Doug Campos-Outcalt, MD, MPA
Medical Director, Mercy Care Plan, Phoenix, Ariz

campos-outcaltd@mercycareplan.com

ACIP vaccine update, 2017

HIV infection is now an indication for meningococcus vaccination and HPV vaccine dosing is simpler for patients <15 years.

The Advisory Committee on Immunization Practices (ACIP) met 3 times in 2016 and introduced or revised recommendations on influenza, meningococcal, human papillomavirus (HPV), cholera, and hepatitis B vaccines. This Practice Alert highlights the most important new recommendations, except those for influenza vaccines, which were described in a previous Practice Alert.[1] (See the summary of how this year's flu season compares to last year's on page 168.)

Meningococcal vaccine: Now recommended for HIV-positive patients

Meningococcal conjugate vaccine (serogroups A, C, W, and Y) is recommended for all adolescents ages 11 to 12 as a single dose with a booster at age 16.[2] It is also recommended for adults and for children (starting at age 2 months) who have high-risk conditions such as functional or anatomic asplenia or complement deficiencies. Others at high risk include microbiologists routinely exposed to isolates of *Neisseria meningitidis* and those traveling to areas of high meningococcal incidence. ACIP recently added human immunodeficiency virus (HIV) infection to the list of high-risk conditions.[3]

Two meningococcal conjugate vaccines are available in the United States: Menactra, (Sanofi Pasteur), licensed for use in individuals ages 9 months to 55 years; and Menveo (GlaxoSmithKline), licensed for use in individuals ages 2 months to 55 years. Menveo is the preferred vaccine for children younger than 2 years infected with HIV. However, if Menactra is used, give it at least 4 weeks after completing all pneumococcal conjugate vaccine doses and either before or concomitantly with diphtheria and tetanus toxoid and acellular pertussis vaccine (DTaP). All individuals who are HIV positive should receive a multi-dose primary series and booster doses. The number of primary doses and timing of boosters depends on the product used and the ages of those vaccinated (**TABLE**[3]).

Although neither meningococcal conjugate vaccine product is licensed for use in individuals 56 years or older, ACIP recommends using one of the products for HIV-infected individuals in this age group because the only meningococcal vaccine licensed for use in adults 56 or older, meningococcal polysaccharide vaccine (MPSV4, Menomune, Sanofi Pasteur), has not been studied in patients with HIV infection.

Serogroup B. Two vaccine products provide short-term protection against meningococcal serogroup B: MenB-FHbp (Trumenba, Wyeth Pharmaceuticals, Inc.) and MenB-4C (Bexsero, GlaxoSmithKline). In 2015, ACIP made a "B" recommendation for the use of these vaccines in individuals 16 to 23 years of age, with the preferred age range being 16 to 18.[4] A "B" recommendation means that while ACIP does not advise routine use of the vaccines in this age group, the vaccines can be administered to those who desire them. ACIP has recommended routine use of these products only for individuals 10 years and older who are at high risk for meningococcal disease.[5]

Trumenba was approved as a 3-dose vaccine, administered at 0, 2, and 6 months. Bexsero requires 2 doses given at least one month

TABLE

Recommended meningococcal conjugate vaccination schedule and intervals for HIV-infected patients[3]

Age group	Recommended schedule and intervals
Primary vaccination	
<2 years	4 doses of MenACWY-CRM (Menveo) at ages 2, 4, 6, and 12-15 months*
	2 doses of MenACWY-D (Menactra) at age 9-23 months, 12 weeks apart†‡§
≥2 years	2 doses of MenACWY-D or MenACWY-CRM, 8-12 weeks apart†§
Booster dose	
<7 years at previous dose	Additional dose of MenACWY-D or MenACWY-CRM 3 years after primary series; repeat boosters every 5 years thereafter¶
≥7 years at previous dose	Additional dose of MenACWY-D or MenACWY-CRM 5 years after primary series; repeat boosters every 5 years thereafter

*MenACWY-CRM is licensed for use in individuals ages 2 months to 55 years. Children ages 7-23 months who receive vaccination with MenACWY-CRM should be given 2 doses 12 weeks apart, with the second dose administered after their first birthday. **Source:** Food and Drug Administration. Menveo U.S. package insert. Available at: http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM201349.pdf. Accessed February 7, 2017.

†MenACWY-D is licensed for use in individuals ages 9 months to 55 years. **Source:** Food and Drug Administration. Menactra U.S. package insert. Available at: http://www.fda.gov/downloads/BiologicBloodVaccines/Vaccines/ApprovedProducts/UCM131170.pdf. Accessed February 7, 2017.

