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Identifying the barriers to receiving the human papillomavirus (HPV) vaccine in adolescents and young adults to help increase vaccination rates in the United States.

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## PERMISSION

Title Identifying the barriers to receiving the human papillomavirus (HPV) vaccine in adolescents and young adults, to help increase vaccination rates in the United States.

Department Nursing

Degree Master of Science

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### Abstract

The human papillomavirus (HPV) is a sexually transmitted virus that is most commonly found in sexually active adolescents and young adults. Vaccination rates for HPV in the United States are very low compared to other recommended vaccines for this age group. The literature was reviewed to identify the reasons why adolescents and young adults, both male and female, are not receiving the HPV vaccine in the time frame recommended by the Center for Disease Control (CDC). Electronic databases, including CINAHL and PubMed were searched to help locate research studies and systematic reviews that would help to identify why adolescents and young adults are not receiving the HPV vaccine. The research studies and systematic reviews that were utilized in this review of literature were published between 2006 and 2016, since this is the time frame when the first HPV vaccine had been approved. The key reasons for not receiving the HPV vaccine that were identified, included: cost and time to complete the series, safety and efficacy, knowledge deficit regarding the vaccine and disease, provider knowledge and recommendations of HPV vaccine, vaccine not required for school admission, religious and cultural beliefs, concerns about increased sexual promiscuity with initiation of vaccine, and attitudes of distrust of the vaccine due to pharmaceutical companies financial gain.

*Keywords:* human papilloma virus (HPV), vaccine, attitudes, barriers, concerns, adolescents, young adults

**Identifying the barriers to receiving the human papillomavirus (HPV) vaccine in adolescents and young adults to help increase vaccination rates in the United States.**

Human papillomavirus (HPV) is a sexually transmitted infection (STI) passed through skin-to-skin sexual contact, including vaginal, oral, and anal sex, and is the leading cause of cervical cancer in women in the United States. HPV can affect both females and males, but is more prevalent in young adults. HPV is spread through sexual contact and is most preventable through vaccination (Centers for Disease Control and Prevention, 2015). Most HPV infections will clear without intervention in one to two years, but some infections remain and can progress to pre-cancerous lesions (Holman et al., 2014). HPV most commonly causes cervical cancer, but is also responsible for vulvar and vaginal cancers in women. HPV is responsible for penile cancer in males, and also causes anal, oropharyngeal cancers and pre-cancers along with genital warts and recurrent respiratory papillomatosis in both genders (Centers for Disease Control and Prevention, 2015).

HPV has affected about 79 million Americans, and there are about 14 million new cases each year. HPV is so common that most sexually-active men and women will be positive for a least one type of HPV during their lifespan (Centers for Disease Control and Prevention, 2016). The Centers for Disease Control and Prevention (CDC) (2016) recommends that both genders should be vaccinated against HPV starting at age eleven or twelve and if they have not received it as adolescents, it should be recommended as a catch-up vaccine for females through age 26 and males through age 21. The recommendation for gay or bisexual men is through age 26 (Center for Disease Control and Prevention, 2016).

There is no definitive test to find out a person's HPV status. Most individuals affected with HPV do not even know they have it and will never develop symptoms. The vast majority of

HPV infections will clear on their own without any intervention (Ratanasiripong, 2012).

Females are routinely screened for HPV at the age of 30 and over. Women are usually unaware that they have the virus until their Pap smear comes back abnormal. Some individuals will discover that they have the virus when they develop genital warts. There are about 360,000 new cases of genital warts each year, along with 11,000 women per year that are diagnosed with cervical cancer (Centers for Disease Control and Prevention, 2016).

The HPV vaccine is a series of three injections. The first dose is recommended at the age of eleven or twelve, then the second dose is given one to two months after the first, and the third dose is given six months after the first dose (Centers for Disease Control and Prevention, 2013). The vaccine is routinely given at age eleven or twelve because optimal efficacy is derived if it is administered before the onset of sexual activity, and because antibody responses are highest between age nine and fifteen (American Academy of Pediatrics, 2012). The vaccination rates in the United States in 2014 were 39.7% and 21.6% respectively for girls and boys; these numbers reflect individuals who received all three doses of the vaccine (Centers for Disease Control and Prevention, 2015).

