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COP Paper

11/28/19

## **The Importance of Educating Men about the Human Papilloma Virus and the HPV Vaccine**

### **Introduction:**

The Human Papilloma Virus is a sexually transmitted infection that is very prevalent in today's society. The CDC estimates that approximately "79 million Americans, most in their late teens and twenties are infected with HPV." <sup>1</sup> Statistics show that "14 million persons are newly infected each year in the United States." There are many different strains of the human papilloma virus that can lead to a multitude of medical conditions. Some strains are benign and can persist for life without causing a person any deficit or complication. HPV strain 6 and 11 are "responsible for 90% of the cases of genital warts." <sup>2</sup> Other strains have been found to be more aggressive and may lead to cancer. Dunne shows that 66% of cervical cancer, 55% of vaginal cancers, 79% of anal cancers, and 62% of oropharyngeal cancer are attributed to HPV strains 16 or 18. <sup>3</sup> The Human Papilloma Virus can also cause penile cancer.

After understanding the detrimental effects of HPV on the human body, researchers worked hard to come up with a way to combat this virus. Dr. Jian Zhou was the main researcher credited with invention of the HPV vaccine. <sup>4</sup> In 2005, scientists announced to the public that a vaccine had been developed to combat cervical cancer. In "August 2006, the first dose of the vaccine was administered by Professor Ian Frazer" in Queensland, Australia. <sup>4</sup>

There are currently three available HPV vaccines available for public use that have been researched and that the FDA has determined is safe and effective- Gardasil 9, Gardasil, and Cervarix.<sup>19</sup> It is important to note the HPV vaccination targets specifically cancer causing strains, and genital wart causing strains of HPV. These strains tend to be aggressive, and are considered high-risk. The vaccine does not protect against all strains of HPV, especially those that have not been found to cause cancer/warts. The National Cancer Institute explains that the high-risk strains include HPV types 16, 18, 31, 33, 45, and 58. “HPV types 26 and 18 are responsible for approximately 70% of all cervical cancers and HPV types 31, 33, 45, 52, 58 are responsible for another 20% of cervical cancers.”<sup>19</sup> The Cervarix vaccine (bivalent vaccine) protects against HPV 16 and 18. Gardasil (quadrivalent vaccine) protects against HPV 6, 11, 16, and 18. HPV 11 and 18 do not cause cancer, but cause genital warts. The newest vaccination is Gardasil 9 which protects against HPV 6, 11, 16, 18, 31, 33, 45, 52, and 58.<sup>19</sup>

The Human Papilloma Virus effects many different populations. Sexually active males and females are at great risk for acquiring HPV. Dunne and Unger found that there was “a statistically significant trend for increasing HPV prevalence with each year of age from 14-24 year.”<sup>3</sup> The most prevalent age group being ages 20-24 (44.8%).<sup>3</sup> Dunne also found that there were “higher incidence rates [of HPV] among Hispanic, Black, and American Natives than among whites.”<sup>5</sup> Oropharyngeal cancers are increasing; more so among males than females, and anal cancers are increasing among males and females in all racial/ethnic groups.<sup>5</sup>

Due to the high prevalence, and detriment to society that HPV can have, information about HPV and HPV vaccination has been included in Healthy People 2020. The goal of this organization is to increase public awareness of HPV, benefits of vaccination, and educates people about this topic.

It is important to educate all members of society about the Human Papilloma Virus and the importance of HPV vaccination; however, I chose to focus my attention to educate young adult males about HPV. Men are affected by HPV in a multitude of ways. These ways include development of penile, anal, and oropharyngeal cancers, acquiring genital warts, and being a carrier for HPV transmission to female partners, which may lead to cervical cancer.

### **Penile, Anal, and Oropharyngeal Cancers**

The Human Papilloma virus can cause penile, anal and oropharyngeal cancers. Chaturvedi found that 36-40% of penile cancers are related to HPV.<sup>6</sup> The HPV strains most likely to cause penile cancer include 16, 18, 33, and 35.<sup>7</sup> Stratton found that the “most common HPV type identified [to cause penile cancer] was HPV 16, seen in 30.8%, while HPV 6 and HPV 18 represent 6.7% and 6.6%.”<sup>7</sup> Symptoms of penile cancer include a lump on the penis, “area of skin becoming thicker and/or changing color, a reddish velvety rash, swelling, or an ulcer that might bleed.”<sup>8</sup> The gold standard for diagnosis of penile cancer is tissue biopsy. A patient is then evaluated for possible lymph node or metastasis involvement. There are no routine preventative screens for individuals to undergo that will identify early detection of penile cancers, and “penile cancer is often, unfortunately, ignored until it is advanced.”<sup>8</sup>

