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Centers for Disease Control and Prevention 2015 Human Papillomavirus Vaccine Recommendations for Sexually Assaulted Patients: A Review and Update

Meredith Scannell, RN, CNM, MSN, MPH

ABSTRACT

Individuals who have been sexually assaulted are at risk for contracting human papillomavirus (HPV), the most common sexually transmitted infection. One of the best methods in protecting against contracting the HPV is to receive the HPV vaccine. To date, national sexual assault protocols and guidelines do not include information on HPV vaccination. The current 2015 Centers for Disease Control and Prevention has updated their recommendations for sexually assaulted patients to now receive the HPV vaccine. This article reviews information on HPV, HPV vaccines, and specific considerations for patients who have been sexually assaulted.

KEY WORDS:

HPV vaccine; human papillomavirus; sexual assault; sexually transmitted infections

Patients who have been sexually assaulted are at risk for sexually transmitted infections (STIs), including the human papillomavirus (HPV). In 2015, the Centers for Disease Control and Prevention (CDC) updated their STI recommendations to include prophylactic HPV vaccination for sexually assaulted patients aged 9–26 years (Workowski, Bolan, & CDC, 2015). To date, most national sexual assault protocols do not include HPV vaccination as a standard of care for sexually assaulted patients (American College of Emergency Physicians, 2013; Office on Violence Against Women, U.S. Department of Justice, 2013). The purpose in writing this article was to provide an overview of HPV transmission, HPV vaccination, counseling, and forensic and emergency nursing implications for implementing HPV vaccination as a standard of care for sexually assaulted patients.

Author Affiliation: *Brigham and Women's Hospital, and Northeastern University.*

The author declares no conflict of interest.

Correspondence: *Meredith Scannell, RN, CNM, MSN, MPH, Brigham and Women's Hospital, Center for Clinical Investigation, Emergency Department, 75 Francis Street, Boston, MA 02115. E-mail: mjscannell@partners.org.*

Received May 25, 2016; accepted for publication September 2, 2016.

DOI: 10.1097/JFN.0000000000000126

HPV Information

HPV is the most common STI worldwide (Forman et al., 2012). More than 14 million individuals are infected with HPV each year in the United States (CDC, 2015a). Lifetime estimates of acquiring at least one strain of HPV are as high as 80% in women and 90% in men (Chesson, Dunne, Hariri, & Markowitz, 2014). Risk factors for HPV transmission include increased sexual exposures from multiple sexual partners, a new sexual partner, lack of condom use, sex with nonmonogamous partners, and injuries sustained during sex (Chelimo, Wouldes, Cameron, & Elwood, 2013; Sommers, Schafer, Zink, Hutson, & Hillard, 2001).

HPV is a double-stranded DNA virus that infects human epithelial cells (Roberts & Young, 2008). Over 150 different sexually transmitted HPV strains have been identified in addition to 40 mucosal strains (Carter, Ding, & Rose, 2011; de Villiers, Fauquet, Broker, Bernard, & zur Hausen, 2004). In many cases, the virus remains dormant or transient and does not lead to disease (Carter et al., 2011; Workowski, Berman, & CDC, 2010). Among the 40 mucosal strains, there are high-risk or oncogenic

strains that can cause different types of cancer including anogenital, penile, vulvar, vaginal, and oropharyngeal cancers (Roberts & Young, 2008). The low-risk oncogenic strains can cause genital warts and (rarely) laryngeal papillomas (CDC, 2015a). High-risk oncologic HPV strains 16 and 18 are associated with most cervical cancers (Roberts & Young, 2008; Workowski et al., 2010). Low-risk oncologic HPV strains 6 and 11 cause 90% of documented genital wart cases (Workowski et al., 2015).

The transmission of HPV occurs through sexual contact or close skin-to-skin contact between an infected person and a noninfected person (Carter et al., 2011). Although HPV can be transmitted via nonsexual contact, HPV is most often considered an STI (Forman et al., 2012). For most cases, the virus enters the body through injuries sustained during intercourse or other sexual contact (Carter et al., 2011; Roberts & Young, 2008). The incubation period of HPV exposure and the onset of symptoms for an HPV infection range from 1 to 6 months for genital warts, and several months to years in some cases of HPV-related cancers (American College of Emergency Physicians, 2013; Carter et al., 2011; Chelimo et al., 2013). Risk factors for HPV infection include being in an immunocompromised state, cigarette smoking, or having a concurrent STI such as herpes simplex virus or *Chlamydia trachomatis* (Chelimo et al., 2013).