There are over 100 types of HPV, about 40 of them are sexually transmitted, and 13 can potentially cause cancer. There are currently three HPV vaccines that the CDC recommends. HPV4 (Gardasil 4) was the first vaccine for HPV and was introduced in 2006 for females and in 2009 for males. The HPV4 vaccine protects individuals against types 6, 11, 16 and 18. Types 6 and 11 are responsible for about 90% of anogenital warts. Type 16 is being detected in 90% of oropharyngeal cancers, and is the type that causes most cervical cancers. HPV2 (Cervarix) was introduced in 2009 and it protects against strain 16 and 18, which are responsible for 66% of cervical cancers and the majority of other HPV-attributable cancers. Types 16 and 18 are

considered the high-risk oncogenic types of HPV. HPV9 (Gardasil 9) is the third vaccine, and was introduced at the end of 2014. HPV9 protects against type 6, 11, 16, 18, 31, 33, 45, 52, and 58. The five strains that were added to the HPV9 vaccine are identified as high risk strains that are responsible for 15% of cervical cancers, but the HPV9 vaccine will protect an individual against 90% of potential cancers (American College of Pediatricians, 2016). Risk factors for persistent oncogenic HPV infection include smoking, HPV type, increasing age, lack of condom use, immunodeficiency, possible other sexually transmitted infections, and oral contraceptive use. High-risk oncogenic infections will lead to cervical cancer and negative health outcomes in 10% of women who contract high-risk HPV types (Ratanasiripong, 2012).

It's important to identify why the vaccination rates are so low and what providers can do to help increase the rates. Providers should understand the most common reasons why individuals are not getting vaccinated against HPV. Increasing the vaccination rate can help prevent oral and anogenital warts and most importantly cancer. Most parents along with their adolescents and young adult children experience different attitudes about receiving the HPV vaccine. Most of them lack the knowledge to make an appropriate informed decision about receiving the vaccine. There are many concerns and questions that may arise when parents, children, and young adults are asked about receiving the HPV vaccine. It's important that all of the barriers to HPV vaccination uptake are known and addressed to help increase the rates of vaccination for HPV in adolescents and young adults. If the barriers to the uptake of the HPV vaccine are not addressed, this can have a lasting effect on the future of our young people's future sexual, physical and reproductive health (Ferrer, Trotter, Hickman, and Audrey, 2014).

### Case Study

Susie is a 20 year-old female that presents to the University of North Dakota's clinic on February 5, 2016 because she would like to start birth control. She is currently a college student at the University of North Dakota (UND). She does have a primary care provider that she sees back in her hometown. She states that she is sexually active and uses condoms for protection. Her last menstrual period was on January 19, 2016. She states her periods are regular and she bleeds for about five days. She does get occasional cramps but she takes Midol and that seems to help. She does not have a history of sexual transmitted infections or past pregnancies. She states she did use Emergency Contraception on January 1, 2016 due to a condom breaking. She states that she does have some white milky vaginal discharge. She would also like testing for sexually transmitted diseases today. She states she would like to go on "the pill."

A thorough history was obtained from Susie during the visit. She is overall a very healthy young female. She does not have any significant past medical history. She has not had any surgeries. Susie states that she takes a multivitamin, when she remembers, and reports using over-the-counter Xenadrine for weight loss on occasion. She has an allergy to Penicillin, but does not recall the reaction to the medication. She states the reaction happened as a child and all she knows is her mother told her she is allergic. Susie's immunizations are up-to-date as recommended by the CDC, except she reports not having the HPV vaccine and is not sure why she hasn't had it. In regards to family history she reports that her mother had a breast mass that was removed, but it was benign. She also reports that her father had a blood clot after he was involved in an accident where he hit that area of his leg on impact. Susie is a college student at UND in the nursing program. She denies smoking, but reports using occasional alcohol on weekends and denies illicit drug use. She is sexually active with male partners and currently uses

condoms for protection against pregnancy and sexually transmitted infections (STI's). Susie states that she maintains good grades, eats a healthy diet, and exercises regularly.

