

INCREASING HUMAN PAPILOMAVIRUS VACCINATION IN YOUNG ADULTS

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Increasing Human Papillomavirus Vaccination in Young Adults

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Problem: The Human Papillomavirus (HPV) is a group of more than 150 viruses that are a causative agent in many types of cancers. This virus can be linked to cervical cancer, vulvar cancer, vaginal cancer, penile cancer, anal cancer, and throat cancer. There are currently three approved vaccines to prevent the spread of HPV that are known to be associated to these cancers. The number of young adults in the United States that receive HPV vaccine is low. One of the reasons identified for not receiving the HPV vaccine is a knowledge deficit related to the disease and the vaccine.

Project Aim: The aim of this quality improvement project will be to increase the number of HPV vaccines given to young adults (ages 18-26) through an educational pamphlet related to HPV and the HPV vaccines. The Project Director assumes that providing an educational pamphlet to young adults before they see their health care provider will increase the number of HPV vaccines administered at in a clinic setting (ComCare).

Project Method: This quality improvement project was conducted at ComCare in Salina, Kansas. An educational pamphlet about HPV and the HPV vaccine was constructed from the literature and input from four healthcare professionals, including three nurse practitioners and one physician. A five-question pre-survey concerning the HPV vaccine and patient demographics was provided to the 10 healthcare providers at ComCare. Providers were given one week to complete the surveys. The pamphlets were then made available to young adult patients at this clinic for a six-week period by being placed in the waiting room, as well as in patient care areas. After the six-weeks were completed, the providers were given a six-question post-survey to determine the effectiveness of the educational pamphlets.

Results: Nine out of the 10 providers at ComCare completed the pre-survey and eight out of 10 providers completed the post-survey. The post surveys showed a slight increase in the number of patients who had received the vaccine as well as the number of patients who initiated the vaccine each week. At ComCare, 89% of providers indicated that an educational deficit was why patients refused the HPV vaccine. There were 62% of providers at ComCare thought that the pamphlets were beneficial in their care, related to HPV, for young men and women age 18 to 26 in their clinic.

Conclusion: Pamphlets containing educational information on HPV and HPV vaccines in a clinic setting appears to be useful in increasing the number of HPV vaccines administered. Providers in the clinic setting identified the largest factor related to not vaccinating against HPV was an educational deficit. Further studies should be conducted in additional clinics to determine

if educational pamphlets are beneficial in increasing the number of young adults that obtain the HPV vaccine.

Table of Contents

Introduction.....	5
Literature Review.....	6
Pathophysiology of HPV.....	7
Host Defense.....	7
HPV Invasion	8
Vaccines	8
Efficacy.....	8
Safety	9
Prevalence.....	9
Reason for Not Vaccinating	10
Education	10
Not at Risk/Sexually Active	11
Side Effects/Safety	12
Cost.....	13
Provider Recommendations.....	14
Education Interventions	14
Summary	15
Project Aims.....	16
Theoretical Framework	16
Definitions.....	17
Conceptual Definition: Educational Information	17
Operational Definition: Education Information	17
Conceptual Definition: Young Adult	18
Operational Definition: Young Adult.....	18
Conceptual Definition: Initial dosage.....	18
Operational Definition: Initial dosage	18
Methods.....	18
Design.....	18
Project Sample and Selection.....	19
Data Collection.....	19
Results.....	20
Discussion	22
Limitations	24
Conclusion	25

Recommendations for Practice	25
References.....	27
Appendix A.....	32
Appendix B.....	37
Appendix C.....	38
Appendix D.....	39
Appendix E.....	43
Appendix G.....	46
Appendix H.....	47

Introduction

Human papillomavirus (HPV) is a group of more than 150 related viruses that are transmitted through direct skin-to-skin contact, usually sexual, with an infected person (Center for Disease Control and Prevention [CDC], 2015). The virus is most commonly spread through vaginal or anal sex, but can be transmitted following nonpenetrative sexual activity. Currently, one in four Americans are infected with HPV (CDC, 2015). The most at risk group for HPV are sexually active women, under the age of 25, but many sexually active men and women get HPV at some point in their lives (Palefsky, 2016).

HPV is the causative agent in cell changes that result in genital warts and several cancers. Over 27,000 women and men are affected by a cancer caused by HPV annually. This virus can be linked to almost all cervical cancers, 91% of anal cancers, 75% of vaginal cancers, 72% of throat cancers, 69% of vulvar cancers, and 63% of penile cancers (CDC, 2015). Many of these cancers do not have signs or symptoms until they are in the advanced stages making treatment difficult. Statistics from the CDC (2015) show that from 2005-2009 there were 3,968 deaths annually due to cervical cancer, which were nearly all related to HPV. Currently, HPV can be identified as the causative agent in half a million deaths worldwide every year (Westrich, Warren, Pyeon, 2016).

Statement of the Problem

HPV is a group of viruses that currently has one of the highest incidence rates when compared with other STIs in the United States. It is estimated that there are nearly 20 million new sexually transmitted diseases (STIs) in the United States annually. HPV accounts for nearly 50% of these newly acquired STIs. Although about 90% of new HPV infections will

spontaneously resolve within two years, the care for the remaining 10% is rather costly due to the expense of treating HPV related cancers (World Health Organization, 2016).

The medical costs to care for individuals who acquire a new STI totals around \$16 billion. Annual costs for preventing and treating HPV associated diseases was estimated to be \$8.0 billion in 2010 (Chesson, Ekwueme, Saraiya, Watson, Lowy, & Markowitz, 2012). There is currently no cure for the HPV virus thus; one method to address this issue is through prevention of the virus.

There are currently three different multi-dose vaccine series available that provide immunity against HPV strands that are known to cause multiple cancers and genital wart (Smulian, Mitchell, & Stokley, 2016). Unfortunately, the CDC (2015) found that HPV vaccination initiation and completion rates are lower than desired by healthcare professionals. This leaves many people at risk for a multitude of cancers and genital warts. Low rates of immunizations, also increase the financial burden related to this disease.

The World Health Organization (WHO) (2016) recommends a comprehensive approach to preventing and controlling HPV related illnesses. This includes community education, social mobilization, vaccination, screening, treatment, and palliative care. It is important for healthcare providers to educate patients and develop ways to decrease the number of newly acquired HPV infections. Primary prevention interventions, such as vaccinations, are recommended prior to exposure and acquisition of HPV. It can also decrease the financial constraints observed throughout the American healthcare system due to HPV incidences and related illnesses.

Literature Review

A literature review was conducted from August 2016 to March 2017 to determine common causes of not receiving the vaccination and interventions that help increase the

initiation of the HPV vaccine series. The databases that were search included PubMed and CINAHL. The keywords searched included human papillomavirus, HPV, vaccine, interventions, and increase uptake. The search was limited to English articles that were published between 2011 and 2016. The articles title and abstracts were reviewed to determine relevance to the study for inclusion into the literature review section.

Data from the articles that were relevant were placed on the matrix in Appendix A. The matrix contains the citation, level of evidence, sample/setting, data collection/interventions, key findings, limitations, and summary of findings. The matrix includes 16 articles total.

Pathophysiology of HPV

HPV is a small double-stranded deoxyribonucleic acid (DNA) virus that infects the basal epithelial cells of the skin and mucosal membranes and can cause different types of warts and benign or malignant tumors (Sabeena, Bhat, Kamath, & Arunkumar, 2017; Westrich, Warren, & Pyeon, 2016). The transmission of the virus is species specific and most commonly transmitted through sexual contact (Sabeena, et al., 2017). For HPV to initiate infection, it must translocate across skin and mucous membranes. After the virus invades the host, it must withstand multiple defense mechanisms of the body. To do this, HPV interferes with multiple cellular pathways to evade the host immune response.

Host Defense

Mucous membranes pose a major physical barrier to the virus due to the secretion of viscous protective fluid and antimicrobial peptides (Sabeena, et al., 2017). Once the virus has invaded a host cell, innate pathogen sensors recognize the pathogen. When the pathogen has been detected, innate immune cells, such as dendritic, Langerhans, natural killer, and natural killer T cells, move to the HPV-infected environment (Westrich, Warren, & Pyeon, 2016). The

secretion of various cytokines, interferon- α (IFN- α), interleukin-6 (IL-6), tumor necrosis factor α (TNF- α), and IL-8, occurs when the innate immune cells are activated. The host T cell responses are required for elimination of HPV, but antibody titers from natural immunity are usually too low to protect the host against the virus (Westrich, Warren, & Pyeon 2016).