Anal cancers are related to HPV as well. A study by Palefsky looked for HPV strains 6, 11, 16, 18, and 31 in cases of reported anal cancers. “HPV DNA was detected in the invasive anal cancer tissues of 11 of 13 subjects.”<sup>9</sup> HPV strain 16 was “associated exclusively with high grade anal intraepithelial neoplasia and invasive cancer. HPV types 6 and 11 were associated with low grade anal intraepithelial neoplasia.”<sup>9</sup> “Almost half of patients with anal cancer will present with rectal bleeding. Pain or sensation of rectal mass is experienced in 30% of patients, while 20% have no tumor-specific symptoms.”<sup>9</sup> Additionally, the SEER database shows that “50% of patients with anal cancer have disease localized to the anus, 29% have regional lymph node involvement or direct spread beyond the primary, and 12% have metastatic disease.”<sup>9</sup> A meta-analysis by Abbas found that “80% of anal cancers could be avoided by [HPV] vaccination.”<sup>9</sup>

Oropharyngeal cancers can be related to the Human Papilloma Virus. Marur found that there has been a rise in oropharyngeal cancer, specifically of the lingual and palatine tonsils, in white men younger than 50 who are not alcohol users, or tobacco users. This has been linked to the HPV strain 16 infection.<sup>10</sup> Symptoms of oropharyngeal cancer include “hoarseness, pain or difficulty swallowing, pain while chewing, a lump in the neck, or a persistent lump in the throat, change in voice, or non-healing sores on the neck”<sup>11</sup> Treatment options depend on stage of disease include radiation treatments and chemotherapy. Long-term complications include problems with voice, swallowing, and dysphagia.<sup>11</sup>

All three of these male related HPV cancers are related to sexual activity. The best piece of advice is for men to receive the HPV vaccination prior to initiation of sexual

activity and to use condoms and dental dams when engaging in sexual activity to avoid acquiring HPV.

### **Genital Warts**

Most cases of genital warts are caused by HPV strains type 6 and 11. <sup>12</sup> These warts can take on a variety of appearance including “cauliflower-like condylomata acuminata that usually involve moist surfaces; keratotic and smooth papular warts, usually on dry surfaces; and subclinical “flat” warts, which can be found on any mucosal or cutaneous surface.” <sup>12</sup> Most of these warts are “benign and typically asymptomatic, but these lesions can become problematic, with pain, itching, and bleeding. The presence of warts is cosmetically disfiguring and can cause patient distress. Warts can also become larger and spread to new locations. Genital warts are highly infectious, and up to 64% of sexual partners will eventually develop warts as well.” <sup>2</sup> The American Family Physician Journal discusses management of genital warts. They recommend “patient-applied therapy such as Imiquimode cream or podofilox.” <sup>14</sup> The American Family Physician Journal also recommends surgical excision, and cryotherapy as convenient and effective options. <sup>14</sup>

### **Men are carriers for HPV transmission to women.**

Men who have cancer-causing strains of the Human Papilloma Virus acts act as a mode of transmission for cervical cancer development in women. Thus, it is important to educate men about HPV related cervical cancers and the benefit of the HPV vaccine in reducing cervical cancer rates.

In 2008, Kavanagh looked at HPV reduction in women in Scotland after immunization. <sup>15</sup> The study sample size was 4,679 females ages 12-13. Research showed

that after vaccination there was a reduction in HPV strains 16 and 18 (two strains that have are high risk for causing cervical cancer) from 29.8% to 13.6%. Additionally, Konno looked at the efficacy of HPV vaccination for strains 16 and 18, in 752 Japanese women aged 20-25.<sup>16</sup> In the group of women who had an initial negative HPV screening and were vaccinated, none developed HPV strain 16 or 18 cervical intraepithelial neoplasia (abnormal cells that may potentially progress to cervical cancer).

