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NEEDLE TIPS

from the Immunization Action Coalition — www.immunize.org

What's In This Issue

Use Standing Orders to Increase Coverage Rates and Protect Patients

Using standing orders protocols for vaccination in your medical practice allows appropriately trained healthcare professionals – who are permitted to do so under state law – to assess a patient's need for vaccination, determine if there are contraindications or precautions, and then to administer vaccine without obtaining a physician's written or verbal order for an individual patient.

Numerous studies have shown that standing orders, carried out by nurses or other qualified healthcare professionals, are one of the most consistently effective means for increasing vaccination rates and reducing missed opportunities for vaccination, thereby improving quality of care.

CDC's Advisory Committee on Immunization Practices (ACIP) has recommended the use of standing orders to increase adult vaccination rates since 2000. See www.cdc.gov/mmwr/preview/mmwrhtml/rr4901a2.htm.

The Community Preventive Services Task Force (Task Force) recommends standing orders for vaccinations based on strong evidence of effectiveness in improving vaccination rates among adults and children, when used alone or with additional interventions, and across a range of settings and populations. See www.thecommunityguide.org/vaccines/standingorders.html.

Exactly who is authorized to administer vaccines under standing orders varies by state law. To find out which medical personnel are permitted to administer vaccines under standing orders in your state, contact your state immunization program manager. Contact information is available at www.immunize.org/coordinators.

If you are interested in starting a standing orders program in your practice setting, the Immunization Action Coalition (IAC) has materials available that help make standing orders easy to implement. "Using Standing Orders for Administering Vaccines: What You Should Know" is a one-page article describing the basics of standing orders. See www.immunize.org/catg.d/p3066.pdf.

Standing Orders Templates for Routinely Recommended Vaccines Are Available on IAC's Website

IAC has created standing orders templates for all routinely recommended vaccines for administration to children, teens, and adults. They are all available online and are modifiable in any way you choose to suit your practice's needs. These standing orders templates are based on ACIP vaccine recommendations and are reviewed for technical accuracy by CDC staff. IAC updates its standing orders protocols whenever ACIP makes changes in vaccine recommendations.

You can find IAC's standing orders templates on IAC's Standing Orders web page at www.immunize.org/standing-orders. A few examples follow:

- "Standing Orders for Administering Influenza Vaccine to Adults" (www.immunize.org/catg.d/p3074.pdf)
- "Standing Orders for Administering Influenza Vaccine to Children and Adolescents" (www.immunize.org/catg.d/p3074a.pdf)
- "Standing Orders for Administering Tdap/Td Vaccine to Adults" (www.immunize.org/catg.d/p3078.pdf)
- "Medical Management of Vaccine Reactions in Children and Teens" (www.immunize.org/catg.d/p3082a.pdf)
- "Medical Management of Vaccine Reactions in Adult Patients" (www.immunize.org/catg.d/p3082.pdf)

Access all IAC's standing orders templates at www.immunize.org/standing-orders.

To be notified when new or revised templates become available, subscribe to IAC's free weekly news service, *IAC Express*, at www.immunize.org/subscribe, which is sent to more than 50,000 healthcare professionals every Wednesday. ✦

Immunization questions?

- Email nipinfo@cdc.gov
- Call your state health department (phone numbers at www.immunize.org/coordinators)

Ask the Experts

The Immunization Action Coalition extends thanks to our experts, medical officer Andrew T. Kroger, MD, MPH, and nurse educator Donna L. Weaver, RN, MN, both with the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention (CDC).

Hepatitis B vaccine

What is the recommended time to do hepatitis B testing for evidence of success or failure of immunoprophylaxis given at birth to an infant born to a hepatitis B surface antigen (HBsAg)-positive mother?

In 2015, CDC revised the recommendation for the timing of hepatitis B serologic testing for infants born to an HBsAg-positive woman. Postvaccination testing (HBsAg and hepatitis B surface antibody [anti-HBs]) is now recommended 1 to 2 months after completion of at least three doses of the hepatitis B vaccine series. For a child on schedule, this is age 9 to 12 months. The previous recommendation was to test an on-schedule child at age 9 to 18 months. Testing should not be performed before age 9 months, as hepatitis B immune globulin (HBIG) might still be present for 6 to 8 months, nor should testing be performed within 1 month of the most recent hepatitis B vaccine dose, as a transient false positive HBsAg might occur. Antibody to hepatitis B core (anti-HBc) testing of infants or children is not recommended because passively acquired maternal anti-HBc might be detected up to age 24 months in children of HBV-

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Needle Tips

online at www.immunize.org/nt

Immunization Action Coalition

2550 University Ave. W., Suite 415 North
Saint Paul, MN 55114
Phone: (651) 647-9009
Email: admin@immunize.org
Websites: www.immunize.org
www.vaccineinformation.org
www.immunizationcoalitions.org
www.give2mcv4.org

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IAC maintains strict editorial independence in its publications.