HPV Invasion

After the virus invades the host cell, the virus enters the nucleus. The virus then alters the host DNA methylation process, which is responsible for distinct gene expression patterns. The virus then manipulates host transcription (Mallen-St Clair, Alani, Wang, & Srivatsan, 2016).

The host immune response is altered due to expression of HPV oncoproteins E6 and E7, which quickly inactivate several tumor suppressors and causes chemotaxis of various immune cells. E6 and E7 oncoproteins also interact with multiple host proteins and change their activity to enhance virus replication and persistence. This inadvertently induces cellular malignancy (Mallen-St Clair, et al., 2016).

Vaccines

There are currently three vaccines approved in the United States to prevent HPV and related illnesses (CDC, 2015). All three of the vaccines cover HPV strands 16 and 18, which are the agents known to cause cancers. HPV strands six and 11 are covered by two vaccines and these strands are the causative agent of HPV related genital warts. One of the vaccines that covers strands six and 11 also covers strands 31, 33, 45, 52, and 58, which have been found to cause cervical, vulvar, and vaginal diseases (WHO, 2016).

Efficacy

The bivalent HPV vaccine (bHPV2) is effective against HPV strands 16 and 18, and is available for females aged ten to 25 (CDC, 2015). In females aged 15-25, the efficacy of the

vaccine in preventing cervical intraepithelial neoplasm (CIN2) is 94.9% and in preventing CIN3 is 91.7%.

The quadrivalent HPV vaccine (qHPV) is effective against HPV strands 6, 11, 16, and 18. It is available to females and males aged nine through 26 (CDC, 2015). In females aged 16-26 year, qHPV has an efficacy rate of 98.2% in preventing CIN2/3, 100% in preventing vulvar intraepithelial neoplasm (VIN) 2/3, and 99% in preventing genital warts. In males 16 to 26, qHPV has an efficacy of 77.5% in preventing anal intraepithelial neoplasm (AIN).

The third vaccine is the newest and is a nine valent HPV vaccine (9HPV). 9HPV protects against HPV strands six, 11, 16, 18, 31, 33, 45, 52, and 58. Studies related to the 9HPV are limited because it is relatively new. 9HPV has shown to be non-inferior to qHPV in preventing CIN and VIN in females ages 16 to 26, but was effective in preventing persistent infection and conditions related to HPV strands 31, 33, 45, 52, and 58 (Audisio, et al., 2016).

Safety

Local reactions, such as pain, redness, and swelling, are the most common side effects of both bHPV and qHPV. According to Audisio, et al. (2016), no serious adverse events have been found with either bHPV or qHPV. They found that pyrexia, headache, myalgia, and arthralgia have been reported. The WHO (2016) has reviewed reports on bHPV and qHPV and has determined that both vaccines have excellent safety and efficacy profiles.

Prevalence

In 2012, 28.1% of females aged 13 to 15 years had received all recommended doses of HPV vaccine (Healthy People 2020, 2016). According to the CDC (2015), the current rates for the HPV vaccine initiation in children 12 – 17 in the state of Kansas are less than 59% in girls and less than 39% in boys. The overall goal of Healthy People 2020 (2016) is to promote healthy

sexual behaviors, strengthen community capacity, and increase access to quality services to prevent sexually transmitted infections (STIs) and their complications. To reach this goal, Healthy People 2020 (2016) recommends that completion rate of the three dose HPV vaccine series is 80% in adolescent females aged 13 to 15 (Healthy People, 2016).

Reason for Not Vaccinating

Of the articles review, 10 discussed the reasons why individuals were not receiving the HPV vaccine. Common themes found in this group include not enough education, side effect/safety, cost, no physician recommendation, and thoughts of being not at risk/or sexually active.

Education

Knowledge about HPV and the HPV vaccines is a modifiable risk factor that significantly contributes to under-vaccination. Nine articles reviewed found that one of the major reasons that vaccination rates are so low is due to a need for more education. Ratanasiripong (2012) and Small, Sampsel, Martyn, and Dempsey (2013) conducted systematic reviews that both found conflicting evidence related to the influence an educational deficit has on vaccinating. Ratanasiripong (2012) determined there is a direct relationship between knowledge and the intent to vaccinate. The lack of knowledge related to HPV and the HPV vaccine can result in misconception and negative attitudes toward the vaccine.

Researchers have examined why women 18 to 26 years of age are not vaccinating against HPV. Wilson, et al. (2016) found that 28% of the participants (n=325) who were not vaccinated wanted more information about the vaccine. The need for more education was the most common reason for not vaccinating in this study. Laz, Rahman, and Berenson (2013) found that 12.7% of the participants (n=1892) needed more information about the vaccine, which was the second

most common reason to decline vaccination. Schmidt and Parsons (2014) found that in 2008 17% of participants (n=782) indicated they did not know enough about the vaccine, which dropped to 12% in 2012 (n=988).

Taylor et al. (2014) and Wong et al. (2011) surveyed mothers who had a daughter in the 9-17 age range. Taylor et al. (2014) found that 43% of mothers (n=49) identified a lack of knowledge as their reason for not vaccinating their daughters against HPV. In a larger study by Wong, et al. (2011), 17.7% of participants (n=1105) identified a lack of knowledge as a reason for not vaccinating, which was the second most common reason to decline vaccination.

Oldach and Matz (2012) and Head, Vanderpool, and Mills (2013) used healthcare professional's opinions to determine common reasons for refusal of the HPV vaccine. Oldach and Matz (2012) found that 55.6% of healthcare professionals (n=50) identified a lack of knowledge as a barrier to the vaccine, which was the most common reason in the study. In a smaller qualitative study of 15 healthcare professionals, one of two common themes for low HPV vaccine uptake was because patients did not think they needed the vaccine (Head, Vanderpool, & Mills, 2013). It was identified from the interviews that patients do not understand the link between HPV and cervical cancer, therefore identifying a knowledge deficit amongst these patients.

Not at Risk/Sexually Active

Nine articles were identified that indicated patient's perception of not being at risk or not being sexually active as a reason for not vaccinating against HPV. Small, Martyn, and Dempsey (2013) performed a systematic review of literature and found that patient's perception of risk was a significant contribution to not vaccinating, but did not indicate that sexual inactivity was a

factor. In a systematic review of literature, Ratanasiripong (2012) reported sexual inactivity as a significant reason for not vaccinating in women aged 18 – 26.

Young women aged 18-26 was the target population for multiple studies. An observational study (n=325) found that 10% of the study sample indicated not needing the vaccine due to sexual inactivity (Wilson, et al., 2016). Patel, et al., (2012) (n=80) found that not being at risk (28.8%) was the least common reasons found for not vaccinating against HPV. Schmidt and Parsons (2014) found both the perception of not being at risk and sexual inactivity as reasons for not vaccinating in their analysis of surveys from 2008 and 2010. In 2008, 35.9% of participants (n=782) indicated they did not need the vaccine, while only 10.3% of participants reported sexual inactivity as their reason for not vaccinating against HPV. In this study, 40.7% of participants (n=988) indicated not needing the vaccine and 8.1% of the participant's reported sexual inactivity as their reason for not getting vaccinated against HPV in 2010. Another survey conducted in 2010 found that 39.6% of women aged 18-26 (n=1478) do not receive vaccinations against HPV because they do not think they need the vaccine (Laz, Rahman, & Berenson, 2013).

Parents of young girls aged nine to 17 indicated that their daughters did not need the vaccine or were sexually inactive in two studies. Taylor, et al. (2014) found 26% of parents (n=49) indicated this (n=49) as their reason for not vaccinating. A larger study found that 35.2% of parents (n=1105) indicated that their daughter does not need the vaccine or is not sexually active (Wong, et al., 2011).