‡If MenACWY-D is used, administer it at least 4 weeks after completing all pneumococcal conjugate vaccine doses.

§Children with human immunodeficiency virus are at increased risk for meningococcal disease. If using the MenACWY-D vaccine in children at increased risk, give it either before or concomitantly with DTaP.

¶If the most recent dose was received before age 7 years, administer a booster dose 3 years later.

apart. At its October 2016 meeting, ACIP approved a 2-dose Trumenba schedule, at 0 and 6 months, when administered to those not at risk for meningococcal disease.[6] However, during an outbreak, and for those at high risk for meningococcal disease, adhere to the original 3-dose schedule.

HPV vaccine: Now a 2-dose schedule for younger patients

The only HPV vaccine available in the United States is the 9-valent HPV vaccine (9vHPV), Gardasil 9. It is approved for both males and females ages 9 to 26 years. ACIP recommends it for both sexes at ages 11 or 12, and advises catch-up doses for men through age 21 and women through age 26. It also recommends vaccination through age 26 for men who have sex with men and men with HIV/acquired immunodeficiency syndrome (AIDS). Children with a history of being sexually abused or assaulted should begin vaccination at age 9 years.

The HPV vaccine is approved for a 3-dose schedule at 0, 1 to 2, and 6 months. At its October 2016 meeting, ACIP approved a 2-dose schedule (0, 6-12 months) for those starting the vaccine before their 15th birthday.[7] Those starting the vaccine after their 15th birthday, and individuals at any age with an immune-compromising condition, should receive 3 doses. It is hoped that a 2-dose schedule will help to increase the uptake of this safe, effective, and underused vaccine.

Cholera: A new vaccine is available

In June 2016, the FDA approved a live, attenuated, single-dose, oral vaccine (Vaxchora, PaxVax, Inc.) for the prevention of cholera in adults ages 18 to 64 years. It is the only cholera vaccine approved in the United States.

Cholera occurs at low rates among travelers to areas where the disease is endemic. The key to prevention is food and water precautions, and thus the vaccine is not recommended for most travelers—only for those who are at increased risk of exposure to cholera or who have a medical condition that pre-

PRACTICE ALERT UPDATE

How this year's flu season compares to last year

The 2016-2017 influenza season has been relatively mild, with activity nationwide picking up in late January and continuing to increase in February. As of February 16, 90% of the infections typed were type A, and most of those cases (more than 90%) were H3N1. Not surprisingly, the age group most heavily affected has been the elderly.

The hospitalization rate among those ≥65 years as of early February was 113.5/100,000, which is about half the rate of the same week during the 2014-2015 flu season. The hospitalization rate among those ages 50 to 64 years was 23.5/100,000—about 40% lower than the rate during the same week last flu season. At press time, 20 pediatric deaths had occurred, which is less than one-quarter of the number that occurred during the same time last year, and resistance to oseltamivir had not yet been detected in any isolates.

Source: Centers for Disease Control and Prevention. Situation update: summary of weekly FluView report. Available at: https://www.cdc.gov/flu/weekly/summary.htm. Accessed February 16, 2017.

disposes them to a poor response to medical care if cholera is contracted.[8] Risk increases with long-term or frequent travel to endemic areas where safe food and water is not always available. Examples of compromising medical conditions include a blood type O, low gastric acidity, and heart or kidney disease.

Duration of the vaccine's effectiveness is unknown, given a lack of data beyond 6 months. No recommendation for revaccination has been made, and this issue will be assessed as more data are collected. Other unknowns about the vaccine include its effectiveness among immune-suppressed individuals and pregnant women, as well as for those who live in cholera endemic areas or were previously vaccinated with another cholera vaccine.

Hepatitis B: Vaccinate newborns sooner

The incidence of hepatitis B virus (HBV) infection has declined by more than 90% since the introduction of a vaccine in 1982.[9] However, about 19,000 new cases still arise each year,[10] and about 950 of these are acquired by babies born to HBV-infected mothers.[11] About 90% of these infected newborns will develop chronic HBV infection[12] and, if untreated, incur its long-term risks of cirrhosis and liver failure. Hepatitis B vaccine given soon after birth is 75% effective in preventing perinatal HBV infection, and hepatitis B immune globulin (HBIG) is 71% effective.[13] Used together, the 2 are 94% effective.[13]

Current recommendations for the prevention of HBV include:[9]

- Screen all pregnant women for hepatitis B surface antigen (HBsAg), and use HBIG and hepatitis B vaccines within 12 hours of birth for all newborns whose mothers are HBsAg positive or have an unknown HBsAg status.
- Administer the 3-dose hepatitis B vaccine to all other infants.
- Routinely vaccinate previously unvaccinated children and adolescents.
- Routinely vaccinate adults who are non-immune and at risk for HBV infection.