A comprehensive review of systems was obtained from Susie and was found to be mostly negative with the exception of a few complaints. She does deny unintentional weight loss or gain, but reports using Xenadrine on occasion to maintain an acceptable weight for herself. Susie complains of a white milky vaginal discharge that started a few weeks ago. She denies any odor, dysuria, itching, hematuria, frequency, or back pain. Susie last had sexual intercourse around New Year's Eve when she reports the condom breaking so she used emergency contraception to prevent pregnancy. She states she has never had an STI as far as she can remember, but has also never been tested. She reports seeing her primary care provider in her hometown yearly, but has never had a Papanicolaou test (PAP), due to her age. She did not receive the HPV vaccine series, but is not sure why she did not get it. Susie reports that her menstrual cycles have been normal and she last had her cycle around January 19, 2016 for about five days. She denies any past history of oral contraceptives other than the emergency contraceptive she used at the beginning of January 2016.

A physical exam was performed on Susie. Vital signs were obtained before her visit and her blood pressure was 122/74 mm/hg, pulse 82 bpm, respiratory rate 18 bpm, and temperature 98.5 degrees Fahrenheit. Her weight was recorded at 110 pounds and height was five feet seven inches. Her vital signs were all within normal limits, except her Body Mass Index (BMI) was calculated and found to be 17.2, which falls into the category of underweight (Center for Disease Control, 2015). Susie's exam was essentially negative. She was a well-appearing female in no acute distress. Her head, eyes, ears, nose and throat were all unremarkable. Susie's neck was supple with no lymphadenopathy or thyromegaly. Her lungs were clear bilaterally with no

adventitious sounds or dyspnea. Susie's heart rate was regular with no extra beats noted. Heart sounds S1 and S2 were normal and no murmurs were noted upon examination. Abdomen was soft and non-distended; bowel sounds were present in all four quadrants. Neurologically she was grossly intact with good balance and coordination. Her skin was warm and pink without rashes. She had strong pulses bilaterally and no edema was appreciated. A pelvic exam was not performed due to the situation, but a swab for TYM due to her complaint of white milky discharge from the vagina and history of sexual activity and recent incident of condom breaking during intercourse.

After reviewing Susie's history, review of systems, and completing a good physical exam, the plan of care for her is to obtain a TYM culture and urine to screen for chlamydia and gonorrhea due to milky white discharge and past sexual history. Her urine will also be checked for signs of a urinary tract infection. A urine pregnancy test was also done because Susie would like to start her birth control pill immediately and not wait for her next period, as recommended by current guidelines. Her urine was negative for chlamydia and gonorrhea, infection, and pregnancy. Her TYM swab was also negative. She has no contraindications to start the oral birth control pill, so Susie will be started on a monophasic oral contraceptive. She was instructed to start the pill pack on Sunday and use a form of back-up birth control for seven days. She was educated on oral contraceptives and how they do not prevent STIs, so she should still use condoms. She was also educated on side effects of the medication and a chart was given to guide her in the unfortunate event that she missed a pill or two. Susie was educated on HPV and HPV vaccine and offered the vaccination. All her questions were answered and she was encouraged to call with any other questions. Susie was informed that she could come in at any time if she decides that she would like the HPV vaccine and the series would be started for her. She is aware

that if she wants the vaccine she needs to get it before age 26. The majority of the visit was spent on education. She was encouraged to make an appointment with her preferred provider for her Pap test, because she should have it done when she turns 21. Susie was encouraged to return to clinic or call if she has any other concerns.