Side Effects/Safety

Side effects and/or safety were reasons for not vaccinating in six articles reviewed. In a systematic review of literature by Small, et al. (2014), safety concerns influenced vaccine uptake in 24% of participants in three studies with a variety of populations including parents and young

women aged 18-26. Ratanasiripong (2012) found a wide range of < 5% - 42.9% of participants indicated safety concerns as a reason for not vaccinating in a systematic review.

A survey conducted in 2008 and 2010 found that 12.6 % of women age 26 years old were worried about the safety of the HPV vaccines (n=782) and 12.3% respectively (Schmidt & Parsons, 2014). Wilson, et al. (2016) found 13% of the 26 year old women (n=136) were concerned with safety and side effects. In a study of 26 year old female college students (n=80), 48.8% of participants indicated concerns about safety and side effects as reasons they were not getting vaccinated against HPV (Patel, et al. 2012). Another study found 37.8 % of health care professionals (n=50) indicated that among parents of male and female adolescents their concerns about safety were barriers to HPV vaccination (Oldach & Katz, 2012).

Cost

The cost of the HPV vaccine can vary significantly due to variations in insurance coverage. Small, et al. (2014) found that cost and insurance coverage influenced young adult's decision to vaccinate, but is less of a concern for the younger population. They indicated this difference is most likely because children 19 and younger are usually insured and may be eligible for free vaccines through the Vaccine for Children (VFC) program.

In a study of women 18-26 years of age (n=1892), cost was an issue for 2.6% of participants (Las, Rahman, & Berenson, 2012). This concern was highest in participants that did not have insurance (n=276; 5.3%). A survey of U.S. women age 18-26-years of age found that in 2008 (n=782) and in 2010 (n=988) 1.8% and 2.5% participants indicated the HPV vaccine was too expensive (Schmidt & Parsons, 2014). In an observational study of college women (n=136), Wilson, et al. (2016) found that cost of the HPV vaccine was a main reason for not receiving the vaccine in 17% of participants (n=325). Patel, et al. (2012), who also studied college women,

found that cost of the vaccine was a significant concern to 41.3% of participants (n=80). A study of barriers reported by providers (n=45) found that 8.9% of providers find cost to be an issue in participants that do not qualify for the VFC program (Head, Vanderpool, & Mills, 2013). Cost was not a significant concern for parents of young girls between the ages of nine and 17 (n=1105, 1.6%) (Wong, et al., 2011).

Provider Recommendations

If a provider does not recommend the HPV vaccine to patients, the uptake of the HPV vaccine can be affected. According to Small, et al. (2014), who performed a systematic review of literature, indicated that provider recommendation is one of the most clinically significant factors that has shown an increase in HPV vaccine uptake. A survey in 2008 (n=782) and 2010 (n=988) of U.S. women aged 18-26 found that no provider recommendation was the reasons 5.4% and 7.4% women did not receive the HPV vaccine. Another survey on women aged 18-26 found that 7.2% of participants (n=1892) did not get the HPV vaccine because their healthcare provider did not recommend it (Las, Rahman, & Berenson, 2012).

Taylor, et al. (2014) surveyed parents of girls aged nine to 17 (n=49) and found that 24% of participants reported no physician recommendation as their reason for not vaccinating their child. Another study of parents of young girls found that not receiving physician recommendation was less common of a reason to refuse the HPV vaccine. This study found that 5.5% of parents refused the HPV vaccine due to not receiving physician recommendation for it (Wong, et al, 2011).

Education Interventions

A limited number of studies used educational interventions as a variable to increase the initiation of the HPV vaccine series. A systematic review of literature conducted by Fu,

Bonhomme, Cooper, Joseph, and Zimet (2014) found educational trials directed toward parents, adolescence, and young adults did not show a significant increase in HPV vaccine uptake after intervention. Although these trials did not show significance, Fu, et al. (2014) concluded from their review that the intent of adolescents and young adults to receive the HPV vaccination could be influenced by education interventions. They also found that participants who received their initial HPV vaccine at the time of an educational intervention were more likely to complete the 3-dose series.

Another systematic review found differing results related to the impact of educational interventions. They concluded that patient education showed a modest increase in the initiation of the HPV vaccine. They also found that interventions that were both provider and community based had the greatest impact on vaccine uptake (Smulian, Mitchell, & Stokley, 2016).

Summary

Although there is not strong evidence indicating educational interventions will greatly affect the initiation of the HPV vaccine series, education related to HPV vaccine is needed. Of the reasons indicated for not receiving the HPV vaccine, not enough education, side effects/safety, and perception of not being at risk or sexually active are possible reasons where educating patients about HPV and the HPV vaccine could change their decision concerning vaccinations.

With the consistent rise in individuals infected with HPV, it is important that interventions to increase vaccination rates be pursued. As vaccination rates increase, the risk of acquiring an HPV related cancers or illnesses would begin to decrease. The goal of Health People 2020 is an 80% vaccination rate, which will require interventions to increase compliance with the CDC recommendations related to the HPV vaccine.

Project Aims

Current literature suggests that there is a knowledge deficit pertaining to HPV and the HPV vaccine. Although there is no specific intervention that has shown an increase in the uptake of the HPV vaccine, there are studies that show educational interventions do increase the intent to vaccinate and improve overall knowledge about HPV and the HPV vaccine.

The **aim** of this quality improvement (QI) project is to increase the number of HPV vaccines given to young adults (ages 18-26 years old) through an educational pamphlet related to HPV and the HPV vaccines. The project question developed is: Will the use of an education pamphlet on HPV and the HPV vaccines increase the initial uptake of the HPV vaccine in young adults aged 18-26? The Project Director assumes that providing an educational pamphlet to young adults before they see their health care provider will increase the number of HPV vaccines administered at ComCare in Salina, Kansas.

Theoretical Framework

The Plan-Do-Study-Act (PDSA) framework was chosen for this QI project. The purpose of the PDSA framework is to establish a functional relationship between process changes in systems of healthcare and variations in outcomes (Speroff & O'Connor, 2004). By following this framework, the question "How will we know that a change is an improvement?" will be answered (Speroff & O'Connor, 2004).

The PDSA model is a four-stage cyclic learning approach. The model mirrors the scientific method and is used to adapt changes aimed at improvement. This framework follows four major steps. Taylor, et. al (2013) describe the steps as: "In the 'plan' stage a change aimed at improvement is identified, the 'do' stage sees this change tested, the 'study' stage examines

the success of the change and the ‘act’ stage identifies adaptations and next steps to inform a new cycle” (Taylor, McNicholas, Nicolay, Darzi, Bell, & Reed, 2013) (p. 291).

Following the PDSA framework, a plan was developed for this QI project. The change that this project evaluated is the use of educational pamphlets about HPV and the HPV vaccine at ComCare in Salina, Kansas. The goal of the project was to increase the HPV vaccine in young adults aged 18-26 by educating them on HPV and the HPV vaccine. To determine if the use of educational pamphlets made an improvement in vaccine uptake, providers within the clinic completed pre- and post-intervention surveys. After data were collected, the Project Director reviewed the surveys and interrupt the data to determine if the use of educational pamphlets increased the uptake of the HPV vaccine. The findings were shared with the healthcare providers at ComCare.

Definitions

Conceptual Definition: Educational Information

An educational pamphlet is a document that provides the reader with general information about a specific subject. Educational information should be designed to improve patient knowledge or attitude (Fu, et al., 2014). Educational information is defined by Patel, et al. (2013), as a fact sheet that is molded from information from the CDC.

Operational Definition: Education Information

For this QI project, the education information will be provided in the form of an educational pamphlet. The pamphlets are a single sheet of paper, both front and back, in an easy to read format. Information about HPV and the HPV vaccine was obtained from the CDC and the Immunization Action Coalition. There was also input from four different content experts, consisting of one Physician and three Nurse Practitioners.

Conceptual Definition: Young Adult

Young adults can be defined as individuals, both male and female, between the ages 20 – 26 (Fu, et al., 2014). This age group of individuals are usually at a higher risk for STIs due to a combination of behavior, biological, and cultural reasons.

Operational Definition: Young Adult

For this QI project, a young adult is defined as any male or female between the ages of 18 and 26. There will be no regulations related to ethnicity. This age group was chosen because at the age of 18 individuals can make informed consent. The HPV vaccine can be administered to individuals up until the age of 26 years old, so this allow all individuals who are able to make informed consent and receive the vaccine be included in the study.

