed the virus for 24–48 hours before influenza symptoms appear. My shedding the virus can spread influenza disease to patients in this facility.
- If I become infected with influenza, even when my symptoms are mild or non-existent, I can spread severe illness to others.
- I understand that the strains of virus that cause influenza infection change almost every year, which is why a different influenza vaccine is recommended each year.
- I understand that I cannot get influenza from the influenza vaccine.
- The consequences of my refusing to be vaccinated could have life-threatening consequences to my health and the health of those with whom I have contact, including
  - my patients and other patients in this healthcare setting
  - my coworkers
  - my family
  - my community

Despite these facts, I am choosing to decline influenza vaccination right now for the following reasons: _____

_____

_____

I understand that I can change my mind at any time and accept influenza vaccination, if vaccine is available.

I have read and fully understand the information on this declination form.

Signature: _____ Date: _____

Name (print): _____

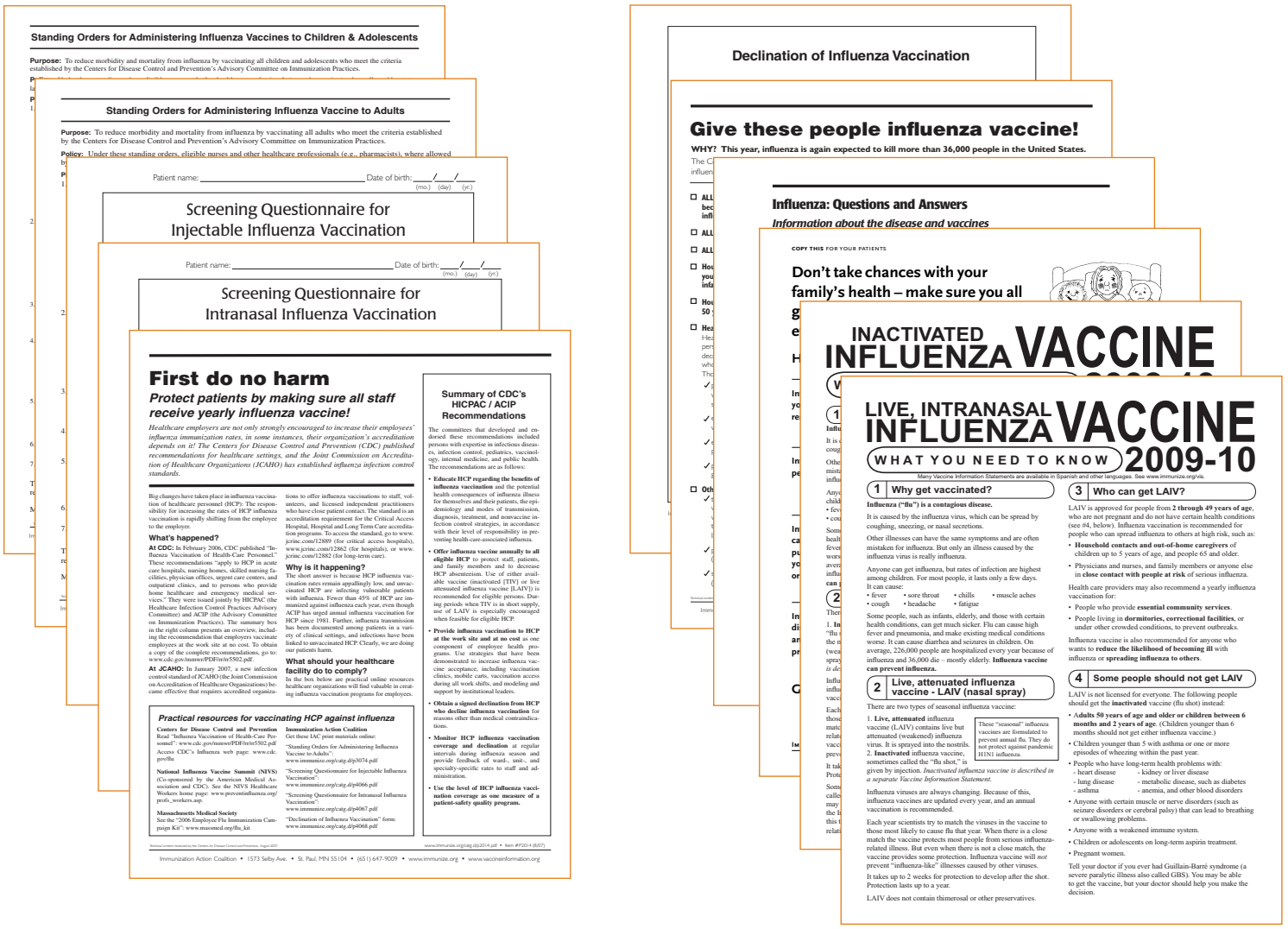
Department: _____

Reference: CDC. Prevention and Control of Seasonal Influenza with Vaccines—Recommendations of ACIP at www.cdc.gov/flu/professionals/acip/index.htm

Tactical content reviewed by the Centers for Disease Control and Prevention, September 2009.

Influenza education materials for patients & staff

Free and CDC-reviewed, they're ready for you to download, copy, and distribute!



For 8-1/2" x 11" copies of the pieces above, visit IAC's website: www.immunize.org

1. **Standing orders for administering seasonal influenza vaccines to children & adolescents:** www.immunize.org/catg.d/p3074a.pdf
2. **Standing orders for administering seasonal influenza vaccine to adults:** www.immunize.org/catg.d/p3074.pdf
3. **Screening questionnaire for injectable influenza vaccination:** www.immunize.org/catg.d/p4066.pdf
4. **Screening questionnaire for intranasal influenza vaccination:** www.immunize.org/catg.d/p4067.pdf
5. **First do no harm: Protect patients by making sure all staff receive yearly influenza vaccine!** www.immunize.org/catg.d/p2014.pdf
6. **Declination of influenza vaccination (for healthcare worker refusal):** www.immunize.org/catg.d/p4068.pdf
7. **Give these people seasonal influenza vaccine!** www.immunize.org/catg.d/p2013.pdf
8. **Influenza: Questions and Answers:** www.immunize.org/catg.d/p4208.pdf
9. **Don't take chances with your family's health—make sure you all get vaccinated against influenza!** www.immunize.org/catg.d/p4069.pdf
10. **Federally required Vaccine Information Statements in English and other languages:** www.immunize.org/vis
    - **Inactivated Influenza Vaccine: What you need to know:** www.immunize.org/vis/2flu.pdf
    - **Live, Intranasal Influenza Vaccine: What you need to know:** www.immunize.org/vis/liveflu.pdf

Pneumococcal polysaccharide vaccine (PPSV)

CDC answers your questions

William L. Atkinson, MD, MPH, and Andrew T. Kroger, MD, MPH, medical epidemiologists with CDC's National Center for Immunization and Respiratory Diseases, answer your questions on pneumococcal polysaccharide vaccine (PPSV).

For complete information on CDC's recommendations for the use of pneumococcal vaccine, go to www.immunize.org/acip

How serious is pneumococcal disease?
An estimated 40,000 cases of invasive pneumococcal disease occur annually. Case-fatality rates are high, particularly when disease results in meningitis (~30%) or bacteremia (~20%). In addition, pneumococcal pneumonia, often a secondary complication of influenza, results in an estimated 175,000 hospitalizations annually.

My patient doesn't have a record of receiving pneumococcal polysaccharide vaccine (PPSV) and can't remember if she has had it in the past. What should I do?
Vaccinate her. People with unknown vaccination status should be vaccinated.

Should all nursing home patients be vaccinated against pneumococcal disease?
Yes. Standing orders for vaccination of persons admitted to long-term care facilities can help simplify the procedure (see suggested standing orders at www.immunize.org/standingorders).

Which additional groups did CDC target in 2008 for vaccination with PPSV?
In 2008, the CDC's Advisory Committee on Immunization Practices (ACIP) reviewed data that showed an increased risk of invasive pneumococcal disease among adults who smoked cigarettes or who had asthma. Consequently, these two groups were added to the categories of adults for whom vaccination is recommended.

My patient has had pneumococcal pneumonia. Is vaccination still necessary for him?
Yes, if he is in a group recommended for PPSV vaccination (see table). More than 90 known serotypes of pneumococcus exist; 23 serotypes are in the current vaccine. Infection with one serotype does not necessarily produce immunity to other serotypes.

Should HIV-positive patients receive PPSV?
Yes. Patients with HIV infection should be given PPSV as soon as possible after diagnosis and a one-time revaccination dose at the appropriate interval (see table). The risk of pneumococcal infection is up to 100 times greater in HIV-infected persons than in other adults of similar age. Although severely immunocompromised persons may not respond well to the vaccine, the risk of disease is great enough to warrant vaccination even though there is a chance that the vaccine may not produce an antibody response.

Can I give other vaccines at the same time I give PPSV to a patient?
Yes. PPSV is an inactivated vaccine, which means you can give all other recommended vaccines at the same visit (using separate syringes) or at any later time with no waiting period following PPSV.

When should I vaccinate patients who are planning to have either a cochlear implant or elective splenectomy?
If time permits, give PPSV to such patients at least 2 weeks before surgery.

What needle length is recommended for administering PPSV to adults?
Pneumococcal vaccine may be given either IM or SC. Use a 1–1½" needle for IM, depending on muscle mass. For SC, use a ⅝" needle.

Some physicians in our area order PPSV every 5 or 6 years for their patients. Is this correct?
CDC recommends 1 dose of PPSV for most people in a lifetime and 2 doses for certain people (see table below). PPSV is a polysaccharide vaccine that does not boost well, and data do not indicate that more than 2 doses are beneficial.

