Update From the Advisory Committee on Immunization Practices

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The Advisory Committee on Immunization Practices (ACIP) is a committee composed of medical and public health experts and one community representative that meets three times a year to develop vaccine recommendations for the civilian population in the United States. ACIP recommendations become official recommendations of the Centers for Disease Control and Prevention (CDC) when adopted by the CDC Director and published in the MMWR (http://www.cdc.gov/vaccines/pubs/ACIP-list-by-date.htm). Members of ACIP include people with expertise in vaccines, public health, and various aspects of medicine and preventive medicine (http://annals.org/article.aspx?articleid=744177). Members of the Pediatric Infectious Diseases Society frequently serve on this committee and on ACIP working groups, and our society serves as one of 31 ex-officio organizations that participate as nonvoting representatives. The American Academy of Pediatrics (AAP) Committee on Infectious Diseases (COID) also works closely with the ACIP to maximize harmonization between the CDC and the AAP. The ACIP last met at the CDC on June 19–20, 2013. During this meeting there were two votes taken (JE vaccine and influenza vaccine), and several other topics were discussed. All ACIP vaccine recommendations will have GRADE applied (http://www.cdc.gov/vaccines/acip/recs/GRADE/table-refs.html).

JAPANESE ENCEPHALITIS VACCINE FOR TARGETED POPULATIONS

Japanese encephalitis (JE) is a severe disease with substantial morbidity and mortality in various parts of the world (http://wwwnc.cdc.gov/travel/diseases/japanese-encephalitis). The only licensed JE vaccine in the United States is recommended for travelers 17 years of age and older who plan to spend a month or longer in endemic areas during JE virus transmission season (http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5901a1.htm). Following extension by the FDA of the indication for use of JE vaccine to include children 2 months through 16 years of age, the ACIP therefore modified the wording of the current recommendation to include children from 2 through 16 years of age traveling to JE-endemic areas during the JE virus transmission season (GRADE A recommendation). Using seroprotection as the endpoint, JE vaccine is effective and safe in children 2 months through 16 years of age. Recommendations address long-term travelers, recurrent travelers, or expatriates who will be based in urban areas but are likely to visit endemic rural or agricultural areas. JE vaccine is recommended for short-term (less than 1 month) travelers who plan to travel outside of an urban area and have an increased risk for JE virus exposure.

UPDATE ON PERTUSSIS VACCINE STRATEGIES

Tetanus, diphtheria, and acellular pertussis (Tdap) vaccine is recommended for all preteens, teens, and adults, including pregnant women during each pregnancy (http://www.cdc.gov/MMWR/preview/mmwrhtml/mm6207a4.htm). Pertussis vaccines continue to be the best way to protect against pertussis and its complications. For those individuals who have received Tdap, but still get pertussis, the vaccine is effective at preventing severe disease and hospitalization. It does not appear that herd (population) protection is possible with the currently available pertussis vaccines, as they result in a lower protection rate and do not protect for many years. Therefore, while revaccination with Tdap is safe [1], the modest impact and short duration of protection provided by...
TDap does not support a new general recommendation for a second dose of TDap, except in pregnant women. The ACIP continues to recommend a single dose of TDap to adolescents and adults, preferably at 11 or 12 years of age.

Preventing infant deaths is the primary goal of pertussis immunization. The ACIP recommends several strategies, including TDap vaccination of pregnant women during every pregnancy, cocooning (vaccinating everyone who comes into close contact with an infant), and high diphtheria, tetanus, and acellular pertussis (DTaP) coverage rates among children. Data were presented from the United Kingdom and Australia supporting the safety of immunizing pregnant women and effectiveness of the cocooning strategy.

The CDC and ACIP will continue to study vaccine effectiveness, evaluate vaccination policy, and if necessary, make changes to vaccine recommendations to best control pertussis. They will consider the potential impact of additional doses of TDap for special populations, including health care providers and people who are in close contact with young infants.

**HUMAN PAPILLOMAVIRUS VACCINE IMPACT MONITORING**

Human papillomavirus vaccines (HPV) vaccine impact monitoring is under way in Australia and Denmark, both of which have high coverage rates. The incidence of genital warts has decreased very significantly in Australia and Denmark. Genital warts also have decreased in Australian males, even though males are not part of the vaccination program, demonstrating a herd effect of female vaccination. The prevalence of HPV in women 18–24 years of age in Australia also has decreased. The CDC is monitoring the impact of vaccination in the United States on type-specific HPV prevalence, genital warts, cervical precancers, and HPV-associated cancer. From the National Health and Nutrition Examination Survey study, the prevalence of HPV 6, 11, 16, and 18 in cervicovaginal swabs has decreased by 56% among 14–19-year-olds, but not among older female age groups [2]. This reduction is significant, especially in the context of relatively low vaccine uptake in the United States. In a claims database, there also may be early signals of decreased anogenital wart prevalence among 15–19-year-olds. For women vaccinated more than 24 months prior to a Pap smear in a population-based assessment in sentinel sites, HPV 16/18–related CIN2+ are significantly less likely to occur. Postlicensure monitoring data continue to show excellent vaccine safety profiles. A variety of early, middle, and late HPV-associated outcomes currently are being monitored, and data suggest impact on early and middle outcomes in the United States. A reviewed and updated HPV statement, with consolidation of the 2007 statement and subsequent Policy Notes, is planned.