Conceptual Definition: Initial dosage

Patel, et al. (2012) defined the initial dosage as receiving the first dose of the vaccine series. The participant cannot have received a dose of the HPV vaccine within their lifetime.

Operational Definition: Initial dosage

The initial dosage for this QI project will be defined as receiving at least one dose of the HPV vaccine series. For this QI project, there will be no requirements related to time of initial dose or uptake of subsequent doses.

Methods**Design**

This project is an evidence based QI project. The Institutional Review Board at the University of Kansas Medical Center reviewed the protocol and gave permission to perform this QI project (Appendix D). Management at ComCare in Salina, Kansas was contacted about this QI project and provided the Project Director a letter of approval (Appendix G) to perform this QI

project. Prior to distribution of the pre-survey, providers at ComCare were sent a letter (Appendix E) informing them about this QI project and asking them for their participation in this QI project.

Providers at ComCare in Salina, Kansas were given a pre-survey (Appendix B), to determine how many HPV vaccines they recommend, how many HPV vaccines are provided, reasons for patient refusal of the HPV vaccine, and patient demographics. After the pre-survey was completed, educational pamphlets (Appendix F) were distributed. These educational pamphlets include information about HPV and the HPV vaccine from evidence based and accredited websites, such as the CDC, as well as input from four different content experts. These experts consist of a one Physician and three Nurse Practitioners. The pamphlets were placed in the waiting room and examination rooms of the clinic. Once a week the Project Director ensured there were adequate amounts of pamphlets available to patients and answered any questions providers had.

After a six-week period, providers were asked to complete the post-survey (Appendix C) to determine if there were changes in the number of HPV vaccines recommended, number of HPV vaccines provided and/or the reasons for not vaccinating. Providers were also asked if they felt the educational pamphlets were beneficial to their practice.

Project Sample and Selection

The sample consisted of ten healthcare providers working at ComCare. The healthcare providers consisted of eight Physicians and two Nurse Practitioners who practice at the clinic.

Data Collection

Data were collected through pre- and post-surveys completed by the healthcare providers at ComCare. The information collected includes estimated number of HPV vaccines

recommended each week, estimated number of HPV vaccines given each week, reasons patients refuse the vaccine, age range of patients receiving the vaccine, sex of patients receiving the vaccine, and ethnicity of patients receiving the vaccine. The surveys the providers at ComCare completed include no identifying data to maintain confidentiality of the patients and providers.

Results

Nine out of 10 providers chose to participate in the pre-survey and eight out of 10 providers participated in the post-surveys. Frequency of answers to the survey questions are displayed in tables, bar charts, and pie charts. Demographic data were analyzed and all of the providers reported on both the pre- and post-surveys that the most common patients they met in the study population were white females between the ages of 18 and 22.

The first question of the surveys asked the providers on average, how many patients do you see in the clinic each week that are between the ages 18 and 26? *Figure 1* (Appendix H) shows the number of providers that responded for each option. The pre-survey showed that six providers (66%) reported that they met nine or more patients between the ages of 18 and 26 each week. On the post-survey showed five providers (63%) met nine or more patients between the ages of 18 and 26 each week. There was one provider in the clinic that met zero to two patients. One provider met three to five patients and one provider that met six to eight patients between the ages of 18 and 26 each week in both the pre- and post-surveys.

On the pre-survey, eight of the providers (89%) reported that zero to two of the patients they met each week had already initiated the HPV vaccine (*Figure 2*, Appendix H). Only one provider (11%) reported more than this, and they reported examining three to five of the patients each week that had already initiated the HPV vaccine. All nine providers, 100 % of providers,

reported on the pre-survey that they have zero to two patients which initiated the vaccine each week (*Figure 3*, Appendix H).

Figure 2 also shows the post survey results for the number of providers that had patients who had already initiated the HPV vaccine. Three of the providers (37.5%) reported they had three to five patients a week that had initiated the HPV vaccine series, while five (62.5%) providers, reported zero to two patients had initiated the HPV vaccine series. During the post survey, providers had more patients initiate the HPV vaccine series than in the pre-survey (*Figure 3*, Appendix H). Two providers (25%) reported that six to eight of their patients initiated the vaccine series a week, while six providers (75%) reported zero to two patients initiated the HPV vaccine each week.

Providers were asked to report reasons their patient refused the HPV vaccine. The most common reasons patients refuse the vaccine, from the literature review, include education deficit, cost, side effects/safety, and fear of shots. Providers were to choose all of the reasons that apply to their practice and *Figure 4* (Appendix H) illustrates these results. The most common reason for refusal of the HPV vaccine was an educational deficit. At ComCare, 89% of providers indicated this as a reason their patients refused the HPV vaccine. Another common reason for refusal was concerns about side effects or safety, where 56% of providers indicated this as a reason for vaccine refusal. There were 33% of providers indicating the cost of the vaccine was a concern for patients and 22% of providers indicated that their patients had a fear of shots.

During the post survey, providers were asked if they felt the educational pamphlet that had been placed throughout the ComCare clinic was beneficial in their care for young men and women aged 18 to 26. The results of this question showed that 62% of providers thought the

pamphlet was beneficial, 29% of providers thought that the pamphlet was not beneficial, and 14% of providers were not sure if they were beneficial (*Figure 5, Appendix H*).

Discussion

Overall, the response rate of the providers was excellent. There was a small sample size of 10 providers, but 90% of them responded to the pre-survey and 80% responded to the post-surveys. Between 63% and 66% of providers examined nine or more patients each week that met criteria for this QI project, which included that the patient being a male or female between the ages of 18 and 26.

The provider responses to reasons why patients were refusing the HPV vaccine in this QI project were similar to those found in literature. Oldach and Matz (2012) interviewed healthcare professionals and found the most common reason for vaccine refusal was due to an educational deficit. They found 55.6% of healthcare professionals identified educational deficit as the main reason for not vaccinating. A systematic review of literature by Ratanasiripong (2012) also found that the main reasons patients were refusing the HPV vaccine series was due to an educational deficit. The results of this QI project showed that educational deficit was the most common reason for HPV vaccine refusal as indicated by the healthcare providers participating in the survey. This QI project showed that 89% of providers identified an education deficit in their patients as the reason for vaccine refusal.

Patel, et al. (2012) found that 48.9% of women age 18 – 26 years of age were concerned of side effects and safety, which is comparable to the result of 56% reported by providers in this QI project. In this QI project, cost was the second most common reasons providers identified for patients not vaccinating against HPV. Oldach and Katz (2012) also determined safety and side effects were the second most common reason for not vaccinating against HPV in their study of

providers. They concluded that 37.8% of providers identified safety and side effects as a concern. While safety and side effects are concerns in multiple studies, it has been identified that all of the HPV vaccines have a low risk safety profile and high efficacy rates in preventing a variety of cancers.

Cost of the vaccines were identified as the third most common reason for not vaccinating in this QI project. It was determined that 33% of providers in this QI project identified cost as a barrier to patients receiving the HPV vaccine. Small, et al. (2012) found, in a systematic review of literature, cost influenced patient's intent to vaccinate. They found this to be a bigger concern for young adults than adolescence. Patel et al. (2012) identified cost as a barrier and indicated that 41.3% of college women who participated in their study reported cost as a reason for not vaccinating. Wilson, et al. (2016), who also studied college aged women, found that 17% of participants identified cost as a concern related to receiving the HPV vaccine. Head, Vanderpool, and Mills (2013) found that 8.9% of providers identified cost as a barrier to patients receiving the HPV vaccine. When looking at studies of similar age groups, the results of this QI project are comparable to current literature.

The results of this QI project showed a slight increase in the number of patients that had started the HPV vaccine series and the number of HPV vaccines given each week. These results correlate to those concluded by Smulian, Mitchell, and Stokley (2016), who determined there was a modest increase in the initiation of the HPV vaccine with patient education. The results of this QI project differ from those found by Fu, et al. (2014), who found that educational trails for parents, adolescents, and young adults did not show significant increase in HPV vaccine uptake. However, these researchers did identify the intent to vaccinate increased in young adults when they were educated about HPV and the HPV vaccine.