Who needs to be vaccinated with PPSV?	Who needs a second dose of PPSV?
1. Vaccinate all previously unvaccinated adults age 65 years and older. 2. Vaccinate all adults who smoke cigarettes. 3. Vaccinate persons ages 2–64 years who • have chronic cardiovascular disease (e.g., congestive heart failure, cardiomyopathy), chronic pulmonary disease (e.g., COPD, emphysema, adults with asthma), or diabetes mellitus, or who are cochlear implant patients. • have chronic liver disease (including cirrhosis), are alcoholic, or have a cerebrospinal fluid leak. • live in special environments or social settings (e.g., adults ages 50–64 years who are Alaska Natives or certain American Indian populations if recommended by local health authorities). 4. Vaccinate persons ages 2–64 years with functional or anatomic asplenia (including persons with sickle cell disease or splenectomy patients). 5. Vaccinate immunocompromised persons age 2 years and older, including those with HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure (including dialysis patients), or nephrotic syndrome; those receiving immunosuppressive therapy (including long-term systemic corticosteroids); and those who have received an organ or bone marrow transplant.	A one-time revaccination is indicated for • All adults age 65 years and older who were previously vaccinated with PPSV prior to age 65 years if 5 years (or more) have elapsed since the previous dose. • All children and adults who are at highest risk of serious pneumococcal disease or are likely to have a rapid decline in pneumococcal antibody levels (categories 4 and 5 to the left) if 5 years (or more) have elapsed since the previous dose.

Technical content reviewed by the Centers for Disease Control and Prevention, September 2009.

www.immunize.org/catg.d/p2015.pdf • Item #P2015 (9/09)

Give the birth dose . . .

Hepatitis B vaccine at birth saves lives!

*By **Deborah L. Wexler, MD,** Executive Director, Immunization Action Coalition*

*In December 2005, CDC issued updated recommendations on hepatitis B vaccination (HepB) for infants. The recommendations strongly support (1) giving the HepB birth dose to every newborn prior to hospital discharge and (2) using standardized admission orders for administering the birth dose. In addition, it is recommended that a copy of the **original** maternal hepatitis B lab report be sent to the hospital—**not** a transcribed result. The recommendations also state that the HepB birth dose may be delayed until after hospital discharge only "in rare circumstances." When doing so, a physician's order to withhold the birth dose and a copy of the original lab report indicating that the mother was HBsAg negative during this pregnancy should be placed in the infant's medical record. The latest CDC estimates indicate only 55% of newborns receive the HepB birth dose by 3 days of age. Clearly, there is much work left to do to fully protect newborns.*

Healthcare professionals!

Urge your patients to protect their newborns with hepatitis B vaccine before hospital discharge. Your recommendation to vaccinate is a strong patient motivator!

The HepB birthdose saves lives!

To obtain CDC's recommendations for hepatitis B immunization of infants, children, and adolescents, go to: www.cdc.gov/mmwr/pdf/rr/rr5416.pdf

Leading health organizations—CDC, AAP, AAFP, and ACOG—recommend that all hospitals and healthcare professionals protect newborns from hepatitis B virus (HBV) infection by administering the first dose of hepatitis B vaccine (HepB) to every baby at birth, no later than hospital discharge.

Approximately 24,000 women with chronic HBV infection give birth in the U.S. each year, and many do not know they are infected. Up to 95% of perinatal infections can be prevented by postexposure prophylaxis given within 12 hours of birth. Tragically, many babies are exposed to HBV at birth and do not receive appropriate postexposure prophylaxis. Infants infected at birth have a greater than 90% chance of becoming chronically infected with HBV. Chronic HBV infection in infants leads to liver cancer, cirrhosis, and liver failure in 25% of these infants when they become adults.

Why is a universal birth dose policy necessary in hospitals?

Following are some of the ways newborns can be infected if they do not receive a dose of hepatitis B vaccine, ideally within 12 hours of birth:

- The pregnant woman is tested and found to be hepatitis B surface antigen (HBsAg) positive, but her "infected" status is not communicated to the newborn nursery. The infant receives neither HepB nor HBIG protection at birth.
- A chronically infected pregnant woman receives the wrong test. For example, antibody to hepatitis B surface antigen (antiHBs) is ordered in error, instead of HBsAg. This can happen because some labs use the confusing abbreviation HBsAb instead of anti-HBs. This misordering of a test is relatively common since the two abbreviations (HBsAg and HBsAb) differ by only one letter. However, when her incorrectly ordered test comes back "negative," the woman may actually be HBsAg positive and her infant would not receive appropriate postexposure prophylaxis.
- The pregnant woman is HBsAg positive, but her test results are misinterpreted or mistranscribed into her prenatal record or her infant's chart. As a result, her infant does not receive HBIG or HepB.
- The pregnant woman is not tested for HBsAg either prenatally or in the hospital at the time of delivery. In one study, women who didn't receive prenatal care were eight times more likely to be HBsAg positive than women who received prenatal care. When a woman does not receive prenatal care and is not tested at the time of delivery, her infant is in danger of being infected with HBV at birth—unless he or she is born in a hospital that adheres to a policy of administering HepB within 12–24 hours of birth to every newborn ***without fail.*** This provides the greatest effectiveness in preventing HBV infection.
- She develops HBV infection later in pregnancy, but it is not clinically detected. Because her initial HBsAg test result is negative, she is not retested later in pregnancy as CDC recommends for high-risk women, and her infant does not receive HepB or HBIG at birth.
- The mother is HBsAg negative, but the infant is exposed to HBV postnatally from another family member or caregiver. This occurs in two-thirds of the cases of childhood transmission.

State perinatal hepatitis B coordinators provided hundreds of reports of newborns who were unprotected or inadequately protected because of medical errors.

In 2001, 2002, and 2008, the Immunization Action Coalition surveyed perinatal hepatitis B coordinators at every state health department, as well as at city and county CDC projects to assess their views about providing hepatitis B vaccine in the hospital. Their responses contained hundreds of reports of newborns who were unprotected or inadequately protected because healthcare professionals failed to order or misordered hepatitis B blood tests or misinterpreted, mistranscribed, or miscommunicated the test results of the children's mothers (see www.immunize.org/catg.d/p2062.pdf).

These state coordinators' reports tell us that no matter how well healthcare providers think they are doing in screening all pregnant women for HBsAg, mistakes continue to occur. Newborns are are unnecessarily being exposed without the benefit of postexposure prophylaxis. At least one baby has died of fulminant hepatitis B; hundreds have become chronically infected and are doomed to preventable hepatocellular carcinoma or cirrhosis later in life. To overcome these failures, perinatal hepatitis B coordinators overwhelmingly endorse providing a HepB birth dose as the first step in developing a safety net to protect all infants from HBV infection, regardless of the circumstances.

To maximally protect every newborn, CDC, AAP, AAFP, and ACOG recommend ***all*** infants be vaccinated with a HepB birth dose prior to hospital discharge. Delaying hepatitis B vaccination until a follow-up office visit will be too late to prevent perinatal HBV transmission.*

State perinatal hepatitis B coordinators surveyed overwhelmingly endorsed providing the birth dose.

HepB is a highly effective vaccine. Studies have shown that infants of the most highly infectious mothers (women who are both HBsAg and HBeAg positive) who receive postexposure prophylaxis with HepB alone (without HBIG) at birth are protected in 70%–95% of cases. Please read the hepatitis coordinators' survey results (www.immunize.org/birthdose), including descriptions of their experiences with failures of the system—failures that largely will be prevented by administering HepB to infants before they go home from the hospital, ideally within 12 hours of birth.

Your support for providing a birth dose to newborns while they are still in the hospital will protect and save lives that are now being put at risk. ♦

*For subsequent doses of hepatitis B vaccine (HepB) in infants, use monovalent HepB or hepatitis B-containing combination vaccines. If using hepatitis B-containing combination vaccines, you will be giving 3 more doses of HepB. Giving a total of 4 doses of HepB to infants is acceptable practice to CDC, AAP, and AAFP. These vaccine doses are covered under the Vaccines For Children (VFC) program for VFC-eligible children.

www.immunize.org/catg.d/p2125.pdf • Item #P2125 (9/09)