### **Literature Review**

The purpose of the literature review was to identify what the barriers are to adolescents and young adults receiving the HPV vaccine. As mentioned before, the HPV vaccine protects against cervical, vulvar, vaginal, penile, anal, and oropharyngeal cancers and precancers, along with genital warts and recurrent respiratory papillomatosis (Centers for Disease Control and Prevention, 2015). Susie is a 20 year-old college student who has still not received her HPV vaccine and it has never been offered to her. It's important that providers understand the barriers so they can identify the patients that are at higher risk for contracting HPV, along with the recommended age groups that are eligible to receive the vaccine. If providers gain a better understanding of the reasons that patients are foregoing the HPV vaccine they can provide better education so the patient and/or parents can make an informed decision regarding the HPV vaccine.

The review of literature was done by means of the internet through The Harley French Library of the Health Sciences online. The search engines utilized were the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and PubMed. The articles were all within the last ten years, since 2006 was when the first HPV vaccine was approved. The search terms used were *HPV, Gardasil, vaccine, immunization, attitudes, barriers, belief, safety, concerns, adolescents, and young adults*. There were 26 resources found and reviewed and it was narrowed down to a total of 16 resources that were pertinent to this review of literature.

### **Attitudes toward the HPV vaccine**

Most women have positive attitudes regarding the HPV vaccine and intend to receive the vaccine. In the issue regarding minors, studies show that most parents intend on giving the vaccine to their child. Parents and adolescents are more likely to get the HPV vaccine if their provider recommends it and the vaccine is publicly funded. The HPV vaccine has higher uptake in patients with a history of gynecological disease, with mothers who have experienced cancer in the family, and those patients that smoke and belong to lower-income families. (Z. Chan, T. Chan, and Wong, 2012). Slomovitz and Bodurka (2007) reveal a study that asked the parents of children ages 10-15 years of age if they are going to consent to the HPV vaccine for their child. The study reported that 55% of parents had intended to give their child the vaccine. The parents were then given an educational session on the HPV vaccine and the disease and after the session another 20% of parents were willing to give their child the vaccine. (Slomovitz and Bodurka, 2007).

Warner et al. (2015) did a study on Latino parents' perceptions of the HPV vaccine. Latinas have the highest risk of cervical cancer, so prevention is very important. Parents reported that they were very misinformed about the vaccine. Some admit they didn't know that males needed to be vaccinated too, they were unaware of what age groups needed to be vaccinated, and they did not know that the vaccine was a series of three injections (Warner et al., 2015).

Adolescents that have not yet been sexually active are the prime targets for education on the HPV vaccine. The vaccine is most effective when given to those adolescents that have not yet had sexual relations. Some parents believe that their child does not need the vaccine because they are not sexually active, but they need to be informed that this is the best time to vaccinate (Slomovitz and Bodurka, 2007).

### **Safety and Efficacy**

There were extensive safety trials before licensure of HPV4, HPV2, and HPV9. No significant reactions or concerns were identified; however there is a risk of local reactions and syncope after receiving HPV4. Patients that are receiving these vaccines should remain sitting or lying and should be monitored for fifteen minutes after the vaccine is administered. There were studies done on potential adverse events such as pregnancy outcomes, autoimmune conditions, demyelinating and other neurological conditions, anaphylaxis, thromboembolic problems, and stroke. Their post-vaccine rates for these problems were not found to be any different from background rates (American College of Pediatricians, 2016). More than 40 million doses were administered in the first five years of routinely vaccinated girls in America and no vaccine-specific adverse effect, with the exception of rare anaphylaxis to vaccine components were detected (American Academy of Pediatrics, 2012).

A Warner et al. (2015) study that looked at Latino parents' perception of the HPV vaccine had high levels of concern about adverse effects that the vaccine may cause. Their biggest concerns were that the vaccine could cause infertility, death, irregular menstruation, and behavioral issues. They believed the HPV vaccine was dangerous and could cause serious complications for their child. Once the parents were properly educated on HPV and the benefits and risks of the vaccine, they were more willing to consent to vaccinate their child. Most parents just needed more information on the vaccine, because they had never been properly educated (Warner et al., 2015).

