2013

Increasing Knowledge About HPV and the HPV Vaccine Amongst Adolescents and Adults Through a School-Based Setting: A Capstone Project

Denise Barry
UMass Amherst

Follow this and additional works at: https://scholarworks.umass.edu/nursing_dnp_capstone

Part of the Nursing Commons

Barry, Denise, "Increasing Knowledge About HPV and the HPV Vaccine Amongst Adolescents and Adults Through a School-Based Setting: A Capstone Project" (2013). Doctor of Nursing Practice (DNP) Projects. 31.
Retrieved from https://scholarworks.umass.edu/nursing_dnp_capstone/31

This Open Access is brought to you for free and open access by the College of Nursing at ScholarWorks@UMass Amherst. It has been accepted for inclusion in Doctor of Nursing Practice (DNP) Projects by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.
Increasing Knowledge About HPV and the HPV Vaccine Amongst Adolescents and Adults

Through a School-Based Setting: A Capstone Project

by

Denise E. Barry, DNP(c), BSN, ACRN, RN

Submitted to the Graduate School of the
University of Massachusetts Amherst School of Nursing
in partial fulfillment of the requirements for the degree of

DOCTOR OF NURSING PRACTICE

Public Health Nurse Leader

June, 2013
Abstract

Infection with human papillomavirus (HPV), the sexually transmitted virus that causes cervical and other types of cancer, can be prevented. A safe and effective vaccine has been approved for both boys and girls. Despite this recommendation and alarming rates of HPV-associated cancers, vaccination rates among adolescents in the United States are low. A capstone project was implemented to target students and parents of students who attend Holyoke High School and William J. Dean Vocational Technical High (Dean Tech) in Holyoke, Massachusetts. The goals of the project were to improve knowledge about HPV and the HPV vaccine in students and parents, to increase the number of parents of adolescents who intend to vaccinate their children against HPV, and to increase the number of adolescents who intend to receive the HPV vaccine. The project was based on the theoretical framework of the Health Belief Model. Students in ninth grade health classes at both schools were taught content about HPV and why they should receive the HPV vaccine. An informational handout was sent home with all ninth grade students at the schools and reminded them that the school-based health center (SBHC) had the HPV vaccine available. Outreach to parents was done at two community events. The research translation method that was used for this project is an educational intervention that utilized the Plan-Do-Study-Act (PDSA) model. Evaluation of this project was done with a pre-test post-test design with the ninth grade students. The results showed an increase in knowledge and increase in intent among the students to get vaccinated against HPV. No formal data was gathered from the parents. Knowledge gained from this capstone project should encourage nurses to continue educating adolescents and their parents about the HPV vaccine and showed that SBHCs are a promising site to increase HPV vaccination rates.
# Table of Contents

- **Abstract** ................................................................................................................................. 2
- **Introduction** ............................................................................................................................ 4
- **Problem** .................................................................................................................................. 6
- **Review of Literature** ................................................................................................................. 9
  - **Review of the Evidence** ........................................................................................................ 9
  - **Synthesis of the Evidence** .................................................................................................. 17
- **Theoretical Framework** ........................................................................................................... 19
- **Project Description, Implementation, and Monitoring** .......................................................... 20
  - **Population/Community** ...................................................................................................... 20
  - **Needs Assessment/Organizational Analysis** ...................................................................... 23
  - **Stakeholder Support** ......................................................................................................... 24
  - **Resources, Barriers, and Facilitators** ................................................................................ 24
  - **Protocol/Plan** .................................................................................................................... 25
    - **Goals and Objectives** ....................................................................................................... 25
    - **Project Design and Evaluation** ...................................................................................... 25
    - **Costs and Resources** ...................................................................................................... 29
    - **IRB Approval and Ethical Considerations** ..................................................................... 29
    - **Implementation and Timeline** ...................................................................................... 29
- **Evaluation** .................................................................................................................................. 31
  - **Demographic Data** ............................................................................................................ 31
  - **Data Analysis-Pre-tests/Post-test** ..................................................................................... 31
  - **Interpretation of the Findings** .......................................................................................... 36
Increasing Knowledge About HPV and the HPV Vaccine Amongst Adolescents and Adults

Through a School-Based Setting: A Capstone Project

In June of 2006, the United States (U.S) Food and Drug Administration (FDA) released a statement that the vaccine Gardasil® had been approved for use to prevent four types of human papillomavirus (HPV) that can cause cervical, vaginal, and vulvar cancer and genital warts in women (U.S. FDA, 2006). This was groundbreaking medical news. Headlines around the world announced the news of the first ever vaccine to prevent cancer (British Broadcast Company, 2006; Harris, 2006; Rubin, 2006). Another vaccine, Cervarix®, was released in 2009. Cervarix® prevents two types of HPV that can cause cervical cancer and precancerous lesions (U.S. FDA, 2009).

There are many types of cancer that are related to HPV. According to the Centers for Disease Control and Prevention (CDC) (2011a), almost all cases of cervical cancer are caused by HPV. Ninety percent of anal cancers, 65% of vaginal cancers (De Vuyst, Clifford, Nascimento, Madeleine, & Franceschi, 2008), 50% of vulvar cancers, 35% of penile cancers (Parkin & Bray, 2006), and 60% of oropharyngeal cancers (Kreimer, Clifford, Boyle, & Franceschi, 2005) can be attributed to HPV infection. The CDC (2012b) estimates that over 20 million Americans are infected with HPV and every year there are 6 million new cases of HPV infection.

There are over 40 types of HPV virus. Types 16 and 18 are the most oncogenic strains of the HPV virus. They are responsible for causing over 70% of cases of cervical cancer and a large proportion of other types of genital cancer. HPV types 6 and 11 are responsible for causing over 90% of cases of genital warts. Cervarix® is a bivalent vaccine that prevents HPV types 16 and 18. Gardasil® is a quadrivalent vaccine that prevents HPV types 6, 11, 16, and 18 (CDC, 2012b).
The Advisory Committee for Immunization Practices (ACIP) is a group of medical and public health experts that are appointed by the Secretary of the U.S. Department of Health and Human Services to make recommendations about vaccines for residents of the U.S. (CDC, 2012a). ACIP first recommended in 2006 that females between the ages of 9-26 be vaccinated with Gardasil® to prevent cervical cancer and genital warts (CDC, 2007). In October 2009, ACIP recommended that all males between the ages of 9-26 be vaccinated with Gardasil® to prevent genital warts (CDC, 2010). In December 2011, ACIP again recommended all males and females between the ages of 9-26 be vaccinated with Gardasil® because the vaccine can also prevent anal cancer (CDC, 2011b). In 2011, ACIP also recommended that routine HPV vaccination begin in males and females starting at age 11, but the vaccine can still be given as early as age nine if parents are willing and provide consent. This age is recommended because ideally the vaccine should be given before the adolescent has sexual contact for the first time (CDC, 2011b). A study published in 2004 by Weinstock, Berman, and Cates Jr. revealed that even though youth, ages 15-24, only account for about a quarter of the sexually active population, they account for over half of all new sexually transmitted diseases (STDs) in the U.S. each year.

The CDC (2012b) predicted that at least 50% of individuals will have been exposed to the HPV virus at some point during their lifetime. Approximately 90% of people’s immune systems will clear the virus from their body within two years, but for the 10% who are unable to clear it, HPV can cause genital warts or types of cancer. This is why vaccination for males and females against HPV is important.

**Problem**

In 2012, it was estimated that 12,170 women would be diagnosed with invasive cervical cancer and that 4,220 women would die from the disease in the U.S. (American Cancer Society,
Cervical cancer rates have significantly improved over time since the advent of the Papanicolaou (Pap) test, but women are still dying from a disease that doctors can effectively screen for and now have a preventative vaccine (National Cancer Institute, 2012b). Women of color and of lower socioeconomic status are disproportionately affected by cervical cancer. The CDC (2012d) reported that Black and Hispanic women have higher rates of cervical cancer than white women. From 2004-2008, 9.9/100,000 Black women and 11.3/100,000 Hispanic women were diagnosed with cervical cancer compared with 7.4/100,000 white women. It is unclear whether the rates are higher due to incidence of disease or because Black and Hispanic women have less access to screening and treatment than white women. The National Cancer Institute (2012a) reported from 1998 to 2010, women who lived in households with incomes at less than 200 percent of the poverty level or had not graduated from high school, were less like to have had a Pap test.

The CDC (2012h) estimated there are about 3,100 new cases of HPV-associated vulvar cancer every year in the U.S. From 2004-2008, there were 1.9/100,000 cases in white women compared with 1.4/100,000 cases in Black women and 1.2/100,000 cases in Hispanic women. There were very few cases of HPV-associated vaginal cancer. The CDC (2012g) estimated there are about 740 new cases per year. Black women had the highest rates from 2004-2008 at 0.7 cases per 100,000 women while white and Hispanic women had 0.4 cases per 100,000 women.

HPV-associated penile cancer is also another rare cancer in the U.S. The CDC (2012f) estimated there are about 1,000 new cases per year. From 2004-2008, Hispanic men had the highest rates at 1.3/100,000 men, compared with 0.7/100,000 in non-Hispanic men. The CDC (2012c) estimated there are about 3,000 new cases of HPV-associated anal cancer each year. White women and Black men have more cases of anal cancer than women and men of other
INCREASING HPV VACCINATION RATES

races. Men are disproportionately affected by HPV-associated oropharyngeal cancer. The CDC (2012e) estimated there are 9,356 new cases in men and 2,370 new cases in women every year. White and Black men and women have higher rates of oropharyngeal cancer than Hispanic men and women.

Despite these staggering cancer statistics, the groundbreaking news about the HPV vaccine, startling HPV statistics, and the ACIP recommendations, rates of HPV vaccination remain the lowest of all adolescent vaccines in the U.S. (Hughes, Jones, Feemster, & Fiks, 2011). A report recently released by the CDC (2012j) discussed vaccination rates of males and females, ages 13-17. As of 2011, only 34.8% of females and 1.3% of males had received all three doses of the HPV vaccine. The rate of females who had received at least one dose of the HPV vaccine increased from 48.7% in 2010 to 53% in 2011. Females, ages 14-17, were significantly more likely to have received a dose of the vaccine than females under the age of 13.

HPV vaccine initiation, in both males and females ages 13-17, was higher for Blacks and Hispanics than whites and vaccine completion was higher in Hispanics. Completion of the HPV vaccine series was lower in Black females than white females. In both sexes, vaccination rates were higher for adolescents living below the poverty line than those living at or above the poverty line except that females living below the poverty line had lower vaccine completion rates (CDC, 2012i).

