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ACIP immunization update

Here's what you need to know to keep your patients' immunizations up to date.

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The Advisory Committee on Immunization Practices (ACIP) made a number of major new recommendations last year. These new recommendations address:

- expanded use of hepatitis A virus (HAV) vaccine
- preferences for combination vaccines
- timing of poliovirus vaccine doses
- resumption of the normal *Haemophilus influenzae* Type b (Hib) schedule, as shortages have resolved
- the use of a new bivalent human papilloma virus (HPV2) vaccine in women and quadrivalent (HPV4) vaccine in men
- a reduced-dose schedule for rabies postexposure prophylaxis
- proof of immunity against mumps, measles, and rubella for health care workers
- recommendations for meningococcal vaccine boosters.

Adoptive families need more protection against HAV

Each year, approximately 18,000 children are adopted from foreign countries, almost all of them born in countries with high or intermediate rates of HAV, 85% of them under 5 years of age.[1] Identifying adoptees with an acute HAV infection is problematic, because in this age group, fewer than 10% of infected children manifest jaundice.[1] The Centers for Disease Control and Prevention (CDC) has recorded a small number of cases of acute HAV infection traced back to exposure to adoptees, and there is some evidence that 1% to 6% of new international adoptees have acute, and infectious, HAV.[1]

In response to these data, the most recent ACIP recommendation expands indications for HAV vaccine to include anyone who will be in close personal contact—living in the same household or providing regular babysitting—with an adoptee from any country with high or intermediate endemic rates of HAV. The vaccine should be given within the first 60 days of the adoptee's arrival in the United States.[1] The first dose of the 2-dose series should be given as soon as the adoption is planned, ideally 2 or more weeks before exposure to the adoptee.

This new recommendation adds to earlier expansions of indications for HAV vaccine, which include universal use in children, use in postexposure prophylaxis, and preexposure protection for travelers.[2,3]

Anyone who will be in close personal contact with an adoptee from any country with high or intermediate endemic rates of hepatitis A should receive the HAV vaccine.

ACIP still prefers combination vaccines, with caveats

Increasing numbers of vaccine products with multiple antigens have reduced the number of injections needed to complete the recommended childhood immunization schedule. These new products also create a situation in which parents and physicians have to choose between using the combination products or staying with component vaccines that contain fewer antigens, but necessitate a larger number of injections.

When ACIP considered this dilemma, committee members gave the general preference to combination vaccines. At the same time, the committee acknowledged that many considerations—storage, costs, number of injections, vaccine availability, vaccination status, likelihood of improved coverage, likeli-

TABLE

HPV vaccines: A side-by-side comparison

	HPV4	HPV2
Year licensed	2006	2009
Virus-like particle types	6, 11, 16, 18	16,18
Hypersensitivity-related contraindication	Yeast	Latex
Schedule	0, 2, 6 months	0, 1, 6 months
Age range	9-26 years	10-25 years

An ACIP-commissioned study found that the 4-dose rabies vaccine series achieved the same antibody levels as the 5-dose series.

hood of return visits, patient preference, and the potential for adverse events—factor into the decision.[4]

MMRV is a special case. One combination product received special attention because of the potential for increased rates of febrile seizures. Combined measles, mumps, rubella, and varicella (MMRV) vaccine is currently in short supply, but when the supply improves it will provide 1 less injection to immunize against 4 childhood viral infections at each of 2 visits. However, there is good evidence that in children 1 to 2 years of age who are receiving the first dose of MMRV, there is an additional incidence of febrile seizures of 1 in every 2300 to 2600, compared with children receiving separate doses of MMR and varicella vaccines.[5] There is no increased risk for older children or for the second dose.

ACIP considered this risk and recommends discussing the benefits and risks of MMR and varicella separately vs using the MMRV combination vaccine. The committee notes: "Use of MMR and varicella vaccines avoids [the] increased risk for fever and febrile seizures following MMRV vaccine."[5]

IPV combination dosing is clarified

The inclusion of inactivated poliovirus (IPV) antigen into new combination vaccine products has caused some confusion over the recommended dosing schedule of polio vaccine. ACIP has now clarified that for the recommended 4-dose IPV schedule, the fourth dose should be administered after age 4 and at least 6 months after dose 3. In addition, the minimal intervals (4 weeks) in the first 6 months of life should be used only for those traveling overseas.[6]

Resume normal Hib schedule

With the licensure of a new Hib product (Hiberix, GlaxoSmithKline) for the booster dose of Hib starting at age 15 months, the supply of Hib vaccine has stabilized. Supply is now adequate to resume all 4 doses in the routine schedule and to recall all children who had their booster dose deferred. Children can be vaccinated with Hib through the age of 59 months (prior to their fifth birthday).[7]

2 HPV vaccines are now available

With the licensure of an HPV2 vaccine for use in women in the United States (Cervarix, GlaxoSmithKline), 2 HPV vaccine products are now available for use.[8] An HPV4 vaccine (Gardasil, Merck & Co.) was licensed in 2006. The **TABLE** compares the composition, dosing schedules, and precaution for these 2 products. Each requires 3 doses, but the age ranges and dosing schedules are slightly different. The HPV4 vaccine contains antigens against HPV types 16 and 18, which cause 70% of cervical cancers and precancerous lesions, and types 6 and 11, which cause 90% of anogenital warts.[9]

The HPV2 vaccine contains antigens for HPV types 16 and 18 only and does not protect against warts. The bivalent product appears to produce a higher level of antibody response and may provide better cross protection against other HPV types. ACIP compared effectiveness studies of both vaccines and decided to show no preference for either vaccine for the prevention of cervical cancer and precancerous lesions.