Parents and patients need to be reminded by their healthcare provider that the HPV vaccine is highly effective and it's one of the best defenses we have against cervical cancer. There are many negative media reports on the HPV vaccine and the potential side effects. Most

media reports are exaggerated and not true, but this still puts doubt in the patient and parents minds. The risk of receiving the vaccine is minimal and the benefit is enormous. Healthcare providers need to be knowledgeable of the HPV vaccine and its safety and efficacy to be able to educate parents and patients so they can make an informed decision regarding vaccination (Z. Chan et al., 2012). Short et al. (2010) reported that in their study they interviewed parents of adolescents regarding the HPV vaccine and found that most of the education on HPV and the HPV vaccine was received through the media or news reports. Because the source of education is not reliable and is often inaccurate, there are many parents, adolescents, and young adults that are misinformed about HPV and the HPV vaccine. Healthcare professionals really need to step it up and provide good education and work with the media to ensure that everyone is getting accurate information about HPV and the vaccine (Short et al., 2010).

Parents and adolescents are fearful of the HPV vaccine due to the newness of the vaccine. They are concerned about long-term effects from the vaccine (Todorova et al., 2014). According to Okoronkwo, Sieswerda, Cooper, Binette, and Todd (2012) parents that are declining the HPV vaccine for their children do not trust the HPV vaccine. They are concerned about the lasting health problems that the vaccine could cause, because its safety is “unproven” and also are wary of the government’s approval as a guarantee for safety because they believe the vaccine is being pushed for monetary gain for the pharmaceutical companies. (Okoronkwo et al., 2012).

The CDC has concluded that the HPV vaccine is safe and effective and the benefits definitely outweigh the risks. The HPV vaccine has proven to be effective in prevention of cervical cancer along with decreasing the number of genital wart diagnoses. In countries where the vaccine is free and vaccination rates are higher, they are seeing fewer incidences of genital warts and less cervical abnormalities on yearly Pap tests. They have also concluded that it is safe

to give the Gardasil vaccine along with the rest of the recommended adolescent vaccines (Haupt and Sings, 2011).

### **Cost and Time**

Financial barriers were reported by many parents and young adults regarding the HPV vaccine. In the United States, most insurance companies are covering the cost of the vaccine. The vaccine is too expensive for those individuals that do not have insurance, and in return these individuals are not being vaccinated. Some parents, adolescents, and young adults agree that if the cost of the vaccine was covered by the government they would be more inclined to consent to get the vaccine. Studies show that if the vaccine was offered for free, this barrier would not exist (Ferrer, Trotter, Hickman, Audrey, 2014).

Haupt and Sings (2011) reported that Australia was one of the first countries to implement free HPV vaccines. They gave Gardasil vaccines to girls in school and to women younger than 27 years of age. They achieved vaccination rates of approximately 70%. They saw a decrease in genital warts diagnoses and also a significant reduction in the incidence of high grade cervical abnormalities in women aged 18-20 years. The HPV vaccine is very beneficial, but the cost of it can be a huge barrier to the uptake of the vaccine. (Haupt and Sings, 2011). The cost of the vaccine per dose can be up to 130 dollars or more (Gerend, M. Shepherd and J. Shepherd, 2013).

The cost of transportation to the clinic to receive the vaccine was also found to be a common barrier to why adolescents and young adults are not receiving the HPV vaccine. The HPV vaccine is a series of three injections given over a six month period, so the recipient of the vaccine would need to report to the clinic several times (Short et al., 2010). This has become an important barrier that needs to be overcome. Offering the vaccine in schools, workplaces or in

the pediatrician's office when they take their children in for appointments would help to overcome this barrier and help increase the rates of HPV vaccine uptake (Short et al., 2010).

Gerend et al. (2013) did a study on the perceived barriers of the HPV vaccine and they identified cost and time constraints to be a more identified barrier for those that intended on getting the HPV vaccine from the start. If the patient or parent did not intend or were undecided about consenting to the vaccine their biggest concerns were safety and efficacy (Gerend et al., 2013).