HPV vaccination rates significantly vary by state. As of 2011, in youth ages 13-17, 31.9% of females in Mississippi had received at least one dose of the HPV vaccine, compared with 76.1% in Rhode Island. Females who had received all three doses of the vaccine were lowest in Arkansas at 15.5% as opposed to the highest rates in Rhode Island at 56.8%. In Massachusetts (Mass.), 61.1% of females had received at least one dose and 48.5% had received
three doses of the HPV vaccine. The rate of males who had received at least one dose in the state was 5.8% (CDC, 2012j). One of the goals of Healthy People 2020 is for 80% of girls between the ages of 13-15 in the U.S. to have received all three doses of the HPV vaccine (U.S. Dept. of HHS, 2012). Currently the U.S. is not on track to reach this goal.

**Review of Literature**

**Review of the Evidence**

An extensive search of the literature was performed to answer the question: how can nurses increase knowledge about HPV and the HPV vaccine and increase vaccination rates in adolescents? The search was performed in PubMed of the National Library of Medicine and the Current Index to Nursing Allied Health Literature (CINAHL). The search terms that were used included: “adolescents,” “HPV vaccine,” “HPV,” and “school-based vaccination programs.” The following limits were placed in the search: English language, items with abstracts, and free full text articles. No time frame was specified due to the fact that HPV vaccination only began in 2006. Inclusion criteria included articles related to increasing HPV vaccination rates in adolescents, parental opinions on why they are or are not consenting to vaccinating their children against HPV, and administration of vaccines in a school-based setting. Exclusion criteria included articles that did not pertain to adolescents.

The search in PubMed yielded 485 results. Fifty-four abstracts were assessed and ten were kept for inclusion in this review. The search in CINAHL yielded 83 results. Seventeen abstracts were assessed and three were kept for inclusion in this review. The rest of the articles used in this literature review were obtained from reviewing the bibliographies of already obtained studies.

The literature review revealed a few overarching themes. Firstly, there are many reasons
parents (any time parents are referenced in this proposal, the author is referencing the legal
guardian of the child) decide not to vaccinate their children against HPV, including: lack of
education, questions about the safety of the vaccine, and that they do not think their children are
sexually active. The review also revealed that schools are a promising venue to educate
adolescents and their parents/legal guardians about HPV and the HPV vaccine and increase HPV
vaccination rates.

Reasons why adolescents have not received the HPV vaccine. There are many reasons
why parents are reluctant to have their adolescent children vaccinated against HPV such as fear
of side effects, but active refusal is not always the reason, often times it is lack of education.
Many parents are not well informed about HPV and the vaccine, especially related to vaccinating
boys.

Lack of education. Many parents and adolescents were not aware of HPV and the HPV
vaccine or do not have enough information to make an educated decision about the HPV vaccine
(Hughes et al., 2011; Read, Joseph, Polishchuk, & Suss, 2010; Sotiriadis, Dagklis, Siamanta,
Chatzigeorgiou, & Agorastos, 2012). Bair, Mays, Sturm, and Zimet (2008) conducted a
qualitative study where they interviewed 40 Latina mothers from an urban pediatric clinic. The
mothers had daughters that were between the ages of 7-14. Seventy-eight percent of the mothers
had not heard of HPV and 68% of the sample knew nothing about cervical cancer. All mothers in
the sample reported having had a Pap smear, but 85% of them did not know about the connection
between HPV and Pap smears. After receiving information about the HPV vaccine, 80% of the
mothers stated they would allow their daughters to receive the HPV vaccine. The eight mothers
who did not agree stated they needed more information about the HPV vaccine and/or their
daughter was too young.
A qualitative study conducted in New South Wales, Australia by Bernard, Cooper Robbins, McCaffery, Scott, and Skinner (2011) looked at fear, the fear response, and factors affecting fear in adolescent girls who were going to receive the HPV vaccine. Girls from nine schools between the ages of 12-16 were either observed on the vaccination days at school or were interviewed in focus groups. Three fear responses were recorded: fear of pain, fear of having needle pierce skin, and fear of vaccine content and possible side effects. The results showed that the girls fear responses exacerbated the responses of their peers, girls were more stressed when waiting in large groups with peers, and the lack of privacy made fear worse. The results also reported that most girls knew very little about HPV and why they were receiving the vaccine. The misinformation that many of the girls received about the vaccine came through rumors from friends and family. The three-dose HPV vaccination rate ranged from 64%-90% among girls from those schools.

Cates, Ortiz, Shafer, Smith Romocki, and Coyne-Beasley (2012) performed a two phase qualitative study with Black parents/caregivers of 11 and 12 year old boys in North Carolina about designing messages to motivate parents/caregivers to vaccinate their sons against HPV. During the first phase of the study focus groups were conducted with parents/caregivers. Participants were recruited from churches and a middle school. Twenty-nine parents/caregivers made up the focus group sample and 76% of them were female. Results showed parents/caregivers were uninformed about HPV. Almost all parents were unaware that HPV can have serious effects on boys. Many thought HPV was only problematic for girls and they were surprised to hear that the HPV vaccine is recommended for boys. During the second phase of the study, intercept interviews were done with 100 parents/caregivers at a pediatric and adolescent clinic. Seventy-seven percent of the sample was female caregivers. This study did not
specifically target females, but female parents/caregivers are the ones who more often chose to participate or were the ones bringing the child to an appointment. Results from the intercept interviews showed that only 11% of parents had heard of the HPV vaccine being recommended for boys.

**Vaccine safety.** Vaccine safety and efficacy is one of the most common reasons for HPV vaccine refusal cited by parents of adolescents (Gilkey, Moss, McRee, & Brewer, 2012). Dempsey, Abraham, Dalton, and Ruffin (2009) performed a qualitative study of 52 mothers of 11-17 year old girls in Michigan. The mothers completed a telephone survey and answered questions about reasons why they accepted or declined the HPV vaccine for their daughters. Thirty-three mothers had accepted the HPV vaccine and 19 had declined vaccine for their daughters. Those who declined the vaccine had significant concerns about the safety of the HPV vaccine. They also generally felt their daughters were at low risk for HPV or were too young to receive the vaccine.

Fear of side effects from the vaccine is another commonly cited reason by parents who have not vaccinated their children against HPV (Bernard, Cooper Robbins, McCaffery, Scott, & Skinner, 2011; Kester, Zimet, Fortenberry, Kahn, & Shew, 2012). Sotiriadis, Dagklis, Siamanta, Chatzigeorgiou, and Agorastos (2012) performed a qualitative study in Greece of 5,249 women who had a 13-year-old son or daughter. The mothers filled out a survey to explore the factors affecting women’s acceptability of the vaccine for themselves, their daughters and their sons. The acceptability rate for vaccination of their daughters was 78.3% and 77.5% for their sons. The most common reasons cited by mothers about refusal of the vaccine were fear of adverse events and lack of knowledge about HPV and vaccination. The intention to vaccinate their children
decreased significantly after the vaccine became available in Greece and it coincided with a rise in mothers who were concerned about its potential side effects.

Lu, Kimar, Castellsague, and Giuliano (2011) conducted a systematic review and meta-analysis on the safety and efficacy of HPV vaccines. The study included 13 publications representing seven randomized control trials. Results showed vaccines are highly efficacious in preventing HPV infection and associated precancerous lesions. Local and systemic side effects were generally mild. The most serious side effect was abnormal pregnancy related outcomes and this was rare.

A case study published by Watson, Shaw, Mochanoff, and McInnes (2009) described the implementation of an HPV school vaccination program in South Australia. Side effects reported by the adolescent girls were similar to those reported in the meta-analysis by Lu et al. (2011). The most common side effects reported were nausea, headache, injection site reaction, fever and rash. There was report of numbness in limbs, seizure, neck stiffness and a urinary tract infection but it is unclear whether these symptoms can be directly associated with the HPV vaccine. The program was offered to 50,191 female students in school classes 8-12 across 219 schools. HPV vaccination initiation was highest in year 8 at 83% and year 10 at 70%. Vaccination rates of doses two and three varied from 55% to 77% amongst the classes. The rates were impressive given that the vaccine initiative was announced after the school year had begun and coordination and implementation was completed within a six-month period.

*Parents do not think children are sexually active.* According to the CDC (2011b), the ideal time for adolescents to receive the HPV vaccine is between the ages of 9 to 12 so that it is provided before their first sexual encounter. Many parents delay getting their adolescents vaccinated because they do not think their children are sexually active when they are (Bair et al.,
A qualitative study conducted by Read, Joseph, Polishchuk, and Suss (2010) administered a survey to girls and their parents at an urban health clinic to assess knowledge and attitudes about HPV and the vaccine. The sample was made up of girls who predominantly are of African-American or Caribbean descent. Results revealed early sexual initiation by the girls. Out of the sample of 175 girls ages 13-19, 48.9% reported being sexually active at an average age of 14.9 years. Over half of the girls who reported being sexually active have had more than one lifetime sexual partner. Only 55.8% of girls knew what HPV was. Seventy-two parents participated in the survey and 38.9% of them reported they were unsure about the HPV vaccine and 23.6% of parents stated they would refuse the vaccine for their daughter. The most common reason for refusal reported by parents was not having enough information about HPV and the vaccine.

**Schools and the HPV vaccine.** School-based health centers (SBHCs) and school-based vaccination programs are quite common in other parts of the world and HPV vaccination programs have been successful in these settings. SBHCs and school-based vaccination programs are not as common in the U.S., but they are slowly increasing in number and the majority of parents support them. Gustafson (2005) wrote an article about the history of SBHCs in the U.S. In 1990, there were only 200 SBHCs located in 45 states plus the District of Columbia, but that number increased to over 1500 by 2002. Sixty-one percent of SBHCs are in urban areas, 27% in rural areas, and 12% in suburban areas. SBHCs are mostly nurse managed with nurse practitioners and other healthcare providers. The mission of SBHCs is to provide access to primary care and preventative care for kids who are the least likely to access regular care within their communities.
In England, a national school-based vaccination program with Cervarix® began during the 2008/2009 school year. Statistics show that in its first year, 80.1% of 12-13 year old girls received the three-dose series. In the 2009/2010 school year, 76.4% of girls ages 12-13 had received all three doses of the vaccine, 82.3% had received at least two doses, and 84.3% had received at least one dose of the HPV vaccine (Sheridan & White, 2010). Vaccination rates in other countries are well above the rates among females of the same age in the U.S.