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Limitations

This QI project, using educational pamphlets to increase the uptake of the HPV vaccine, was performed over a six-week period. The results did show a slight increase in the number of patients who received the HPV vaccine, but it is unknown if the educational pamphlets were the specifically related to this increase. Conducting a longer study would be beneficial to help determine if the educational pamphlets assisted with the significant increase in HPV vaccinations. The sample of young adults that was sampled in this QI project was mainly white females between the ages of 18 and 22, which does not fully represent the population available to receive this vaccine. It would be beneficial to perform similar projects in a more diverse population.

The surveys used in this QI projects used ranges for the number of patients each provider cared for, the number of patients who had previously initiated the HPV vaccine, and the number of patients who initiated the HPV vaccine each week. The results of these questions could be more precise if whole numbers were used instead of ranges. In addition, providers estimated the

number of patients they cared for related to each of these questions. The results would be more precise if data were collected through chart review instead of provider recall and estimations.

While this QI project was intended to educate young adults aged 18 to 26, interventions should also look at ways to educate parents and adolescence. Patients should be receiving the HPV vaccine prior to exposure to HPV, which would be prior to sexual activity. Today the age of first sexual activity is becoming younger. Irala, Osorio, Ruiz-Canela, and Lopez-del Gurgo (2011) found that in the United States the mean age for first sexual intercourse is age 15. Thus, intervention for young adults may come too late to prevent HPV and HPV related diseases for all that vaccinate during this age.

Conclusion

The educational pamphlets showed to be beneficial in this clinic setting. The results of this QI project showed that there was a slight increase in the number of patients who received the HPV vaccine after the educational pamphlets were made available. This QI project identified that, according to providers, there is a significant educational deficit in patients related to HPV and the HPV vaccine. Providers in this clinic setting concluded that educational pamphlets were beneficial to their care related to HPV in young adults aged 18 to 26.

Recommendations for Practice

As the incidence rates of HPV infections and related cancers continues to rise, it is important that providers can identify ways to decrease rates. Patient education has been identified as a major deficit related to HPV. The HPV vaccine is just one topic that providers need to educate patients on related HPV prevention. Other topic that should be discussed with patients include abstinence, limiting sexual partners, and the use of condoms. Studies should

continue to be developed to assess if other educational interventions would be more beneficial than an educational pamphlet.

Research should continue to determine age specific intervention that will help educate parents, adolescents, and young adults. Technology has become a part of everyday life and should be used as a tool to educate patients. Further research should be done to determine if educational interactive digital programs on tablets in the waiting room or educational clips delivered on tablets or televisions in waiting rooms would increase patient's knowledge about HPV and the HPV vaccine.

The overall rates of HPV vaccination are low; therefore, interventions that are not age specific should be researched as well. Other methods to increase the uptake of the HPV vaccine that should be investigated to include an incentive gift for receiving the vaccine or a free vaccination day. While it was not the top reason for not vaccinating, the cost of the vaccine was identified as a reason for not vaccinating.

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Appendix A

Literature Review Matrix

Citation (author/year)	Level of Evidence	Design	Sample/Setting	Data Collection/ Interventions	Key Findings	Limitations	Summary of Findings
Fu, L. Y./ 2014	I	Systematic review	33 studies:7 tested parental interventions; 8 studies tested the effectiveness of interventions with adolescents or young adults; 18 compared different message frames	-PubMed and Web of Science databases searched -two authors independently reviewed articles to determine relevance	-education intervention trials showed no significant increase in uptake as a result of their interventions	- search restricted to English studies - bias for different methods for resting educational interventions	- adolescents and young adult's intention to receive HPV vaccination may be more readily influenced by educational interventions - Enhanced single-session education may increase compliance with completion of the 3-dose series among participants who are given first dose at the time of the education
Head, K. J, 2013	IV	Interview	- sample size 15: 6LPNs, 3NPs, 6Physicians	- 1-hour interview - interview questions specifically focused on healthcare providers' perceptions of barriers and facilitators to HPV vaccination uptake and adherence - interview was audio recorded	- Reasons for low HPV vaccine uptake: (1) patient barriers – do not want a shot and do not think the vaccine is important (2) inadequate region- and age-specific HPV vaccination education and promotion - Reasons for low HPV vaccination adherence: (1) complications of three-dose vaccine schedule, (2) clinic-centered communication deficiencies	- limited generalizability – small sample and rural area - research team shares an affiliation with facility used - providers perspective of why vaccine is refused – risk for biased interpretations and inaccurate observations	- Reasons for low vaccine uptake: patient barriers and inadequate education and promotion
Laz, T. H./ 2012	IV	Survey with a cross sectional design; complex, stratified, multistage probability design.	1892 women aged 18-26	Survey questions related to HPV vaccine awareness, receipt of the vaccine, number of doses, perceived barriers, and relevant socio-demographic variables	-77.3% of women had not initiated the vaccine -reasoning of unvaccinated: 39.6% do not need the vaccine; 12.7% insufficient knowledge; 12.0% concerned about safety; 7.2% not recommended by physician; 6.7% not sexually active; 3.1% too old for vaccine	- recall bias - survey did not assess sexual behavior therefore unable to associate vaccination with sexual behavior - unable to conclude causality	Increase in number of women 18-26 from 2008 survey, but still under-vaccinated. 2/3 on unvaccinated women were not interested in vaccination.
Navalpaka m, A./ 2016	IV	Cross sectional survey	1000 female Oakland University students 18 years old and above	- Knowledge of HPV Infection and Vaccination - Attitudes towards HPV Vaccination	- knowledge deficit evident by mean knowledge score of 53%	- convenience sample - not representative of general population	educational resources and activities, as well as awareness campaigns seem to be an inexpensive and effective way to

					- 79% thought HPV was a life-threatening disease		improve disease knowledge, tolerance, and increase HPV vaccination rates
Niccolai, L. M./ 2016	I	Systematic Review	- 14 articles	PubMed, Web of Science, MEDLINE search: - through July 2014 - search terms: HPV, Vaccine, intervention	- Reminder and Recall system -Physician focused intervention - School based programs - social marketing	- technological effect untested - only 2 interventions included boys - effect size small for some interventions	- All of the following had statistically significant increase in HPV vaccine compliance: -Reminder and Recall system -Physician focused intervention - School based programs - social marketing
Obulancy, P. A./ 2016	III	Quasi-experimental design	- convenience sample of 41 mother/daughter dyads	- pre and post test to determine knowledge of HPV - intervention: educational session – brochure, list of HPV preventative measures, video presentation including great detail about HPV infection and cervical cancer, and a Q&A session	- great improvement in HPV knowledge after educational session – $t=5.068$, $p<0.0001$ - 81% of mothers intend to vaccinate daughter after education information compared to 56% preintervention	- small convenience sample - short study period - lack of translator - data collected from only one small clinic	- improvement in HPV knowledge after education intervention - mothers were more likely to vaccinate their child after an education intervention than with no educational intervention
Oldach, B./ 2012	IV	Structured questionnaire via telephone contact	- 50 health departments in Ohio	- data collected through a phone interview - Ask nurses at the health departments an estimate of HPV vaccine compliance rate and their perceived reasons for refusal among patients	- 66.7% of the health departments reports less than 50% of individuals ages 9-26 years of age had received the HPV vaccine - Reasons for refusal: lack of knowledge, concern of side effects, newness of the HPV vaccine, and parents believe their children are not sexually active	- participants provide an estimate of the number of requests for HPV vaccine, HPV vaccine initiation and completion rates, provider recommendation patterns, HPV vaccine barriers, and patient cost information	- less the 50% of individuals 9-26 years of age were vaccinated - Highest refusal reasons were lack of knowledge and concern of side effects
Patel, D. A./ 2012	II	RCT	- 256 participants from UHS gynecology clinic	-intervention: educated with HPV and Vaccination fact sheet - reminder and fact sheet main 2 weeks after clinic visit	- 41% indicated an intent to receive vaccine – top reasons include not wanting to get cervical cancer and genital warts - 31.3% did not intend to undergo vaccination – reasons include concerned about safety, site effects, cost, not at risk - 5.5% received an initial doses of HPV vaccine	- may have received dose outside of specific clinic - college ages students - cost of vaccine	- educational intervention was not statically relevant