**ROTAVIRUS VACCINES: UPDATE ON INTUSSUSCESSION**

Introduction of rotavirus vaccines has made a tremendous public health impact in reducing the burden of rotavirus disease in infants in the United States and around the world. Rotavirus vaccines are the best way to protect infants from rotavirus disease and its complications. During the June ACIP meeting, data from 3 studies—Vaccine Safety Datalink [3], Post licensure Rapid Immunization Safety Monitoring program, and Vaccine Adverse Event Reporting System—were presented, as well as data from Australia, demonstrating a small increased risk of intussusception for infants from the two rotavirus vaccines. Intussusception occurs in about 1 in 20 000 to 1 in 100 000 infants who receive the vaccine and generally occurs within one week after the first or second vaccine dose. There are about 2,000 cases of intussusception in infants each year in the United States that are not related to vaccination. The CDC continues to recommend that all U.S. infants receive rotavirus vaccine. The risk–benefit analysis continues to demonstrate that the benefits of rotavirus vaccination continue to outweigh the risks associated with vaccination, including the small risk of intussusception [4]. Steps moving forward will include continued monitoring to further quantify this risk, systematic evaluation of the data by the ACIP, and education for healthcare professionals and parents. Following rotavirus vaccination, parents or caregivers should observe their infants for signs and symptoms of intussusception, including episodes of stomach pain with severe crying (which may be brief), vomiting, blood in the stool, or acting weak or irritable, especially within the first 7 days after rotavirus vaccination. Parents or caregivers should contact their child’s healthcare professional if the child has any of these signs, even if it has been several weeks since the last dose of vaccine. Providers should be aware of the risks and educate parents about the risk of intussusception and the benefits of rotavirus vaccines.

**H7N9 INFLUENZA**

As of June 20, 2013, there have been 132 laboratory-confirmed cases of influenza H7N9 virus disease worldwide, with 127 (96%) requiring hospitalization. Of these, 78 (59%) recovered, and 39 (30%) died. Updates are
provided on a regular basis at http://www.cdc.gov/flu/avianflu/h7n9-virus.htm. Cases have been diagnosed in 8 Chinese provinces and 2 Chinese municipalities, as well as in Taiwan; 77% of cases had exposure to live animals, mostly chickens and ducks. Predominately severe disease from H7N9 is being seen in older patients with underlying health conditions. Only 5% of cases have been in children 0 through 17 years of age, which is different than what occurred with H5N1. Overall, the H7N9 viruses studied to date remain susceptible to oseltamivir and zanamivir, but resistant to amantadine and rimantadine. Studies using serum from people vaccinated with the 2012–2013 seasonal trivalent inactivated influenza vaccine show no existing cross-reactive antibodies to H7N9 either before or after vaccination in young children, adults, and older adults. Candidate H7N9 vaccine viruses have been developed and provided to vaccine manufacturers. A clinical trial of inactivated, nonadjuvanted, vaccine is planned.

SEASONAL INFLUENZA VACCINES
Seasonal influenza vaccination in 2012–2013 reduced the risk of outpatient medical visits due to influenza A (H3N2) by 44%, except among children 9 through 17 years and adults 65+ years of age, for whom vaccine was slightly less effective. Vaccination reduced the risk of outpatient medical visits due to influenza B by 62%, consistently across ages. There was similar vaccine effectiveness against both influenza B lineages in circulation, although further research is needed to confirm and understand age differences.

Influenza vaccine viruses for the trivalent product in 2013–2014 influenza season are an A/California/7/2009 (H1N1)-like virus, an H3N2 virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011 (A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage). In the quadrivalent vaccine licensed in June 2013, the additional B strain will be B/Brisbane/60/2008-like virus (Victoria lineage). There are many preparations of influenza vaccine which can be found at two web sites: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6218a3.htm and http://aapredbook.aappublications.org/site/news/vaccstatus.pdf#page=2. The committee also reaffirmed the recommendation for annual influenza immunization beginning at age 6 months, with younger children (6 months through 8 years) who previously have not received influenza vaccine receiving two doses administered at least 28 days apart.

At this meeting ACIP voted upon the following: (1) FluBlok be included as an option for vaccination of persons with egg allergy of any severity who are 18 through 49 years of age. (2) For persons who have no known history of exposure to egg but who are suspected of having an egg allergy on the basis of previously performed allergy testing, consultation with a physician with expertise in management of allergic conditions should be obtained prior to vaccination. Alternately, such individuals may receive FluBlok if they are 18 through 49 years of age.

Further information about the ACIP and its recommendations can be found online at http://www.cdc.gov/vaccines/acip. Nominations are open for new ACIP members and are due November 19, 2013. The next ACIP meeting is scheduled for October 23–24, 2013, and the ACIP website includes information about registration and the meeting webcast. In addition, slides shown during the meeting will be posted on the ACIP web site, as will minutes of the meeting.

REFERENCES
1. Talbot EA, Brown KH, Kirkland KB, Baughman AL, Halperin SABroder KR. The safety of immunizing with tetanus-diphtheria-acellular pertussis vaccine (Tdap) less than 2 years following previous tetanus vaccination: Experience during a mass vaccination campaign of healthcare personnel during a respiratory illness outbreak. Vaccine 2010; 28:8001–7.