Okoronkwo et al. (2012) reported a study from Canada that examined the effects of knowledge and attitudes of parents toward the HPV vaccine when it was offered free to students in a school-based setting. The vaccine was publicly funded and given at school only if the parents consented. The vaccine was not mandated for school-entry. The barrier of cost and time constraints were overcome, but parents still chose not to vaccinate due to safety concerns. The study concluded that the parents who did not consent felt that the risks of receiving the vaccine outweighed the benefits (Okoronkwo et al., 2012).

To overcome the barriers of cost, providers should inform the parents and/or patient about the Vaccines For Children (VFC) program. It is a federally funded program that provides vaccines that are recommended by the Advisory Committee on Immunization Practices (ACIP) to children ages 0-17 at no cost. The children that qualify for these vaccines are children who do not have insurance, are on Medicaid, or are underinsured. The CDC buys vaccines at a discount and distributes them to state health departments and public health agencies that give them to private or public health clinics to give to those children that are eligible for VFC vaccines. The HPV vaccine is part of this program (Centers for Disease Control and Prevention, 2016). They would still have the barrier of time constraints, but if the parent knew that the vaccine was free of charge, the hope would be that this would help increase the uptake of the HPV vaccine. Parents

and patients are usually not aware that the VFC program exists, so understanding what the reasons are that the adolescents are not being vaccinated will help guide the provider's education.

### **Not required for school-entry**

In the United States, mandatory vaccines for school-entry are decided on a state level for each state. HPV vaccine is not mandatory for entry to school due to the fact that it is not transmittable from person to person during the school day. It is only transmitted during sexual contact. Some healthcare providers feel that making the HPV vaccine a school-entry mandate would help increase our vaccination rates in adolescence and decrease some of the concerns that parents have regarding the importance of the vaccine. The belief among parents seems to be that if the school does not mandate the vaccine, it must not be necessary for my child to receive it. Some parents in the study felt that mandating the vaccine for school-entry would help to get more adolescents vaccinated and therefore result in greater benefit for the children (Ferrer et al., 2014).

Z. Chan et al. (2012) states that vaccination uptake for the HPV vaccine is increased when the vaccine is publicly funded and provided in a school-based setting. Parents are more accepting of the vaccine when it is given at school and they tend to be less worried about safety and efficacy (Z. Chan et al., 2012).

### **Increased Sexual Promiscuity**

Some healthcare providers find it uncomfortable to talk about sexual intercourse with adolescents, and this is a huge barrier when the intention of the HPV vaccine is to implement it before the onset of sexual activity. Healthcare providers say that the HPV vaccine is hard to discuss with adolescents and parents, because most parents do not want to accept that their child

is or will be engaging in sexual activity. Some of the studies revealed that parents would delay the vaccine until their children were older, and at an age that they felt their child would be sexually active. There was also concern among parents that if they gave their adolescent the vaccine it would give them the “green light” to become sexually active. Some adolescents voiced opinions about the vaccine and they thought they were completely protected against all sexually transmitted infections. This raised concerns among parents and healthcare providers. Education needs to be done with patients and parents before the vaccine is given. Some of the parents wanted to give the vaccine to their children but did not want to discuss sex with them. They just wanted to tell their child that they were getting “a shot” to protect them from cancer (Ferrer et al., 2014).

### **Healthcare Provider knowledge and recommendation**

Parents agree that when their healthcare provider is recommending the vaccine, they are more likely to give their child the vaccine. If the provider tells the parent the vaccine is available for their child at age eleven but doesn't strongly recommend it, parents are more likely to forego the vaccine. Some providers do not recommend the vaccine because of the concerns of safety. There are a small number of providers that don't routinely recommend the HPV vaccine since it is not required for school-entry. They figure if the parent really wants it they will bring it up at the appointment (Ferrer et al., 2014).

