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## Human Papillomavirus and Vaccination of Males: Knowledge, Beliefs, and Perceptions of Registered Nurses

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HUMAN PAPILLOMAVIRUS AND VACCINATION OF MALES:  
KNOWLEDGE, BELIEFS AND PERCEPTIONS  
OF REGISTERED NURSES

by

LEAH A. WHITE

A thesis submitted in partial fulfillment of the requirements  
for the Honors in the Major Program in Nursing  
in the College of Nursing  
and in the Burnett Honors College  
at the University of Central Florida  
Orlando, Florida

Summer Term 2013

Thesis Chair: Dr. Julee Waldrop

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## ABSTRACT

**Background:** Human papillomavirus (HPV) infections are the most common sexually transmitted infections in the world today. HPV has been identified as the cause of both cancer and genital warts. A vaccine to prevent select types of HPV infection was developed and approved for males and females ages 9 to 26. This vaccine has not been universally accepted by healthcare providers, parents, or the public and has lower vaccination coverage rates than other recommended vaccines for the same age group. Multiple studies addressing the knowledge, perceptions, and beliefs of providers and parents regarding the vaccine have taken place. Only a few studies with the nursing profession are found in the literature and they do not look at the vaccine in regards to males. Nurses are seen as one of the most trustworthy of professions. What nurses know, perceive and believe can impact both patients and those they come in contact with on an informal basis.

**Objective:** The purpose of this study is to determine knowledge, beliefs, and perceptions of registered nurses about the human papillomavirus and associated vaccination for males.

**Methodology:** This study took place in February of 2013 and used a descriptive correlational design with a cross-sectional survey. The survey was administered online to alumni of the University of Central Florida (UCF) College of Nursing, members of the Theta Epsilon chapter of Sigma Theta Tau International Honor Society, and current graduate nursing students and faculty of UCF College of Nursing. There were one hundred and twelve Registered Nurses that participated in the study.

**Findings:** Knowledge of HPV varied among respondents. The vast majority knew that HPV was a common sexually transmitted infection however less were knowledgeable on specific

information about the vaccine. Less than eighty percent of study participants knew that the vaccine was available for both males and females. Close to ninety percent of respondents agreed that vaccinating males would be important to protect their future partners from complications associated with HPV, such as genital warts and cervical cancer, and to protect themselves from future complications, such as genital warts and cancers. Participants with doctoral degrees possessed a significantly more favorable attitude ( $p < 0.001$ ) towards vaccine use in males than those with a bachelors degree.

Conclusions: Nurses in this study were knowledgeable about specific HPV information but were less knowledgeable about the extent of infection seen in males or the availability of the vaccine for males. This study found inaccuracies and lack of knowledge among Registered Nurses that demonstrates the need for education about HPV and the associated vaccine. While the attitudes of the respondents reflect favorably toward the vaccine, there is still a need for education among this population.

## DEDICATION

This thesis is dedicated to my family and friends that have been there for me throughout this journey. To my husband, TJ, who constantly supported and encouraged me. To my parents, who taught me to always strive to go above and beyond what is expected. To my sisters, Grace and Kathleen, and my cousin, Rachel, who kept me positive and laughing. To my friends, both old and new, who always reminded me to have fun. This experience would not have been the same without you all.

## ACKNOWLEDGEMENTS

First of all, I would like to thank my committee members. Thank you for going on this journey with me. Your guidance and support made this all possible.

My committee chair, Dr. Julee Waldrop, thank you everything. You were an incredible mentor and inspired me to reach for my goals. Your insight and experience were invaluable.

Dr. Chris Blackwell and Ms. Sharon Douglass, thank you for being a part of my team. You were always there for me and provided me with great feedback that allowed me to grow as a researcher and writer.

To the faculty and staff of the UCF College of Nursing, especially those on the Daytona Beach Campus, thank you for constant encouragement and support. I am grateful for this opportunity to learn and grow.

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## INTRODUCTION

Human papillomavirus (HPV) infections are the most common sexually transmitted infections in the world today (Baseman & Koutsky, 2004). Six million people in the United States are infected with HPV each year and approximately 20 million Americans are currently infected (CDC, 2012). The majority of sexually active individuals will likely be exposed to HPV in their lifetime (Trottier & Franco, 2006) and HPV rates are especially high among sexually active young adults (Baseman & Koutsky, 2005). While most HPV infections in individuals are eliminated by the body without clinical manifestations, HPV has been identified as a cause of both cancer and genital warts. There are over 120 different types of HPVs and they are classified as either high-risk oncogenic or low-risk (Trottier & Franco, 2006).