A third study by Tabrizi looked at herd immunity and cross-protection after HPV vaccination in Australia. The two groups of 202 women studied were women ages 18-24 (pre-vaccination group) who received a PAP in October 2005- July 2007 in 3 metropolitan cities, and 1058 women ages 18-24 who had a PAP in these cities from August 2010- November 2012 (post-vaccination group).<sup>17</sup> Results showed that “vaccine-targeted HPV genotypes were significantly lower in the post-vaccination-implementation sample (7%) than the pre-vaccine group (29%).”<sup>17</sup> Results indicated that there was a lower rate of vaccine targeted HPV in vaccinated, and a lower rate of vaccine targeted HPV in unvaccinated women. This indicates herd immunity.

Lastly, a study in England in 2013 looked at reduction of HPV strain 16 and 18 in sexually active young women after HPV vaccination introduction. The sample size was 4178 women. The results found that “post-immunization prevalence of HPV 16/18 infection was lowest in the youngest age group (16-18 years) and increased with age”<sup>18</sup>. The study showed that HPV 16/18 infection in the post-immunization study was 6.5% among ages 16-18, and was previously 19.1% among this population prior to HPV vaccination introduction.

## **Interventions**

With respect to my population of interest which is sexually active young men, intervention needs to be focused on educating men regarding the health related illnesses associated from HPV and implement education about the importance of HPV vaccination for men.

### **Linguistically/Culturally Appropriate Material**

Scarinci discussed that one of the most pertinent challenges faced when tackling the issue of HPV education and vaccination includes barrier of access.<sup>20</sup> Some of these barriers included languages difficulties, limited access to care, and cultural concern about modesty. An approach to combating this issue includes having HPV/vaccination information pamphlets in a range of languages at locations where men frequent. This includes, medical offices, student health clinics, school campuses, and culture community centers.

Research by Meade supports the benefit of this intervention (linguistically and culturally appropriate material). Meade performed a study that discussed the importance of appropriate cancer information among Hispanic farmworkers as a way to tackle HPV rates among this population.<sup>21</sup> This study found that it was important for the provided information to be culturally appropriate, linguistically appropriate, and literacy relevant to this population for there to be a favorable impact. The results of the study showed that the participants in this population had favorable reactions to culturally, linguistically, and literacy appropriate cancer material, and that there was a statistically significant increase of knowledge ( $p < 0.001$ ). Additionally, “97% stated that they would be willing to miss a day of work to get a health check-up”<sup>21</sup>.

### **Educating Teachers/Providers That Work with Young Men**

A big interventional strategy needs to be placed on teaching educational providers, such as teachers and medical providers, about HPV and the importance of the HPV vaccination. A study by Beatty looked at HPV education by nurses and teachers. Of the 108 participants, 60% were school nurses, and 40% were school teachers. “In five of the eight questions addressing basic knowledge of HPV, less than 60% of respondents gave the correct answer”<sup>22</sup>. 73% of the participants felt that HPV education was important in schools. The educators expressed that barriers to education included lack of time, materials, and lack of personal knowledge about HPV.<sup>21</sup> They suggested implementing brochures for students, and an education session for teachers about the basics of HPV.

### **Low Cost/Free Vaccination**

The FDA has now approved the HPV vaccine for men and women ages 9-45.<sup>23</sup> It is important for young men to know that the HPV vaccination is often covered under medical insurance. There are also coupons online for discounts for the HPV vaccination such as on GoodRx.com.<sup>24</sup> There have also been pop-up free vaccination clinics that offer the HPV vaccination free of cost such as at Tyler Junior College in Texas.<sup>25</sup> More facilities need offer this cost effective way of vaccinating against HPV.

### **Conclusion:**

The Human Papilloma Virus does not only cause cervical cancer in women, but the HPV virus directly affects men as well. This includes development of penile, anal, and oropharyngeal cancers. It also includes development of genital warts and exposing their female partners to the virus, which can lead to cervical cancer in these women. For all these reasons, educating men about HPV is vital. The HPV vaccination has been



proven to be effective in reducing the rates of all of these medical conditions. The HPV vaccination should be encourage for men to receive. Emphasis needs to be placed on providing suffice and informative HPV/vaccination information for these men in a variety of targeted locations, as well as providing cost effective ways to ensure vaccination follow-through. I have chosen to educate a group of college male fraternity alumni in their early and mid-twenties about this important issue. Male population and sexually active individuals in this age range are encouraged to be HPV vaccinated, and it is my hope that they take away important health information from our educational session.

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