The literature search also highlighted studies with results that show parents are supportive of school-based vaccination programs. Reiter, Stubbs, Panozzo, Whitesell, and Brewer (2011) identified that parents, healthcare providers and school staff members are the key stakeholders in regards to adolescent females and HPV vaccination. An HPV education campaign was conducted throughout Guilford County, North Carolina. Numerous 30-40 minute informational sessions were held for groups made up of the key stakeholders. Data was reported from 118 healthcare staff members, 456 school staff members, and 376 parents who attended the intervention sessions and 91% of them were female. Healthcare and school staff completed pre- and post-session surveys during the intervention. Surveys assessed objective knowledge about HPV and asked opinion-based questions regarding the HPV vaccine and schools. Before the intervention, 86% of school staff members felt middle schools were appropriate venues for HPV education and vaccination programs, but after the intervention, the number increased to 91%. Before the intervention, 79% of school staff members stated they were supportive of school-based vaccination clinics and after the interventions, 85% stated they were supportive. Parents did not fill out surveys before the intervention, but after the intervention, 97% of them stated they would be supportive of a school-based vaccination clinic.

A large qualitative study conducted by Middleman and Tung (2011) assessed the
association between parents’ perspectives on school-located immunization programs and the subsequent implementation of a school-located immunization programs. A sample of 1,377 parents who had children in middle school completed a pre-program questionnaire and 777 parents returned a consent or refusal form for their child to be vaccinated at school. An unexpected finding appeared in the results of this study. Forty-two percent of parents who consented to having their child vaccinated at school had indicated in their pre-program survey that schools were not a preferred place for children to receive vaccines. The authors suggested that rates of parents who actually consent for their child to receive vaccines at school might be higher than expected from responses on assessing parental attitudes about school-based vaccination. This study was not about HPV vaccine, only tetanus, diphtheria, acellular pertussis (Tdap) and meningococcal vaccines were being offered to the adolescents.

A qualitative cross-sectional study conducted by Kelminson et al. (2012) mailed surveys home to 805 parents of incoming sixth grade students in three public middle schools in Aurora, Colorado. The purpose of the survey was to assess parental attitudes about administering vaccines at school. Five hundred surveys were returned and 85% of those who completed the survey were female. This study did not target mothers, but they were the ones choosing to fill out the surveys about their child’s health. Seventy-one percent of parents stated they would consent to their children receiving vaccines at school. More parents stated they would consent for their children to receive the Tdap or meningococcal vaccine than the HPV vaccine, but 72% of parents responded that they would consent for their children to receive the HPV vaccine at school.

Reiter, McRee, Pepper, and Brewer (2012) conducted a qualitative study that sent an online survey to parents in the U.S. with adolescent sons aged 11-17. The study assessed attitudes and beliefs about HPV vaccination and boys. Four hundred and four parents completed
the survey and 54% were female and 46% were male. This is the only study from the literature search that had a sample of nearly equal participation of both mothers and fathers. The authors did not report any reason as to how or why so many fathers completed the survey. Parents were presented with mock situations that offered to vaccinate their children at a school clinic. As other studies have shown, parents agreed to the HPV vaccination more often when the HPV vaccine was offered with other routine vaccinations required for adolescents. Parents also agreed to the HPV vaccination more often when presented with a consent form for them to “opt-in” rather than “opt-out” of the vaccination for their children.

Kadis et al. (2011) performed a study about whether mothers would support an HPV vaccination program in their child’s school. The nationally representative sample consisted of 496 mothers of 11-14 year-old females who completed an online survey. Out of the sample, 20% of mothers reported that their daughters had already completed the series of HPV vaccination, 31% of mothers reported that their daughters had received at least one dose of the vaccine, and 48% stated they intended to have their daughter vaccinated within the next year. Sixty-seven percent of the mothers who had already had their daughters receive one or all of the HPV vaccines or intended to vaccinate their daughters against HPV stated they would agree to their daughters receiving the HPV vaccine at school.

**Synthesis of the Evidence**

The majority of the studies had a qualitative design, which is considered a lower level of evidence according to the Johns Hopkins Nursing Evidence-Based Practice Rating Scale (Newhouse, Dearholt, Poe, Pugh, & White, 2007), but qualitative studies are appropriate for answering the question: how can nurses increase awareness about HPV and the HPV vaccine and increase vaccination rates in adolescents? One limitation of many of the articles was the use of
INCREASING HPV VACCINATION RATES

convenience samples. Another limitation of many of the articles was that the results were not
generalizable to the U.S. populations because either the study was performed in another country
or only in a small area of the U.S. Despite these limitations, the literature review provides many
avenues that nurses can follow to increase awareness about HPV and the HPV vaccine and
increase vaccination rates in adolescents

Nursing interventions need to primarily focus on increasing general educational messages
about HPV and the vaccine for both parents and adolescents. The literature clearly reveals that
lack of education is one of the biggest, if not the biggest reason why HPV vaccination rates are
so low. Outreach to parents of adolescents, particularly parents of boys, is imperative to educate
them that their adolescents should receive the HPV vaccine, as many parents are still unaware
that the HPV vaccine is recommended for boys as well as girls. Educational messages should
also include information that the HPV vaccine is safe, but inform parents and adolescents about
the most common side effects associated with the vaccine.

Schools that have SBHCs and/or school-based vaccination programs are promising
avenues to increase knowledge about HPV and the HPV vaccine and increase HPV vaccination
rates. HPV vaccination programs at SBHCs in other parts of the world have been highly
successfully and have had vaccination rates of up to 90% (Bernard et al, 2011). As the literature
review revealed, a large number of parents stated they would consent to their child receiving
vaccinations at school and the results from one study showed that when the vaccination program
was actually implemented, more parents consented to their child receiving vaccines than was
anticipated from results of pre-program survey. Nurses can educate parents and adolescents
about HPV and the HPV vaccine at schools that have SBHCs and remind them that the
adolescent can receive the HPV vaccine at school. Having adolescents vaccinated at school also
provides an opportunity to decrease the rates of missed opportunities. Healthcare providers working at the SBHCs can ensure that adolescents already coming in for routine physicals and/or other recommended vaccines also get the HPV vaccine.

The literature review identified barriers to vaccinating adolescents against HPV. One barrier is the fear response adolescent girls have toward vaccinations/injections. They have fears of pain and having the needle pierce their skin. Concern about safety of the HPV vaccine and its possible side effects are also major barriers. Both parents and adolescents have identified with this concern. Another barrier are parents who think the HPV vaccine is not yet necessary for their children because they do not think their children are sexually active, when in fact they are.

**Theoretical Framework**

It is essential to have a theoretical framework on which to focus implementation of research-based interventions in practice (White & Dudley-Brown, 2012). One such theory is the Health Belief Model (HBM). This model (Appendix A) is composed of six constructs that “…influence people’s decisions about whether to take action to prevent, screen for and control illness” (NCI, 2005, p. 13). The HBM can be applied to an evidence-based intervention to increase knowledge in parents and adolescents about HPV and the HPV vaccine and increase HPV vaccination rates in adolescents.

The authors of the HBM state people will be ready to act on a health decision if all six of the constructs are present. The first construct is perceived susceptibility. People must believe they are susceptible to the condition. The second construct is perceived severity. People must believe the condition has serious consequences. The third construct is perceived benefits. People must believe taking action would reduce their susceptibility or its severity. The fourth construct is perceived barriers. People must believe the costs of taking the action are outweighed by the
benefits. The fifth construct is cue to action. People must be exposed to factors that prompt action. The sixth and final construct is self-efficacy. People must feel confident in their ability to successfully perform the action. The authors comment that health motivation is central to the HBM and the model is useful for designing short and long-term behavior change strategies (NCI, 2005).

The HBM can be applied to a scenario where a mother and her son decide whether to vaccinate the son against HPV. The adolescent son receives education about HPV and the HPV vaccine in his health class at school and his mother hears similar information at a meeting she attended in the community (perceived susceptibility). Both mother and son learn that HPV can cause genital warts and cancer in males and females (perceived severity). They both learn that the HPV vaccine is recommended for adolescents, ages 9-26, and can prevent the son from getting the most common types of HPV that cause genital warts and cancer (perceived benefits). The mother and son learn that the HPV vaccine is safe and are aware of the most common side effects caused by the vaccine. They learn that the HPV vaccine is covered by most insurance companies and is available at the SBHC at the son’s school and/or at his primary care provider’s office (perceived barriers). After hearing this information, the mother and son are both provided information to take home with the contact information of the SBHC and how to make an appointment for the son to receive the vaccine. The mother and son decide that the son should receive the HPV vaccination and call to make an appointment (cue to action and self-efficacy).

**Project Description, Implementation, and Monitoring**

**Population/Community**

The city of Holyoke is in the western part of the Commonwealth of Massachusetts. It is located in Hampden County. The population of Holyoke in 2010 was 39,880 people. Out of the
39,880 people living in Holyoke 19,313 (48.4%) people identified themselves as Hispanic or Latino and 20,567 (51.6%) identified themselves as not Hispanic or Latino. Of those who did not identify as Hispanic or Latino, 18,651 (46.8%) identified as white alone, 961 (2.4%) as Black or African American alone, 402 (1%) as Asian alone, 7 (0%) as Native Hawaiian or Pacific Islander alone, 43 (0.1%) as American Indian or Alaska Native alone, 61 (0.2%) as some other race alone, and 442 (1.1%) identified as two or more races. (U.S. Census Bureau, 2010).

Holyoke has two public high schools, Holyoke High School and William J. Dean Vocational Technical High (Dean Tech) with students in grades 9-12. During the 2012/2013 school year, 1,354 students were enrolled at Holyoke High School (Massachusetts (Mass.) Department (Dept.) of Elementary and Secondary Education (ESE), 2013a) and 517 at Dean Tech (Mass Dept. of ESE, 2013c). Out of the 1,354 students at Holyoke High School, 3.3% identified as African American, 0.9% Asian, 68.9% Hispanic, 0% Native American, 26.4% white, 0% Native Hawaiian or Pacific Islander, and 0.5% identified as multi-race, non-Hispanic (Mass Dept. of ESE, 2013a). Out of the 517 students at Dean Tech, 1.5% identified as African American, 0.2% Asian, 91.3% Hispanic, 0% Native American, 6.8% white, 0.2% Native Hawaiian or Pacific Islander, and 0% identified as multi-race, non-Hispanic (Mass Dept. of ESE, 2013c). Among the student body at Holyoke High School, 46.3% of students’ first language is not English and 10.9% of students are limited English language proficient (Mass Dept. of ESE, 2013b). Among the student body at Dean Tech, 69.1% of students’ first language is not English and 30.8% of students are limited English language proficient (Mass Dept. of ESE, 2013d).

At Holyoke High School, 74.9% of students are considered low income, 68.1% of students qualify for free lunch, and 6.8% of students qualify for reduced lunch (Mass Dept. of ESE, 2013b). At Dean Tech, 95.6% of students are considered low income, 91.5% of students
INCREASING HPV VACCINATION RATES

qualify for free lunch, and 4.1% of students qualify for reduced lunch (Mass Dept. of ESE, 2013d). To qualify for free or reduced lunch in the state of Mass., the parent(s)/caregiver(s) must have an annual household income before taxes that does not exceed $26,955 if two people live in the household; $33,874 if three people live in the household; $40,793 if four people live in the household; $47,712 if five people live in the household; $54,631 if six people live in the household; $61,550 if seven people live in the household; and $68,469 if eight people live in the household. For larger households, add $6,919 for each additional person in the home (Benefits.gov, 2012). In 2009/2010, the national average of high school students who were eligible to receive free or reduced lunch rates was 38% (Institute of Educational Sciences, 2010).