A vaccine to prevent HPV infection was developed by Merck & Co. and approved by the Food and Drug Administration (FDA) in 2006. This vaccine, Gardasil ®, is a quadrivalent vaccine, developed to protect against four types of HPV (types 6, 11, 16, and 18) for prevention of cancer, precancerous or dysplastic lesions, and genital warts (Norman, 2006). HPV types 6 and 11 cause approximately 90% of genital warts (CDC, 2010b) and types 16 and 18 cause approximately 70% of cervical cancers worldwide (CDC, 2006). Gardasil ® was originally approved for females, ages 9 to 26 (Norman, 2006), and was later approved for males ages 9 to 26 for the prevention of genital warts caused by HPV types 6 and 11 (Sun, 2009). Prior to 2010, Gardasil was approved for the prevention of cervical, vulvar, and vaginal cancers, with the prevention of anal cancer being added in 2010 (Sun, 2010). Another vaccine, developed by GlaxoSmithKline, named Cervarix ®, was approved by the FDA in 2009 for cervical cancer prevention (CDC, 2010a). Cervarix ® is a bivalent human papillomavirus vaccine that is directed against HPV types 16 and 18 and is only approved by the FDA for use in females.

The current recommendation for HPV vaccination by the Advisory Committee on Immunization Practices (ACIP) includes routine vaccination of males and females aged 11 to 12 years with 3 doses of quadrivalent HPV vaccine (CDC, 2011a). Vaccination is also recommended for females 13 to 26 years of age and males 13 to 21 years of age who have not been previously vaccinated or have not completed the full series, and for men through age 26 who have sex with men or who have a weakened immune system because of HIV infection, medications, or other illness (CDC, 2013). The American Academy of Pediatrics (2012) also recommends the vaccine for all 11 to 12 year old children as part of the adolescent immunization platform. The ACIP's recommendations for HPV vaccination are based on several aspects, including the safety and effectiveness of the vaccine, data on HPV epidemiology and age of sexual debut in the U.S., and the high probability of adolescents acquiring HPV within several years of debut (CDC, 2010b).

### Statement of Problem

HPV has been identified as the cause of both genital warts and various cancers. About 12,000 women in the U.S. get cervical cancer each year. An additional 13,000 U.S. men and women get another form of HPV related cancer, including HPV associated vulvar, vaginal, penile, anal, and oropharyngeal cancers annually (CDC, 2012). Genital warts are associated with a significant detriment to health related quality of life (Woodhall et al., 2008). HPV infection has also been linked to HIV acquisition (Houlihan et al., 2012).

According to the CDC (2011b) vaccination coverage among adolescents aged 13 through 17 increased from 2009 to 2010 for three routinely administered vaccines ["meningococcal conjugate (MenACWY, 2 doses); tetanus, diphtheria, acellular pertussis (Tdap, 1 dose); and human papillomavirus (HPV, 3 doses)" (p. 1117)]. Of the three vaccines, HPV coverage saw

less than half the increase observed for each of the other two vaccines. Among adolescent females, HPV vaccine coverage increased from 44.3% in 2009 to 48.7% in 2010 for at least one dose, and from 26.7% in 2009 to 32.0% in 2010 for three doses, while only 1.4% of adolescent males in the same age group had received the HPV vaccine in 2010 (CDC, 2011b).

Gardasil has been surrounded by controversy since before FDA approval in 2006 (Stein, 2005). While vaccination for both males and females is recommended by the ACIP, it has not been universally accepted by healthcare providers, parents or the public. There has been a clash between social conservatives, who believed that immunizing to prevent a sexually transmitted disease could encourage sexual activity, and health advocates, who seek to use the vaccine aggressively in prevention efforts (Stein, 2005). Conservative groups and some physicians are concerned that the vaccine would send subtle messages that condone sex before marriage or encourage risky sexual behavior. Counters to this argument came from Alan M. Kaye, executive director of the National Cervical Cancer Coalition, in comparing the vaccine to a seat belt in saying, “just because you wear a seat belt doesn't mean you're seeking out an accident” (Stein, 2005).

Multiple studies address the knowledge, perceptions, and beliefs of providers and parents regarding the vaccine (Cates, Ortiz, Shafer, Romocki, & Coyne-Beasley, 2012; Daley & Crane, 2010; Nandwani, 2010; Perkins & Clark, 2012; Weiss, Zimet, Rosenthal, Brenneman, & Klein, 2010). Providers and parents have been hesitant of the vaccine's implementation (Cates et al., 2012; Daley & Crane, 2010; Perkins & Clark, 2012; Weiss et al., 2010). Pediatric and family medicine providers are apprehensive about difficulty in discussing the vaccine with parents and are unaware of the health benefits of the vaccine for males (Perkins & Clark, 2012). Parents

worry about the cost of the vaccine as well as side effects, effectiveness and long-term safety (Cates et al., 2012).