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infected mothers. Children who are HBsAg positive should receive medical evaluation and ongoing follow-up. For additional information, see www.cdc.gov/mmwr/pdf/wk/mm6439.pdf, pages 1118–20.

I work in occupational health and have some patients who are off schedule for their hepatitis B vaccine series. They came back for dose #2 in 4 to 6 months rather than getting it 1 month later. In this situation, what is the correct timing for dose #3? And how long must the interval be between doses before I am required to restart the series?
The minimal intervals for hepatitis B vaccine are at least 4 weeks between doses #1 and #2, at least 8 weeks between doses #2 and #3, and at least 16 weeks between doses #1 and #3. Since in your cases 16 weeks or more have elapsed since dose #1, you should schedule dose #3 to be given 8 weeks after dose #2. It is not necessary to restart the series because of an extended interval between doses, no matter how long.

DTaP/Tdap/Td vaccines

The U.S. immunization schedule indicates that DTaP #4 is recommended at age 15–18 months. However, the footnote says that dose #4 can be given at age 12 months as long as the minimal interval of 6 months has been met. If the minimal interval is met, is it acceptable to give DTaP #4 to a 12-month-old in order to avoid a missed opportunity to vaccinate?
Yes. If the minimum interval of 6 months has elapsed since DTaP #3, then DTaP #4 can be given at age 12 months or older. It is particularly important to give DTaP #4 as soon as possible if there is any doubt that the child will return at age 15–18 months.

A 16-year-old has a written record of receiving doses of DTaP at ages 2 months and 5 months and one dose of Tdap at age 15 years. Since she has had three doses of pertussis-containing vaccine, would she still need two additional doses of Td?
Since the first DTaP was received before age 12 months and one Tdap dose has been given, this person needs one dose of Td given 6 calendar months after the Tdap dose. Then, a routine Td booster dose should be administered every 10 years. An IAC handout that can help you work through situations like this is available at www.immunize.org/catg.d/p2055.pdf.

For a person entering a long-term-care facility at age 70 or older, if we cannot document that the resident has had a primary series of three doses of tetanus-containing vaccine, is the right course of action upon admission to give a Tdap first, then a Td in 1 to 2 months, followed by a Td in 6 to 12 months, and then a Td booster every 10 years?
Your understanding of the general Td/Tdap recommendation is correct, and this is the schedule that should be followed for persons 7 years old and older who have never received tetanus-containing vaccine or who cannot provide documentation of prior vaccination. Be sure to document doses administered so a primary series does not need to be repeated in the future.

If a patient is receiving a tetanus-containing vaccine after an injury and there is no history of any prior tetanus vaccine (e.g., an Amish person who has previously declined vaccination), how much tetanus protection will one dose provide? Also, what is the time frame that the tetanus toxoid needs to be given following an injury?
One dose of tetanus toxoid-containing vaccine (Tdap or Td) provides little or no protection. That is why tetanus immune globulin (TIG) is also recommended in this situation. See "The Pink Book" section titled Wound Management at www.cdc.gov/vaccines/pubs/pinkbook/tetanus.html. As far as timing, the toxoid and TIG should be given as soon as possible.

MMR vaccine

During a mumps outbreak, should a 6-month-old baby be vaccinated with MMR as we do during a measles outbreak?
You are correct that in some measles outbreaks, MMR is recommended for children as young as age 6 months. However, ACIP has not made this recommendation in the event of a mumps outbreak.

Would you consider a healthcare worker with two documented doses of MMR vaccine to be immune, even if the serology for one or more of the antigens comes back negative?
Yes. Healthcare personnel (HCP) with two documented doses of MMR vaccine are considered to be immune, regardless of the results of a subsequent serologic test for measles, mumps, or rubella. Documented age-appropriate vaccination supersedes the results of sub-

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IAC's "Ask the Experts" team from the Centers for Disease Control and Prevention

Andrew T. Kroger, MD, MPH

Donna L. Weaver, RN, MN

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sequent serologic testing. HCP who do not have documentation of MMR vaccination and whose serologic test is interpreted as "indeterminate" or "equivocal" should be considered not immune and should receive two doses of MMR. ACIP does not recommend serologic testing after vaccination. For more information, see ACIP's recommendations on the use of MMR at www.cdc.gov/mmwr/pdf/rr/rr6204.pdf, page 22.