In 2012, out of 340 students who entered ninth grade at Holyoke High School in 2008, the 4-year graduation rate was 67.9%. Among the other students who did not graduate in four years, 7.9% were still attending school, 16.2% had dropped out, 3.2% had completed their education but had not graduated, and 3.8% had earned a GED (Mass Dept. of ESE, 2012a). In 2012, out of 167 students who entered 9th grade at Dean Tech in 2008, the 4-year graduation rate was 27.5%. Among the other students who did not graduate in four years, 15.6% were still attending school, 30.5% had dropped out, 10.8% had completed their education but had not graduated, and 3.0% had earned a GED (Mass Dept. of ESE, 2012b). The national average 4-year graduation rate in public schools is 75.5% and the average in the state of Mass. is over 80% (Institute of Educational Sciences, 2012). Students attending Holyoke High School and Dean Tech are a racially and ethically diverse group of adolescents who come from a low socioeconomic and education status.

ACIP recommends that HPV vaccination begin in adolescents starting at ages 11 to 12 so that children receive the vaccine before they begin having sexual contact, yet they point out that
both males and females ages 13 to 26, also benefit from the vaccine. Males and females between the ages of 13 to 26 who have not had sexual contact will benefit from the vaccine and those who already are sexually active may not have been exposed to all the oncogenic strains of HPV and the vaccine will provide benefit to them as well (CDC, 2007; CDC, 2011c). Even though students attending Holyoke High School and Dean Tech are older than age 12, the HPV vaccine is beneficial to them if they have not already received the three dose series.

**Needs Assessment/Organizational Analysis**

Mary Fago, Adult Nurse Practitioner (ANP), clinical director of Holyoke’s SBHCs was interviewed by the Doctorate of Nursing Practice (DNP) student researching capstone project ideas related to HPV vaccination rates and SBHCs. Holyoke Public Schools have three SBHCs and two of them are located at Holyoke High School and Dean Tech. It became apparent that there was a need to educate adolescents and their parents about HPV and the HPV vaccine. The sites have offered the HPV vaccine, but have not had time to do education with students and their parents about the vaccine, so very few doses have been administered. At these SBHC sites there are likely many missed opportunities for adolescents to receive the HPV vaccine (M. Fago, personal communication, February 14, 2013).

The Director also revealed that she felt there is a lack of awareness about HPV and the HPV vaccine amongst adolescents and their parents. A new sex education program was implemented at the high schools three years ago, but no specific content was included about HPV and its consequences and the HPV vaccine. The Director stated she would like to do more education about HPV and the HPV vaccine, but has lacked the time to do so.

An assessment and analysis of the situation at Holyoke High School and Dean Tech was performed with the Director and it was determined that an HPV education project was needed for
both adolescents and parents. As mentioned previously, Black and Hispanic women have higher rates of cervical cancer and women who lived in households with incomes at less than 200 percent of the poverty level or had not graduated from high school, were less like to have had a Pap test. Black women have higher rates of vaginal and oropharyngeal cancer and Black men have higher rates of oropharyngeal and anal cancer. Hispanic men have higher rates of penile cancer. A large proportion of the students attending Holyoke High School and Dean Tech are Hispanic and the majority of them live below the poverty level, which puts them at a higher risk for HPV-associated cancers. Also mentioned previously were the low rates of HPV vaccine series completion and that SBHCs are an opportune location to receive all three doses. Students do not have to miss school as the vaccine is provided on site and parents need to have only signed a consent form, but do not need to be present when the vaccines are given.

**Stakeholder Support**

The Director, the school nurse leader, and the head of health education for Holyoke Public Schools approved this capstone project. Mary Fago signed the letter of agreement (Appendix B).

**Resources, Barriers, and Facilitators**

The resources needed to implement this research translation project were space, supplies, and time. Space was needed to teach students and parents about HPV and the HPV vaccine. Supplies were needed to create educational materials that are appropriate for both adolescents and their parents. The HPV vaccine is available in the school-based clinic. Time was needed to create the educational materials, to teach the students do outreach to parents, and to gather and analyze the results of the project. The DNP student managed her time to complete the listed tasks during the spring 2013 semester.
Teachers, parents and adolescents could have been potential barriers to the success of this project. If teachers were not supportive of the HPV vaccine, they could have persuaded adolescents to not get the vaccine or not create a supportive learning environment for students to be educated about HPV and the HPV vaccine. Parents who were not supportive of the HPV vaccine could have convinced their children that the vaccine is harmful or not necessary and they have the ultimate say as to whether their child receives the vaccine. Adolescents who were fearful or misinformed about the vaccine could also have persuaded their parents to not let them receive the vaccine.

The primary facilitators of the capstone project were the DNP student and the student’s capstone project committee. The DNP student was responsible for completing the work and the committee was there to advise, mentor, and guide the student through all phases of the project. Other facilitators of the capstone project were Mary Fago, clinical director of Holyoke’s SBHCs and the health teachers at Holyoke High School and Dean Tech.

Protocol/Plan

Goals and objectives. There were two primary objectives of this capstone project. The first goal was to increase knowledge about HPV and the HPV vaccine in students and parents of students who attend Holyoke High School and Dean Tech. The second goal was to increase the number of parents of adolescents who intended to vaccinate their adolescents against HPV and also increase the number of adolescents who intended to receive the HPV vaccine.

Project design and evaluation. The research translation method that was used for this project was an educational intervention and the Plan-Do-Study-Act (PDSA) model. PDSA projects are used when “…data are collected to demonstrate that change by interventions resulted in improvement” (Speroff & O’Connor, 2004, p. 21). A PDSA project was used to develop an
intervention to educate parents and adolescents about HPV and the HPV vaccine, which will then lead to higher intent to vaccinate adolescents against HPV.

For this project, evidence-based research had already been collected. The rationale for this project was centered on evidence-based research that shows when the HPV vaccine is offered in a school-based setting, vaccine rates are higher (Brabin et al., 2008; Reiter et al., 2012) and that parents and adolescents need more education about HPV and the HPV vaccine. Based on this research, a proposed protocol was developed to educate parents and adolescents about HPV and the HPV vaccine and then they would be reminded of the opportunity to vaccinate their adolescents through the SBHC (Plan).

The DNP student attended ninth grade health classes at both Holyoke High School and Dean Tech to teach content to students about HPV and why they should receive the HPV vaccine. The DNP student did one 50-minute class period with each section of ninth grade health class at both schools. The presentation emphasized that the vaccine is now available for boys as well as girls and that it is important for both sexes to receive the vaccine. The information presented to the students was taken from the CDC website and also from an HPV curriculum developed by Planned Parenthood for parents and adolescents (Bernstein et al., 2008) and formulated into an interactive presentation and educational handout (Appendix C). A demographic instrument and pre-test (Appendix D) was prepared and administered at the beginning of class. Post-tests (Appendix E) were also prepared and administered at the end of class after the educational intervention (Do).

The DNP student had proposed to give a presentation to parents about HPV and the HPV vaccine and provide parents with an opportunity to ask questions and discuss their concerns about the vaccine at the high schools or the Holyoke Boys and Girls Club parent night. A
The questions for the pre-tests and post-tests for both the adolescents and the parents were based on a study (permission was obtained by the DNP student) by Kennedy, Sapsis, Stokley, Curtis, and Gust (2011), the Planned Parenthood HPV curriculum (Bernstein et al., 2008), and the HBM. The standardized pre-test and post-test were comprised of the exact same ten multiple-choice questions. The questions were used to measure knowledge levels about HPV and the HPV vaccine, their perceived severity to HPV, the perceived benefits of the HPV vaccine, the perceived barriers of the HPV vaccine, their cues to action about receiving the HPV vaccine, and their intent to receive the HPV vaccine (Do).

The DNP student did outreach to parents to inform them about HPV and the HPV vaccine. The student staffed a Teen Clinic table at a parent information night at Holyoke High School for parents of incoming ninth graders. The table had information about the HPV vaccine, the Teen Clinic, and the DNP student spoke with parents about the HPV vaccine and that the vaccine was available through the Teen Clinic. The student also staffed a table on behalf of the Teen Clinic at a 5K run in Holyoke and had information about HPV and the HPV vaccine for parents and adolescents. The student had a sign that stated, “Come talk about HPV and get a popsicle for free” to give people an incentive to visit the table. The student spoke with parents and adolescents and gave them information and answered their questions about HPV and the HPV vaccine (Do).
The DNP student prepared an informational handout that was sent home with all ninth grade students at Holyoke High School and Dean Tech. The handout was an information sheet written by the CDC (Appendix H) with a small attachment stapled to it (Appendix I) that reminded parents and students that the SBHC had the HPV vaccine available and was an opportune site for students to receive the HPV vaccine. The attachment provided information on how adolescents could schedule an appointment at the SBHC. The handout was double-sided in both English and Spanish. Informational brochures and posters that are specifically aimed at adolescents were also ordered and obtained about HPV and the HPV vaccine and were placed in the SBHC (Do).

To evaluate the project outcomes, three instruments were used: the demographic instrument (no identifying information was collected from students), the pre-test, and post-test. All data collected during the protocol was analyzed to see if the goals of the project were accomplished. (Study).

The first goal of increasing knowledge about HPV and the HPV vaccine in students and their parents was only evaluated in the students by administering the pre-test and post-test before and after the educational intervention. Improvement in the test scores demonstrated an increase in knowledge in the students. The second goal of increasing the number of parents of adolescents who intended to vaccinate their adolescents against HPV and also increasing the number of adolescents who intended to receive the HPV vaccine, was only evaluated in the adolescents. This was measured on the adolescents’ pre-tests and post-tests. Students were asked on the pre-test if they have received the HPV vaccine and if not, whether they intended to receive the HPV vaccine. On the post-test, students were again asked if they intended to receive the HPV vaccine.
An increase in adolescents who intended to receive the HPV vaccine demonstrated that the project was successful.

Then all the data was reviewed and analyzed. It was determined the protocol was successful and knowledge about HPV and the HPV vaccine increased and intent to vaccinate rates increased. It was also determined that the fliers and consent forms could be sent home to students in other grades at Holyoke High School and Dean Teach or at other schools that have SBHCs to increase HPV awareness and vaccination rates at those sites as well (Act).