Additional studies have looked at the acceptance of the vaccine for males among parents, males, and providers (Liddon, Hood, Wynn, & Markowitz, 2010; Nandwani, 2010).

Acceptability of the vaccine that protects against both cervical cancer and genital warts was high among male college students but lower in a community sample of males. Support of vaccination among mothers of sons varied widely but was generally high. Neither males nor parents saw prevention of cervical cancer for female partners as a motivating reason for HPV vaccination. A repeated cited reason for declining HPV vaccination was the belief that there was no direct benefit for males (Liddon et al., 2010). Provider's overall recommendation for vaccination varied by age but was generally high, though there was a preference to vaccinate females over males (Liddon et al., 2010). Additional factors influencing acceptance included sexual activity, perceived susceptibility or benefit of vaccination, perceived norms for HPV vaccination, and physician recommendation (Nandwani, 2010).

For years, nurses have been regarded as the most trustworthy professionals (Gallup Poll, 2012). What nurses know, perceive and believe can impact not only patients but also persons they come in contact with on an informal basis. Only a few studies addressing knowledge, perceptions, and beliefs about HPV have involved nurses (Brabin et al., 2011; Duval et al., 2009; Nganwai et al., 2008; Kahn et al., 2009; Stretch et al., 2009). In the first year after vaccine approval for females, mothers who were also nurses were surveyed with the focus of determining intention of mothers to vaccinate their daughters. This study found that the mothers' intention to vaccinate a daughter was lower with a daughter <13 years than with an older daughter (Kahn et al., 2009).

Two studies in the UK assessed school nurses views on providing the vaccination without parental consent and factors limiting vaccine uptake (Brabin et al., 2011; Stretch et al., 2009). HPV vaccination in the United Kingdom (UK) has been provided to schools and administered by school nurses since 2008 (Stretch et al., 2009). Vaccination uptake was affected by characteristics of the schools, schools' attitudes toward health interventions, organizational problems, and the multiple roles of the school nurse (Stretch et al., 2009). Brabin et al. (2011) looked at nurses' views on providing the vaccination without parental consent and found that while girls were legally allowed to consent on their own, nurses would defer vaccination rather than vaccinate without parental consent.

Two additional studies, that took place in Canada and Thailand, assessed nurses' knowledge, attitudes, and beliefs about HPV (Duval et al., 2009; Nganwai et al., 2008). Nganwai et al. (2008) surveyed nurses in an urban hospital in Northeast Thailand and found that almost all nurses had a moderate knowledge related to cervical cancer/HPV and females but that there were still some major misunderstandings. The authors recommended using strategies such as educational pamphlets, notices, and hospital announcements to increase nurses' knowledge. Duval et al. (2009) assessed nurses' knowledge, attitudes, and information needs as well as factors associated with willingness to recommend vaccination in Canada. This study was funded by GlaxoSmithKline and found that most nurses supported HPV vaccination but recommended targeted educational efforts to ensure nurses' involvement (Duval et al., 2009). Both studies emphasized the need for increased HPV vaccination efforts and recognized nurses to be a pivotal role in this process. Nganwai et al. (2008) described registered nurses "the most visible, frontline personnel providing health education to patients and the general population" (p. 15). Duval et al. (2009) discussed the need for support and acceptability by healthcare personnel in successfully

implementing a new vaccination program and chose nurses for this study “based on their decisive role in the promotion and realization of immunization programmes, as well as their known influence on patients’ decision to receive the vaccine” (p. 501).

Additionally, a study assessing knowledge of, perceived susceptibility to, perceived seriousness of, and risk behaviors regarding HPV, and cervical cancer among female nursing students found a lack of knowledge and low perceived susceptibility among this population, which was similar to other studies among college women (Denny-Smith, Bairan, & Page, 2006). Researchers acknowledged the need knowledge about HPV for practitioners involved in the care with women and were surprised with the low knowledge levels among junior and senior nursing students in a baccalaureate program.

Marketing of the vaccine was initially focused solely around HPV and cervical cancer in women (Herskovits, 2007). However, the HPV vaccine for males received little attention when approved by the FDA (2009) until 2011 when it was recommended by the ACIP (Cates et al., 2012). As a result awareness is lower for use of this vaccine in males.

## PURPOSE OF STUDY

The purpose of this research study is to identify knowledge, beliefs and perceptions that may be barriers to achieving adequate vaccination rates of HPV vaccine in males through a survey of registered nurses. Based on the history so far, potential barriers are provider and parent attitudes, social issues, and past marketing campaigns to increase awareness. Findings of this thesis may promote development and implementation of interventions to increase acceptance of the vaccine.