					within 6 months of education		
Ratanasiripong, N. T./ 2012	I	Systematic Review	- 13 studies	- searched PubMed, MEDLINE, CINAHL, and Google Scholar	- 80.7% to 93.5% of participants thought that contracting HPV would be severe and having cervical cancer would be devastating - 50% to 84.4% of participants did not think that were at risk for HPV -72.4% of participants thought HPV could be cured with the right treatment -various studies noted reasons for not getting the HPV vaccine include cost, side effects, lack of information, lack of transportation, inactive sexual behavior, new vaccine, lack of insurance	- many studies were conducted when the vaccine first came out and attitudes have changes since that time - difference among studies data collection methods	- HPV is a severe disease - Lack of knowledge related to cure -reasons for not vaccinating: cost, side effects, lack of information, lack of transportation, inactive sexual behavior, new vaccine, lack of insurance
Schmidt, S./ 2014	IV	Cross-sectional, multipurpose health survey; multistage probability design	Women aged 18 – 26: 10513 – Vaccination initiation; 2817 interest in HPV vaccination; 1770 for nonvaccination	Outcomes: HPV vaccination uptake, Interest in HPV vaccine, and reasons for nonvaccination	- 76.7% had not initiated the HPV vaccine series - reason for not vaccinating 2010: 40.7% do not need vaccine; 11.8% don't know enough about the vaccine; 12.3% worried about safety	- cross-sectional data set - recall bias- all information was self-reported - No information on recommendation from doctor	- uptake has increased from 2008 – 2012 - a continuation in efforts by policymakers and education vaccination initiatives to develop strategies and interventions to improve HPV vaccine initiation and completion.
Small, S. L./ 2013	I	Systematic review	- 19 articles	Electronic database search: - limitations: human, female, English, published between January 1, 2009 to June 1, 2011. -direct measurement of uptake	- 6 influences: 1) cost and insurance coverage 2) provider recommendation 3)vaccination opportunity 4) HPV and HPV vaccine knowledge 5) vaccine safety concerns 6) HPV risk		1) cost and insurance coverage 2) provider recommendation 3)vaccination opportunity 4) HPV and HPV vaccine knowledge 5) vaccine safety concerns 6) HPV risk
Smulian, E. A./ 2016	I	Systematic review	- 34 studies addressing vaccination. - adolescents and young adults	-two authors Searched PubMed, Web of Science, Wiley Online Library, Cumulative Index of Nursing and Allied Health Literature, and Google Scholar	-two patient education studies reviewed demonstrate some potential promise of this type of intervention	- Many studies had limited generalizability in their results, as many has small sample sizes or were observational studies	- single-method intervention strategies that frequently produce statistically significant increases in HPV vaccination coverage were reminder, recall, and patient education.

				-between June 2006- May 2015		- Each study measured HPV vaccine up-take differently - ACIP recommendations only extended to include bits in 2011 - Interventions conducted outside the US were not included	
Taylor, V. M./ 2014	IV	Survey	- Sample size 86 - Seattle metropolitan area: third largest Cambodian community in US - Cambodian mothers with daughter aged 9-17	- three survey interviewers who were bilingual Cambodian women - 9 months during 2012 to 2013 - telephone interviews	- 29% reported daughters had initiated HPV vaccine series - 14% reported completion of HPV vaccine series - top reason for vaccinating was to protect daughter against disease - reasons for not vaccinating: lack of knowledge about the HPV vaccine, not having received physician recommendation, and thinking the vaccine was not needed because daughter had no health problems.	- one geographic area -some Cambodian mother's level of understanding about prevention may be an impediment to HPV vaccine uptake, -	- 71% had not initiated vaccine series - reasons for not vaccinating: lack of knowledge about the HPV vaccine, not having received physician recommendation, and thinking the vaccine was not needed because daughter had no health problems.
Valdez, A./ 2015	II	RCT	708 Latino and Korean parents of unvaccinated 9-17 years of age	- Education DVD was developed through focus groups and cognitive interviews - assess knowledge gains, decisional conflict, decision self-efficacy and informed decision making from view the DVD - Pre and Post intervention questionnaire	- informed decision making – 2.4 times more likely - knowledge gain 1.7 points higher (p< .0001) - decrease in decisional conflict by 8 points (p < .0001)	- study is self-selection - convenience sample - only Latino and Korean parents	- education DVD resulted in increased knowledge, increased informed decision making and decreased decisional conflict related to HPV and the HPV vaccine
Wilson, A. R./ 2016	IV	Mailed survey	Survey mailed to 325 women ages 18-26 who attended the University of Utah Community Clinic	- survey mailed out to first 1000 individuals - survey mailed out to second 1000 individuals with return envelope and \$5 for participation	- Only 28% of initial 2000 were vaccinated. - 62% who returned survey had initiated the vaccine series -48.9% completed vaccine series - reasons for not initiating or completing vaccine series: waiting for more	- low survey return rates - those who vaccinated were more likely to respond - majority of participants were white/Caucasian, had access to healthcare, and response rates were higher in the vaccinated vs	- 28% of individuals vaccinated - reasons for not initiating or completing vaccine series: waiting for more information/too new, cost of vaccine or unsure if insurance covers vaccine, concern of side effects, not sexually active, and vaccine

					information/too new, cost of vaccine or unsure if insurance covers vaccine, concern of side effects, not sexually active, and vaccine inconvenience	non-vaccinated individuals	
Wong, C./ 2013	IV	Questionnaire	- Civilian, noninstitutionalized population in the United States: Families with girls aged 8-17; 2205 parents or parent proxies - Multistage area probability design	7 questions about the HPV vaccine	-42.9% of girls had received 1 dose of the vaccine - Not Vaccinate: 21.5% thought vaccine was not needed; 17.7% had insufficient information - 47% of unvaccinated would not vaccinate if recommended by daughter; 14% did not know	- vaccination status may be subject to recall error - provider recommendation was not explored	- there is a need for focused public health messages and interventions to promote initiation and completion of all HPV vaccine doses

Appendix B**Pre-intervention Survey**

1. On average, how many patients do you see in the clinic each week that are between the ages 18 and 26?
 - a. 0-2
 - b. 3-5
 - c. 6-8
 - d. 9 or more
2. How many of these patients, men and women aged 18 to 26, that you see each week, have ***initiated*** the Human Papilloma Virus (HPV) vaccine series?
 - a. 0-2
 - b. 3-5
 - c. 6-8
 - d. 9 or more
3. Approximately how many HPV series are initiated each week to patients between of ages of 18 to 26?
 - a. 0-2
 - b. 3-5
 - c. 6-8
 - d. 9 or more
4. What are the reasons patients refused the HPV vaccine? (Please Circle all that apply)
Educational deficit Cost Side effects/Safety Fear of Shots
5. What are the most common demographic categories of the patients that have received the HPV vaccine series in your practice? (Circle One for each category below)
Age Ranges in years: 18 – 22 y/o 23 – 26 y/o
Gender: Female Male
Race: White African American Hispanic Asian Other

Appendix C

Post-intervention Survey

1. On average, how many patients do you see in the clinic each week that are between the ages 18 and 26?
 - a. 0-2
 - b. 3-5
 - c. 6-8
 - d. 9 or more
2. How many of these patients, men and women aged 18 to 26, that you see each week, have initiated the Human Papilloma Virus (HPV) vaccine series?
 - a. 0-2
 - b. 3-5
 - c. 6-8
 - d. 9 or more
3. Approximately how many HPV series are initiated each week to patients between the ages of 18 and 26?
 - a. 0-2
 - b. 3-5
 - c. 6-8
 - d. 9 or more
4. What are the reasons patients refused the HPV vaccine? (Please Circle all that apply)
Educational deficit Cost Side effects/Safety Fear of Shots
5. Do you feel that the pamphlets were beneficial to your care related to HPV in young men and women aged 18 to 26?
 - a. Yes
 - b. No
6. What are the most common demographic categories of the patients that have received the HPV vaccine series in your practice? (Circle One for each category below)
Age Ranges in years: 18 – 22 y/o 23 – 26 y/o
Gender: Female Male
Race: White African American Hispanic Asian Other