**Costs and resources.** The expenses for this project were staff time and supplies. Staff time was needed to allow the DNP student to present in the ninth grade health classes. Time was needed to create/gather the educational materials, to teach the students, to do outreach to the parents, and to gather and analyze the results of the project. The location for the educational programs for the adolescents was at school and there was no fee involved. The supplies for the educational program and the parent outreach were approximately $300. The DNP student covered this cost. Brochures and posters were ordered at no cost from the CDC, which the DNP student used and reproduced on a copy machine.

**IRB approval and ethical considerations.** This capstone project did not require IRB approval because this was a student program improvement project. The project involved human subjects, but did not involve any research activities. No identifying information was collected on the adolescents or their parents.

**Implementation and timeline.** The capstone project proposal was approved by the DNP student’s capstone committee in March 2013, before the project began. Once the committee approved the proposal, the DNP student immediately created and ordered the educational materials needed for the educational sessions, the pre and post-tests for the students and parents
were written, and supplies for the parent outreach were gathered. The informational handout for parents was also prepared and copied. The educational interventions and parent outreach was performed during May and June 2013. The data was analyzed and the final write-up of the capstone project was completed in May and June 2013. The timeline below was the proposed workplan for the capstone project in 2013.

Table 1. Timeline

<table>
<thead>
<tr>
<th>Task</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capstone Project Proposal</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop Parent Information Form</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop Student/Parent Educational Information</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational Sessions with Students and Parents</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Data Collection and Analysis</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpretation of Results</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Complete Capstone Write-up</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Evaluation

Demographic Data

The adolescent sample was a convenience sample of all ninth graders who had health class during the spring semester at Holyoke High School and Dean Tech. This comprised about half of the entire ninth grade class at each school. The sample was 52% female and 48% male. Twenty-one percent of the students were 14 years old, 62% were 15 years old, 16% were 16 years old, and 1% was 17 years old. Out of the sample, 63% of students identified as Hispanic, 18% as white, 12% as Hispanic, more than one race, 5% as non-Hispanic, more than one race, and 2% as Black or African American.

Data Analysis-Pre-tests/Post-tests

The DNP student entered all data from the adolescents’ pre-tests and post-tests into an Excel spreadsheet. Only adolescents who completed the demographic data, pre-test, and post-test results were used in this analysis (N=164). More students (N=169) were present for the educational intervention, but they had missing data. The mean scores from each question were calculated and scores from the pre-tests were compared with the post-tests scores. Scores were compared for the group as a whole and also scores of males versus females. No data was able to be collected from the parents because the presentation for the parents was not performed and the two outreach sessions for parents were not amenable to collecting data.

Table 2 shows all the students’ mean scores on each pre-test and post-test question. Table 3 shows the students’ mean scores on each pre-test and post-test question, but compares the scores by sex.
Table 2. Entire Group Scores

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test Score</th>
<th>Post-Test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-If I am infected with HPV, I could get genital warts and/or cancer.</td>
<td>Agree-26%</td>
<td>Agree-95%</td>
</tr>
<tr>
<td></td>
<td>Disagree-14%</td>
<td>Disagree-2%</td>
</tr>
<tr>
<td></td>
<td>Unsure-60%</td>
<td>Unsure-3%</td>
</tr>
<tr>
<td>2-HPV is one of the most common sexually transmitted infections in the United States.</td>
<td>True-72%</td>
<td>True-98%</td>
</tr>
<tr>
<td></td>
<td>False-28%</td>
<td>False-2%</td>
</tr>
<tr>
<td>3-The highest rates of new genital HPV infections occur in young adults between the ages of 15-24.</td>
<td>87%--True</td>
<td>True-94%</td>
</tr>
<tr>
<td></td>
<td>13%--False</td>
<td>False-6%</td>
</tr>
<tr>
<td>4-How is HPV transmitted? Select all the correct answers.</td>
<td>7% Chose A &amp; D</td>
<td>62% Chose A &amp; D</td>
</tr>
<tr>
<td>A. Skin-to-skin contact</td>
<td>95% Chose A or D</td>
<td>100% Chose A or D</td>
</tr>
<tr>
<td>B. Contact with infected blood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. An infected person coughs or sneezes on another person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Vaginal, oral, or anal sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-Who should receive the HPV vaccine?</td>
<td>1% Girls only</td>
<td>1% Girls only</td>
</tr>
<tr>
<td></td>
<td>0% Boys only</td>
<td>0% Boys only</td>
</tr>
<tr>
<td></td>
<td>99% Girls and Boys</td>
<td>99% Girls and Boys</td>
</tr>
<tr>
<td>6-Have you received the HPV vaccine? *If you answered yes to question 6, do not answer any more questions</td>
<td>Yes-19%</td>
<td>Yes-33%</td>
</tr>
<tr>
<td></td>
<td>No-27%</td>
<td>No-27%</td>
</tr>
<tr>
<td></td>
<td>Unsure-54%</td>
<td>Unsure-40%</td>
</tr>
<tr>
<td>7-I believe I could be at risk (now or in the future) for getting HPV.</td>
<td>Agree-15%</td>
<td>Agree-43%</td>
</tr>
<tr>
<td></td>
<td>Disagree-36%</td>
<td>Disagree-23%</td>
</tr>
<tr>
<td></td>
<td>Unsure-49%</td>
<td>Unsure-34%</td>
</tr>
<tr>
<td>8-There is a vaccine I could receive to prevent myself from getting the most serious types of HPV.</td>
<td>Agree-65%</td>
<td>Agree-87%</td>
</tr>
<tr>
<td>Question</td>
<td>Agree</td>
<td>Disagree</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>9-There is someone I could talk to (parent, nurse, doctor, friend, teacher) about my questions and concerns about HPV and the HPV vaccine.</td>
<td>Agree-81%</td>
<td>Disagree-3%</td>
</tr>
<tr>
<td></td>
<td>Agree-92%</td>
<td>Disagree-2%</td>
</tr>
<tr>
<td>10-If you have not received the HPV vaccine, do you intend to get the HPV vaccine in the future?</td>
<td>Yes-63%</td>
<td>No-4%</td>
</tr>
<tr>
<td></td>
<td>Yes-76%</td>
<td>No-4%</td>
</tr>
</tbody>
</table>
Table 3. Males Versus Female Scores

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Test Score</th>
<th>Post-Test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-If I am infected with HPV, I could get genital warts and/or cancer.</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>Agree-28%</td>
<td>Agree-25%</td>
<td>Agree-94%</td>
</tr>
<tr>
<td>Disagree-16%</td>
<td>Disagree-10%</td>
<td>Disagree-3%</td>
</tr>
<tr>
<td>Unsure-56%</td>
<td>Unsure-65%</td>
<td>Unsure-3%</td>
</tr>
<tr>
<td>2-HPV is one of the most common sexually transmitted infections in the United States.</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>True-66%</td>
<td>True-77%</td>
<td>True-97%</td>
</tr>
<tr>
<td>False-34%</td>
<td>False-23%</td>
<td>False-3%</td>
</tr>
<tr>
<td>3-The highest rates of new genital HPV infections occur in young adults between the ages of 15-24.</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>True-86%</td>
<td>True-87%</td>
<td>True-92%</td>
</tr>
<tr>
<td>False-14%</td>
<td>False-13%</td>
<td>False-8%</td>
</tr>
<tr>
<td>4-How is HPV transmitted? Select all the correct answers.</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>A. Skin-to-skin contact</td>
<td>8% chose A and D</td>
<td>5% chose A and D</td>
</tr>
<tr>
<td>B. Contact with infected blood</td>
<td>91% chose A or D</td>
<td>99% chose A or D</td>
</tr>
<tr>
<td>C. An infected person coughs or sneezes on another person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Vaginal, oral, or anal sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-Who should receive the HPV vaccine?</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>Girls only-2%</td>
<td>Girls only-0%</td>
<td>Girls only-1%</td>
</tr>
<tr>
<td>Boys only-0%</td>
<td>Boys only-0%</td>
<td>Boys only-0%</td>
</tr>
<tr>
<td>Girls and Boys-98%</td>
<td>Girls and Boys-100%</td>
<td>Girls and Boys-99%</td>
</tr>
<tr>
<td>6-Have you received the HPV vaccine?</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td><strong>Question</strong></td>
<td><strong>Males</strong></td>
<td><strong>Females</strong></td>
</tr>
<tr>
<td>--------------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>7 - I believe I could be at risk (now or in the future) for getting HPV.</td>
<td>Agree-18%</td>
<td>Agree-13%</td>
</tr>
<tr>
<td></td>
<td>Disagree-35%</td>
<td>Disagree-37%</td>
</tr>
<tr>
<td></td>
<td>Unsure-47%</td>
<td>Unsure-50%</td>
</tr>
<tr>
<td>8 - There is a vaccine I could receive to prevent myself from getting the most serious types of HPV.</td>
<td>Agree-60%</td>
<td>Agree-69%</td>
</tr>
<tr>
<td></td>
<td>Disagree-5%</td>
<td>Disagree-1%</td>
</tr>
<tr>
<td></td>
<td>Unsure-35%</td>
<td>Unsure-30%</td>
</tr>
<tr>
<td>9 - There is someone I could talk to (parent, nurse, doctor, friend, teacher) about my questions and concerns about HPV and the HPV vaccine.</td>
<td>Agree-81%</td>
<td>Agree-82%</td>
</tr>
<tr>
<td></td>
<td>Disagree-5%</td>
<td>Disagree-1%</td>
</tr>
<tr>
<td></td>
<td>Unsure-14%</td>
<td>Unsure-17%</td>
</tr>
<tr>
<td>10 - If you have not received the HPV vaccine, do you intend to get the HPV vaccine in the future?</td>
<td>Yes-63%</td>
<td>Yes-63%</td>
</tr>
<tr>
<td></td>
<td>No-5%</td>
<td>No-3%</td>
</tr>
<tr>
<td></td>
<td>Unsure-32%</td>
<td>Unsure-34%</td>
</tr>
</tbody>
</table>
Interpretation of the Findings

The data was analyzed by looking at the findings that were relative to the pre-test and post-test question clusters that align with each construct of the HBM. The questions that had to do with knowledge about HPV and the HPV vaccine all had an increase in scores. In the pre-test, 72% of students answered the question that HPV is one of the most common sexually transmitted diseases in the U.S. correctly and in the post-test, 98% of students answered it correctly. In the pre-test, 66% of males answered the question correctly and in the post-test, 97% of males answered it correctly, versus 77% of females in the pre-test and 98% of females in the post-test. In the pre-test, 87% of students answered the question that the highest rates of new genital HPV infections occur in young adults between the ages of 15-24 correctly and in the post-test, 94% answered it correctly. In the pre-test, 86% of males answered the question correctly and in the post-test, 92% of males answered it correctly, versus 87% of females in the pre-test and 95% of females in the post-test. In the pre-test, 7% of students identified both ways HPV is transmitted, by skin-to-skin contact and through vaginal, oral, or anal sex correctly and in the post-test, 62% identified both answers correctly. In the pre-test, 8% of males and 5% of females identified both answers correctly and in the post-test, 53% of males and 73% of females identified both answers correctly. In the pre-test, 95% of students identified one of the two ways HPV is transmitted correctly and that increased to 100% in the post-test. In the pre-test, 91% of males and 99% of females could identify one of the two ways, which also increased to 100% in both groups in the post-test. In both the pre-test and post-test, 99% of students knew that both girls and boys should receive the HPV vaccine. In the pre-test and post-test, 100% of females answered this question. In the pre-test, 2% of males thought the HPV vaccine was for girls only and that decreased to 1% of males in the post-test.
In the pre-test question about the perceived severity of HPV, 26% of students agreed that if they were infected with HPV, they could be at risk for genital warts and/or cancer. In the post-test, 95% of students agreed they could be at risk. In the pre-test, 28% of males perceived the severity of HPV and 25% of females. In the post-test, 94% perceived the severity of HPV and 97% of females.

