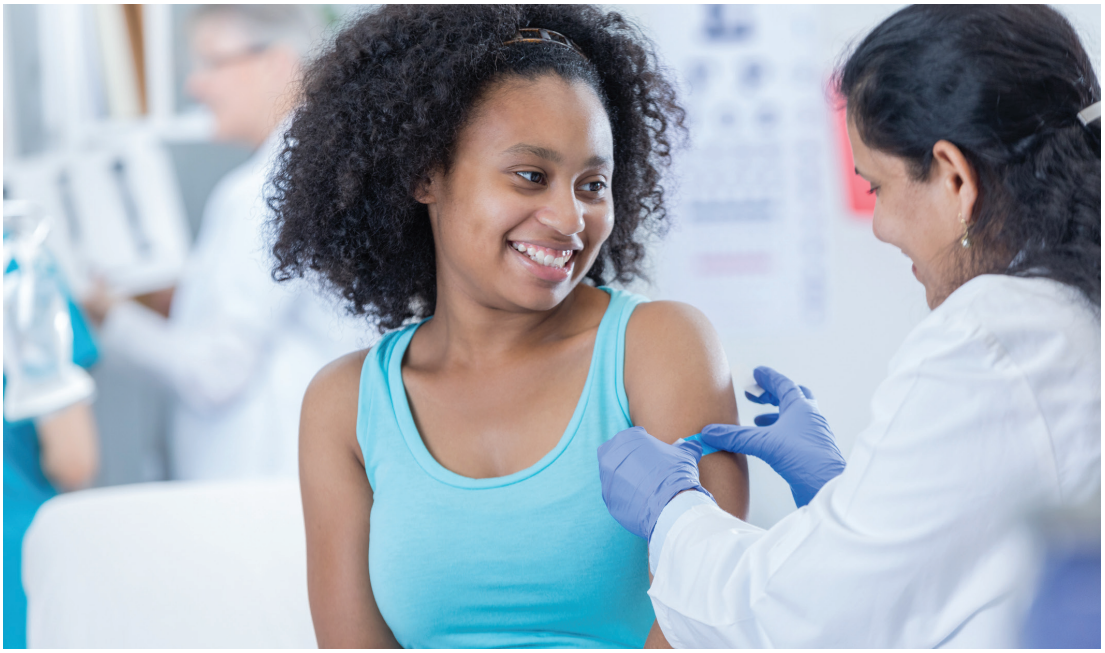

Understanding the Two-Dose HPV Vaccine Schedule

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Nearly 80 million persons in the United States are infected with human papillomavirus (HPV); 14 million new infections occur each year, and persistent infection leads to more than 30,000 new HPV-associated cancer diagnoses among men and women each year (Centers for Disease Control and Prevention [CDC], 2016a). The primary HPV-related cancer affecting women is cervical cancer, and the primary HPV-related cancer affecting men is oropharyngeal cancer (CDC, 2016a). Research has documented that HPV vaccination can reduce the incidence of HPV infection, especially in countries that have achieved high vaccine uptake. Maximal reductions of nearly 90% of the HPV types in the previous 4-valent vaccine (types 6, 11, 16, and 18) and 85% of high-grade cervical cytologic abnormalities have been reported (Garland et al., 2016). U.S. data have begun to reflect declines in HPV infection

Abstract Recent advances in human papillomavirus (HPV) science have led to updates to national HPV vaccine recommendations. This column takes a second look at two recent studies that provide evidence to support the current two-dose HPV vaccination schedule for youth ages 9 to 14 years. This short review will help nurses and other clinicians understand the health and economic benefits of the current dosing recommendation. Nurses are leaders in national vaccination efforts; therefore, it is vital that they remain up to date on the latest evidence that supports vaccination practice as well as health counseling and HPV vaccine recommendations. https://doi.org/10.1016/j.nwh.2018.02.004

Keywords adolescent health | HPV | human papillomavirus | two-dose schedule | vaccine

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prevalence (Markowitz et al., 2013); however, greater adolescent vaccination rates are needed to fully realize the health benefits of HPV vaccination in the United States (Garland et al., 2016; Rimer, Harper, & Witte, 2014).

There have been recent advances to the HPV vaccine characteristics, dosing, and guidelines. The most superior and currently available HPV vaccine in the United States is the 9-valent (9vHPV) vaccine. This updated HPV vaccine first received recommendation from the Advisory Committee on Immunization Practices (ACIP) in 2015 with a three-dose schedule, the same as the preceding 4-valent vaccine. It has documented safety and efficacy and protects against nine viral strains, seven of which account for more than 90% of HPV-causing cancers (types 16, 18, 31, 33, 45, 52, and 58) and two of which account for 90% of anal/genital condylomas (types 6 and 11) (Petrosky et al., 2015). Then, in 2016, the ACIP updated the 9vHPV dosing guidelines and approved a two-dose schedule for children and early adolescents ages 9 through 14 years (Meites, Kempe, & Markowitz, 2016). This two-dose change was based on more recent evidence (Dobson et al., 2013; Krajden et al., 2011; Romanowski et al., 2011) and follows patterns in the international community led by dosing changes made by the World Health Organization in 2014. Current HPV vaccine guidelines in the United States as set by the ACIP and the CDC are summarized in Box 1.

> A health care provider's recommendation is the strongest predictor of vaccine acceptance by consumers

The purpose of this column is to review two recently published studies important to women's health nursing. The two studies chosen contributed to the scientific evidence that supported the most recent CDC 9vHPV vaccine recommendation to move from a three-dose to a two-dose vaccination schedule for early adolescents. Review of these studies will provide nurses a clear understanding of the health and economic benefits of this switch in the United States. In the first study, Iversen et al. (2016) examined the immunogenicity—that is, the vaccine's ability to provide protection—of the two-dose versus the three-dose 9vHPV vaccine among males and females. This study provides Level II-1 evidence (see Box 2). In the second study, Laprise, Markowitz, Chesson, Drolet, and Brisson (2016) showed the potential health and economic impact of this schedule change using a cost–utility analysis (Level II-3 evidence, see Box 2). Understanding recent changes and rationales for changes in vaccine guidelines will help nurses provide comprehensive up-to-date care and enhance nurses' abilities to be strong advocates for and recommenders of HPV vaccination for all youth.

Box 1.

Current U.S. Recommendations for HPV Vaccination

- Vaccination with 9vHPV in a two-dose series (at 0 and at 6–12 months) is routinely recommended for youth (boys and girls) ages 11 to 12 years. Youth could be given the two-dose series as early as age 9 years.
- For adolescents who do not obtain the vaccine by the recommended age, catch-up vaccination through age 14 years in a two-dose series is recommended; however, late adolescent/young adult women ages 15 to 26 years and men ages 15 to 21 years still need a three-dose series (at 0, 1–2, and 6 months).
- Routine three-dose vaccination is also recommended for all youth and young adults (ages 9–26 years) who are immunocompromised.
- HPV vaccination is recommended for men who have sex with men and for transgender persons through age 26 years.

Note. 9vHPV = 9-valent human papillomavirus; HPV = human papillomavirus.

Source: Meites et al. (2016).

First Study

Design, Sample, and Data Analysis

Iversen et al. (2016) conducted an open-label,