HPV-related diseases can involve complex and costly medical and surgical procedures, requiring years of ongoing treatments (Chelimo et al., 2013). Some HPV-associated diseases such as genital warts can cause visible lesions, and treatments to remove them can be uncomfortable and leave scars (Kellogg & Parra, 1995). Other HPV diseases, such a cervical cancer, may require a more extensive treatment such as radiation therapy, chemotherapy, and/or surgical procedures.

There are many factors that contribute to sexually assaulted patients having a higher risk for the transmission of HPV leading to HPV-related diseases. Higher rates of abnormal cervical cells caused by HPV have been found in women with a lifetime history of sexual assault (Sadler, Mengeling, Syrop, Torner, & Booth, 2011). Studies have shown that women who have experienced intimate partner violence, forced sex, or childhood sexual abuse also have increased rates of HPV (Coker, Hopenhayn, DeSimone, Bush, & Crofford, 2009).

Sexual assaults can be traumatic, with as high as 88% of sexually assaulted individuals sustaining injures, which subsequently increases the risk for HPV transmission (Sommers et al., 2001). An assault by a stranger or acquaintance will increase exposure to HPV, and assaults by multiple assailants can exponentially increase the exposure (Black et al., 2011; Bletzer & Koss, 2012). Furthermore, women in abusive intimate partner relationships, including sexual abuse, may have partners who refuse to wear condoms or may be nonmonogamous, placing them at an additional risk for HPV transmission (Rountree, Granillo, & Bagwell-Gray, 2016). Sexually assaulted patients may also have a disproportionate risk because of preexisting STIs as rates of a preexisting STI found in individuals, at the time they were seeking postassault care, are as high as one in five (Griffith, Ackerman, Zoellner, & Sheffield, 2010), and rates of genital warts associated with HPV have been observed to range from 0.6% to 2.3% after a sexual assault (Reynolds, Peipert, & Collins, 2000).

HPV Vaccines

Vaccination against HPV is the best method for preventing HPV-related diseases (CDC, 2015a). The current 2015 CDC STI updates recommend that sexually assaulted patients aged 9–26 years should routinely receive the HPV vaccine after assault (Workowski et al., 2015). As of 2015, the 9-valent Gardasil vaccine (9vHPV) has replaced other HPV vaccines as the primary vaccine used for women and men and is the recommended vaccine because of its availability, whereas other formulas will no longer be available (Saslow et al., 2016). The 9vHPV is recommended for all women (including sexually assaulted patients) aged 9–26 years and for all men (including sexually assaulted patients) aged 9–21 years (Food and Drug Administration [FDA], 2016; Markowitz et al., 2014; Petrosky et al., 2015; Saslow et al., 2016; Workowski et al., 2015). In cases where men have sex with men or patients are immunocompromised, the vaccine should be administered up to the age of 26 years (Petrosky et al., 2015). Vaccination over the age of 26 years is not recommended as it is less effective in reducing HPV-related diseases (Saslow et al., 2016).

The 9vHPV was approved for use by the FDA in 2014 (Petrosky et al., 2015) and has proven to be the superior vaccine for its expanded protection against nine different strains of HPV: 6, 11, 16, 18, 31, 33, 45, 52, and 58 (FDA, 2016; Petrosky et al., 2015). Extensive clinical trials have shown that the vaccine is effective (Petrosky et al., 2015). In one randomized control trial with over 14,000 women aged 16–26 years, the efficacy was found to be as high as 97% using the 9vHPV (Joura et al., 2015).

The vaccine is given in a three-dose series, with the second dose administered 1–2 months after the first dose and the third dose administered 6 months after the first dose (Petrosky et al., 2015). The vaccines work by activating an immune response against the specific strains of HPV. Table 1 lists the characteristics of 9vHPV.