Meningococcal vaccines

I have a 7-year-old patient with congenital asplenia. She has already received PCV13 and meningococcal conjugate vaccine. Would you consider giving her meningococcal B vaccine?
Use of either meningococcal serogroup B vaccine (MenB: Bexsero, GSK; Trumenba, Pfizer) in persons younger than age 10 years is off-label in the U.S. There is currently no ACIP recommendation for use of this vaccine for this age group. However, Bexsero has been studied among infants and is approved for infants by the European Medicines Agency (the European version of the U.S. Food and Drug Administration). It is routinely recommended for infants in the United Kingdom (see www.nhs.uk/conditions/vaccinations/pages/meningitis-b-vaccine.aspx for details). A clinician may choose to use a vaccine off-label if, in their opinion, the benefit of the vaccine exceeds the risk from the vaccine. Product information for Bexsero can be found on the European Medicines Agency website at www.ema.europa.eu/ema.

I have an otherwise healthy 26-year-old patient with HIV infection who received one dose of meningococcal conjugate vaccine (MCV4, MenACWY: Menactra, Sanofi Pasteur; Menveo, GSK) three years ago. Should he receive one or two doses now? Will he need booster doses later?
It is not necessary to start the MenACWY series again. Give the person one dose of MenACWY vaccine now. This dose represents a delayed second dose in the primary series, which is recommended in patients with HIV regardless of the presence of another condition that increases the risk of meningococcal disease. In the absence of another condition that increases the risk of meningococcal disease (such as asplenia), booster doses are not recommended.

Are microbiologists recommended to receive meningococcal B vaccine? And if so, how frequently?
ACIP recommends that microbiologists who work with meningococcus bacteria in a laboratory receive both MenB vaccine and MenACWY vaccine. MenB can be given at the same time as any other vaccine. You can administer either two doses of Bexsero 4 weeks apart, or three doses of Trumenba on a 0-, 1–2-, and 6-month schedule. In April 2016, the FDA also approved a 2-dose schedule for Trumenba with doses given at 0 and 6 months. There is currently no recommendation for a booster dose of MenB vaccine for any age or risk group.

Pneumococcal vaccines

Does a patient younger than age 65 years who smokes marijuana on a daily basis, but doesn't smoke cigarettes, need to receive pneumococcal polysaccharide (PPSV) vaccine?
No. ACIP does not identify people who smoke marijuana but not cigarettes as being at increased risk for pneumococcal disease or as being in a risk group for PPSV (Pneumovax 23, Merck) vaccination.

Is a patient younger than age 65 years who recently had a prostatectomy with lymph node dissection for prostate cancer a candidate for PPSV? The patient is believed to be cancer-free and is on no chemotherapy.
In the absence of "generalized malignancy" (which is generally considered to mean disseminated cancer) or immunosuppression, a recent history of prostate cancer surgery alone is not an indication for PPSV.

I have patients who are in their 70s and 80s and remember getting a pneumococcal vaccine a few years ago. Should we assume that this was PPSV? Should I assume that it was given before the 65th birthday?
You can accept a patient's verbal report of PPSV* and it is reasonable to assume that PPSV was the pneumococcal vaccine that was administered. If the patient's history suggests that this dose was given on or after

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age 65 years, it can be counted as the one dose recommended for this age group. If it has been a year or longer since this dose, pneumococcal conjugate vaccine (PCV, Prevnar 13, Pfizer) should be administered now. If there is any question about the age at which the dose was given, it is reasonable to give PCV now then give a dose of PPSV in 1 year.

*Note: a personal report (undocumented) of receipt of a vaccination is acceptable only for PPSV and influenza vaccines. All other vaccines must be documented with a written, dated record.

Zoster vaccine

If a patient received dose #1 of varicella vaccine at age 60 years, should we administer zoster vaccine as dose #2?

The action taken depends on why varicella vaccine was given in the first place. If it was given because the person tested negative for varicella antibody, then the next dose should be varicella vaccine. If the varicella vaccine was given in error (i.e., without serologic testing), then zoster vaccine (Zostavax, Merck) should be given.

A dose of zoster vaccine was inadvertently given to a patient receiving chemotherapy for colon cancer. We realize this was an error, so please advise us on what to do now.