## METHODS

### Design

This study used a descriptive correlational design. The method was a cross-sectional survey.

### Subjects

Survey participants were recruited via an email letter of invitation. Email lists used were alumni of the University of Central Florida (UCF) College of Nursing, members of the Theta Epsilon chapter of Sigma Theta Tau International Honor Society, and current graduate nursing students and faculty of UCF College of Nursing. Email addresses were obtained, with permission, from the UCF College of Nursing Alumni listserv and the Theta Epsilon chapter of Sigma Theta Tau International Honor Society. The e-mail lists used assumed that the participants are graduates with a bachelors degree or higher in nursing, are registered nurses, and over 18 years old. A total of 1,579 separate invitations were sent (Grad nurse – 817; MSN alumni – 224; Theta Epsilon – 538).

It is possible that some nurses received multiple invitations to participate in the survey because some of the UCF College of Nursing alumni are also members of the Theta Epsilon chapter of Sigma Theta Tau International Honor Society and or current graduate nursing students or faculty. However, once the survey was completed by one e-mail address it was closed for further attempts.

### Inclusion and Exclusion Criteria

Inclusion criteria: Registered Nurse, 18 years of age or older. Exclusion criteria: none.

## PROCEDURES

Permission from the University of Central Florida's Institutional Review Board was obtained. The survey was provided to study participants via e-mail inviting them to voluntarily participate in the study through a link to SurveyMonkey™ on February 20, 2013. The survey contained an explanation of the research. Consent was implied if they completed the survey and they were free to withdraw from the study at any point. Surveys that were not completed or submitted were not included. The online survey was left open and available for 2 weeks.

Participants had the opportunity to be entered into a random drawing for one of 30 Starbucks gift cards valued at \$5 by including their e-mail address in the last question of the survey. Provision of this information was voluntary and could be left blank if the participant did not wish to provide this information or did not wish to receive the incentive. Emails provided were not used in any of the data analysis.

All data collected from the online survey was confidential and remained secure on the password protected survey website. Data was also downloaded into a separate Excel™ database and kept on a password protected computer and did not contain any identifiable information.

## Instruments

The study used a 39 question survey (Attachment A). The survey aimed to collect information about knowledge, beliefs, and perceptions of registered nurses of HPV and vaccination of males. The survey was adapted from two previously administered surveys to physicians (Daley & Crane, 2010; Weiss et al., 2010). Permission was given by the authors of these studies to utilize the questions and modify as needed for the difference in intended participants.

The survey contained 9 true/false questions about current understanding of HPV and HPV vaccine, 5 likert scale questions about current understanding of HPV in males, 8 likert scale questions regarding attitudes about recommending and vaccinating males patients with the HPV vaccine, and 9 questions regarding attitudes about the HPV vaccine in general. In addition, 8 questions collected demographic information.

### Data Analysis

For data analysis purposes demographic information on the following variables was transformed. Employment was classified into 4 categories: hospital, community, education and other. If the respondent had children or not was classified as yes or no and then if the child was male or not was a yes or no. True/False/Don't know responses were coded numerically as 1, 2 and 0 respectively. Likert scale responses were coded numerically from strongly disagree – strongly agree as 1-5. There were five questions where the responses were flipped and these were recoded accordingly. Analysis of the survey included both descriptive and correlational statistics on the demographics and questions. In addition, T-tests or Chi-Squared tests were run, comparing age groups, education, ethnicity, or experience.

## FINDINGS

### Sample Characteristics

One hundred and twelve (7.09% response rate) Registered Nurses participated in the study. One survey was not included in the analysis because only the first few questions were completed for a final total of 111. The majority of study participants were female (94.5%, n=103). Participant ages ranged from 18 years old to older than 60 years with the majority falling between 45 and 60 years (44.1%, n=49). The educational background of the participants ranged from bachelors degree to doctoral degree with the majority of participants having a Masters degree or higher (64.9%, n=72). Half of the participants worked in a hospital setting (50.0%, n=56), others worked in a physician's office (18.0%, n=20), and others in a variety of settings including but not limited to: public health, university setting, nursing home, and orthopedic clinic. The participants experience as a nurse varied from fewer than 5 years of experience to 20 or more years of experience with the majority of participants having greater than 15 years of experience (62.2%, n=69). The majority of participants were parents (68.5%, n=76).