Summary of Recommendations for Childhood and Adolescent Immunization

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Hepatitis B (HepB) *Give IM*	• Vaccinate all children age 0 through 18yrs. • Vaccinate all newborns with monovalent vaccine prior to hospital discharge. Give dose #2 at age 1–2m and the final dose at age 6–18m (the last dose in the infant series should not be given earlier than age 24wks). After the birth dose, the series may be completed using 2 doses of single-antigen vaccine or up to 3 doses of Comvax (ages 2m, 4m, 12–15m) or Pediarix (ages 2m, 4m, 6m), which may result in giving a total of 4 doses of hepatitis B vaccine. • **If mother is HBsAg-positive:** give the newborn HBIG + dose #1 within 12hrs of birth; complete series at age 6m or, if using Comvax, at age 12–15m. • **If mother's HBsAg status is unknown:** give the newborn dose #1 within 12hrs of birth. If mother is subsequently found to be HBsAg positive, give infant HBIG within 7d of birth and follow the schedule for infants born to HBsAg-positive mothers.	• Do not restart series, no matter how long since previous dose. • 3-dose series can be started at any age. • Minimum intervals between doses: 4wks between #1 and #2, 8wks between #2 and #3, and at least 16wks between #1 and #3 (e.g., 0-, 2-, 4m; 0-, 1-, 4m).	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
DTaP, DT (Diphtheria, tetanus, acellular pertussis) *Give IM*	• Give to children at ages 2m, 4m, 6m, 15–18m, 4–6yrs. • May give dose #1 as early as age 6wks. • May give #4 as early as age 12m if 6m have elapsed since #3 and the child is unlikely to return at age 15–18m. • Do not give DTaP/DT to children age 7yrs and older. • If possible, use the same DTaP product for all doses.	• #2 and #3 may be given 4wks after previous dose. • #4 may be given 6m after #3. • If #4 is given before 4th birthday, wait at least 6m for #5 (age 4–6yrs). • If #4 is given after 4th birthday, #5 is not needed.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • For DTaP/Tdap only: encephalopathy within 7d after DTP/DTaP. **Precautions** • Moderate or severe acute illness. • History of Arthus reaction following a prior dose of tetanus- and/or diphtheria-toxoid-containing vaccine, including MCV4. • Guillain-Barré syndrome (GBS) within 6wks after previous dose of tetanus-toxoid-containing vaccine. • For DTaP only: Any of these events following a previous dose of DTP/DTaP: 1) temperature of 105°F (40.5°C) or higher within 48hrs; 2) continuous crying for 3hrs or more within 48hrs; 3) collapse or shock-like state within 48hrs; 4) convulsion with or without fever within 3d. • For DTaP/Tdap only: Unstable neurologic disorder. **Note:** Tdap may be given to pregnant women at the provider's discretion.
Td, Tdap (Tetanus, diphtheria, acellular pertussis) *Give IM*	• Give 1-time Tdap dose to adolescents age 11–12yrs if 5yrs have elapsed since last dose DTaP; then boost every 10yrs with Td. • Give 1-time dose of Tdap to all adolescents who have not received previous Tdap. Special efforts should be made to give Tdap to persons age 11yrs and older who are 1) in contact with infants younger than age 12m and 2) healthcare workers with direct patient contact. • In pregnancy, when indicated, give Td or Tdap in 2nd or 3rd trimester. If not administered during pregnancy, give Tdap in immediate postpartum period.	• If never vaccinated with tetanus- and diphtheria-containing vaccine: give Td dose #1 now, dose #2 4wks later, and dose #3 6m after #2, then give booster every 10yrs. A 1-time Tdap may be substituted for any dose in the series, preferably as dose #1. For persons who previously received a Td booster, an interval of 2yrs or less between Td and Tdap may be used.	
Polio (IPV) *Give SC or IM*	• Give to children at ages 2m, 4m, 6–18m, 4–6yrs. • May give dose #1 as early as age 6wks. • Not routinely recommended for U.S. residents age 18yrs and older (except certain travelers).	• The final dose should be given on or after the 4th birthday and at least 6m from the previous dose. • If dose #3 is given after 4th birthday, dose #4 is not needed if dose #3 is given at least 6m after dose #2.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.
Human papillomavirus (HPV) *Give IM*	• Give 3-dose series to girls at age 11–12yrs on a 0, 2, 6m schedule. (May be given as early as age 9yrs.) • Vaccinate all older girls and women (through age 26yrs) who were not previously vaccinated.	Minimum intervals between doses: 4wks between #1 and #2; 12 wks between #2 and #3. Overall, there must be at least 24wks between doses #1 and #3.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.

Special Notes on Hepatitis B Vaccine (HepB)

Dosing of HepB: Monovalent vaccine brands are interchangeable. For persons age 0 through 19yrs, give 0.5 mL of either Engerix-B or Recombivax HB.

Alternative dosing schedule for unvaccinated adolescents age 11 through 15yrs: Give 2 doses Recombivax HB 1.0 mL (adult formulation) spaced 4–6m apart. (Engerix-B is not licensed for a 2-dose schedule.)

For preterm infants: Consult ACIP hepatitis B recommendations (*MMWR* 2005; 54 [RR-16]).*

*This document was adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP). To obtain copies of the recommendations, call the CDC-INFO Contact Center at (800) 232-4636; visit CDC's website at www.cdc.gov/vaccines/pubs/ACIP-list.htm; or visit the Immunization Action Coalition (IAC) website at www.immunize.org/acip. This table is revised periodically. Visit IAC's website at www.immunize.org/childrules to make sure you have the most current version.

Technical content reviewed by the Centers for Disease Control and Prevention, September 2009.

www.immunize.org/catg.d/p2010.pdf • Item #P2010 (9/09)

Summary of Recommendations for Childhood and Adolescent Immunization

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccine administration and related issues	Contraindications and precautions (mild illness is not a contraindication)
Varicella (Var) (Chickenpox) *Give SC*	• Give dose #1 at age 12–15m. • Give dose #2 at age 4–6yrs. Dose #2 may be given earlier if at least 3m since dose #1. • Give a 2nd dose to all older children and adolescents with history of only 1 dose. • MMRV may be used in children age 12m through 12yrs.	• If younger than age 13yrs, space dose #1 and #2 at least 3m apart. If age 13yrs or older, space at least 4wks apart. • May use as postexposure prophylaxis if given within 5d. • If Var and either MMR, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Children on high-dose immunosuppressive therapy or who are immunocompromised because of malignancy and primary or acquired cellular immunodeficiency, including HIV/AIDS (although vaccination may be considered if CD4+ T-lymphocyte percentages are either 15% or greater in children ages 1 through 8yrs or 200 cells/μL or greater in children age 9yrs and older). **Precautions** • Moderate or severe acute illness. • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating. **Note:** For patients with humoral immunodeficiency or leukemia, see ACIP recommendations*.
MMR (Measles, mumps, rubella) *Give SC*	• Give dose #1 at age 12–15m. • Give dose #2 at age 4–6yrs. Dose #2 may be given earlier if at least 4wks since dose #1. • Give a 2nd dose to all older children and teens with history of only 1 dose. • MMRV may be used in children age 12m through 12yrs.	• If MMR and either Var, LAIV, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart. • When using MMR for both doses, minimum interval is 4wks. • When using MMRV for both doses, minimum interval is 3m. • Within 72hrs of measles exposure, give 1 dose of MMR as postexposure prophylaxis to susceptible healthy children age 12m and older.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Severe immunodeficiency (e.g., hematologic and solid tumors; receiving chemotherapy; congenital immunodeficiency; long-term immunosuppressive therapy, or severely symptomatic HIV). Note: HIV infection is NOT a contraindication to MMR for children who are not severely immunocompromised (consult ACIP MMR recommendations [*MMWR* 1998;47 [RR-8] for details*). **Precautions** • Moderate or severe acute illness. • If blood, plasma, or immune globulin given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating. • History of thrombocytopenia or thrombocytopenic purpura. **Note:** MMR is not contraindicated if a TST (tuberculosis skin test) was recently applied. If TST and MMR are not given on same day, delay TST for at least 4wks after MMR.
Seasonal Influenza Trivalent inactivated influenza vaccine (TIV) *Give IM* Live attenuated influenza vaccine (LAIV) *Give intranasally*	• Vaccinate all children and teens age 6m through 18yrs. • Special efforts should be made to vaccinate the following children, teens, and persons age 19yrs and older because they are at higher risk for influenza complications: those ages 6 through 59m; on long-term aspirin therapy (through age 18yrs); with pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, cognitive, neurologic/neuromuscular, hematologic, or metabolic (including diabetes) disorders; with immunosuppression (including that caused by medications or HIV); residing in long-term care facilities; who will be pregnant during influenza season. • Vaccinate children, teens, and adults who are household contacts, out-of-home caregivers, or workplace contacts of the persons listed in bullet #2 above; or of children age 0–59m; or of adults age 50yrs and older. • LAIV may be given to healthy, non-pregnant persons age 2–49yrs. • Give 2 doses to first-time vaccinees age 6m through 8yrs, spaced 4wks apart. • For TIV, give 0.25 mL dose to children age 6–35m and 0.5 mL dose if age 3yrs and older.		**Contraindications** • Previous anaphylaxis to this vaccine, to any of its components, or to eggs. • For LAIV only: age younger than 2yrs; pregnancy; chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, neurological/neuromuscular, hematologic, or metabolic (including diabetes) disorders; immunosuppression (including that caused by medications or HIV); for children and teens ages 6m through 18yrs, current long-term aspirin therapy; for children age 2 through 4yrs, wheezing or asthma within the past 12m, per healthcare provider statement. **Precautions** • Moderate or severe acute illness. • History of Guillain-Barré syndrome (GBS) within 6wks of a previous influenza vaccination. • For LAIV only: close contact with an immunosuppressed person when the person requires protective isolation. **Note:** If LAIV and either MMR, Var, and/or yellow fever vaccine are not given on the same day, space them at least 28d apart.
Rotavirus (RV) *Give orally*	• Rotarix (RV1): give at age 2m, 4m. • RotaTeq (RV5): give at age 2m, 4m, 6m. • May give dose #1 as early as age 6wks. • Give final dose no later than age 8m 0 days.	• Do not begin series in infants older than age 15wks 0 days. • Intervals between doses may be as short as 4wks. • If prior vaccination included use of different or unknown brand(s), a total of 3 doses should be given.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. If allergy to latex, use RV5. **Precautions** • Moderate or severe acute illness. • Altered immunocompetence. • Moderate to severe acute gastroenteritis or chronic gastrointestinal disease. • History of intussusception.