Most side effects from the HPV vaccines are injection site specific. Redness, swelling, and pain at the injection site are the most common side effects. Other noninjection site-specific side effects noted from the vaccines include syncope, headaches, nausea, dizziness, and fatigue (FDA,

TABLE 1. Vaccine Characteristics

9-valent human papillomavirus vaccine characteristics	
Characteristic	**9-valent**
Manufacturer	Merck
Trade name	Gardasil9
Prevents HPV strains	6, 11, 16, 18, 31, 33, 45, 52, and 58
Administration schedule	0, 2, and 6 months
FDA-approved age for women	9–26 years
FDA-approved age for men	9–26 years
Pregnancy	No safety established
Contraindicated	Individuals with yeast hypersensitivity and/or allergies to yeast or previous hypersensitivity or allergy to vaccines

Adapted from (FDA, 2016; Merck Sharp & Dohme Corp, 2015)

2016). In cases where syncope is experienced, patients should lie down or sit for approximately 15 minutes after the vaccine is administered (CDC, 2015b). Adverse life-threatening reactions are rare, and patients and healthcare providers should report any vaccine reactions to the national adverse event reporting system, www.vaers.hhs.gov (U.S. Department of Health and Human Services, 2015). The pharmaceutical manufacturers also have their own reporting system. Table 2 lists contact information for the various reporting systems.

HPV vaccines can be administered in individuals with mild illnesses such as mild respiratory tract infection; however, administration should be delayed in individuals with moderate-to-severe infections (Hariri, Dunne, Saraiya, Unger, & Markowitz, 2011). Contraindications to the vaccines include a previous allergic reaction and hypersensitivity to the vaccine in a previous administration and if the individual is pregnant (CDC, 2015b; FDA, 2016). All women of childbearing age should have a negative pregnancy test before administration. If a woman becomes pregnant after receiving the first or second dose of the HPV vaccine, any subsequent doses should be delayed until after pregnancy (Petrosky et al., 2015). Limited information is available on breastfeeding, although no serious adverse reactions have been reported in the mother or infant during the vaccine period (Markowitz et al., 2014; Petrosky et al., 2015). See Table 1 for a list of vaccine-specific contraindications.

TABLE 2. Resources

Resources	Information	Email address and/or telephone number
Report adverse vaccine reaction to Vaccine Adverse Event Reporting System	National agency for reporting adverse reactions after receiving a vaccine	1-800-822-7967 or www.vaers.hhs.gov
Centers for Disease Control and Prevention Vaccine Information Statement: Gardasil9	Free CDC vaccine information statement handout for patients receiving the Gardasil9 vaccine	http://www.cdc.gov/vaccines/hcp/vis/vis-statements/hpv-gardasil-9.html
Merck, Gardasil9 patient information handout	Manufacturer patient information handout for Gardasil9	http://www.merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_ppi.pdf
Merck's patient assistance program for vaccines	Information on free vaccines for individuals without health insurance and who do not have prescription drug coverage	www.MerckHelps.com
Merck, Gardasil rebate information for individuals with health insurance without complete vaccine coverage	Information on vaccine program that assistance in providing free or reduced costs for HPV vaccines	http://www.gardasilrebate.com/
Merck Sharp & Dohme Corp., adverse vaccine reaction department	Manufacturer, Merck vaccine reporting agency	1-877-888-4231
Vaccines for Children (VFC)	Provide free vaccines to children and adolescents 18 years and younger who are Medicaid eligible; American Indian, or Alaskan Native; or uninsured or whose health insurance does not cover shots	1-800-232-4636
National Breast and Cervical Cancer Early Detection Program	Free or low-cost cervical cancer screening program for individuals eligible for Medicaid or with low income or who do not have health insurance	http://www.cdc.gov/cancer/nbccedp/

The HPV vaccine, in addition to other vaccines given for prophylaxis, can be administered during the acute postassault phase (Schiller, Castellsagué, & Garland, 2012). The preferred site of administration for the HPV vaccine is in the deltoid (Schiller et al., 2012). Many patients who have been sexually assaulted may require additional vaccines such as the tetanus vaccine or hepatitis vaccine. In these cases, all of these vaccines can all be administered; however, different sites should be used for each vaccine.