### Knowledge, Understanding, and Attitudes

#### *Knowledge of HPV*

The vast majority of participants knew that HPV was a common sexually transmitted infection (96.4%). Similarly but less known was that most cervical cancers are also caused by this virus (84.8%). Comparably, ninety percent of the participants knew that most people with genital HPV infections did not have symptoms (90.2%). Less than half of the participants knew that the incidence of HPV is not highest among women in their 30's and many participants were

unsure about this item (39.3% false; 23.2% unsure). Fifty nine percent of participants knew that sexually active adolescents did not need to be tested prior to HPV vaccination (58.6%). Nurses with degrees were more likely to answer this question correctly than those with a master's degree ( $p=0.045$ ) or bachelors degree ( $p=0.037$ ). Nearly sixty percent of participants knew that men and women who have been diagnosed with HPV are not discouraged from getting the vaccine (59.8%) and respondents with doctoral degrees were more likely to answer this question incorrectly than those with less education. Fifty two percent knew that the HPV vaccine is not licensed for females older than 26 years old (52.3%) and almost eighty percent of participants were aware that there is a vaccine available for both males and females (78.4%). Finally, a slight majority of participants thought that genital warts were caused by the same HPV types that cause cervical cancer, which is untrue (53.2%). In addition nurses with 10-14 years of experience got this question correct significantly more often than nurses with less than 5 years of experience ( $p = 0.047$ ); those with 15-20 years of experience ( $p=0.037$ ) and those with more than 20 years of experience ( $p = 0.021$ ).

#### *Understanding of HPV in Males*

Participants agreed that “males are at risk for HPV infection” (71.4% strongly agreed and 18.8% somewhat agreed), and that “genital and anal warts can cause serious physical, emotional, and financial consequences for males patients” (77.7% strongly agreed and 15.2% somewhat agreed). Respondents also agreed that “HPV infection is common in males” (46.8% strongly agreed and 31.5% somewhat agreed) and that “HPV infection may contribute to anal, penile, or head and neck cancers in males” (59.5% strongly agreed and 26.1% somewhat agreed). There was more uncertainty that “nearly all sexually active males have already been infected with HPV

by age 26,” however the majority of participants agreed with this statement (21.4% strongly agreed, 33.0% somewhat agreed, and 20.5% neither disagreed or agreed).

In addition a total score was calculated based on each participant’s response to the statements about HPV in males. A total score of 25 would indicate more correct knowledge of HPV in males, while a total score of 5 would indicate the least correct knowledge. For this section, respondents with doctoral degrees had more correct knowledge towards the vaccine than those with less education, however, this difference was not statistically significant. Nurses with ten to fourteen years of experience had more correct knowledge on average towards the vaccine than any of the other experience groups, however, this difference was also not significant. Nurses over 60 years old had the most correct knowledge, on average, while nurses under 30 had the least correct knowledge of any age group, and this difference was significant ( $p=0.024$ ).

#### *Attitudes About HPV Vaccine*

Some respondents were concerned that “vaccination against a sexually transmitted infection may encourage earlier or riskier sexual behavior,” however, most were not concerned (1.8% strongly agreed and 12.6% somewhat agreed). Seventy two percent of participants did not feel that the vaccine is too new and hasn’t been around long enough (51.4% strongly disagreed and 21.6% somewhat disagreed). Similarly, two thirds of the participants were not concerned about the safety of the vaccine (45.0% strongly disagreed and 21.6% somewhat disagreed,) nor the efficacy of the vaccine (41.8% strongly disagreed and 23.6% somewhat disagreed). Only four and a half percent of participants were opposed to HPV vaccination for moral or religious reasons (2.7% strongly agreed and 1.8% somewhat agreed). Sixteen percent of participants reported to be “unaware that the vaccine is available for both males and females” (11.8% strongly agreed and 5.5% somewhat agreed). Nearly eighty percent of participants were

interested in the HPV vaccine for males (47.3% strongly agreed and 30.9% somewhat agreed). One third of the participants expressed ambivalence to being “more comfortable providing the HPV vaccine to males than females” (33.3% neither disagreed or agreed) and sixty one percent were no more comfortable providing the vaccine to males than females (45.9% strongly disagreed and 15.3% somewhat disagreed). Finally, participants ranged on their concern about the cost of the vaccine (31.2% strongly disagreed they were concerned about cost, 26.6% neither disagreed or agreed, and 22.0% somewhat agreed).

A total score for this section was also calculated based on each participant’s response to the questions with higher scores (max = 40) indicating the most favorable attitude towards the vaccine. Nurses with twenty or more years of experience had a more favorable attitude on average toward the vaccine than other experience groups. Doctoral degree holders possessed a more favorable attitude toward the vaccine than those with less education and persons ages 45 to 60 had the most favorable attitude of any age group. There were no statistically significant differences between groups based on experience or education.