Summary of Recommendations for Childhood and Adolescent Immunization

Vaccine name and route	Schedule for routine vaccination and other guidelines (any vaccine can be given with another)	Schedule for catch-up vaccination and related issues	Contraindications and precautions (mild illness is not a contraindication)
Hib (*Haemophilus influenzae* type b) *Give IM*	• ActHib (PRP-T): give at age 2m, 4m, 6m, 12–15m (booster dose). • PedvaxHIB or Comvax (containing PRP-OMP): give at age 2m, 4m, 12–15m (booster dose). • Dose #1 of Hib vaccine should not be given earlier than age 6wks. • The last dose (booster dose) is given no earlier than age 12m and a minimum of 8wks after the previous dose. • Hib vaccines are interchangeable; however, if different brands of Hib vaccines are administered for dose #1 and dose #2, a total of 3 doses are necessary to complete the primary series in infants. • Any Hib vaccine may be used for the booster dose. • Hib is not routinely given to children age 5yrs and older. • Hiberix is approved ONLY for the booster dose at age 15m through 4yrs.	**All Hib vaccines:** • If #1 was given at 12–14m, give booster in 8wks. • Give only 1 dose to unvaccinated children ages 15 through 59m. **ActHib:** • #2 and #3 may be given 4wks after previous dose. • If #1 was given at age 7–11m, only 3 doses are needed; #2 is given 4–8wks after #1, then boost at age 12–15m (wait at least 8wks after dose #2). **PedvaxHIB and Comvax:** • #2 may be given 4wks after dose #1.	**Contraindications** • Previous anaphylaxis to this vaccine or to any of its components. • Age younger than 6wks. **Precaution** Moderate or severe acute illness.
Pneumococcal conjugate (PCV) *Give IM*	• Give at ages 2m, 4m, 6m, 12–15m. • Dose #1 may be given as early as age 6wks. • Give 1 dose to unvaccinated healthy children age 24–59m. • High-risk** children ages 24–59m: Give 2 doses at least 8wks apart if they previously received fewer than 3 doses; give 1 dose if they previously received 3 doses. • PCV is not routinely given to children age 5yrs and older. ****High-risk:** Those with sickle cell disease; anatomic/functional asplenia; chronic cardiac, pulmonary, or renal disease; diabetes; cerebrospinal fluid leaks; HIV infection; immunosuppression; diseases associated with immunosuppressive and/or radiation therapy; or who have or will have a cochlear implant.	• For age 7–11m: If history of 0–2 doses, give additional doses 4wks apart with no more than 3 total doses by age 12m; then give booster 8wks later. • For age 12–23m: If 0–1 dose before age 12m, give 2 doses at least 8wks apart. If 2–3 doses before age 12m, give 1 dose at least 8wks after previous dose. • For age 24–59m: If patient has had no previous doses, or has a history of 1–3 doses given before age 12m but no booster dose, or has a history of only 1 dose given at age 12–23m, give 1 dose now.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Pneumococcal polysaccharide (PPSV) *Give IM or SC*	• Give 1 dose at least 8wks after final dose of PCV to high-risk children age 2yrs and older. • For children who are immunocompromised or have sickle cell disease or functional or anatomic asplenia, give a 2nd dose of PPSV 5yrs after previous PPSV (consult ACIP PPSV recommendations at http://www.cdc.gov/vaccines/pubs/ACIP-list.htm*).		**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Hepatitis A (HepA) *Give IM*	• Give 2 doses to all children at age 1yr (12–23m) spaced 6m apart. • Vaccinate all previously unvaccinated children and adolescents age 2yrs and older who - Wish to be protected from HAV infection. - Live in areas where vaccination programs target older children. - Travel anywhere except U.S., W. Europe, N. Zealand, Australia, Canada, or Japan. - Have chronic liver disease, clotting factor disorder, or are MSM adolescents. - Are users of illicit drugs (injectable or non-injectable). - Anticipate close personal contact with an international adoptee from a country of high or intermediate endemicity during the first 60 days following the adoptee's arrival in the U.S.	• Minimum interval between doses is 6m. • Children who are not fully vaccinated by age 2yrs can be vaccinated at subsequent visits. • Consider routine vaccination of children age 2yrs and older in areas with no existing program. • Give 1 dose as postexposure prophylaxis to incompletely vaccinated children age 12m and older who have recently (during the past 2wks) been exposed to hepatitis A virus.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.
Meningococcal conjugate (MCV4) *Give IM* — **polysaccharide** (MPSV4) *Give SC*	• Give 1-time dose of MCV4 to adolescents age 11 through 18yrs. • Vaccinate all college freshmen living in dorms who have not been vaccinated. • Vaccinate all children age 2yrs and older who have any of the following risk factors: - Anatomic or functional asplenia, or persistent complement component deficiency. - Travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of Sub-Saharan Africa). **Note:** Use MPSV4 ONLY if there is a permanent contraindication or precaution to MCV4.	If previously vaccinated with MPSV4 or MCV4 and risk of meningococcal disease persists, revaccinate with MCV4 after 3 years (if first dose given at age 2 through 6 yrs) or after 5 yrs (if previous dose given at age 7 yrs or older). If the only risk factor is living in a campus dormitory, there is no need to give a 2nd dose.	**Contraindication** Previous anaphylaxis to this vaccine or to any of its components, including diphtheria toxoid (for MCV4). **Precautions** • Moderate or severe acute illness. • For MCV4 only: history of Guillain-Barré syndrome (GBS).

Summary of Recommendations for Adult Immunization

Vaccine name and route	For whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Seasonal Influenza Trivalent inactivated influenza vaccine (TIV) *Give IM* Live attenuated influenza vaccine (LAIV) *Give intranasally*	• Vaccinate all persons who want to reduce the risk of becoming ill with influenza or spreading it to others. • Special efforts should be made to vaccinate the following persons because they are at higher risk for influenza complications: those who are ages 50yrs and older; have pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, cognitive, neurologic/neuromuscular, hematologic, or metabolic (including diabetes) disorders; have immunosuppression (including that caused by medications or HIV); will be pregnant during influenza season; residing in long-term care facilities. • Vaccinate adults, children, and teens who are household contacts, caregivers, or workplace contacts of the persons listed in bullet #2 above or of children age 0–59m. • Vaccinate healthcare personnel. • Travelers to the tropics, to areas with current influenza activity, or on trips with people from areas with current influenza activity (e.g., on organized tours) should consider vaccination. • Vaccinate students or other persons in institutional settings (e.g., dormitories, correctional facilities). **Note:** LAIV may not be given to some of the persons listed to the left; see contraindications listed in far right column.	• Give 1 dose every year in the fall or winter. • Begin vaccination services as soon as vaccine is available and continue until the supply is depleted. • Continue to give vaccine to unvaccinated adults throughout the influenza season (including when influenza activity is present in the community) and at other times when the risk of influenza exists. • If 2 or more of the following live virus vaccines are to be given—LAIV, MMR, Var, Zos, and/or yellow fever vaccine—they should be given on the same day. If they are not, space them by at least 28d.	**Contraindications** • Previous anaphylactic reaction to this vaccine, to any of its components, or to eggs. • For LAIV only: age 50yrs and older; pregnancy; chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, neurological/neuromuscular, hematologic, or metabolic (including diabetes) disorders; immunosuppression (including that caused by medications or HIV). **Precautions** • Moderate or severe acute illness. • History of Guillain-Barré syndrome (GBS) within 6wks of previous influenza vaccination. • For LAIV only: close contact with an immunosuppressed person when the person requires protective isolation.
Pneumococcal poly-saccharide (PPSV) *Give IM or SC*	• Persons age 65yrs and older. • Persons who have chronic illness or other risk factors, including chronic cardiac or pulmonary disease (including asthma), chronic liver disease, alcoholism, diabetes, CSF leaks, cigarette smoking, as well as people living in special environments or social settings (including Alaska Natives and certain American Indian populations age 50 through 64yrs if recommended by local public health authorities). • Those at highest risk of fatal pneumococcal infection, including persons who - Have anatomic asplenia, functional asplenia, or sickle cell disease. - Have an immunocompromising condition, including HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure, or nephrotic syndrome. - Are receiving immunosuppressive chemotherapy (including corticosteroids). - Have received an organ or bone marrow transplant. - Are candidates for or recipients of cochlear implants.	• Give 1 dose if unvaccinated or if previous vaccination history is unknown. • Give a 1-time revaccination at least 5yrs after 1st dose to persons - Age 65yrs and older if the 1st dose was given prior to age 65yrs - At highest risk of fatal pneumococcal infection or rapid antibody loss (see the 3rd bullet in the box to left for listings of persons at highest risk).	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Zoster (shingles) (Zos) *Give SC*	• Persons age 60yrs and older.	• Give 1-time dose if unvaccinated, regardless of previous history of herpes zoster (shingles) or chickenpox. • If 2 or more of the following live virus vaccines are to be given—MMR, Zos, and/or yellow fever vaccine—they should be given on the same day. If they are not, space them by at least 28d.	**Contraindications** • Previous anaphylactic reaction to any component of zoster vaccine (e.g., gelatin & neomycin). • Primary cellular or acquired immunodeficiency. • Pregnancy. **Precaution** Moderate or severe acute illness.

*This document was adapted from the recommendations of the Advisory Committee on Immunization Practices (ACIP). To obtain copies of these recommendations, call the CDC-INFO Contact Center at (800) 232-4636; visit CDC's website at www.cdc.gov/vaccines/pubs/ACIP-list.htm; or visit the Immunization Action Coalition (IAC) website at www.immunize.org/acip. This table is revised periodically. Visit IAC's website at www.immunize.org/adultrules to make sure you have the most current version.

Technical content reviewed by the Centers for Disease Control and Prevention, September 2009.

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Summary of Recommendations for Adult Immunization (continued)