A diagnosis of an HPV-related disease may be made at the time a sexually assaulted patient presents for care and may include signs such as visible genital warts found during the pelvic examination (Hariri et al., 2011; Reynolds et al., 2000; Workowski et al., 2010). All patients should receive the HPV vaccine regardless of a current HPV-related disease (National Cancer Institute, 2015). Receiving the HPV vaccine will protect against strains that the patient may have yet been exposed to (National Cancer Institute, 2015). Studies examining HPV efficacy on individuals with previous exposures have shown high rates of immunology against new strains, leading to a decrease in HPV-related diseases (Schiller et al., 2012).

Counseling

Patients often require counseling regarding information on HPV and information about HPV vaccines (Royer & Falk, 2012; Saslow et al., 2007; Teitelman et al., 2011). Assessing the patients' level of knowledge about HPV and the vaccines will help guide healthcare professionals in developing individualized patient education. Before administration of the vaccine, all patients should be counseled on the risk and benefits of the HPV vaccine and given the CDC vaccine information statement sheets for the specific vaccine (CDC, 2015b).

The benefits of the HPV vaccine include protection against the specific HPV strain the vaccine covers and a decrease in HPV-related diseases (National Cancer Institute, 2015). Unfortunately, The HPV vaccine does not protect against all strains of HPV (Saslow et al., 2007). This leaves the patient at risk for acquiring HPV strains that are not covered by the vaccine (Carter et al., 2011; Saslow et al., 2007). In addition, the HPV vaccine does not protect against previous HPV exposures or current HPV-related diseases (Carter et al., 2011; Saslow et al., 2007). Patients can still develop HPV-related diseases and need to monitor for signs and symptoms of diseases such as genital warts and be instructed on when to seek medical care (Kellogg & Parra, 1995). All patients should be instructed on continuing regular gynecological care, routine cervical screenings, and other preventive health measures. Nurses should assess the level of knowledge for each patient and emphasize the fact that the HPV vaccine does not protect against pregnancy and other STIs or replace the need for condoms and other safe sexual practices (National Cancer Institute, 2015).

The out-of-pocket cost of the vaccine and healthcare services may be a barrier for some patients to complete the entire vaccine series (Wagner, 2009; Teitelman et al., 2011). The cost of the HPV vaccine ranges from 85.00 to 177.00 dollars, depending on health insurance coverage and the type of HPV vaccine (CDC, 2016). Both the pharmaceutical company Gardasil and the federally funded Vaccines for Children Program offer free or discounted vaccine programs (see Table 2 for the list of programs). Vaccines may also be covered through federally funded programs sponsored by the Office on Violence Against Women (U.S. Department of Justice, 2015). Patients may also be eligible for additional federal funding from the Victims of Crime Act Victim Assistance Grant Program that aims to help support victim-related expenses including healthcare expenses (Office of Justice Programs, Office for Victims of Crime, & Department of Justice, 1996). Table 2 lists available HPV vaccine resources to help educate nurses to better equip themselves to counsel and treat patients.

Implications for Forensic Nurses and Sexual Assault Nurse Examiners

Forensic nurses and sexual assault nurse examiners are specially educated and trained nurses who provide the most up-to-date, evidence-based, and sensitive care to patients who have been sexually assaulted. Despite the high rate of HPV transmission, HPV-related diseases, available vaccines, and the HPV transmission risk to sexual assault patients, protocols for healthcare providers on caring for sexually assaulted patients have not addressed HPV vaccination (American College of Emergency Physicians, 2013; Office on Violence Against Women, U.S. Department of Justice, 2013). Implementing the 2015 CDC STI guidelines for administering the HPV vaccine as a standard to current sexual assault protocols is reasonable; however, educating nurses who will be implementing the guidelines is essential (Fontenot, 2013; Saslow et al., 2007).