#### *Attitudes About HPV Vaccine Use in Males*

More than ninety percent of participants agreed that males should be vaccinated against HPV to protect their future partners from cervical cancer and other consequences of HPV (73.6% strongly agree and 17.3% somewhat agree) as well as prevent females from getting infected with HPV in general (64.5% strongly agreed and 26.4% somewhat agreed). Respondents also agreed that it would be important to vaccinate males to prevent them from getting genital and anal warts (53.7% strongly agreed and 30.6% somewhat agreed) and anal and penile cancers (61.3% strongly agreed, 30.6% somewhat agreed). Participants disagreed that “we already vaccinate females against HPV so there is no need to vaccinate males as well” (81.1% strongly disagreed

and 15.3% somewhat disagreed). Participants also disagreed that HPV causes too few cancers to make vaccinating males worthwhile (54.1% strongly disagreed and 29.7% somewhat disagreed). Likewise they disagreed with not vaccinating males because genital and anal warts can be managed in other ways (68.2% strongly disagreed and 22.7% somewhat disagreed). Similarly participants disagreed that “it’s too late to vaccinate against HPV if an adolescent male is already sexually active” (67.3% strongly disagreed and 22.7% somewhat disagreed).

For this section persons under 30 years had the most favorable attitude towards vaccination of any of the age groups (NS) and doctoral degree holders possessed a significantly more favorable attitude towards the vaccine than those with a only a bachelors degree ( $p < 0.001$ ).



## DISCUSSION OF FINDINGS

Nurses in this study were knowledgeable about specific HPV information, such as most cervical cancers are caused by HPV infection, that HPV is a relatively common sexually transmitted infection, and that most people with genital HPV infections are asymptomatic, however, there was significant lack of knowledge related to the types of HPV that cause genital warts or cervical cancer. Respondents recognized that males are at risk for HPV infection and that infection can lead to serious complications in males but were less knowledgeable about the extent of infection seen in males or the availability of the vaccine for males.

The vast majority of respondents were interested in the HPV vaccine for males and were not concerned about safety of the vaccine, the efficacy of the vaccine, nor the cost of the vaccine. They also agreed that males should be vaccinated against HPV to prevent complications associated with HPV in both males and females, such as genital warts and cancers. Participants did not agree that males should not be vaccinated because females are already being vaccinated or that vaccinating males is not worthwhile because HPV causes too few cancers.

Findings from this study were similar to other research studies among nurses, however there were some notable differences. Registered Nurses surveyed in Thailand had a moderate level of knowledge about HPV but also had some major misunderstandings. Similar to this study, nearly ninety percent of respondents knew that HPV infection is usually asymptomatic, but only sixty percent were aware that almost all cervical cancers are caused by HPV infection compared to nearly eighty five percent of participants in this study. They also found age to have an inverse association with knowledge about cervical cancer and HPV, which was the opposite of this study, and found no association with marital status or education (Nganwai, et al., 2007).

Like the RNs in this study nearly three quarters of nurses surveyed in Canada recognized HPV infection as the cause of cervical cancer (Duval, et al., 2009). However, one difference that was noted was that only nineteen percent of their respondents answered incorrectly about genital warts and cervical cancer being caused by the same types of HPV while this study had fifty three percent of respondents respond incorrectly to this question. Compared to a similar study of knowledge and attitudes among family physicians and pediatricians, participating nurses had a greater lack of knowledge on average than the physicians studied (Daley et al., 2010). In particular, many of the nurses were unaware of specific guidelines related to vaccination, including that sexually active adolescents did not need to be tested prior to HPV vaccination, that men and women who have been diagnosed are not discouraged from getting the vaccine, that it is not licensed for women older than 26 years, and that the vaccine is available to both males and females. The lack of knowledge seen in the study was greater than expected since the majority of nurses sampled had a Masters degree or higher.

When comparing attitudes associated with HPV vaccination, there were also some differences with past studies. In Thailand nearly forty percent agreed that HPV vaccination would increase propensity for sexual activity (Nganwai, et al., 2007) while this study found roughly fourteen percent agreed with this belief. Looking at attitudes associated with HPV vaccination among participants, when asked about vaccinating males against HPV related to preventing transmission to females, more respondents strongly agreed to the importance of vaccinating males “to protect their future partners from cervical cancer and other consequences of HPV” than “to prevent females from getting infected with HPV. When asked about vaccinating males against HPV for prevention HPV consequences in males, more respondents strongly agreed to the importance of vaccinating males to “prevent them from getting anal and

penile cancers” than “to prevent them from getting genital and anal warts”. It is also important to note that there were less “strongly agree” responses when asked about HPV vaccination for prevention of consequences associated with males than for prevention of consequences in their female partners. This was different than previous studies of vaccination acceptability, in which protecting future partners did not increase motivation for vaccination of males for either parents or males (Liddon et al., 2010). Previous studies on physician acceptability also found that the vaccine was being declined due to the belief that there was no direct benefit to males, which is opposite from the findings of this study in nurses (Liddon et al., 2010).