Healthcare providers seem to be recommending the HPV vaccine based on a perceived risk to older adolescents and are not recommending it in younger adolescents at age eleven or twelve. Healthcare providers need to be educated better and understand the importance of recommending the vaccine before the adolescent becomes sexually active. It is best to catch them as early as possible. Studies show that parents respect the recommendation of their

healthcare provider and if they recommend doing the vaccine at a younger age, the parent will most likely consent. Healthcare providers will benefit from education on the HPV vaccine and the current recommendations for it (Holman et al., 2014).

Rosberger, Krawczyk, Stephenson, and Lau (2014) did a study that examined knowledge, attitudes, and beliefs of community based health educators and counselors regarding the HPV vaccine. They gave the participants questionnaires before and after the two hour workshop, specifically on the HPV vaccine. Before the workshop most participants had moderate knowledge of HPV and the vaccine, and they did not feel confident discussing it with parents and/or patients. They provided them with knowledge and recommendation on HPV and the vaccine during a two hour workshop. After the workshop their confidence in being able to provide accurate information to parents and/or patients and willingness to recommend the vaccine significantly increased. The workshop also helped reduce anxiety about possible side effects of the vaccine. They were educated on the safety and efficacy of the vaccine and were able to pass their knowledge on to patients and parents and help increase uptake of the HPV vaccine. The “potential” side effects of the vaccine are one of the primary reasons why parents are not vaccinating their children with the HPV vaccine (Roseberger et al., 2014).

In the 2015 study by Warner et al., regarding the perception of Latino parents on the HPV vaccine, parents agree that healthcare providers are highly influential on the parents’ decision to vaccinate their child. The parents state they trust their providers and know that they are getting accurate information regarding the vaccine. The parents in the study who decided not to vaccinate their child report that their provider did not offer it to them, so they didn’t think it was important. There were some parents that did speak to their providers about the vaccine but the

provider did not prioritize the vaccine and offered it as optional, so they didn't find it important, and therefore didn't consent to the vaccine for their child (Warner et al., 2015).

Todorova, Alexandrova-Karamanova, Panayotova, Dimitrova, and Kotzeva (2014) reported a study they did to understand how the HPV vaccine is perceived by health care providers in Bulgaria. Health care providers in Bulgaria were excited about the HPV vaccine, since cervical cancer mortality rates were on the rise. The HPV vaccine gives the providers hope for the future. Health care providers are in the position to educate parents and patients on the vaccine, and to do this education they need to be well educated themselves. Health care providers in Bulgaria feel responsible for reducing fears and uncertainties among patients and parents, by doing proper education on HPV and the vaccine, by doing so they are hoping to increase the rates of HPV vaccine uptake (Todorova et al., 2014).

### **Knowledge Deficit**

Many parents report that they do not have the proper knowledge regarding the vaccine to be able to consent for their child to receive the vaccine. Parents would like more information about the vaccine and the safety, adverse effects, and current age recommendations. Communication is important between the healthcare provider and the parent and patient. There is a belief among parents and adolescents that only sexually active adolescents need the vaccine, and this belief can cause decrease uptake. Vaccinating adolescents at age eleven or twelve not only targets adolescents at an age where most are not sexually active yet, but this is the age when the immune system response to the vaccine is greater (Holman et al., 2014). If the proper education is given to the parent it helps them make an informed decision regarding the vaccine, instead of relying on the media, internet stories, and word of mouth.

Habel, Liddon, and, Stryker (2009) did a study that reviewed the internet for information regarding the HPV vaccine. They found that the HPV vaccine is being mostly marketed as a vaccine to prevent cervical cancer, so it is not targeting the male population. They also noted incomplete information and inaccuracies in information that was provided online. There are quite a few articles on the internet that question the safety of the vaccine. The public health experts should be readily available to answer questions that the public has regarding the safety of the vaccine. Public health experts should be doing a better job of putting accurate information online and keeping it up to date. They should put more effort into how the media coverage and exposure affects the vaccination rates (Habel, Liddon and, Stryker, 2009).