The pre-test asked if students had been vaccinated against HPV or if they were unsure. Nineteen percent stated, yes they had received the vaccine, 27% stated they had not received the vaccine, and 54% were unsure. This number should have remained the same in the post-test because no one received the vaccine while in health class, but the numbers changed. In the post-test, 33% of students reported they had received the HPV vaccine, 27% stated they had not, and 40% stated they were unsure. These response rates were the same for males and females. In the pre-test, 18% of males stated they had received the HPV vaccine, 35%, stated they had not, and 47% were unsure. These numbers changed in the post-test to 33% of males stating they had received the HPV vaccine, 27% stating they had not, and 40% were unsure. In the pre-test, 13% of females stated they had received the HPV vaccine, 37%, stated they had not, and 50% were unsure. These numbers changed in the post-test to 33% of females stating they had received the HPV vaccine, 27% stating they had not, and 40% were unsure.

The students who stated they had not received the HPV vaccine or were unsure if they had received it were sorted by sex and race/ethnicity. Among the 53 males, 59% were Hispanic, 19% were white, 15% were Hispanic, more than one race, 6% were non-Hispanic, more than one race, and 1% were Black or African American. In the 56 females who reported they had not received the HPV vaccine or were unsure, 70% were Hispanic, 14% were white, 8% were Hispanic, more than once race, 4% were non-Hispanic, more than once race, and 4% were Black.
or African American. Also out of the 109 students who stated they had not received the HPV vaccine or were unsure, 21% of them were 14 years old, 62% were 15 years old, 16% were 16 years old, and 1% was 17 years old.

If the students stated they had received the HPV vaccine, they did not answer any more questions. If students stated they had not or were unsure if they had received they HPV vaccine, they completed four more questions. A question about whether students felt they were at risk now or in the future for getting HPV had responses on the pre-test that showed 15% agreed with this statement, 36% disagreed, and 49% were unsure. In the post-test, 43% of students agreed they could be at risk now or in the future for HPV, 23% disagreed and, 34% were still unsure. In the pre-test, 18% of males and 13% of females felt they could be at risk for HPV, 35% of males and 37% of females felt they were not at risk for HPV, and 47% of males and 50% of females were unsure. In the post-test, 45% of males and 41% of females felt they could be at risk for HPV, 22% of males and 35% of females felt they were not, and 33% of males and 24% of females remained unsure if they were at risk now or in the future of getting HPV.

The next question asked if students thought there was a vaccine that could prevent them from getting the most serious types of HPV, which demonstrated the perceived benefits of the HPV vaccine. In the pre-test, 65% of students agreed with this statement, 3% disagreed, and 32% were unsure. In the post-test, 87% of students agreed with this statement, 1% disagreed, and 12% remained unsure. In the pre-test, 60% of males and 69% of females agreed there was a vaccine that could prevent them from getting HPV, 5% of males and 1% of females disagreed, and 35% of males and 30% of females were unsure. In the post-test, 83% of males and 91% of females agreed, 0% of males and 2% of females disagreed, and 17% of males and 7% of females remained unsure.
In the pre-test, 81% of students agreed, 3% disagreed, and 16% were unsure if there was someone they could talk to about their questions and concerns about HPV and the HPV vaccine. This assessed whether students felt there were perceived barriers to getting the HPV vaccine. In the post-test, 92% of students agreed there was someone they could talk to, 2% disagreed, and 6% remained unsure. In the pre-test, 81% of males and 82% of females agreed there was someone they could talk to, 5% of males and 1% of females disagreed, and 14% of males and 17% of females were unsure. In the post-test, 91% of males and 93% of females agreed there was someone they could talk to about HPV. Two percent of males and 2% of females disagreed with this and 7% of males and 5% of females remained unsure if there was someone they could talk to about HPV.

The last question asked the students who had answered that they had not received the HPV vaccine, whether they intended to get the HPV vaccine in the future. This assessed the students’ cues to actions. In the pre-test, 63% of students stated they intended to receive the HPV vaccine, 4% stated they did not intend to receive the HPV vaccine, and 33% were unsure. In the post-test, 76% of students stated they intended to receive the HPV vaccine, 4% stated they did not intend to receive it, and 20% remained unsure. In the pre-test, 63% of both males and females stated they intended to receive the HPV vaccine, 5% of males and 3 of females stated they did not intend to receive the HPV vaccine, and 32% of males and 34% of females were unsure. In the post-test, 74% of males and 78% of females stated they intended to receive the HPV vaccine, 6% of males and 2% of females stated they did not intend to receive the HPV vaccine, and 20% of both males and females remained unsure about whether they intended to receive the HPV vaccine.
There was also feedback that was not purposefully gathered during this capstone project, but is important to be presented here. The DNP student reported that the ninth grade students were very engaged during the class periods. Students asked a plethora of questions about HPV and the HPV vaccine. One student stated “Thank you for taking the time to inform us about this.” Another student stated, “Why hasn’t anyone else told us about HPV, this is important!” A group of three girls after the presentation stated they were all going to the Teen Clinic after school to pick up permission slips to take home for their parents to sign. At least five students stated they were taking the HPV handout they received in class home to their parents to talk about with them. When discussing possible side effects of the HPV vaccine, three students in different periods all raised their hands and commented that they had recently received the vaccine. Two reported having no side effects and one stated, “It hurt a little, but I am fine.” One parent at an outreach session stated, “My son can receive this vaccine? I didn’t know that. I will make him an appointment right away.”

**Discussion**

The first goal of increasing knowledge about HPV and the HPV vaccine in students and their parents was partially met. Results from the educational intervention with the students showed an increase in knowledge about HPV and the HPV vaccine. There was a 26% overall increase in scores on the question about HPV being one of the most common sexually transmitted diseases in the U.S. There was a 7% overall increase in scores on the question about the highest rates of new genital HPV infections occurring in young adults ages 15-24. There was also a 55% overall increase in the scores on the question about identifying both ways HPV is transmitted. There may have been an increase in knowledge amongst parents to whom the DNP student spoke to at the outreach events, but there was no way to measure that outcome.
The second goal of increasing the number of parents of adolescents who intended to vaccinate their adolescents against HPV and also increase the number of adolescents who intended to receive the HPV vaccine was also partially met. Results from the educational intervention with the students showed an increase in the overall number of adolescents who intend to get the HPV vaccine in the future. There was a 13% increase in intent in the adolescents from the pre-test to the post-test. There may have been an increase in parents to whom the DNP student spoke to at the outreach events who intended to vaccinate their adolescents against HPV, but again there was no way to measure that outcome.

The results demonstrated that students may be ready to act on a health decision as in the constructs of the HBM. Students learned about their perceived susceptibility/severity of HPV with a 69% overall increase in students who stated that if they were infected with HPV, they could get genital warts and/or cancer. There was a 22% overall increase in students who stated there is a vaccine they could receive to prevent themselves from getting the most serious types of HPV, the perceived benefits. Students had 11% overall increase in those that reported there was someone they could talk to about their questions about HPV and the HPV vaccine, the perceived barriers. As mentioned above, there was a 13% overall increase in students who stated they intended to receive the HPV vaccine, which is their cue to action. The last step of the HBM is self-efficacy, which could not be captured in this project as there was no way to measure how many students actually received the HPV vaccine, but students and their parents now have tools to assist them in making an informed decision.

One unexpected finding in the results was the number of students who reported they had already received the HPV vaccine. As mentioned above, this number should have remained the same in the post-test because no one received the vaccine while in health class, but the numbers
increased in those that reported they had already received the HPV vaccine on the post-test. The students were not given any information about HPV before the pre-test, so the DNP student surmises that the students did not know the vaccine by name, but when they heard it referred to as Gardasil or as the vaccine against cancer, many students realized they had in fact already received the vaccine. The post-test results also showed that the males and females reported the exact same vaccination rates, 33% stated they had received the HPV vaccine, 27% stated they had not, and 40% were unsure. These results do not match national data, which shows vaccine rates amongst males being much lower than amongst females. However, the reported vaccine rates were low overall, which does match the national data. As mentioned previously, the rate of HPV vaccination completion in females, ages 13-17 in Massachusetts is 48.5%, which is higher than the 33% of females in this group who reported they had been vaccinated.

The results from the students and the qualitative data from the parent outreach sessions match the findings of the literature review. Adolescents and their parents are not aware of HPV or its consequences and the HPV vaccine. This capstone project also demonstrated that schools with SBHCs are ideal locations to educate adolescents about HPV and the HPV vaccine. Students were excited to hear that the HPV vaccine was available at the Teen Clinic.

As mentioned previously, rates of cervical cancer are disproportionately higher in Hispanic and Black women. In this sample, out of the females who reported they had not been vaccinated against HPV or were unsure if they had been vaccinated, 70% were Hispanic, 8% Hispanic, more than once race, and 4% Black or African American. Also HPV-associated penile cancer is highest in Hispanic men. In this sample, out of the males who reported they had not been vaccinated against HPV or were unsure if they had been vaccinated, 59% were Hispanic
and 15% were Hispanic, more than one race. This demonstrates a need for adolescents, especially Hispanics and Blacks, to get vaccinated against HPV.

The study by Read et al. (2010) reported that 48.9% of females, ages 13-19, reported being sexually active by 14.9 years of age and over half of them had had more than one sexual partner. In this sample, amongst the adolescents who stated they had not received the HPV vaccine or were unsure if they had, 21% of them were 14 years of age, 62% 15 years of age, 16% 16 years of age, and 1% 17 years of age. Though the students were not asked if they were sexually active, based on data from the Read et al. study, one can assume that some of these students are already sexually active and a large proportion of them are not vaccinated against HPV.