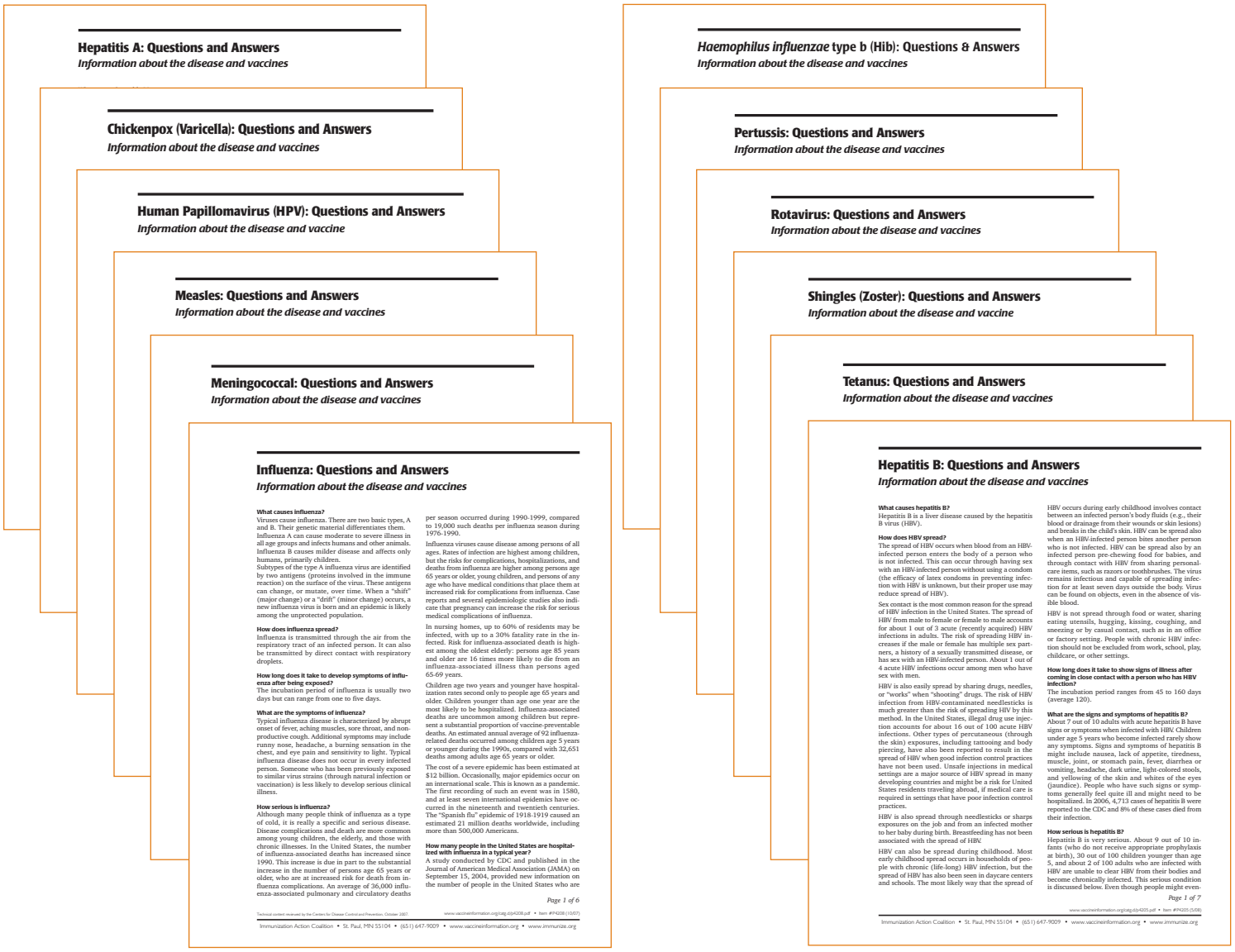
Vaccine name and route	For whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Hepatitis B (HepB) *Give IM* Brands may be used interchangeably.	• All persons through age 18yrs. • All adults wishing to be protected from hepatitis B virus infection. • High-risk persons, including household contacts and sex partners of HBsAg-positive persons; injecting drug users; sexually active persons not in a long-term, mutually monogamous relationship; men who have sex with men; persons with HIV; persons seeking evaluation or treatment for an STD; patients receiving hemodialysis and patients with renal disease that may result in dialysis; healthcare personnel and public safety workers who are exposed to blood; clients and staff of institutions for the developmentally disabled; inmates of long-term correctional facilities; and certain international travelers. • Persons with chronic liver disease. **Note:** Provide serologic screening for immigrants from endemic areas. If patient is chronically infected, assure appropriate disease management. Screen sex partners and household members; give HepB at the same visit if not already vaccinated.	• Give 3 doses on a 0, 1, 6m schedule. • Alternative timing options for vaccination include 0, 2, 4m and 0, 1, 4m. • There must be at least 4wks between doses #1 and #2, and at least 8wks between doses #2 and #3. Overall, there must be at least 16wks between doses #1 and #3. • **Schedule for those who have fallen behind:** If the series is delayed between doses, DO NOT start the series over. Continue from where you left off. For Twinrix (hepatitis A and B combination vaccine [GSK]) for patients age 18yrs and older only: give 3 doses on a 0, 1, 6m schedule. There must be at least 4wks between doses #1 and #2, and at least 5m between doses #2 and #3. An alternative schedule can also be used at 0, 7d, 21–30d, and a booster at 12m.	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precaution** Moderate or severe acute illness.
Hepatitis A (HepA) *Give IM* Brands may be used interchangeably.	• All persons wishing to be protected from hepatitis A virus (HAV) infection. • Persons who travel or work anywhere EXCEPT the U.S., Western Europe, New Zealand, Australia, Canada, and Japan. • Persons with chronic liver disease; injecting and non-injecting drug users; men who have sex with men; people who receive clotting-factor concentrates; persons who work with HAV in experimental lab settings; food handlers when health authorities or private employers determine vaccination to be appropriate. • Persons who anticipate close personal contact with an international adoptee from a country of high or intermediate endemicity during the first 60 days following the adoptee's arrival in the U.S. • Adults age 40yrs or younger with recent (within 2 wks) exposure to HAV. For persons older than age 40yrs with recent (within 2 wks) exposure to HAV, immune globulin is preferred over HepA vaccine.	• Give 2 doses. • The minimum interval between doses #1 and #2 is 6m. • If dose #2 is delayed, do not repeat dose #1. Just give dose #2.	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Safety during pregnancy has not been determined, so benefits must be weighed against potential risk.
Td, Tdap (Tetanus, diphtheria, pertussis) *Give IM*	• All adults who lack written documentation of a primary series consisting of at least 3 doses of tetanus- and diphtheria-toxoid-containing vaccine. • A booster dose of tetanus- and diphtheria-toxoid-containing vaccine may be needed for wound management as early as 5yrs after receiving a previous dose, so consult ACIP recommendations.* • Using tetanus toxoid (TT) instead of Td or Tdap is not recommended. • In pregnancy, when indicated, give Td or Tdap in 2nd or 3rd trimester. If not administered during pregnancy, give Tdap in immediate postpartum period. **For Tdap only:** • All adults younger than age 65yrs who have not already received Tdap. • Adults in contact with infants younger than age 12m (e.g., parents, grandparents younger than age 65yrs, childcare providers, healthcare personnel) who have not received a dose of Tdap should be prioritized for vaccination. • Healthcare personnel who work in hospitals or ambulatory care settings and have direct patient contact and who have not received Tdap.	• For persons who are unvaccinated or behind, complete the primary series with Td (spaced at 0, 1–2m, 6–12m intervals). One-time dose of Tdap may be used for any dose if younger than age 65yrs. • Give Td booster every 10yrs after the primary series has been completed. For adults younger than age 65yrs, a 1-time dose of Tdap is recommended to replace the next Td. • Intervals of 2yrs or less between Td and Tdap may be used. **Note:** The two Tdap products are licensed for different age groups: Adacel (sanofi) for use in persons age 11–64yrs and Boostrix (GSK) for use in persons age 10–64yrs.	**Contraindications** • Previous anaphylactic reaction to this vaccine or to any of its components. • For Tdap only, history of encephalopathy within 7d following DTP/DTaP. **Precautions** • Moderate or severe acute illness. • GBS within 6wks of receiving a previous dose of tetanus-toxoid-containing vaccine. • Unstable neurologic condition. • History of Arthus reaction following a previous dose of tetanus- and/or diphtheria-toxoid-containing vaccine, including MCV4. **Note:** Tdap may be given to pregnant women at the provider's discretion.
Polio (IPV) *Give IM or SC*	• Not routinely recommended for U.S. residents age 18yrs and older. **Note:** Adults living in the U.S. who never received or completed a primary series of polio vaccine need not be vaccinated unless they intend to travel to areas where exposure to wild-type virus is likely. Previously vaccinated adults can receive 1 booster dose if traveling to polio endemic areas or to areas where the risk of exposure is high.	• Refer to ACIP recommendations* regarding unique situations, schedules, and dosing information.	**Contraindication** Previous anaphylactic or neurologic reaction to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Pregnancy.

Summary of Recommendations for Adult Immunization (continued)

Vaccine name and route	For whom vaccination is recommended	Schedule for vaccine administration (any vaccine can be given with another)	Contraindications and precautions (mild illness is not a contraindication)
Varicella (Var) (Chickenpox) *Give SC*	• All adults without evidence of immunity. **Note:** Evidence of immunity is defined as written documentation of 2 doses of varicella vaccine; a history of varicella disease or herpes zoster (shingles) based on healthcare-provider diagnosis; laboratory evidence of immunity; and/or birth in the U.S. before 1980, with the exceptions that follow. Healthcare personnel (HCP) and pregnant women born in the U.S. before 1980 who do not meet any of the criteria above should be tested. If they are not immune, give the 1st dose of varicella vaccine immediately (HCP) or postpartum and before hospital discharge (pregnant women). Give the 2nd dose 4–8 wks later. Routine post-vaccination serologic testing is not recommended.	• Give 2 doses. • Dose #2 is given 4–8wks after dose #1. • If dose #2 is delayed, do not repeat dose #1. Just give dose #2. • If 2 or more of the following live virus vaccines are to be given—LAIV, MMR, Var, Zos, and/or yellow fever vaccine—they should be given on the same day. If they are not, space them by at least 28d. • May use as postexposure prophylaxis if given within 5d.	**Contraindications** • Previous anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Persons on high-dose immunosuppressive therapy or who are immunocompromised because of malignancy and primary or acquired cellular immunodeficiency, including HIV/AIDS (although vaccination may be considered if CD4+ T-lymphocyte counts are greater than or equal to 200 cells/µL. See *MMWR* 2007;56,RR-4). **Precautions** • Moderate or severe acute illness. • If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating.
Meningococcal Conjugate vaccine (MCV4) *Give IM* — Polysaccharide vaccine (MPSV4) *Give SC*	• All persons age 11 through 18yrs. • College freshmen living in a dormitory. • Persons with anatomic or functional asplenia or with a persistent complement component deficiency. • Persons who travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of Sub-Saharan Africa). • Microbiologists routinely exposed to isolates of *N. meningitidis.*	• Give 1 dose. • If previous vaccine was MCV4 or MPSV4, revaccinate after 5yrs if risk continues. • MCV4 is preferred over MPSV4 for persons age 55yrs and younger; use MPSV4 ONLY if there is a permanent contraindication/precaution to MCV4. • If the only risk factor is living in a campus dormitory, there is no need to give a 2nd dose.	**Contraindication** Previous anaphylactic or neurologic reaction to this vaccine or to any of its components, including diphtheria toxoid (for MCV4). **Precautions** • Moderate or severe acute illness. • For MCV4 only, history of Guillain-Barré syndrome (GBS).
MMR (Measles, mumps, rubella) *Give SC*	• Persons born in 1957 or later (especially those born outside the U.S.) should receive at least 1 dose of MMR if there is no laboratory evidence of immunity or documentation of a dose given on or after the first birthday. • Persons in high-risk groups, such as healthcare personnel (paid, unpaid, or volunteer), students entering college and other post–high school educational institutions, and international travelers, should receive a total of 2 doses. • Persons born before 1957 are usually considered immune, but evidence of immunity (serology or history of 2 doses of MMR) should be considered for healthcare personnel. • Women of childbearing age who do not have acceptable evidence of rubella immunity or vaccination. **Note:** Routine post-vaccination serologic testing is not recommended.	• Give 1 or 2 doses (see criteria in 1st and 2nd bullets in box to left). • If dose #2 is recommended, give it no sooner than 4wks after dose #1. • If a pregnant woman is found to be rubella susceptible, give 1 dose of MMR postpartum. • If 2 or more of the following live virus vaccines are to be given—LAIV, MMR, Var, Zos, and/or yellow fever vaccine—they should be given on the same day. If they are not, space them by at least 28d. • Within 72hrs of measles exposure, give 1 dose as postexposure prophylaxis to susceptible adults.	**Contraindications** • Previous anaphylactic reaction to this vaccine or to any of its components. • Pregnancy or possibility of pregnancy within 4wks. • Severe immunodeficiency (e.g., hematologic and solid tumors; receiving chemotherapy; congenital immunodeficiency; long-term immunosuppressive therapy; or severely symptomatic HIV.) **Note:** HIV infection is NOT a contraindication to MMR for those who are not severely immunocompromised (i.e., CD4+ T-lymphocyte counts are greater than or equal to 200 cells/µL). **Precautions** • Moderate or severe acute illness. • If blood, plasma, and/or immune globulin were given in past 11m, see ACIP statement *General Recommendations on Immunization** regarding time to wait before vaccinating. • History of thrombocytopenia or thrombocytopenic purpura. **Note:** If TST (tuberculosis skin test) and MMR are both needed but not given on same day, delay TST for 4–6wks after MMR.
Human papillomavirus (HPV) *Give IM*	• All previously unvaccinated women through age 26yrs.	• Give 3 doses on a 0, 2, 6m schedule. • There must be at least 4wks between doses #1 and #2 and at least 12wks between doses #2 and #3. Overall, there must be at least 24wks between doses #1 and #3.	**Contraindication** Previous anaphylactic reaction to this vaccine or to any of its components. **Precautions** • Moderate or severe acute illness. • Data on vaccination in pregnancy are limited. Vaccination should be delayed until after completion of the pregnancy.

