Understanding Changes to the 2017 Immunization Schedule
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Q. What was the efficacy of live attenuated influenza vaccine (LAIV) in 2009–10 & 2010–11?

A. Below is a slide from the Centers for Disease Control and Prevention (CDC) showing relative influenza vaccine effectiveness of killed vaccines and LAIV since 2010. Up until the 2013–14 season, LAIV was trivalent and demonstrated similar efficacy to inactivated influenza vaccine (IIV). Starting with the 2013–14 season (note the predominant circulation of the H1N1 strain), the quadrivalent LAIV offered little protection relative to IIV.

US Flu VE Network: LAIV and IIV VE age 2-17 yrs
Any Influenza A or B

Q. Does a patient less than 15 years of age, who had 2 doses of HPV4 more than 6 months apart, need 1 dose of HPV9?

A. No. An adolescent who received any combination of 2 doses of HPV2, HPV4, or HPV9, and separated by 6 months before the 15th birthday, should be considered fully vaccinated.
Q. In the area where I practice (MD), public schools do not require students 11–12 years of age to be given human papillomavirus (HPV) vaccine. Why? Also, influenza vaccine is the most frequently declined vaccine by parents for their children. They say because they received flu vaccine themselves and they got the flu.

A. These are two interesting questions.

First, vaccine mandates for school entry generally apply to vaccine preventable illnesses that may be transmitted in a school setting (such as measles, mumps, rubella, and varicella). Human papillomavirus infection is not transmitted in the same fashion and therefore is treated separately. Nonetheless, it is troubling that far more children in the United States will die annually from HPV related cancers than from disease caused by measles, mumps, rubella, and varicella combined.

Second, remember the only recommended influenza vaccines are killed vaccines, meaning they consist mostly of surface proteins (hemagglutinin and neuraminidase). There is no live virus to cause disease in the vaccinee. We have come to expect high degrees of protection from most vaccines. The influenza vaccine is not a particularly effective vaccine in preventing infection (relative to other vaccines), but it is still the best protection available. This year (2016–17), the effectiveness of the influenza vaccine so far is about 50%, meaning about 50% of vaccinated persons may still contract influenza. That also means 50% of vaccinees will be protected from influenza. In addition, it is likely that a vaccinated person who experiences breakthrough influenza will experience less severe disease than if he or she had not been vaccinated.

The need for an improved influenza vaccine is clear. Several approaches are being studied. Stay tuned.

Q. Can you discuss the spacing of the primary series?

A. The following is a summary of the current American Academy of Pediatrics and CDC recommendations regarding HPV vaccination.

- A 2-dose schedule of HPV vaccine is recommended for persons who receive the first dose before the 15th birthday (except for persons with certain immunocompromising conditions). The second and final dose should be administered 6–12 calendar months after the first dose. If the second dose was administered at least 5 months after the first dose, it can be counted. The 4-day grace period can be applied to this 5-month minimum interval. (If the second dose is administered at a shorter interval, an additional dose should be administered at least 12 weeks after the second dose, and at least 6–12 months after the first dose.)
- For persons who have already received 1 dose of HPV before the 15th birthday, and now are 15 years old or older, providers should offer the 2-dose series.
- Persons who initiate the series on or after the 15th birthday, and persons with certain immunocompromising conditions, should be vaccinated with the 3-dose series. In a 3-dose schedule, the second dose should be administered 1–2 months after the first dose, and the third dose should be administered 6 months after the first dose (0-, 1–2-, 6-month schedule).
Q. Why not recommend PCV23 for all children?

A. The 23-valent pneumococcal vaccine (PPSV23) is a pure polysaccharide (meaning non-conjugated) vaccine. Non-conjugated vaccines have several disadvantages relative to conjugated vaccines, such as limited immunogenicity before 2 years of age and lack of impact on carriage rates. Also, more than 80% of invasive pneumococcal disease in children in the United States is caused by the serotypes included in PCV13, so adding PPSV23 to the immunization schedule would offer only limited additional protection.

Also, importantly, repeat doses of PPSV23 (the non-conjugated vaccine) results in the paradoxical effect called “hypo-responsiveness.” After multiple doses of PPSV23, the antibody response goes down, raising concern that during an actual infection, the immune response may be impaired.

Q. What is the most compelling argument to convince parents who are hesitant regarding hepatitis B vaccine for their newborn when the mother tested HBsAg negative and denies risk factors?

A. • Hepatitis B vaccine should be viewed as a cancer prevention vaccine (like HPV vaccine). Hepatoma caused by hepatitis B virus is a leading cause of cancer in many countries.
• Hepatitis B vaccine is one of the safest of all vaccines administered in the vaccine schedule.
• The CDC estimates between 800,000 and 1.2 million people in the United States are chronically infected with hepatitis B. Many infected people are unaware they are infected. There are a number of ways in which hepatitis B may be transmitted, including sexual contact and transmission to babies from infected mothers. So, risk of infection justifies the importance of vaccine-induced immunity.
• A number of people with chronic hepatitis B infection do not have recognized risk factors.
• Also, about 1,000 babies annually in the United States contract hepatitis B at birth. Many of these babies will develop cirrhosis, liver failure, and cancer later in life because of the infection.
• Even though a mother may be reported to be hepatitis B negative in prenatal testing, there are well-documented instances of errors in recording the results (an infected mother may be erroneously reported as not infected) and the narrow window to prevent infant infection (about 24 hours) with hepatitis B hyperimmune globulin and vaccine may be missed.
• The safest approach is to start vaccine series for all babies within 24 hours of birth.

Q. What are the indications to give MenB vaccine for children less than 5 years old? What are the indications for MenB vaccines for children less than 10 years old?

A. • MenB vaccines are not licensed for use before 10 years of age and are not recommended before this age.
• You are correct in noting that the highest rates of MenB infection occur in the first 4 years of life.
• But remember, the total number of cases of MenB in the United States among all age groups is 70 to 110 cases per year. While MenB can be a life-threatening illness, it is also an exceedingly rare disease at the present time in this country. That is why MenB vaccine is not routinely recommended in older children and adolescents.
Q. We are starting to see higher numbers of refugee children of all ages. We get our immunization materials free of charge in Maine through a deal worked out in past years—works great by the way—but Td is not provided. The recommendations for catch-up shots for older kids only allow for one TdaP, as bizarre as that seems. Does your refugee clinic in Boston use Td or TdaP for catch-up? Are there any known or theoretical safety issues to boosting with TdaP, especially in light of the pregnancy recommendations?

A. Presently, only one lifetime dose of Tdap is recommended, except during each pregnancy. There does not appear to be an increased risk of adverse reactions following subsequent doses of Tdap, but this is not recommended. As you correctly point out, Td is recommended after a dose of Tdap.

Thanks to everyone who submitted questions.

Regards,
Cody