Adult Immunization 2012: Politics, Process, and Progress

This issue of *Annals* marks the sixth consecutive publication of the annual update of the Advisory Committee on Immunization Practices (ACIP) Adult Immunization Schedule (1). For the first time, the adult schedule and the schedule for children and adolescents (2) are designed to be combined. This editorial highlights the rationale behind key changes.

**Economics and the Politics of Vaccination Policy**

Recommendations by the committee do not become policy of the Centers for Disease Control and Prevention (CDC) until they are signed by the CDC Director and accepted by the Secretary of the U.S. Department of Health and Human Services. This allows for discretionary oversight (3). These recommendations are considered provisional until published in *Morbidity and Mortality Weekly Report* (1). Vaccine coverage mandated through the Affordable Care Act should increase access to vaccines but could further politicize this process. Budget concerns could delay, and even prevent, incorporation of ACIP recommendations, including those that also influence insurance coverage in the private sector (4).

**Transition to Evidence-Based Processes**

In October 2010, the ACIP adopted an evidence-based process modeled after the GRADE (Grading of Recommendations, Assessment, Development, and Evaluation) guidelines. The committee now evaluates quality of evidence, benefits and harms, values and preferences of affected populations, and economic impact (5). Votes of the ACIP expanding routine human papillomavirus (HPV) vaccination to males and hepatitis B vaccination to young adult diabetics were the first to use this approach.

**Male HPV Vaccination: Background and Rationale**

**HPV-Related Disease Burden**

Human papillomavirus types 6 and 11 are associated with genital warts and recurrent respiratory papillomatosis; types 16 and 18 are linked to cervical, vaginal, vulvar, anal, penile, and oropharyngeal cancer (6–8). Rates of HPV-related oropharyngeal cancer are increasing in men. Risk factors for both men and women include having multiple sex partners and engaging in oral sex. For men, having sex with other men is also a major risk factor (6–8).

Anal cancer is on the rise, with 1600 new cases in women and 900 new cases in men each year. The overall rate and absolute number of anal cancer cases are higher in women (1.4 per 100 000) than in men (1 per 100 000). However, incidence is highest in men who have sex with men (MSM), especially if they are HIV-positive (25 to 100 per 100 000) (6).

**FDA Licensing Distinctions Between HPV Vaccines**

The HPV vaccine is a prophylactic vaccine. It is most effective if given before exposure to the virus. Immune response is more robust when the vaccine is administered to younger persons (9, 10).

There are distinct differences in the U.S. Food and Drug Administration’s (FDA) licensing for the 2 HPV vaccines currently available. The quadrivalent vaccine (HPV4 [Gardasil, Merck & Co., North Wales, Pennsylvania]) protects against types 6, 11, 16, and 18, and is FDA-approved for both females and males aged 9 to 26 years (9). The bivalent vaccine (HPV2 [Cervarix, GlaxoSmithKline, Research Triangle Park, North Carolina]) protects against types 16 and 18 but is FDA-approved only for females (10). Both vaccines prevent cervical cancer; however, only HPV4 is FDA-approved for prevention of vulvar, vaginal, and anal cancer. Efficacy of the HPV4 vaccine for anal intraepithelial neoplasia in MSM ranges from 50% to 78% (11). Only HPV4 protects against genital warts. Although the rationale for protection is certainly plausible, clinical HPV vaccine data are not available for oropharyngeal cancer, recurrent respiratory papillomatosis, or penile cancer (9, 10).

**HPV Vaccination: Not Just for Girls**

The committee’s recommendations for HPV vaccination differ from FDA licensing directives. The new, routine HPV4 vaccination recommendation for males—like females—starts at age 11 years but stops short of gender parity. It extends routine vaccination to males only through age 21 years, whereas vaccinating females through age 26 years is established CDC policy. A subgroup of MSM, as well as immunocompromised and HIV-positive males, “should” be vaccinated through age 26 years (12).

Extending HPV4 vaccine coverage to males is more cost-effective when female coverage rates are low; the 2010 National Immunization Survey data on teenagers show just that (13). Fewer than half (48.7%) of teenage girls has received at least one HPV vaccine dose; only about one third (32%) has received all three doses. Trends for increases in HPV vaccine coverage are also blunted (13). Evidence-based data review supports the cost-effectiveness of vaccinating young MSM, but targeted vaccination strategies may stigmatize individuals. Such strategies require self-identification of risk factors and thus may not be successful.

**Hepatitis B Vaccination for Diabetics**

Hepatitis B vaccination is now routinely recommended for unvaccinated diabetic adults through age 59 years. This age cutoff was chosen on the basis of disease risk and cost-effectiveness. There is also a softer recom-
mendation that, at physician discretion, hepatitis B vaccine “may” be administered to older diabetics.

Diabetic patients aged 23 to 59 years have more than twice the risk for hepatitis B than people without diabetes. For diabetics aged 60 years or older, risk for hepatitis B was increased 1.5 times, but this increase was not statistically significant (14).

Nearly one third of patients older than age 65 years have type 2 diabetes (15). Ironically, this group was left out of routine vaccination—initial discussions investigating the need for hepatitis B vaccination in diabetics began with recognition of outbreaks of hepatitis B infection in older patients in assisted-living facilities due to sharing blood glucose–monitoring equipment (16, 17). Although hepatitis B vaccine efficacy decreases somewhat with patient age, failing to offer vaccine leads to 100% susceptibility (that is, zero efficacy) (18).

**Tdap During Pregnancy**

Tetanus, diphtheria, and acellular pertussis (Tdap) booster is designed to protect infants from pertussis. The practice of cocooning infants and young children by vaccinating family and household contacts (and health care personnel) is still recommended. The change is when to vaccinate pregnant mothers. Previous guidance stated that unvaccinated mothers should be given Tdap immediately postpartum; the new strategy begins protection even sooner: Tdap should be given during pregnancy, preferably after 20 weeks of gestation. Protective maternal antibodies then pass to the fetus. Further study is needed to ensure that maternal antibodies do not blunt the infant’s own immune response to pertussis vaccination (19).

**Influenza Vaccination: Egg Allergy Clearance and Innovation**

Egg allergy is no longer a contraindication to influenza vaccination. Data from at least 17 studies of more than 2600 egg-allergic patients have debunked concerns that traces of ovalbumin egg protein could trigger a serious allergic reaction. Egg-allergic patients must get the inactivated flu shot because that is what has been studied. No skin tests are needed before vaccinating, and the entire vaccine dose can be given at one time. Patients should be observed for 30 minutes after receiving the vaccine (20).

A new intradermal flu formulation (Fluzone Intradermal, sanofi pasteur, Swiftwater, Pennsylvania) is now an option for adults aged 18 to 64 years. Its microinjector apparatus features an ultrafine, 0.06-in needle that causes less pain on injection but induces more injection-site reactions. It is also 30% more expensive than prefilled syringes. The dermal layer of skin is rich in dendritic cells that play a key role in triggering immune response (20).

**The ACP’s Commitment to Helping Shape National Vaccine Policy**

The American College of Physicians has established its first-ever Adult Immunization Technical Advisory Committee. The College has representation at all ACIP meetings and on many ACIP vaccine working groups. Vaccines are vital to ensuring our nation’s health. The newly released fourth edition of the *ACP Guide to Adult Immunization* (21) can help physicians incorporate and improve vaccination strategies in their own practices.

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