IAC's Q&As on Diseases and Vaccines

These materials are ready for you to copy and hand out to patients



Chickenpox Q&As: www.immunize.org/catg.d/p4202.pdf
Diphtheria Q&As: www.immunize.org/catg.d/p4203.pdf
Hepatitis A Q&As: www.immunize.org/catg.d/p4204.pdf
Hepatitis B Q&As: www.immunize.org/catg.d/p4205.pdf
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HPV Q&As: www.immunize.org/catg.d/p4207.pdf
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Measles Q&As: www.immunize.org/catg.d/p4209.pdf
Meningococcal Q&As: www.immunize.org/catg.d/p4210.pdf

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Pneumococcus Q&As: www.immunize.org/catg.d/p4213.pdf
Polio Q&As: www.immunize.org/catg.d/p4215.pdf
Rabies Q&As: www.immunize.org/catg.d/p4216.pdf
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IAC's "Ask the Experts" team

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spaced after the invalid dose by the recommended minimum interval. You can look up minimum ages and intervals here: www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/A/age-interval-table.pdf.

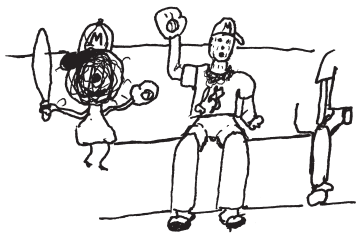
What vaccines are indicated for someone who has had a splenectomy, and is there concern that they may have a less than optimum response to vaccines?

Regarding which vaccines are indicated: People who do not have a functioning spleen or who have had a splenectomy do not handle encapsulated bacteria well and, therefore, are at increased risk for infection with encapsulated bacteria, especially *Neisseria meningitidis, Streptococcus pneumoniae,* and *Haemophilus influenzae* type b. They should be vaccinated with age-appropriate pneumococcal, meningococcal, and possibly Hib vaccines.

Regarding immune response to vaccines: Immunosuppression is not an issue unless the patient has other health issues or treatments that are suppressing the immune system. Their response to vaccination should not be affected by the lack of a functioning spleen.

In addition to receiving their routine vaccinations, children and adults without a functioning spleen who are age 2 years and older should receive 1 dose of pneumococcal polysaccharide vaccine (PPSV) and 1 dose of meningococcal conjugate vaccine (MCV4). However, if the person is age 56 years or older, give meningococcal polysaccharide vaccine (MPSV4). If the person is a child age 2 through 4 years who has recently been vaccinated with pneumococcal conjugate vaccine (PCV7), wait at least 2 months following PCV before giving PPSV. Although *Haemophilus influenzae* type b (Hib) vaccine generally is not recommended for people age 5 years and older, studies suggest good immunogenicity in patients who have had a splenectomy. Giving 1 pediatric dose of Hib vaccine to these patients who have not previously received Hib vaccine is not contraindicated. Ideally, PPSV, meningococcal, and Hib vaccines should be administered at least 2 weeks before a scheduled splenectomy, if possible. If vaccines are not administered before surgery, they should be administered as soon as the person's condition stabilizes post-operatively.

How do you stay cool at a ball game?



Sit next to a fan!

Seasonal & H1N1 influenza

In anticipation of H1N1 monovalent vaccine arriving later this fall, CDC recommends that we begin vaccinating with seasonal influenza vaccine now. Does protection from seasonal influenza vaccine decline or wane within 3 or 4 months of vaccination? Should I wait until October or November to vaccinate my elderly or medically frail patients?

CDC recommends that seasonal influenza vaccine be administered to all age groups as soon as it becomes available. Antibody to seasonal inactivated influenza vaccine declines in the months following vaccination. However, antibody level at a point several months after vaccination does not necessarily correlate with clinical vaccine effectiveness. There are no studies that compare vaccine effectiveness according to the month when the vaccination was given. The authors of a recent review on antibody declines among the elderly after vaccination reported, "In conclusion, we found no compelling evidence for more rapid decline of the influenza vaccine-induced antibody response in the elderly, compared with young adults, or evidence that seroprotection is lost at 4 months if it has been initially achieved after immunization." (See Skowronski, et al., Rapid Decline of Influenza Vaccine-Induced Antibody in the Elderly: Is it Real, or Is It Relevant? *Journal of Infectious Diseases* 2008;197:490-502). In addition, there is a lack of evidence for late-season outbreaks among vaccinated persons that can be attributed to waning immunity.

Will we be able to administer both the seasonal and H1N1 influenza vaccines at the same visit?

You can in most cases. See the points below.

- You can administer both the inactivated seasonal and the inactivated H1N1 influenza vaccines at the same visit (using separate syringes and sites) or at any time before or after each other.
- You can administer the inactivated seasonal and live H1N1 influenza vaccines together or at any time before or after each other.
- You can administer the live seasonal and inactivated H1N1 influenza vaccines together or at any time before or after each other.
- Administering both the live attenuated seasonal and the live attenuated H1N1 influenza vaccines at the same visit is NOT recommended because of concerns about competition between the 2 vaccine viruses. If you have only live vaccines for both seasonal and H1N1 influenza available, you should separate the doses of the live vaccines by at least 4 weeks.

How long after someone is vaccinated with seasonal live attenuated influenza vaccine (LAIV) must they stay away from a severely immunosuppressed person (a person who is in protective [reverse] isolation)?

Persons vaccinated with LAIV should avoid contact with any person who is severely immunosuppressed for at least 7 days after receiving LAIV. There are no restrictions on being in contact with any other patients.

When will vaccine for the 2009 H1N1 influenza virus be available?

CDC estimates that approximately 45 million doses of H1N1 influenza vaccine will be available in mid-October. CDC anticipates that approximately 20 million additional doses will be released in each subsequent week. Keep in mind that vaccine availability is driven by a number of variables in the manufacturing process. Once vaccine is available, vaccination should begin immediately.

Is the 2009 H1N1 influenza vaccine experimental?

No. H1N1 influenza vaccine will be available in an inactivated, injectable formulation and a nasal-spray, live attenuated formulation. Neither is an experimental vaccine. The 2009 H1N1 influenza vaccines are made employing the same methods and facilities used annually to produce seasonal influenza vaccine. The vaccines are undergoing additional clinical trials at this time to determine the size of the dose and the number of doses that will be needed for protection.

(continued on page 20)

Needle Tips correction policy

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Once a 2009 H1N1 influenza vaccine becomes available, who will be targeted to receive the vaccine?

On Aug. 28, 2009, CDC issued recommendations for the use of the 2009 H1N1 influenza vaccine. The recommendations identify 5 initial target groups for H1N1 influenza vaccination. They are (1) pregnant women; (2) people who live with or provide care for infants younger than age 6 months (e.g., parents, siblings, day care providers); (3) healthcare and emergency medical services personnel; (4) children and young adults ages 6 months through 24 years; and (5) people ages 25 through 64 years who have medical conditions that put them at higher risk for influenza-related complications. You can access the complete recommendations at www.cdc.gov/mmwr/pdf/rr/rr5810.pdf.

Why are pregnant women prioritized for vaccination?

Data from early 2009 H1N1 influenza cases in the United States show that pregnant women account for a disproportionate number of deaths, making them a high-priority group for vaccination (see www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)61304-0/abstract). Also, guidance has been issued for clinicians to promptly treat pregnant women who become infected with the 2009 H1N1 virus with antiviral drugs (see www.cdc.gov/h1n1flu/clinician_pregnant.htm).

Why aren't adults age 65 years and older included as a priority group for the 2009 H1N1 vaccination as they are for seasonal influenza, where they are included as part of the age-50-and-older priority group?