Appendix D



KUMC HUMAN SUBJECTS COMMITTEE

**REQUEST FOR
QUALITY IMPROVEMENT/QUALITY ASSURANCE DETERMINATION**

****THIS FORM MUST BE TYPED****

Project Leader: Dr. Janet Pierce	
Department: School of Nursing	
Email: jpierce@kumc.edu	Phone: 913-588-1663
Alternate Contact Person (e.g., Project Coordinator): Julie R. Jennings	
Email: jjennings2@kumc.edu	Phone: 620-290-2210

Project Title:

INCREASING HUMAN PAPILOMAVIRUS VACCINATION IN YOUNG ADULTS

Project Number, Version and/or Date:

March 2017

1. Briefly state the purpose of the proposed project. (Attach project plan if available.)

The aim of this quality improvement project will be to increase the number of HPV vaccines given to young adults (ages 18-26) through an educational pamphlet related to HPV and the HPV vaccines. The Project Director assumes that providing an educational pamphlet to young adults before they see their health care provider will increase the number of HPV vaccines administered at ComCare in Salina, Kansas.

2. Describe the research that has already demonstrated the effectiveness of your intervention. (Cite research and/or attach documentation about the national program or standard you are implementing)

The goal of Health People 2020 is an 80% vaccination rate, which will require interventions to increase compliance with CDC recommendations related to the HPV vaccine.

Ratanasiripong (2012) determined there is a direct relationship between knowledge and the intent to vaccinate and the lack of knowledge related to HPV and the HPV vaccine can result in misconception and negative attitudes toward the vaccine. Laz, Rehman, and Berenson (2012) found that in 2010, 39% of women participants aged 18- 26 did not get the HPV vaccine because they did not need the vaccine and 12.7% of women participants did not get the vaccine because they needed more information. Wilson, et al. (2016) also found that 28% of study participants did not receive the HPV vaccine because they needed more information. Knowledge deficits seemed to be a large issue related to not vaccinating for HPV throughout the literature. Smulian, Mitchell, and Stokley (2016) concluded that patient education showed a modest increase in the initiation of the HPV vaccine. Although there is not strong evidence indicating educational interventions will greatly impact the initiation of the HPV vaccine series, it is evident that there is a need for education related to HPV and the HPV vaccine.

3. What types of data are needed for the project?

This QI project will consist of qualitative data that are collected from a survey. The data will include information about providers' recommendation and administration of the HPV vaccine, reasons seen for refusal of the vaccine, and patient demographics.

4. Do you need access to identifiable patient records to complete the project?

- NO**
 YES

If yes, who holds the records? _____

If yes, which patient identifiers or demographics are needed for the project?

5. Which descriptions best fits your project? *Check all that apply:*

- Determine if a previously implemented clinical practice improved the quality of patient care
- Evaluate or improve the local implementation of widely accepted clinical or educational standards that have been proven effective at other locations
- Gather data on hospital or provider performance for clinical, practical or administrative uses
- Conduct a needs assessment to guide future changes in local health care delivery or to support other improvements at KUMC
- Perform an analysis to characterize our patient population/clients to improve quality of services
- Implement programs to enhance professional development for providers and trainees
- Measure local efficiency, cost or satisfaction related to standard clinical practices

- X Develop interventions or educational strategies that improve the utilization of recognized best practices
- X Implement strategies to improve communication within our local healthcare environment
- X Improve tools for patients that promote education, health literacy or treatment plan compliance

6. **Does your project involve any of the following aspects?** *Check all that apply:*

- Randomizing participants into two or more groups
- Student/residents/trainees are randomized
 - Patients are randomized
 - Healthcare providers are randomized
 - Units of the hospital are randomized
- Other *Specify:* _____
- X Surveying a patient population
- X Developing clinical practice guidelines
- Developing new curriculum recommendations
- Developing or refining a new assessment tool
- X Implementing a novel approach to care that may improve patient outcomes

7. **Which institutions are involved in the project?**

- KUMC only
- Other institutions List ComCare

8. **Which individuals or groups will receive the results of your project?**

- Internal department personnel
- Hospital representatives
- University representatives
- X Presentation/publication*
- Other Specify _____

9. **How will your results be used to implement local improvements?**

If the pamphlets are determined to be beneficial, they will be implemented on a long-term basis at the clinic.

Signature**

Date

Type/Print Name

*Any presentation or publication resulting from this project should explicitly state that it was undertaken as quality improvement.

**Ink signature or email from the project leader is required.

FOR OFFICE USE ONLY	
Quality Improvement Determination Acknowledged. IRB review is not required.	
_____ HRPP Official	
_____ Signature	_____ Date

Appendix E

ComCare
520 S. Santa Fe Ave Suite 300
Salina, KS 67401

To whom it may concern,

I am a Family Nurse Practitioner student at The University of Kansas Medical Center. I am contacting you because you are a provider at ComCare in Salina, Kansas. I am recruiting participants to help in a quality improvement project to increase the administration of the Human Papillomavirus vaccine for young adults aged 18-26. I have developed an educational pamphlet using information from medical websites, as well the input of four medical professionals. The pamphlet will be placed in the waiting room of the clinic for patients to read as they wait to see their provider.

Participation in this quality improvement project involves completing a pre-and post-intervention survey that will take approximately 3 – 5 minutes. I am seeking your participation in this survey. No identifiable information will be collected about you or your patients and the survey is anonymous. There are no personal benefits or risks to participating in this survey. Participation is voluntary and you can stop taking the survey at any time. You will be notified when the surveys are available at the clinic.

If you have any questions, please contact Julie Jennings at (620) 290-2219 or jjennings2@kumc.edu. For questions about the rights of research participants, you may contact the KUMC Institutional Review Board (IRB) at (913) 588-1240 or humansubjects@kumc.edu

Sincerely,

Julie R. Jennings, RN, BSN

APPENDIX F

What are possible side effects of the vaccine?

Most common side effects include:

- Pain, redness, or swelling in the arm where the shot was given
- Fever
- Headache or feeling tired
- Nausea
- Muscle or joint pain



How effective is the vaccine?

- The HPV vaccine provides 95% or greater protection against precancers and nearly 100% protection against genital warts.
- There is no evidence that suggests the HPV vaccine loses the ability to provide protection over time.

How do you get the vaccine?

- ComCare provides the HPV vaccine at the immunization clinic. Ask your doctor today about the HPV vaccine and how to get it scheduled.

How do you pay for the vaccine?

- The vaccine is covered by all Health Insurance Marketplace plans and most private insurance plans.
- If you do not have health insurance, talk with your provider to learn about more affordable options.

References

1. The Centers for Disease Control and Prevention (2016). Human Papillomavirus Vaccination: What everyone should know. Retrieved from: <https://www.cdc.gov/vaccines/yvpd/hpv/public/index.html>
2. The Centers for Disease Control and Prevention (2017). Vaccine Information Statement. Retrieved from: <https://www.cdc.gov/vaccines/hcp/vsis/vsi-statements/hpv.html>
3. Immunization Action Coalition (2017). Ask the Experts: Diseases & Vaccines. Retrieved from: <http://www.immunize.org/hpv/>



HUMAN PAPILLOMAVIRUS

What is HPV and what is the HPV vaccine...

What is Human

Papillomavirus (HPV)?

- HPV is a group of more than 150 related viruses.
- HPV is transmitted through direct skin-to-skin contact, usually sexual contact.
- Nearly all sexually active men and women get HPV at some point in their lives. HPV is the most common sexually transmitted infection in the United States.
- HPV is the causative agent in genital warts and many cancers, with the most common being cervical cancer and oral cancer.

What is the

treatment for HPV?

- There is no treatment for HPV. Associated lesions, such as genital warts and cancers, are treated in a variety of ways.

How do you protect

yourself against HPV?

- Vaccination
- Abstinence
- Limited number of sexual partners
- Use of condoms



Who should not get

the vaccine?