When looking at responses based on employment, age, education and experience, respondents with doctoral degrees had, on average, the most favorable attitudes toward the vaccination both in general and this was a very significant difference for vaccine use in males. Conversely, they also were more likely to answer incorrectly when asked about sexually active adolescents need for testing of HPV antibodies prior to HPV vaccination.

## LIMITATIONS

This study has several limitations. First, the response rate of participants was low (4.97%,). Normal response rates for research surveys are 52.7% with a standard deviation of 20.4% (Yehuda & Holtom, 2008). The sample used was another limitation. The study used a convenience sample that was limited to previous UCF graduates, current UCF faculty and graduate students, and members of Theta Epsilon chapter of Sigma Theta Tau International Honor Society of the greater Orlando area. This group was mostly from the same geographic location and had similar educational backgrounds. This sample was an underrepresentation and a more random and diverse sample would have been better and is therefore less generalizable. Another limitation of the study was the lower than average response rate which may indicate that attitudes of the respondents might differ from non-respondents introducing non-response bias. Lastly, the sample was mostly females, however, this is congruent to what is seen in nursing as a profession.

## NURSING IMPLICATIONS

This study was the first of its kind to look at attitudes and knowledge of Registered Nurses related to HPV and associated vaccine specifically related to males. The study found inaccuracies and lack of knowledge among nurses. The results demonstrate a need for education about HPV and the associated vaccine, specifically for males, as vaccination rates are not as high as they are with other vaccinations. Education could take place as part of required continuing education for licensed nurses or in nursing program curriculum.

Marketing of the HPV vaccine was originally focused on girls and women. This could contribute to the lack of knowledge about the vaccine availability for males. Increased marketing in the public health arena would improve awareness among both nurses and the general public about the vaccine.

## SUMMARY

Six million people in the United States are infected with HPV each year and HPV infections are the most common sexually transmitted infections in the world today. HPV has been identified as a cause of both genital warts and cancers. HPV is also associated with increased risk for HIV acquisition (Houlihan et al., 2012). A vaccine that prevents the main types of HPV is approved in the US for use in males and females ages 9 to 26 and recommended as routine vaccination of males and females aged 11 to 12 years. The vaccine was originally approved for use in females and was marketed as a vaccine to prevent cervical cancer. Current research finds limited acceptance of the vaccine among parents, patients, and physicians. Additionally, studies among nurses find moderate knowledge about HPV as a whole.

Nurses in this study have lack of knowledge about HPV and the associated vaccine. Although attitudes reflect favorably toward the vaccine, there is a need for education about HPV and the associated vaccine among this population. This education could take place through continuing education, nursing school curriculum, or public health outlets.

## Appendix A: Explanation of Research

## APPENDIX A: EXPLANATION OF RESEARCH



### EXPLANATION OF RESEARCH

**Title of Project:** Human Papillomavirus and Vaccination of Males: Knowledge, Beliefs and Perceptions of Registered Nurses

**Principal Investigator:** Julee Waldrop, DNP, Associate Professor College of Nursing

**Co - investigator:** Leah White, BA, Honors in the Major Student Nurse

You are being invited to take part in a research study. Whether you take part is up to you.

- The purpose of this study is to determine knowledge, beliefs, and perceptions of registered nurses about the human papillomavirus and associated vaccination.
- As a participant in this study, you will be asked to complete a questionnaire.
- The questionnaire should take no more than 5 minutes to complete, but feel free to take as much time as you need. This is a one-time commitment and you will not be contacted regarding this study in the future. The results of this research study will be confidential.
- The survey will be available for completion for two weeks, at the end of this time period all participants who provide their email address within the survey will be entered into a drawing to receive one of 30 electronic gift certificates for \$5 to Starbucks.

You must be 18 years of age or older and a Registered Nurse to take part in this research study.

Completion of the survey will imply your consent to participate in this research study.

**Study contact for questions about the study or to report a problem:** If you have questions, concerns, or complaints: Leah White, Student Nurse, College of Nursing at 352-359-7803 or Julee Waldrop, Faculty Supervisor, College of Nursing at 407-823-2198.

**IRB contact about your rights in the study or to report a complaint:** Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.



## Appendix B: Survey

## APPENDIX B: SURVEY

### Human Papillomavirus (HPV) Survey

1. Some nurses are relatively unfamiliar with HPV epidemiology and HPV vaccine. Please answer the following true/false questions and base your answers on your current understanding of HPV and HPV vaccine, without looking at other sources of information. Feel free to let us know when you do not know the answer. Please check box that applies for each statement.