Current studies indicate that the risk of infection, hospitalization, and death from the 2009 H1N1 influenza virus among persons age 65 years and older is less than is the risk for younger age groups. Studies suggest that there is some degree of preexisting immunity to the 2009 H1N1 strains, especially among adults older than age 60 years. One possible explanation is that some adults in this age group have had previous exposure, either through infection or vaccination, to an influenza A (H1N1) virus. People age 65 years and older are included as a priority group if they live with or care for infants younger than age 6 months or are a healthcare or emergency services provider.

Will H1N1 influenza vaccine be available for healthy people age 25 years and older (who are not in targeted groups)?

Once public health authorities at the local level determine that the H1N1 influenza vaccine demand for the 5 target groups has been met, providers will be notified that they can administer the vaccine to healthy people ages 25 through 64 years. Once demand for H1N1 influenza vaccine among younger age groups is met, vaccination should be expanded to all people age 65 and older.

Once H1N1 influenza vaccine becomes available, should we stop administering seasonal influenza vaccine?

No. Providers should start administering seasonal influenza vaccine as soon as it is available and continue to administer it throughout influenza season, including during the winter and spring months.

If a patient has received the seasonal influenza vaccine, do they need to receive the H1N1 influenza vaccine?

If a patient is in a risk group to receive H1N1 influenza vaccine, they should be vaccinated. Studies suggest that vaccination with seasonal influenza vaccine will not provide protection against the 2009 H1N1 influenza virus.

Will there be a new Vaccine Information Statement (VIS) for the 2009 H1N1 influenza vaccine or can we use the same influenza VISs that have been issued from CDC for seasonal influenza vaccine?

A new VIS will be developed that pertains only to the 2009 H1N1 vaccine. You will find it posted at www.immunize.org/vis when it is available.

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We have begun a more aggressive approach to vaccinating our high-risk patients against pneumococcal disease, especially in light of the pending 2009 H1N1 influenza virus pandemic. Do you have any suggestions on how we can improve our system?

Congratulations on your efforts to increase your clinic's vaccination rates against this serious and deadly disease. Health experts have found that influenza predisposes individuals to bacterial community-acquired pneumonia, and studies have shown that this is heightened during influenza pandemics. In June 2009, CDC issued interim guidance for use of 23-valent pneumococcal polysaccharide vaccine (PPSV) in preparation for the upcoming influenza season. Though the interim guidance does not change the groups indicated for PPSV vaccination, it does remind providers that many at-risk people younger than age 65 years and many people who are age 65 and older have not yet been vaccinated—and they need to be. You can find the interim guidance statement at www.cdc.gov/h1n1flu/guidance/ppsv_h1n1.htm.

For more information on PPSV vaccination, including a listing of the high-risk people recommended to be vaccinated, read IAC's professional education sheet "Pneumococcal polysaccharide vaccine (PPSV): CDC answers your questions" (see page 10 of this issue of *Needle Tips* or go to www.immunize.org/catg.d/p2015.pdf).

Other vaccine questions

I understand that the recommendation to give routine Hib boosters at 12–15 months has been reinstated. When did this happen, and how do we catch children up on their doses?

The Hib booster dose was reinstated on June 26, 2009. Here's some background: As you probably know, a shortage of Hib vaccine began in late 2007 when Merck voluntarily recalled certain lots of its PedvaxHIB (Hib) and Comvax (Hib-HepB) vaccines and temporarily suspended production. Healthcare providers were advised to conserve the limited supply of the other Hib-containing products (e.g., sanofi's ActHIB [Hib] and Pentacel [DTaP-Hib/IPV] vaccines) by temporarily deferring the routine Hib booster dose in healthy children. The booster is typically given to children ages 12–15 months. In July 2009, sanofi increased its production of these 2 Hib-containing vaccines such that the supply will be sufficient to reinstate the Hib vaccine booster dose for all children. CDC published "Updated Recommendations for Use of *Haemophilus influenza* Type b (Hib) Vaccine: Reinstatement of the Booster Dose at Ages 12–15 Months" in the June 26 *MMWR* (www.cdc.gov/mmwr/preview/mmwrhtml/mm5824a5.htm).

About catching children up: CDC does not recommend a mass recall of all children who missed their booster dose. Rather, healthcare providers should administer Hib boosters to all children age 12–15 months who have completed the primary series of Hib vaccine (typically given at ages 2, 4,

and 6 months). Children who have not yet reached their fifth birthday, and for whom the booster dose was deferred, should be vaccinated at their next routinely scheduled appointment or medical encounter. CDC has posted online guidance, "Hib Vaccine—Q&A for Providers about the Return to the Hib 'Booster' Dose," on its website at www.cdc.gov/vaccines/vpd-vac/hib/faqs-return-to-booster-hcp.htm.

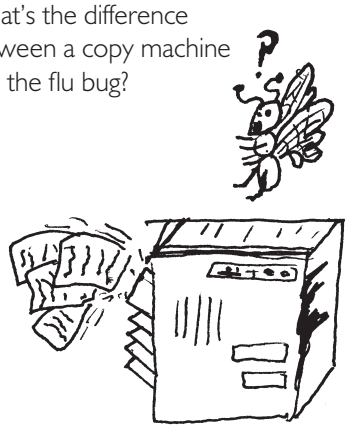
When we give the combination DTaP-IPV/Hib vaccine (Pentacel by sanofi) for the primary series to a child at ages 2, 4, 6, and 15–18 months, the child receives a total of 4 doses of IPV. Does the child still need a booster dose of IPV before entering kindergarten?

Yes. In summer 2009, ACIP updated its recommendations for use of inactivated poliovirus vaccines (IPV), partly in response to the availability of newer combination vaccines (e.g., Pentacel) that include an IPV component. ACIP now recommends that children receive at least 1 dose of IPV at age 4 through 6 years, even if they have previously received 4 doses. The interval between the next-to-last and last dose should be at least 6 months. This means that some children may receive a total of 5 doses, a practice ACIP considers acceptable. This is similar to the recommendation for the last dose in the DTaP series. To view the updated polio vaccine recommendations, go to www.cdc.gov/mmwr/preview/mmwrhtml/mm5830a3.htm.

This summer we saw a 4-year-old child who had a record of only 1 dose of polio vaccine (IPV). I understand that because of his age, he needs only 2 more doses of IPV. Can we give him those doses at 4-week intervals so he can be all caught up by the time he starts school in the fall?

No. In summer 2009, ACIP updated its recommendations for use of IPV to clarify that the interval between the last 2 doses must be at least 6 months. To view the recommendations, go to www.cdc.gov/mmwr/preview/mmwrhtml/mm5830a3.htm.

What's the difference between a copy machine and the flu bug?



One makes facsimiles, the other makes sick families.

Can RotaTeq (RV5; Merck) and Rotarix (RV1; GlaxoSmithKline) vaccines be used interchangeably? If so, what schedule should we follow? Will giving 1 formulation alter the schedule for giving the other?

ACIP recommends that the rotavirus vaccine series be completed with the same product whenever possible. However, vaccination should not be deferred because the product used for a previous dose(s) is not available or is unknown. In these situations, the provider should continue or complete the series with the product available. If any dose in the series was RV5, or the vaccine product is unknown for any dose in the series, a total of 3 doses of rotavirus vaccine should be administered. The minimum interval between doses of rotavirus vaccine is 4 weeks. All doses should be administered by age 8 months and 0 days.

What can birthing hospitals do to prevent newborns from "falling through the cracks" (missing the birth dose) and becoming infected with hepatitis B?

The two most important thing hospitals can do are (1) develop written policies and procedures for giving the birth dose that are based on the recommendations of CDC, AAP, and AAFP and (2) implement the policies and procedures they've developed. By putting this policy into place, hospitals ensure that every newborn will receive the birth dose prior to hospital discharge. You will find guidelines for implementing birth dose policies in CDC's recommendations on hepatitis B prevention in children, which is available at www.cdc.gov/mmwr/pdf/rr/rr5416.pdf.

Effective hospital policies and procedures include establishing standardized admission orders for administration of hepatitis B vaccine as part of routine medical care of all medically stable infants weighing 2 kg (4.4 lb) or more. You can use IAC's "Admission Orders for Labor & Delivery and Newborn Units to Prevent Hepatitis B Virus (HBV) Transmission" (www.immunize.org/catg.d/p2130.pdf) as a model in developing your hospital's admission orders.

Note: According to the CDC recommendations, an order to delay the birth dose until after hospital discharge can be done on a case-by-case basis and only in rare circumstances. Further, it requires that a physician's order to withhold the birth dose and a copy of the original laboratory report indicating that the mother was HBsAg negative during this pregnancy be placed in the infant's medical record.

Delivery hospitals should also enroll in the federally funded Vaccines For Children (VFC) program to obtain free hepatitis B vaccine for administration of the birth dose to newborns who are eligible (i.e., Medicaid eligible, American Indian or Alaska Native, underinsured, or uninsured). The VFC information is available at www.cdc.gov/vaccines/programs/vfc/default.htm. In addition, many states have made free hepatitis B vaccine available to all infants at birth to help simplify the process. Call your state health department to find out if free hepatitis B vaccine is available at birth for all newborns in your state. State health department phone numbers are available at www.immunize.org/coordinators.

We've heard there is a new recommendation for giving hepatitis A vaccine to people who will be in contact with recently adopted children. Would you give us the details?

Yes. ACIP voted in February 2009 to recommend vaccination against hepatitis A for all previously unvaccinated people who anticipate having close personal contact with an international adoptee from a country of high or intermediate endemicity during the first 60 days following the adoptee's arrival in the U.S. In addition to the adoptee's new parents and siblings, this group could include grandparents and other members of the extended family, caregivers, and healthcare providers. Ideally, the first dose of hepatitis A vaccine should be given to close contacts as soon as adoption is planned but no later than 2 weeks prior to the arrival of the adoptee. A second dose should be given no sooner than 6 months after the first dose.

Who is recommended to receive hepatitis A vaccine?