Zoster vaccine is given to people who presumably had chickenpox earlier in life and so have immunity to varicella virus. The cancer chemotherapy will not change the person's immunity to varicella virus. However, the patient should be monitored for the next two weeks for symptoms that might indicate an adverse reaction, such as fever and rash. If symptoms suggestive of varicella develop, the patient can be started on antiviral therapy, such as acyclovir.

Healthcare personnel

Which vaccines are recommended for healthcare personnel (HCP)?

ACIP recommends that people working in healthcare settings be vaccinated against influenza, hepatitis B, measles, mumps, rubella, varicella, and pertussis. For measles, mumps, rubella, and varicella, serologic evidence of immunity is an acceptable substitute for documentation of vaccination. In addition, microbiologists working in a laboratory should receive meningococcal conjugate and meningococcal serogroup B vaccines. In rare cases, some laboratory personnel should also receive polio and typhoid vaccines. For more information, see www.cdc.gov/mmwr/pdf/rr/rr6007.pdf.

Should HCP be vaccinated routinely against hepatitis A?

No. A number of studies have shown that HCP are not at increased risk of hepatitis A virus (HAV) infection because of their occupation. However, if he/she is going to work (or vacation) in a country with a high or intermediate endemic rate of HAV infection, he/she is at risk of HAV infection and should be vaccinated. The only HCP for whom hepatitis A vaccine is routinely recommended are those who work with primates or live HAV.

I am a nurse who received the hepatitis B vaccine series more than 10 years ago and had a positive follow-up antibody titer for anti-HBs (at least 10 mIU/mL) at that time. At present, my titer is negative (less than 10 mIU/ mL). What should I do now?

Nothing needs to be done. Data show that vaccine-induced anti-HBs levels might decline over time; however, immune memory (anamnestic anti-HBs response) remains intact following immunization. People with anti-HBs concentrations that decline to less than 10 mIU/mL are still protected against HBV infection. For HCP with normal immune status who have demonstrated adequate anti-HBs (at least 10 mIU/ mL) following full vaccination, booster doses of vaccine or periodic anti-HBs testing are not recommended.

Storage and handling

How long is a vaccine viable if it has been stored in the refrigerator in a syringe?

Disposable syringes are meant for administration of immunobiologics, not for storage. CDC recommends that vaccines that have been drawn into syringes in the work setting be discarded at the end of the clinic day. Manufacturer-filled syringes that have not been activated (i.e., have not had the needle guard removed or a needle attached) may be kept and used until their expiration date.

Miscellaneous questions

I understand that certain vaccines contain aluminum and/or formaldehyde. Could you provide me with the research showing the "safe" amounts of aluminum and formaldehyde that can be injected per pound of body weight?

Aluminum is common in the environment and is ingested every day in larger amounts than the amount in vaccines. Formaldehyde is a compound that the human body normally produces in higher amounts than are injected with vaccines.

The FDA performed two studies directly related to your question which demonstrate the amounts injected with vaccines are well below what are considered toxic levels. The following citation is about aluminum in vaccines: www.fda.gov/BiologicsBloodVaccines/ScienceResearch/ucm284520.htm

Regarding formaldehyde, the FDA did the following study, and estimated that less formaldehyde is received from vaccines by infants than infants produce themselves: www.accessdata.fda.gov/scripts/publications/search_result_record.cfm?id=45918.

Information on vaccine additives is available on the CDC website at www.cdc.gov/vaccines/vac-gen/additives.htm and on the FDA website at www.fda.gov/biologicsbloodvaccines/safetyavailability/vaccinesafety/ucm187810.htm. ✦

To find more than **1,000** **Ask the Experts** Q&As answered by CDC experts, visit

www.immunize.org/askexperts

About IAC's Question of the Week

Each week, *IAC Express* highlights a new, topical, or important-to-reiterate Q&A. This feature is a cooperative venture between IAC and CDC. William L. Atkinson, MD, MPH, IAC's associate director for immunization education, chooses a new Q&A to feature every week from a set of Q&As prepared by experts at CDC's National Center for Immunization and Respiratory Diseases.

Please encourage your healthcare professional colleagues to sign up to receive *IAC Express* at **www.immunize.org/subscribe**.

To submit an "Ask the Experts" question…

You can email your questions about immunization to us at admin@immunize.org. IAC will respond to your inquiry. Because we receive hundreds of emails each month, we cannot guarantee that we will use your question in "Ask the Experts." IAC works with CDC to compile new Q&As for our publications based on commonly asked questions. Most of the questions are thus a composite of several inquiries.

Needle Tips correction policy

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