At its October 2016 meeting, ACIP adopted a comprehensive update of all HBV prevention recommendations. (This will be the subject of a future Practice Alert.) Included was a revision of a previously permissive recommendation that allowed the first dose of hepatitis B vaccine for newborns to be given within 2 months of hospital discharge. The new recommendation[9] states that newborns of mothers known to be HBsAg negative should be vaccinated within 24 hours (if weight is ≥2000 g) or at age one month or at hospital discharge (if weight is <2000 g).

The first dose should be given within 12 hours of birth to all newborns whose mothers are HBsAg positive or have an unknown HBsAg status.[9]

Immunization schedules

Every year ACIP updates the adult and child immunization schedules to incorporate the changes from the previous year. These can be found on the ACIP Web site at https://www.cdc.gov/vaccines/schedules/hcp/index.html. This Web site remains the most authoritative and accurate source of information on vaccines and immunizations for both professionals and the public. JFP

References

1. Campos-Outcalt D. Need-to-know information for the 2016-2017 flu season. *J Fam Pract.* 2016;65:613-617.
2. Cohn AC, MacNeil JR, Clark TA, et al. Prevention and control of meningococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep.* 2013;62:1-28.
3. MacNeil JR, Rubin LG, Patton M, et al. Recommendations for use of meningococcal conjugate vaccines in HIV-infected persons—Advisory Committee on Immunization Practices, 2016. *MMWR Morb Mortal Wkly Rep.* 2016;65:1189-1194.
4. MacNeil JR, Rubin LG, Folaranmi T, et al. Use of serogroup B meningococcal vaccines in adolescents and young adults: recommendations of the Advisory Committee on Immunization Practices, 2015. *MMWR Morb Mortal Wkly Rep.* 2015;64:1171-1176.
5. Folaranmi T, Rubin L, Martin SW, et al. Use of serogroup B meningococcal vaccines in persons aged ≥10 years at increased risk for serogroup B meningococcal disease: recommendations of the Advisory Committee on Immunization Practices, 2015. *MMWR Morb Mortal Wkly Rep.* 2015;64:608-612.
6. MacNeil J. Considerations for Use of 2- and 3-Dose Schedules of MenB-FHbp (Trumenba). Presentation at: Advisory Committee on Immunization Practices; October 19, 2016; Atlanta, GA. Available at: https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2016-10/meningococcal-05-macneil.pdf. Accessed February 6, 2017.
7. Meites E, Kempe A, Markowitz LE. Use of a 2-dose schedule for human papillomavirus vaccination—updated recommendations of the Advisory Committee on Immunization Practices. *MMWR Morb Mortal Wkly Rep.* 2016;65:1405-1408.
8. Wong KW. Cholera vaccine update and proposed recommendations. Presentation at: Advisory Committee on Immunization Practices; June 22, 2016; Atlanta, GA. Available at: https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2016-06/cholera-02-wong.pdf. Accessed January 27, 2017.
9. Schillie S. Revised ACIP Hepatitis B (HepB) vaccine recommendations. Presentation at: Advisory Committee on Immunization Practices; October 19, 2016. Available at: https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2016-10/hepatitis-02-schillie-october-2016.pdf. Accessed January 27, 2017.
10. Centers for Disease Control and Prevention. Surveillance for viral hepatitis—United States, 2013. Available at: https://www.cdc.gov/hepatitis/statistics/2013surveillance/commentary.htm. Accessed February 10, 2017.
11. Ko SC, Fan L, Smith EA, et al. Estimated annual perinatal hepatitis B virus infections in the United States, 2000-2009. *J Pediatric Infect Dis Soc.* 2016;5:114-121.
12. Mast EE, Weinbaum CM, Fiore AE, et al. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States. *MMWR Morb Mortal Wkly Rep.* 2006;55:1-25.
13. Beasley RP, Hwang LY, Lee GC, et al. Prevention of perinatally transmitted hepatitis B virus infections with hepatitis B immune globulin and hepatitis B vaccine. *Lancet.* 1983;2:1099-1102.