According to CDC, people recommended for vaccination include

- All children at age 1 year (12–23 months)
- People age 12 months or older who are traveling to or working in an area of the world except the United States, Canada, Western Europe, Japan, New Zealand, and Australia
- Men who have sex with men
- Users of illicit drugs, injectable or noninjectable
- Previously unvaccinated people who anticipate having close personal contact with an international adoptee from a country of high or intermediate endemicity during the first 60 days following the adoptee's arrival in the U.S.
- People who have blood clotting disorders
- People who work with HAV-infected primates or with HAV in a research laboratory setting (no other groups have been shown to be at increased risk for HAV infection because of occupational exposure)
- People with chronic liver disease
- Any person who wishes to be immune to hepatitis A

Hepatitis A vaccine is not routinely recommended

(continued on page 22)

for healthcare workers, sewage workers, or day care providers. Children who are not vaccinated by age 2 years should be vaccinated as soon as feasible.

When we vaccinate children age 12–15 months or 4–6 years, should we use a separate MMR vaccine and a separate varicella vaccine, or should we use the combination MMRV vaccine? Does ACIP state a preference?

At its June 2009 meeting, ACIP voted to recommend (1) no preference for use of either the combination MMRV vaccine or the separate MMR and varicella vaccines when giving the first dose to a child age 12–15 months; (2) a general preference for MMRV vaccine (over separate MMR and varicella vaccines) when giving the first dose to a child age 4 years or older; and (3) a general preference for MMRV vaccine (over separate MMR and varicella vaccines) when giving the second dose to a child up through age 12 years. ACIP also voted to include a personal or family history of seizures as a precaution for administering MMRV vaccine. Data from post-licensure studies of administration of the combination MMRV vaccine versus separate MMR and varicella vaccines have suggested an increased risk for febrile seizures in the 1–2 week period after the first dose of MMRV when it is given to children at age 12–15 months.

Would you consider a person with 2 documented doses of MMR vaccine to be immune even if their serology for 1 or more of the antigens comes back negative?

There is no ACIP recommendation for this situation. A negative serology would more likely be the result of an insensitive test than of a true vaccine failure. No more doses are necessary.

When is it appropriate to give both pneumococcal conjugate vaccine (PCV7) and pneumococcal polysaccharide vaccine (PPSV)?

A child who has received pneumococcal conjugate vaccine AND who has a high-risk condition for which PPSV is recommended, should receive PPSV vaccine as long as they are at least 2 years old and it has been at least 2 months since their last dose of PCV7.

I understand a second dose of meningococcal conjugate vaccine (MCV4) is now recommended for certain people. Please tell me more about this.

When meningococcal conjugate vaccine (Menactra; sanofi pasteur) was licensed in January 2005, data were lacking on long-term efficacy and the need for additional vaccination. Since that time, studies indicate that antibody level declines over time. ACIP voted on June 24, 2009, to recommend a routine second dose of MCV4 for people at highest risk for meningococcal infection. This group includes people (1) with persistent complement component deficiencies, (2) with anatomic or functional asplenia, (3) who are infected with HIV, or (4) who frequently travel to or live in areas with high rates of meningococcal disease (African meningitis belt). Children at continued high risk who received the first dose of MCV4 at ages 2 through 6 years should receive the second dose no sooner than 3 years after the first dose. People at continued high risk who received the first dose of meningococcal vaccine at age 7 years or older should receive the second dose no sooner than 5 years after the first dose. Because MCV4 is licensed only for people through age 55, adults 56 and older should instead receive meningococcal polysaccharide vaccine (MPSV4; Menomune; sanofi), as should people ages 2 through 55 years who have a precaution or contraindication to MCV4. Students living in on-campus housing are not included in the at-risk group to receive second doses of MCV4 vaccine.

Please review the recommended schedule for routine administration of human papillomavirus (HPV) vaccine. In what instances are shorter intervals acceptable?

The recommended dosing schedule is 0, 2, and 6 months. You should make every attempt to adhere to this schedule. However, you can count dose #2 as valid if you inadvertently give it sooner than 2 months after dose #1, as long as at least 4 weeks have passed since you gave dose #1. You must make sure that at least 24 weeks pass between giving dose #1 and dose #3. Similarly, you can count dose #3 as valid if you inadvertently give it sooner than 4 months after giving dose #2, as long as at least 12 weeks have passed since you gave dose #2, and that at least 24 weeks pass between giving dose #1 and dose #3. For detailed information on minimum ages and intervals, see table 1 as published in CDC's "General Recommendations on Immunization" at www.cdc.gov/mmwr/preview/mmwrhtml/rr5515a1.htm?s_cid=rr5515a1_e#tab1.

If an adult has had zoster with herpetic neuralgia ophthalmic complications, when can they receive the zoster vaccine?

Once they are no longer acutely ill, they can be vaccinated with zoster vaccine. There is no evidence that the vaccine will have therapeutic effect for a person with existing postherpetic neuralgia.

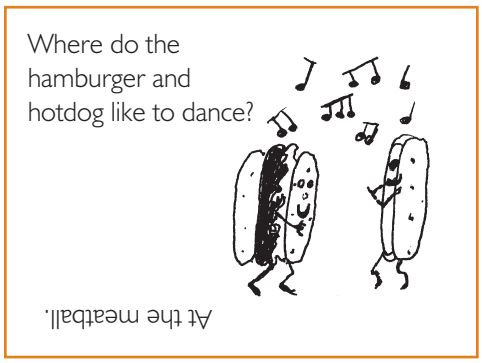
I understand that ACIP now recommends fewer doses of rabies vaccine be given in certain post-exposure situations. Can you tell me more?

In June 2009, ACIP voted to eliminate the fifth dose of vaccine given as post-exposure prophylaxis to previously unvaccinated persons who are not immunosuppressed. This decision was based on evidence that the elimination of the fifth dose will not compromise immunity. The implications of this change are that it will conserve the supply of rabies vaccine, protect the patient, and reduce the number of office visits. To view the provisional recommendations, go to www.cdc.gov/vaccines/recs/provisional/downloads/rabies-July2009-508.pdf.

We provide vaccinations and health advice for international travelers. I understand that the recommendations for Japanese encephalitis virus (JEV) vaccines have recently changed. Can you explain?

You are probably aware that there had been a shortage of JEV vaccine because JE-Vax (Biken) is no longer being produced. The shortage of vaccine for adults has been alleviated somewhat since the licensure of a second vaccine (Ixiaro, Intercell Biomedical) in March 2009. Ixiaro is given as a 2-dose series to adults age 17 and older. JE-Vax is given as a 3-dose series to people ages 1 year and older. The remaining inventory of JE-Vax is now restricted for use in children ages 1 through 16 years. The revised JEV recommendations will include Ixiaro; the targeted populations (e.g., travelers who plan to spend a month or longer in endemic areas during the JEV transmission season) are the same for both JEV vaccines. CDC is revising the JEV Vaccine Information Statement to reflect the dosing information and age indications for both vaccines; in the meantime, providers can refer patients to the Ixiaro package insert (www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM142570.pdf) for more detailed information on the product.

To view ACIP's provisional recommendations for JEV vaccine, go to www.cdc.gov/vaccines/recs/provisional/downloads/je-july2009-508.pdf.



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All healthcare personnel need seasonal and H1N1 influenza vaccination

Dear Readers,

In August, the Centers for Disease Control and Prevention (CDC) published recommendations for the use of H1N1 influenza vaccine (www.cdc.gov/mmwr/PDF/rr/rr5810.pdf). In the recommendations, CDC identified healthcare workers as a high-priority group for immunization with H1N1 influenza vaccine. CDC did this for two reasons. Healthcare workers must be protected from the virus so they will be well enough to come to work and care for sick patients. Even more important, patients must not be placed at risk of getting H1N1 influenza from their caregivers.

As I discussed in the July 2009 issue of *Needle Tips,* the rate of healthcare worker influenza immunization has long been extremely low. This year more than ever before, it is important that every healthcare worker understand that influenza is a deadly disease and the vaccines that prevent it are safe.

Let's make this the season that healthcare professionals show their commitment to patient safety by getting vaccinated in record numbers against seasonal and H1N1 influenza.

Just as some healthcare workers and some patients may have inaccurate ideas about the seasonal influenza vaccine, some may have incorrect beliefs about this year's H1N1 vaccine. The box at the right will help you educate your coworkers and staff on the facts about H1N1 influenza vaccine. We encourage you to copy this letter and the facts at the right and distribute them widely.

Let's make this the season that healthcare professionals show their commitment to patient safety by getting vaccinated in record numbers against seasonal and H1N1 influenza. Make sure you are fully immunized yourself, and tell your coworkers and patients that no matter how serious the upcoming influenza season may be, you've done what you can to protect them from it. Your example may be all it takes for them to act—and to get vaccinated themselves.

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Key Facts About H1N1 Influenza Vaccine

1. ***Seasonal influenza vaccine won't protect against H1N1 influenza.***
   Every healthcare worker should be vaccinated against both H1N1 and seasonal influenza.
2. ***All healthcare personnel need 2009 H1N1 influenza vaccine, including those 65 and older.***
   The vaccine is recommended for every healthcare worker, regardless of age. Though preliminary data (which are all we have now) seem to show that older people are likely to have some immunity, don't assume this vaccine isn't necessary if you're a healthcare worker who is 65 or older.
3. ***H1N1 influenza is a dangerous virus.***
   It is easily passed from person to person, and it can cause serious complications among healthy people.
4. ***The vaccine against H1N1 is not experimental.***
   H1N1 influenza vaccine has been developed using the same safe methods that produce each year's seasonal influenza vaccine. There is every reason to expect that the H1N1 influenza vaccine will be as safe as seasonal influenza vaccine is.
5. ***Antiviral medicine is no substitute for vaccination.***
   If you are infected with influenza, you can pass it to others, including vulnerable patients, for 24 to 48 hours before you have any symptoms. And, though antiviral medicines are valuable for treating people with H1N1 influenza, the best way for you to protect your patients is by getting vaccinated.