	True	False	Don't Know/ Not Sure
HPV is a relatively uncommon sexually transmitted infection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Almost all cervical cancers are caused by HPV infection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The incidence of HPV in women is highest among women in their 30's.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Most people with genital HPV infections are symptomatic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Genital warts are caused by the same HPV types that cause cervical cancer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sexually active adolescents should be tested for HPV before starting HPV vaccination.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HPV vaccine is not licensed for females older than 26 years of age.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HPV vaccine is available for both males and females			
Men and women who have been diagnosed with HPV should not be given HPV vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Below is a series of statements about HPV in males. Please rate how strongly you agree or disagree with each of the statements on the following scale.

	Strongly Disagree	Somewhat Disagree	Neither Disagree or Agree	Somewhat Agree	Strongly Agree
Males are at risk for HPV infection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HPV infection is common among males.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Genital and anal warts can cause serious physical, emotional, and financial consequences for male patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nearly all sexually active males have already been infected with HPV by age 26.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HPV infection may contribute to anal, penile, or head and neck cancers in males.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Below is a list of attitudes that may or may not describe how you feel about recommending and vaccinating male patients with HPV vaccine. Please rate how strongly you agree or disagree with each of the statements.

	Strongly Disagree	Somewhat Disagree	Neither Disagree or Agree	Somewhat Agree	Strongly Agree
We should vaccinate males against HPV in order to protect their future partners from cervical cancer and other consequences of HPV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

We already vaccinate females against HPV so there is no need to vaccinate males as well.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would be important to vaccinate males against HPV to prevent them from getting genital and anal warts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would be important to vaccinate males against HPV to prevent them from getting anal and penile cancers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HPV causes too few cancers among males to make it worthwhile to vaccinate them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vaccinating males doesn't make sense because genital and anal warts can be managed in other ways.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would be important to vaccinate males against HPV to prevent females from getting infected with HPV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It's too late to vaccinate against HPV if an adolescent male is already sexually active.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Below is a list of attitudes that you may or may have regarding the HPV vaccine. Please rate how strongly you agree or disagree with each of the statements.

	Strongly Disagree	Somewhat Disagree	Neither Disagree or Agree	Somewhat Agree	Strongly Agree
I am concerned that vaccination against a sexually transmitted infection may encourage earlier or riskier sexual behavior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that the vaccine is too new and "hasn't been around long enough"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am concerned about the safety of HPV vaccine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am concerned about the efficacy of HPV vaccine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am opposed to HPV vaccination for moral or religious reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am unaware that the vaccine is available for both males and females.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am interested in the HPV vaccine for males	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am more comfortable providing the HPV vaccine to males than females	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am concerned about the cost of the vaccine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Where are you currently employed?  
☐ Physician's office    ☐ Hospital    ☐ Other: \_\_\_\_\_
6. What is the highest degree you have earned?  
☐ Associates Degree    ☐ Bachelors Degree  
☐ Masters Degree    ☐ Doctoral Degree
7. How many years have you been a nurse?  
☐ Fewer than 5 years    ☐ 10 – 14 years    ☐ 20 or more years  
☐ 5 – 9 years    ☐ 15 – 19 years
8. What is your age?  
☐ Younger than 30 years old    ☐ 45 – 60 years old

☐ 30 – 44 years old ☐ Older than 60 years old

9. What is your sex?

☐ Male ☐ Female

10. Are you a parent?

☐ Yes ☐ No

(If yes, continue to next two questions.)

11. What gender children do you have?

☐ boy ☐ both  
☐ girl

12. What are the ages of your children? (select all that apply)

☐ 0 – 5 years ☐ 11 – 15 years ☐ 21 – 25 years  
☐ 6 – 10 years ☐ 16 – 20 years ☐ 26 or older

## Appendix C: IRB Approval

## APPENDIX C: IRB APPROVAL



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

### Approval of Exempt Human Research

**From:** UCF Institutional Review Board #1  
FWA00000351, IRB00001138

**To:** Julee Waldrop, DNP and Co-PI: Leah A. White

**Date:** February 13, 2013

Dear Researcher:

On 2/13/2013, the IRB approved the following activity as human participant research that is **exempt** from regulation:

Type of Review:	Exempt Determination
Project Title:	Human Papillomavirus and Vaccination of Males: Knowledge, Beliefs and Perceptions of Registered Nurses
Investigator:	Julee Waldrop, DNP
IRB Number:	SBE-13-09087
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the **exempt** status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 02/13/2013 03:03:09 PM EST

A handwritten signature in black ink that reads 'Joanne Muratori'.

IRB Coordinator

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