- Anyone who has had a severe allergic reaction to a dose of HPV vaccine should not get another one.
- Anyone who has a severe allergy to any component of HPV vaccine should not get the vaccine.
- HPV vaccine is not recommended for pregnant women.

How is the vaccine given?

HPV Vaccine

Who can get the

vaccine?

- The HPV vaccine can be given as early as age 9.
- Women can get the vaccine up to the age of 26.
- Heterosexual men can get the vaccine up to the age of 21.
- Homosexual men or immunocompromised men can get the vaccine up to the age of 26.

- The vaccine is an intramuscular injection in the arm.
- If given before the age of 15, only two doses of the vaccine are given:
 - First dose
 - Second dose 6-12 months later
- If given at 15 years of age or older, three doses of the vaccine are given:
 - First dose
 - Second dose 1-2 months later
 - Third dose 6 months after first dose

Appendix G



Elm Street

- Kyle D. Elmore, M.D.
- Elaine L. Ferguson, D.O.
- Garrett W. Hooker, M.D.
- Mark A. Krehbiel, M.D.
- Chad R. Schroeder, M.D.
- Gary G. Williams, M.D.
- Dennis C Woodall, M.D.
- Jennifer Dombrowski, PA-C
- Kathleen Corona, APRN, NP-C

Santa Fe

- Larry E. Burnett, D.O.
- Matthew L. Cobb, M.D.
- Jeffrey S. Ehrlich, M.D.
- Scott A. Gayley, M.D.
- Sara L. Johnston, M.D.
- Kevin D. Norris, M.D.
- LaDona M. Schmidt, M.D.
- Alan K. Wedel, M.D.
- Miranda Brown, MSN, APRN, FNP-C
- Alison Hiatt, APRN, NP-C
- Mindy Lovendahl, APRN, NP-C

Minneapolis

- Bruce L. Labes, M.D.
- Patricia Barker Little, M.D.
- Kelly E. Yoxall, M.D.
- Michelle Labes, APRN

StatCare

- Michael D. Grant, M.D.
- John M. Shettlar, D.O.
- Aubrey Fetherston, PA-C
- Gwen Philbrook, MSN, APRN

Wellplan

- Crystal Bertrand, RD, LD, CDE
- Adrienne L. Gapter, MS
- Jillian Junek, RD/LD
- Sandi Martens, MS/RD/LD/CDE
- Renee Riedel, RD/LD

Physicians Practice Management

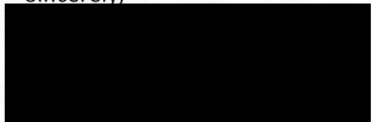
- Joseph Gubbels

June 29, 2017

To Whom It May Concern:

I am writing to confirm that University of Kansas School of Nursing DNP student Julie Jennings has been granted permission to complete her quality improvement project at our clinic. We look forward to hearing about her project findings at the conclusion of her time with us. Should you have further questions regarding our site please contact myself or Julie's project co-chair Alison Hiatt, APRN by email at ahiatt@srhc.com or by telephone at 785-822-4739.

Sincerely,



Carl Roper
 Director of Clinical Operations for Comcare
 Salina Regional Health Center
 785-823-7470

COMCARE Elm Street / 617 East Elm / Salina, Kansas 67401 / (785) 825-8221
 COMCARE Santa Fe Street / 520 S. Santa Fe Ste. 300 / Salina, Kansas 67401 / (785) 823-7470
 COMCARE Minneapolis / 311 North Mill /Minneapolis, Kansas 67467 / (785) 392-2144
 STATCARE / 1001 S. Ohio / Salina, Kansas 67401 / (785) 827-6453

Appendix H

On average, how many patients do you see in the clinic each week that are between the ages 18 and 26?		
	Pre-survey	Post-survey
A. 0 – 2	1	1
B. 3 – 5	1	1
C. 6 – 8	1	1
D. 9 or more	6	5

Figure 1: Question 1

How many of these patients, men and women age 18 to 26, that you see each week, have initiated the HPV vaccine series?		
	Pre-survey	Post-survey
A. 0 – 2	8	5
B. 3 – 5	1	3
C. 6 – 8	0	0
D. 9 or more	0	0

Figure 2: Question 2

Approximately how many HPV series are initiated each week to patients between the ages of 18 and 26?		
	Pre-survey	Post-survey
A. 0 – 2	9	6
B. 3 – 5	0	0
C. 6 – 8	0	2
D. 9 or more	0	0

Figure 3: Question 3

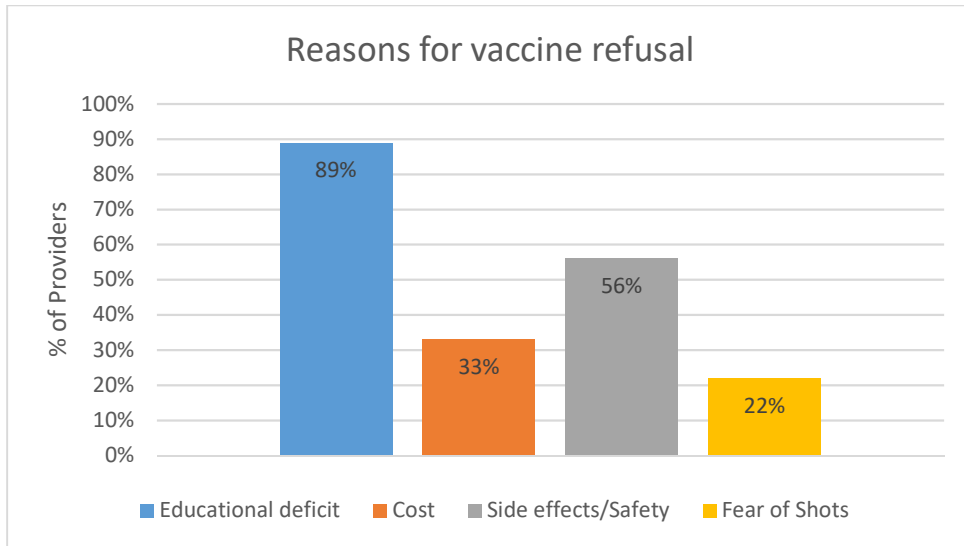


Figure 4: Reasons for vaccine refusal

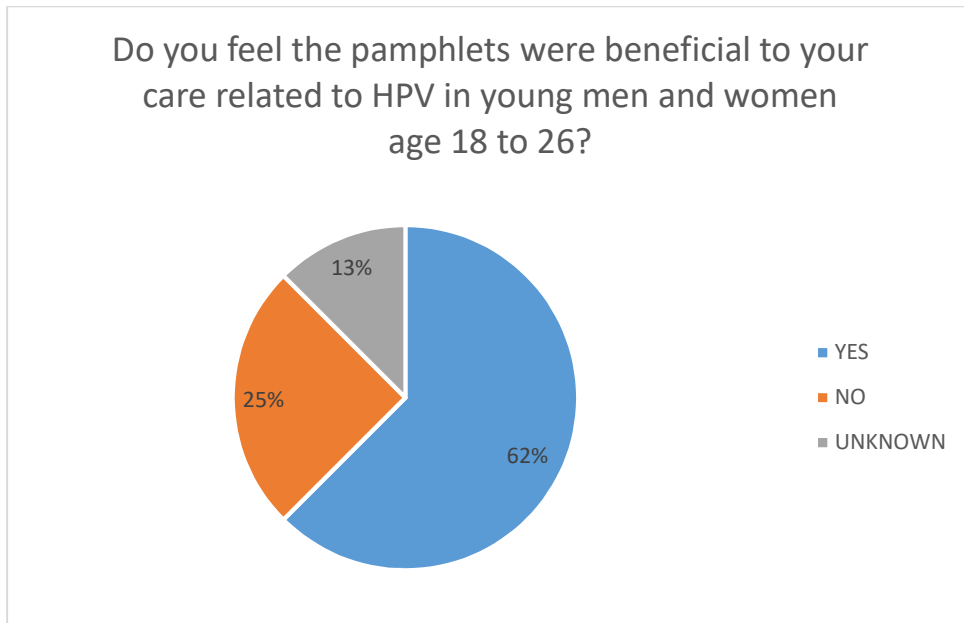


Figure 5: Post-survey Question 5