**Limitations/Recommendations**

The findings of this capstone project should be interpreted in light of several limitations. First, not being able to secure a formal parent group to collect quantitative data from parents was a process failure, whereby part of the intended intervention was not able to be implemented (Issel, 2009). Another barrier to conducting the parent group was the timeframe the DNP student had to implement this invention in order to comply with the academic requirements of the semester. If the DNP student had more time, perhaps the parent group could have been implemented. An additional limitation of this project was it relied on self-report. Self-report of data from adolescents may not be reliable (Burns & Grove, 2009). Another limitation of this project was the group being a convenience sample, which is a threat to the validity of the data (Burns & Grove, 2009).

Future projects within this population should focus on how to engage parents in the HPV vaccine decision-making for their children, but as evidenced by this project, it is difficult to find
a setting in which to conduct this type of intervention. Projects should also be implemented over a longer period of time and nurses should find a way to access health records of students to measure whether the rates of HPV vaccination actually increased after an educational intervention. Also future projects should have a comparison group, where one sample of students and parents receive an educational intervention versus a sample who do not get the intervention and HPV vaccination rates should be measured and compared.

**Conclusion/Future Implications**

The results of this capstone project did show an increase in knowledge about HPV and the HPV vaccine and an increase in intent to vaccinate against HPV in adolescents. Schools, particularly those with SBHCs or vaccine clinics, are an opportune venue to teach adolescents about HPV and the HPV vaccine. The DNP student is hopeful that the health teachers will continue to teach HPV content in their health classes, as they were provided with the information to do so, and it could be done in the time of one class period. The student is also hopeful that the SBHCs in Holyoke High School and Dean Tech will continue to do outreach to adolescents and parents about the HPV vaccine, and as a result, HPV vaccination rates will increase over time.

This project is evidence that there is still a need for increased education targeting parents and adolescents about HPV and the HPV vaccine. Public health nurses and nurses who work in SBHCs are in an important position to do further research and evaluation about how to best reach this population and continue HPV vaccination efforts. Future projects and research about HPV and the HPV vaccine can lead to a more informed U.S. population, which should result in increased HPV vaccination rates and therefore, in fewer HPV-related cancer cases.
INCREASING HPV VACCINATION RATES

References


Reiter, P.L., McRee, A., Pepper, J.K., & Brewer, N.T. (2012). Default policies and parents’
consent for school-located HPV vaccination. *Journal of Behavioral Medicine*. Advance
online publication. doi:10.1007/s10865-012-9397-1


Sheridan A. & White, J. (2010, December 22). Annual HPV vaccine coverage in England in
DEP2012-1386/PQ119371-2.pdf

*Quality management in health care, 13*(1), 17-32.

fear of adverse effects drops intention to vaccinate after the introduction of prophylactic
HPV vaccine. *Archives of Gynecology & Obstetrics*. Advance online publication.
doi:10.1007/s00404-011-2208-z

United States Census Bureau. (2010). Profile of general population and housing characteristics:


papillomavirus quadrivalent (types 6, 11, 16, 18) vaccine, recombinant. Retrieved from
http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm111283.ht


### Table 2. Health Belief Model

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
<th>Potential Change Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived susceptibility</td>
<td>Beliefs about the chances of getting a condition</td>
<td>• Define what populations(s) are at risk and their levels of risk&lt;br&gt;• Tailor risk information based on an individual's characteristics or behaviors&lt;br&gt;• Help the individual develop an accurate perception of his or her own risk</td>
</tr>
<tr>
<td>Perceived severity</td>
<td>Beliefs about the seriousness of a condition and its consequences</td>
<td>• Specify the consequences of a condition and recommended action</td>
</tr>
<tr>
<td>Perceived benefits</td>
<td>Beliefs about the effectiveness of taking action to reduce risk or seriousness</td>
<td>• Explain how, where, and when to take action and what the potential positive results will be</td>
</tr>
<tr>
<td>Perceived barriers</td>
<td>Beliefs about the material and psychological costs of taking action</td>
<td>• Offer reassurance, incentives, and assistance; correct misinformation</td>
</tr>
<tr>
<td>Cues to action</td>
<td>Factors that activate “readiness to change”</td>
<td>• Provide “how to” information, promote awareness, and employ reminder systems</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Confidence in one’s ability to take action</td>
<td>• Provide training and guidance in performing action&lt;br&gt;• Use progressive goal setting</td>
</tr>
</tbody>
</table>
Appendix B

UNIVERSITY OF MASSACHUSETTS AMHERST
Skinner Hall
651 North Pleasant Street
Amherst, MA 01003-9304

Spring, 2013

To Whom It May Concern:

I am the Director of the DNP Program at the University of Massachusetts, Amherst,
School of Nursing. I am writing this letter on behalf of Denise Barry, your student
preceptor. Your student is in the final year of the DNP program, is a DNP Candidate, and
is planning to complete the final requirement for the Degree, a Capstone Scholarly
Project, in your facility. Your student will be designing, implementing, and evaluating the
effect of translating a programmatic intervention into your practice or setting. As these
projects are considered performance improvement or program evaluation projects and not
research studies, the University does not require Institutional Review Board permission
for this student to actualize the project as outlined by the student. I am using this letter as
a "Key Stakeholder" commitment letter for the student to use in the Capstone Scholarly
Project Proposal. A Graduate faculty member of the School of Nursing will, also, be
working directly with your student as Chair of the Capstone Scholarly Project.

Thank you in advance for allowing this student to actualize the Capstone Project in your
facility. If you have any questions, please call me at 413-687-2624 or email
jdemart@nursing.umass.edu.

Key Stakeholder Signature: 

Student Signature: 

Date: 3/15/2013

Date: 3/15/2013

Sincerely,

Jean F. DeMartinis

Jean F. DeMartinis, PhD, FNP-BC
Associate Professor
Director DNP Program

The University of Massachusetts is an Affirmative Action/Equal Opportunity Institution
INCREASING HPV VACCINATION RATES

Appendix C

HPV Fact Sheet

What is HPV?
HPV stands for human papillomavirus. HPV is a virus that is passed from one person to another by skin-to-skin sexual contact including vaginal, oral, and anal sex. HPV can cause genital warts or cell changes that can lead to cancer.

More About HPV
HPV is one of the most common sexually transmitted infections in the U.S. Almost all sexually active people will get HPV at some time in their lives, but most will never know it. 74% of new HPV infections are in young people ages 15-24. Most of the time, the body naturally fights off HPV, but not always and it can lead to health problems.

Does HPV Cause Cancer?
Yes. HPV causes cancer in the cervix, vulva, and vagina in women and the penis in men. It causes cancer in the mouth/throat and anus in both men and women. Every year, HPV causes cancer in 18,000 women and 7,000 men in the U.S.

How Do I Know if I Have HPV?
Unless you have genital warts, most people do not have symptoms from HPV. There is no routine test for HPV. For women, screening for cervical cancer is done with a Pap smear.

Is There a Vaccine Available Against HPV?
YES! The most common vaccine is Gardasil, which protects people from the 4 most common strains of HPV that cause genital warts and cancer. The vaccine is 3 shots, given over a period of 6 months.

Who Should Get the HPV Vaccine? Where Can I Get the Vaccine?
All boys and girls ages 9 to 26 should get the HPV vaccine. You must have your parent/guardian’s permission to get the vaccine. It is available at the Teen Clinic or at your doctor’s office.

Is the HPV Vaccine Safe?
YES! 46 million doses have been given around the world and there have been no serious concerns. Some people report mild side effects like pain in their arm, fever, dizziness, and nausea.

How Can I Protect Myself Against HPV?
Get the HPV vaccine.
Practice abstinence.
Use condoms every time you have sex.
Limit the amount of sexual partners you have.

* Info adapted from CDC.gov
Appendix D

Participant #_____

Demographic Information

Circle the best answer or fill in the blank for all of the following questions.

Example:
The current President of the United States is Barack Obama.

True or False

1. I am:
   Female  Male  Other (Transgender)

2. How old are you?

   _______

3. I am:
   Hispanic
   White
   African American/Black
   Asian
   Native American
   Native Hawaiian/Pacific Islander
   Multi-Race, Non-Hispanic
Pretest

Circle the best answer or fill in the blank for all of the following questions.

Example: The current President of the United States is Barack Obama.

True or False

1. If I am infected with human papillomavirus (HPV), I could get genital warts and/or cancer.

Agree Disagree Unsure

2. HPV is one of the most common sexually transmitted infections in the United States.

True or False

3. The highest rates of new genital HPV infections occur in young adults between the ages of 15-24.

True or False

4. How is HPV transmitted? Select all the correct answers.
   A. Skin-to-skin contact
   B. Contact with infected blood
   C. An infected person coughs or sneezes on another person
   D. Vaginal, anal, or oral sex

5. Who should receive the HPV vaccine?

Girls only Boys only Both girls and boys

6. Have you received the HPV vaccine?

Yes No Unsure

If you answered yes to question # 6, do not answer any more questions

7. I believe I could be at risk (now or in the future) for getting HPV.

Agree Disagree Unsure

8. There is a vaccine I could receive to prevent myself from getting the most serious types of HPV?

Agree Disagree Unsure

9. There is someone I could talk to (parent, nurse, doctor, friend, teacher) about my questions and concerns about HPV and the HPV vaccine.

Agree Disagree Unsure
10. If you have not received the HPV vaccine, do you intend to get the HPV vaccine in the future?

Yes  No  Unsure
Appendix E

Posttest

Circle the best answer or fill in the blank for all of the following questions.

Example: The current President of the United States is Barack Obama.

True or False

1. If I am infected with human papillomavirus (HPV), I could get genital warts and/or cancer.

Agree Disagree Unsure

2. HPV is one of the most common sexually transmitted infections in the United States.

True or False

3. The highest rates of new genital HPV infections occur in young adults between the ages of 15-24.

True or False

4. How is HPV transmitted? Select all the correct answers.
   A. Skin-to-skin contact
   B. Contact with infected blood
   C. An infected person coughs or sneezes on another person
   D. Vaginal, anal, or oral sex

5. Who should receive the HPV vaccine?

Girls only Boys only Both girls and boys

6. Have you received the HPV vaccine?

Yes No Unsure

If you answered yes to question # 6, do not answer any more questions

7. I believe I could be at risk (now or in the future) for getting HPV.

Agree Disagree Unsure

8. There is a vaccine I could receive to prevent myself from getting the most serious types of HPV?

Agree Disagree Unsure

9. There is someone I could talk to (parent, nurse, doctor, friend, teacher) about my questions and concerns about HPV and the HPV vaccine.

Agree Disagree Unsure
10. If you have not received the HPV vaccine, do you intend to get the HPV vaccine in the future?

Yes  No  Unsure

Thank you for your time and participation.
Appendix F

Participant #____

Demographic Information

Circle the best answer or fill in the blank for all of the following questions.

Example:
The current President of the United States is Barack Obama.