Fontenot (2013) surveyed 519 forensic nurses who worked in different clinical settings and found overwhelmingly high levels of support for HPV vaccine administration, with 98% of forensic nurses in favor of, at the very least, providing written information regarding HPV and the vaccine at the time of post-sexual-assault care. However, not all forensic nurses have the experience and/or knowledge about HPV and the vaccine. In the same survey by Fontenot, the overall mean knowledge score concerning HPV was 83%, and only 49.7% of forensic nurses could identify that HPV can cause some cancers in the glands of the head or neck (Fontenot, 2013). This illustrates a key learning issue, that is, that the ongoing and initial

preparation of forensic nurses should include information on HPV and HPV vaccination to implement the current 2015 CDC recommendations.

Unfortunately, forensic nurses are not always available, and emergency room nurses may be the first-line providers in administering the HPV vaccine. Emergency room nurses often administer other vaccines for the prevention of other HPV-related diseases that patients who have been sexually assaulted may need, such as Hepatitis B and tetanus vaccines. Thus, administering the HPV vaccine is within their scope of practice. As this is a newer vaccine, not otherwise given in emergency settings, enhanced education concerning HPV and HPV vaccines may be required (Workowski et al., 2015).

Emergency room nurses will need to refer these patients for follow-up care in a setting where they can receive subsequent doses of the HPV vaccine (Workowski et al., 2015). One issue that may arise within the patient population is the need to complete the HPV series and attend all follow-up appointments. Before discharge, patients should be provided with information on the specific type of HPV vaccine they receive. Discharge instructions should include information on dates for the second and third vaccine dose administrations and information regarding where they can receive follow-up care.

The outpatient setting often functions as a referral source where patients are advised to seek follow-up care after their initial presentation to an emergency department after sexual assault. Follow-up visits for subsequent HPV vaccine doses are essential for full vaccine coverage (Fontenot & Fantasia, 2015). Unfortunately, follow-up rates may be poor for patients who have been sexually assaulted (Chacko, Ford, Sbaiti, & Siddiqui, 2012; Draughon & Sheridan, 2012; Griffith et al., 2010). Possible approaches to engage patients in their post-sexual-assault continuity of care may include reminders via emails, texts, or telephone calls (Fontenot & Fantasia, 2015; Lewis-O'Connor & Chadwick, 2015). In addition, some patients have difficulty navigating the healthcare system and may benefit from assistance with scheduling follow-up appointments (Teitelman et al., 2011).

While providing postassault care, it is important for nurses to discuss safe sex practices and condom use to protect against other STIs and to prevent the transmission of an STI sustained during the assault to a current partner. Discussions regarding safe sexual practices should be approached with sensitivity as sexually assaulted patients may have ongoing issues with resuming sexual activity. Some women may also be in situations where the perpetrator is an intimate partner and using condoms may lead to further aggressive behaviors in the very partner who abuses them. Therefore, patients may benefit from education about condom negotiation or information regarding female condoms (Rountree et al., 2016).

With all cases of sexual assault, patients should be assessed for ongoing violence. Most sexual assaults are from intimate partners, boyfriends, or acquaintances (Black et al., 2011). At each follow-up visit, nurses should assess for signs of further violence. For patients in circumstances where violence persists, their risks for STIs also persist, and additional interventions may be needed. Laughon, Sutherland, and Parker (2011) conducted a pilot study with an intervention of an educational program for women in interpersonal violent relationships focusing on the educational aspects of STI information, safer sex options, and safety planning. The researchers found a significant decrease in the severity of violence and, although not significant, an increase in safer sex strategies.

Conclusion

Patients who have been sexually assaulted are at risk of acquiring STIs, including HPV. HPV infection can progress to HPV-related diseases, including cancer. One major reason patients seek care after sexual assault is for the treatment and prevention of diseases (Lewis-O'Connor & Chadwick, 2015). The HPV vaccine is a safe and effective method in the prevention of HPV and HPV-related diseases (Markowitz et al., 2014). The CDC now recommends the HPV vaccine for all patients aged 9–26 years who have been sexually assaulted (Workowski et al., 2015). Nurses need to include this updated recommendation and make available the HPV vaccines in healthcare institutions where patients who are sexually assaulted seek care. Forensic nurses, emergency room nurses, and outpatient clinic nurses may be skilled in administering the HPV vaccine; however, education is critical for these nurses to discuss, educate, and answer any questions and concerns that patients may have (Saslow et al., 2007).

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