There is belief among the some Latino parents that healthcare providers should give lectures in schools to parents and their children to help learn the importance of the vaccine and its benefits, some even believe that it should be integrated into the sexual education classes, so the adolescents are getting the correct information from an accurate source. Educational materials should be offered in all languages, not just English (Warner et al., 2015).

Gerend et al. (2013) stated that parents that did not intend to consent to the HPV vaccine argued that there was no need for the vaccine because their child was not sexually active. Parents argued that if they consented to give the HPV vaccine to their child at such a young age, they were giving them permission to become sexually active. Some parents were not ready for the sex conversation that early in their child's life. Education should be tailored to the concerns of the parent and/or patient. If they express concern about safety the provider could focus on reducing those concerns through education. If the concern was cost or time constraints, the provider could focus on finding a good time and place to do the vaccine, or refer them to other clinics that offer the vaccine at a reduced rate or participated in VFC (Gerend et al., 2013).

### **Religious and Cultural Concerns**

Religious and cultural concerns are raised when talking about the HPV vaccine. Some women believe that cultural and religious mores can play a role in whether or not they receive the HPV vaccine. Religions and cultures that don't believe in sex before marriage are refusing the vaccine, because they don't want their child to think that receiving the vaccine gives them the right to start becoming sexually active. They also believe that there is no need for the vaccine if they aren't sexually active. A reminder that the vaccine needs to be given before the child becomes sexually active is important (Short et al., 2010).

In the study regarding Latino parents' perception regarding the HPV vaccine, parents reported that their religious beliefs were very influential in their decision to vaccinate. If their religion didn't believe in sex before marriage then they usually didn't consent to vaccinate their children (Warner et al., 2015). It's important to note that the CDC reported that 62.3% of females in the United States have started sexual relations by the twelfth grade, 27.9% by ninth grade, and 4.2% by age 13 (Slomovitz and Bodurka, 2007).

The review of literature identified the reasons why adolescents and young adults, both male and female, are not receiving the HPV vaccine. The barriers to receiving the HPV vaccine in adolescents and young adults included attitudes toward the vaccine, cost and time constraints, safety and efficacy, knowledge deficit regarding the vaccine and disease, provider knowledge and recommendations of HPV vaccine, vaccine not required for school entry, increased sexual promiscuity with initiation of vaccine, and religious and cultural beliefs.

To help increase vaccination rates, providers need to be aware of these barriers that they will encounter in their practice, so they can be prepared to educate patients and parents.

### **Learning Points**

The review of literature identified some important learning points.

1. Education is key when it comes to vaccinations. The majority of the parents, adolescents and young adults are misinformed regarding the HPV vaccine. There needs to be more resources online and through the media that gives complete and accurate information on the HPV vaccine. Health care providers should offer educational sessions in their community regarding the benefits to the HPV vaccine.
2. The provider is very influential in the decision making process on whether parents are going to consent to the HPV vaccine for their child. Providers need to be well educated and be able to answer all the parents' questions, along with calming their fears. The provider should be helping the parent and/or patient weigh the risk and benefits associated with receiving the HPV vaccine. The provider should have written education to give to the parents and/or patients and it should be available in different languages.
3. Patients and/or parents need to be aware of the Vaccines for Children (VFC) program that is funded through the state. The state of North Dakota has a VFC program that provides vaccines free of charge for those children under the age of 18 that are underinsured, Medicaid, or have no insurance. Cost was a huge barrier for those patients who wanted to receive the vaccine, but couldn't afford it. By making them aware of the state funded program for vaccines this will hopefully help increase vaccine uptake.

4. HPV is a preventable disease that hopefully can someday be eradicated with increased vaccination rates. Health care providers need to properly educate parents and patients to help increase uptake of the HPV vaccine.
5. Making the HPV vaccine more available in different areas, other than just the primary care clinic could greatly increase the vaccination rates. If the vaccine could be integrated into schools to be given by the school nurse, for those with parental consent, could help us reach the adolescents that are being missed in the clinic setting.

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