The recommendation is for routine vaccination with an HPV product for all adolescent girls ages 11 to 12, with catch-up through age 26. If a female wants protection against anogenital warts, HPV4 is recommended. It is preferable to complete a 3-dose series with the same product, but if this is not possible, a series can be completed with the other product. The HPV4 vaccine is made using yeast, and prefilled HPV2 syringes contain latex. Hypersensitivity to these substances is a contraindication to their use. Patients who receive either vaccine should be observed for 15 minutes after the injection to prevent injury from syncope.

HPV4 in men. The HPV4 vaccine has now been licensed in the United States for use in males ages 9 to 26 to prevent anogenital warts. It may also protect against HPV-caused cancers (oral, genital, and anal), but the proof of that is still lacking. ACIP debated whether to recommend HPV4 for boys routinely at age 11 to 12 and decided against this. Instead the group voted for a "permissive" recommendation that states HPV4 may be given to adolescents and young men ages 9 to 26 to prevent warts and that protection is better if it is administered before exposure.[10] This allows vaccine use in young males to be provided in the Vaccines for Children Program, but falls short of including it in the routine vaccine schedules.

The reasons for not recommending HPV4 routinely in young men were the cost and the perception that anogenital warts are primarily a cosmetic problem, although it was acknowledged that they can cause serious psychological morbidity. ACIP acknowledged that using HPV4 in men might lead to more protection for women because viral spread would be reduced, but stated that much more protection for women would be gained from a higher level of vaccination among women. As the evidence of protection against HPV-related cancers in men is gathered, ACIP will probably revisit this recommendation.

For a more detailed discussion of the issues posed by these 2 vaccines, see "The case for HPV immunization" in the *Journal of Family Practice*, December 2009.[11]

Rabies vaccine: 4 doses are sufficient

Due to a threatened shortage of rabies vaccine, ACIP commissioned a study to determine if a 4-dose series might be as effective as the licensed 5-dose series. The results showed that a reduced-dose series achieved equivalent antibody levels, so ACIP voted to recommend 4 doses of vaccine at days 0, 3, 7, and 14 postexposure.[12] The vaccine should be part of a 3-pronged approach to prevent rabies after an exposure, along with rabies immune globulin administration and wound cleaning.[13] The 4-dose schedule differs from the rabies vaccine package inserts and the FDA licensure information.

Tougher immunity criteria for health care personnel

Prior to 2009, criteria for proof of immunity to measles, mumps, or rubella among health care workers included serologic testing, history of 2 vaccines after age 1, physician-diagnosed disease, or being born prior to 1957. The new criteria require laboratory confirmation of a physician diagnosis and add a footnote to the "born before 1957" criterion that states: Institutions with unvaccinated health care workers who lack laboratory evidence of immunity should consider vaccinating them with 2 doses of MMR (for measles and mumps) and 1 dose of MMR (for rubella). In an outbreak, the new standards recommend inoculating unvaccinated health care personnel who do not have serological proof of immunity with 2 doses for outbreaks of measles or mumps and 1 dose during an outbreak of rubella.[14,15]

Meningococcal booster for those at high risk

ACIP now recommends quadrivalent meningococcal conjugate vaccine (MCV4) for all teens ages 11 to 18 years and for anyone 2 to 55 years of age who is at increased risk for meningococcal disease.[16] MCV4 is licensed as a single dose.

Because of the high risk for meningococcal disease among certain groups of people, as well as limited data on duration of protection, ACIP now recommends that individuals previously vaccinated with either MCV4

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or meningococcal polysaccharide vaccine (MPSV4) who are at prolonged increased risk be revaccinated with MCV4.

Those who were previously vaccinated at 7 years of age or older should be revaccinated 5 years after their previous meningococcal vaccine; individuals who were previously vaccinated at ages 2 to 6 years should be revaccinated 3 years after their previous meningococcal vaccine.

Individuals at prolonged risk for meningococcal disease are those with complement component deficiencies or anatomic or functional asplenia, microbiologists who routinely work with *Neisseria meningitides,* and travelers to countries where meningococcal disease is hyperendemic or epidemic.

College freshmen living in dormitories who were previously vaccinated with MCV4 do not need to be revaccinated. However, college freshmen living in dormitories who were vaccinated with MPSV4 ≥5 years previously should be vaccinated with MCV4.

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New pneumococcal vaccine with more coverage

A new pneumococcal conjugate vaccine (PCV13) for infants and children will be licensed soon. It will replace the PCV7 vaccine now recommended routinely. ACIP will make recommendations on how to introduce PCV13 into a schedule for infants and children who are in the middle of a PCV7 series, and for catch-up vaccination for children who have completed a PCV7 series.

The new vaccine will provide added protection against an additional 6 types of pneumococcal bacteria, and will replace the older product immediately after licensure. It is unclear what will become of unused supplies of PCV7. Physicians who need to order PCV7 in this interim period before the new vaccine is licensed will be faced with difficult choices. The options include ordering only small quantities or trying to get an advance commitment from the manufacturers to take back any unused vaccine. JFP

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