True  or  False

1. I am the parent/guardian of a child entering the 9th grade next year.

Yes  or  No

If you answered No, you do not need to answer any more questions.

2. My child is:

Male  Female  Other (Transgender)

3. The current age of my child is:

________________

4. I am:

Male  Female  Other (Transgender)

5. I am:

Hispanic
White
African American/Black
Asian
Native American
Native Hawaiian/Pacific Islander
Multi-Race, Non-Hispanic
Circle the best answer or fill in the blank for all of the following questions.

Example: The current President of the United States is Barack Obama.

True or False

1. How is human papilloma virus (HPV) transmitted? Select all the correct answers.
   A. Skin-to-skin contact
   B. Contact with infected blood
   C. An infected person coughs or sneezes on another person
   D. Vaginal, anal, or oral sex

2. Who should receive the HPV vaccine?
   Girls only   Boys only   Both girls and boys

3. Has your adolescent child received the HPV vaccine?
   Yes   No   Unsure

If you answered yes to question #3, do not answer any more questions

4. I believe my adolescent child could be at risk (now or in the future) for getting HPV.
   Agree   Disagree   Unsure

5. My adolescent child could get genital warts and/or cancer someday if he/she does not receive the HPV vaccine.
   Agree   Disagree   Unsure

6. There is a vaccine my adolescent child could receive to prevent him/her from getting the most serious types of HPV.
   Agree   Disagree   Unsure

7. The HPV vaccine is safe for my adolescent child.
   Agree   Disagree   Unsure

8. My adolescent child should receive the HPV vaccine if his/her healthcare provider recommends it.
   Agree   Disagree   Unsure

9. I have access to all the information I need to make a good decision about having my adolescent child receiving the HPV vaccine.
   Yes   No   Unsure
10. If your adolescent child has not received the HPV vaccine, do you intend to have him/her get the HPV vaccine in the future?

Yes  No  Unsure
Appendix G

Posttest

Circle the best answer or fill in the blank for all of the following questions.
Example: The current President of the United States is Barack Obama.

True or False

1. How is human papilloma virus (HPV) transmitted? Select all the correct answers.
   A. Skin-to-skin contact
   B. Contact with infected blood
   C. An infected person coughs or sneezes on another person
   D. Vaginal, anal, or oral sex

2. Who should receive the HPV vaccine?

   Girls only   Boys only   Both girls and boys

3. Has your adolescent child received the HPV vaccine?

   Yes   No   Unsure

If you answered yes to question #3, do not answer any more questions

4. I believe my adolescent child could be at risk (now or in the future) for getting HPV

   Agree   Disagree   Unsure

5. My adolescent child could get genital warts and/or cancer someday if he/she does not receive the HPV vaccine.

   Agree   Disagree   Unsure

6. There is a vaccine my adolescent child could receive to prevent him/her from getting the most serious types of HPV.

   Agree   Disagree   Unsure

7. The HPV vaccine is safe for my adolescent child.

   Agree   Disagree   Unsure

8. My adolescent child should receive the HPV vaccine if his/her healthcare provider recommends it.

   Agree   Disagree   Unsure

9. I have access to all the information I need to make a good decision about having my adolescent child receiving the HPV vaccine.

   Yes   No   Unsure
10. If your adolescent child has not received the HPV vaccine, do you intend to have him/her get the HPV vaccine in the future?

Yes  No  Unsure

Thank you for your time and participation.
Appendix H

HPV Vaccine for Preteens and Teens

Last updated March 2012

Why does my child need HPV vaccine?
This vaccine is for protection from most of the cancers caused by human papillomavirus (HPV) infection. HPV is a very common virus that spreads between people when they have sexual contact with another person. About 6 million people, including teens, become infected with HPV each year. HPV infection can cause cervical cancer in women and penile cancer in men. HPV can also cause anal cancer, throat cancer and genital warts in both men and women.

When should my child be vaccinated?
The HPV vaccine is recommended for preteen boys and girls at age 11 or 12 so they are protected before ever being exposed to the virus. If your teen hasn’t gotten the vaccine yet, talk to their doctor about getting it for them as soon as possible.

The HPV vaccine is given in 3 shots. The second shot is given 1 or 2 months after the first shot. Then a third shot is given 6 months after the first shot. Be sure that your child gets all 3 shots for full protection.

What else should I know about HPV vaccine?
There are two HPV vaccines. Girls and young women should get either HPV vaccine to prevent cervical cancer.

One of the HPV vaccines also protects against genital warts and anal cancer in both females and males. Boys should get this HPV vaccine to prevent anal cancer and genital warts. Girls can get this vaccine to prevent cervical cancer, anal cancer and genital warts.

Both HPV vaccines have been studied very carefully. These studies showed no serious safety concerns. Common, mild adverse events reported during these studies include pain in the arm where the shot was given, fever, dizziness and nausea.

Some preteens and teens might feel faint after getting the HPV vaccine or any shot. Preteens and teens should sit or lie down when they get a shot and stay like that for about 15 minutes after the shot. This can help prevent fainting and any injury that could happen while fainting.

Serious side effects from the HPV vaccine are rare. It is important to tell the doctor or nurse if your child has any severe allergies, including an allergy to latex or yeast. HPV vaccine is not recommended for anyone who is pregnant.

HPV vaccination is recommended by the Centers for Disease Control and Prevention (CDC), the American Academy of Family Physicians, the American Academy of Pediatrics, and the Society for Adolescent Health and Medicine.

How can I get help paying for these vaccines?
The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger, who are not insured or under-insured, Medicaid-eligible, American Indian or Alaska Native. You can find out more about the VFC program by going online to www.cdc.gov and typing VFC in the search box.

Where can I learn more?
For more information about HPV vaccines and the other vaccines for preteens and teens, talk to your child’s doctor or nurse. More information is also available on CDC’s Vaccines for Preteens and Teens website at www.cdc.gov/vaccines/teens.
La vacuna HPV para preadolescentes y adolescentes

¿Por qué mi hijo/hija necesita la vacuna HPV?
Esta vacuna protege contra la mayoría de los cánceres causados por la infección del virus del papiloma humano (HPV, por sus siglas en inglés). El HPV es un virus muy común que se contagia entre las personas cuando tienen contacto sexual con otra persona. Cada año, alrededor de 6 millones de personas, incluyendo a los adolescentes, se infectan con el HPV. La infección por el HPV puede causar cáncer del cuello del útero en las mujeres y cáncer del pene en los hombres. El HPV también puede causar cáncer anal, cáncer de la garganta y verrugas genitales tanto en los hombres como en las mujeres.

¿Cuándo se debe vacunar mi hijo/hija?
Se recomienda que los preadolescentes, tanto varones como mujeres, se pongan la vacuna HPV a la edad de 11 o 12 años de modo que queden protegidos antes de que se expongan al virus. Si su adolescente no se haya puesto la vacuna todavía, hable con su médico para que se la pongan lo más pronto posible.

La vacuna HPV se administra en 3 dosis. La segunda dosis se debe poner 1 o 2 meses después de la primera y la tercera dosis se debe administrar 6 meses después de la primera. Asegúrese que su hijo se ponga las 3 dosis para asegurar la mejor protección.

¿Qué más debo saber sobre la vacuna HPV?
Hay dos vacunas contra el HPV. Las niñas entre 11 y 12 años de edad y las mujeres jóvenes entre 13 y 26 años se deben poner cualquiera de ellas para prevenir el cáncer del cuello del útero.

Una de las vacunas también protege contra las verrugas genitales y el cáncer anal tanto en las mujeres como en los hombres. Los niños deben ponerse esta vacuna HPV para prevenir el cáncer anal y las verrugas genitales. Las niñas se pueden poner esta vacuna para prevenir el cáncer del cuello del útero, el cáncer anal y las verrugas genitales.

Se ha realizado estudios muy cuidadosos de ambas vacunas HPV y dichos estudios han mostrado que no existe ninguna preocupación grave de seguridad con ellas. Algunos efectos secundarios que se han notificado en estos estudios incluyen dolor en el brazo, en el sitio que se ha puesto la inyección, fiebre, mareos y náusea.

Algunos preadolescentes y adolescentes se pueden desmayar luego de recibir la vacuna HPV o cualquier otra vacuna. Los preadolescentes y los adolescentes se deben sentar o recostar cuando se les pone la vacuna y quedarse así por alrededor de 15 minutos después de recibir la inyección. Esto puede ayudar a prevenir los desmayos o cualquier otra lesión que les podría ocurrir al desmayarse.

Los efectos secundarios graves de la vacuna HPV son raros. Es importante decirle al doctor o el enfermero de su hijo si tiene alguna alergia severa, entre ellas, alergia contra el látex o la levadura. No se recomienda poner la vacuna HPV a las mujeres que están embarazadas.

Los Centros para el Control y la Prevención de Enfermedades (CDC, por sus siglas en inglés), la Academia Estadounidense de Médicos de Familia, la Academia Americana de Pediatría y la Sociedad de Salud y Medicina para Adolescentes recomiendan vacunas contra el HPV.

¿Dónde puedo obtener más información?
Para obtener más información sobre las vacunas HPV y las demás vacunas para los preadolescentes y los adolescentes hable con el médico o el enfermero de su hijo. Usted también puede obtener más información disponible en el sitio web “Vacunas para Preadolescentes y Adolescentes” de los CDC en la siguiente dirección: http://www.cdc.gov/spanish/especialesCDC/VacunasParaAdolescentes o www.cdc.gov/vaccines/teens (para más información en inglés).

¿Cómo puedo obtener ayuda para pagar por estas vacunas?
El Programa Vacunas para Niños (VPC, por sus siglas en inglés) provee vacunas para los jóvenes y niños de 18 años de edad y menores que no tienen seguro de salud o están sub-segurados, son elegibles para recibir Medicaid, son nativos americanos o nativos de Alaska. Hable con el médico o el enfermero de su hijo para obtener más información sobre este programa. Puede obtener más información sobre el Programa VPC entrando en línea a la siguiente dirección: http://www.cdc.gov/spanish/especialesCDC/ProgramaVacunas
Appendix I

ATTENTION PARENTS!

The HPV vaccine is available at the Teen Clinic at Dean Tech or is available at your pediatrician’s office.

If you would like to schedule an appointment for your adolescent to receive the HPV vaccine at the Teen Clinic, please have your son or daughter come in to the Teen Clinic and pick up a permission slip.

¡ATENCION PADRES!

La vacuna contra el VPH está disponible en la Clínica de Adolescentes en Holyoke High School y también está disponible en el consultorio de su pediatra.

Si usted desea hacer una cita para su hijo/a para recibir la vacuna contra el VPH en la Clínica de Adolescentes, por favor dígale a su hijo/a que se presenten a la Clínica de Adolescentes para recoger una hoja de permiso.