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UNIVERSITY OF SAN DIEGO

Hahn School of Nursing and Health Science

DOCTOR OF NURSING PRACTICE PORTFOLIO

by

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IMPROVING HPV VACCINATIONS IN MILITARY WOMEN

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Conflict of Interest

The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, University of San Diego, or the United States Government. This work was prepared while the author was a student at the University of San Diego and as part of the author's official duty. Title 17 U.S.G. 105 provides 'Copy-right protection under this title is not available for any work of the United States Government.' Title 17 U.S.C. 101 defines a United States Government work as a work prepared by a military service member or employee of the United States Government as part of that person's official duties.

KEYWORDS

HPV, Workups, Vaccination, STI

Abstract

The purpose of this evidence-based project was to provide patient education in order to increase human papillomavirus (HPV) vaccination rates in military women. Despite the availability of a vaccine, HPV continues to be the most common sexually transmitted infection (STI) in the United States. The goal of this program was to increase patient knowledge and HPV vaccination rates by providing education and a verbal recommendation for vaccination during regularly scheduled well-woman exams (WWE). The project resulted in a 65% increase in vaccination rates, raising the pre-program vaccination rate of 55% to a post-intervention vaccine percentage of 91%. The results demonstrate the importance of patient education and provider recommendation in vaccine acceptance.

Background

Sexually transmitted infections (STIs) are a persistent and costly health care burden in the United States. According to the Centers for Disease Control and Prevention (CDC), close to 20 million new STIs occur in the United States each year; with half of these occurring among our nation's youth ages 15-24. Annual health care costs associated with STI treatment are about \$16.4 billion (CDC, 2013). Human Papillomavirus (HPV) infection is the most common STI in the United States despite the availability of a vaccine. Vaccines such as Gardasil are the safest and most effective way to prevent cervical cancer and other HPV-related problems (CDC, 2013). While there is no cure for the virus, significant reductions in new HPV infections and reinfection rates are possible with vaccine administration.

The Human Papillomavirus is extremely common. In fact, the American Cancer Society (ACS) compares genital HPV incidence to that of the common cold. They go on to state "nearly all sexually-active men and women get HPV at some point in their lives. This is true even for people who only have sex with one person in their lifetime" (ACS, 2014). This is because most cases of HPV are asymptomatic, people are unaware they are infected, and over 90% of the time the body's immune system will clear the virus on its own within two years (ACS, 2014). However, HPV remains the biggest risk factor for cervical cancer, and persistent infections with high-risk HPV subtypes (16 and 18) are associated with 99% of all cervical cancers (CDC, 2012).

So, how big could HPV's impact possibly be? In 2008 there were approximately 14.1 million newly diagnosed cases of HPV, resulting in a prevalence of 79.1 million cases (CDC, 2013). Unfortunately, HPV has other associated complications beyond

cervical cancer. HPV accounts for 90% of anal cancers, 12% of oral and pharyngeal cancers, and 40% of vulvar, and vaginal and/or penile cancers (CDC, 2012). Another complication of HPV is anogenital warts caused by subtypes 6 and 11. An estimated 360,000 Americans contract genital warts each year (ACS, 2015). These statistics are staggering and demonstrate the urgent need for intervention.

The population of interest for this specific evidence-based program was U.S. Navy active duty servicewomen ages 17-26 stationed in San Diego, California. Thus, it is important to examine HPV prevalence in this specific group of women as well. According to Goyal, Mattocks, and Saddler (2012), there are significantly higher rates of STIs, HPV, and cervical dysplasia among young servicewomen than in civilian women. They believe this is because active duty servicewomen “tend to be young and unmarried and belong to racial and ethnic minority groups” associated with increased risk (Goyal et al., 2012, p. 1155). Goyal et al. (2012) went on to state:

Although data are limited, the prevalence of HPV infection may also be higher among women in the military compared to those in the general population. In studies among active duty servicewomen seeking care at an Army Medical Center STI screening clinic, prevalence of any HPV type ranged between 36% and 51%,^{48,49} which is far higher than in the general population of U.S. women (27%, 95% confidence interval [CI] 23%-31%), but similar to that found in U.S. women 20–24 years old (45%, (95% CI 36%-55%). (p. 1157)

In another study, Shen-Gunther, Shank, and Ta (2011) examined HPV vaccination rates among different groups of patients at Naval Medical Center San Diego (NMCSDD). The study looked at vaccine initiation and completion rates in a large group of 5,088 patients

and found that the least adherent group of patients was active duty service members. Although the vaccine is a covered benefit provided by TRICARE, only 16% of active duty servicewomen completed the vaccination series compared to 43% of dependent daughters and 21% of dependent wives. These results indicate that there is a problem with the system and a definite need for improvement in HPV education and vaccination.

Intended Improvement

HPV is a rapidly spreading problem and will continue to be so without adequate patient education. Thus, educating and informing patients about HPV and the HPV vaccine is crucial. By giving patients knowledge, we can empower them to take control of their healthcare and pass on the information to others. Thus, the clinical objective for this evidence-based project was to provide patient education about HPV and ways to prevent/minimize its negative effects. The expected outcome was improved HPV vaccination rates.

Setting

The project was initiated at a southern Californian Naval Medical Facility made-up of a large multi-specialty inpatient hospital along with 10 branch clinics for military members and their families. The program took place at one of the branch clinics designated for active duty service members only. The program focused specifically on well women's exams (WWEs) performed by a designated female nurse practitioner in the clinic. The clinical site has a large number of female patients in the targeted age range (17-26 years) that was easily accessible during their regularly scheduled WWEs. The program involved providing face-to-face patient education about HPV with educational

handouts and a specific provider recommendation for vaccination. The HPV vaccine was readily available, cost free and on-site after the visit.

Study Question

The project was designed to answer the following question: Does an educational HPV intervention result in an increased rate of HPV vaccination among U.S. Navy active duty females? With HPV incidence rates continually increasing, this is an area in which nurse practitioners can really make a significant impact and play a key role in intervention for individual patients, as well as the general public health.

Conceptual Model

This particular evidence-based project was implemented using the Iowa Model for guidance. The Iowa Model of EBP was selected because it places an emphasis on visualizing the healthcare system as a whole and identifies several steps to assist and guide the practitioner in the EBP process. The model is broadly applicable and a variety of health care disciplines can utilize and reproduce the program in their settings. For this particular project, the identified problem and/or trigger was low HPV vaccination rates.

Ethical Issues

Prior to implementation, project approval was obtained from the University of San Diego's (USD) Institutional Review Board (IRB) with permission to disseminate de-identified clinical findings. The project was also reviewed by the Regional Director of Nursing Research for the Navy Medicine West region and was approved as a quality improvement project.

Intervention Implementation

The intervention included face-to-face patient education, providing an educational handout, and giving a verbal recommendation for the HPV vaccine during regularly scheduled well-woman exams (WWEs). Patients checked-in for their regularly scheduled WWE and completed the women's health intake form (which included a question about HPV vaccination status) prior to seeing the nurse practitioner. The nurse practitioner then completed the WWE and took time during each visit for patient education and health promotion. Patient education time was specifically dedicated to discussing HPV and the HPV vaccine. During this time, the practitioner provided an educational handout, answered any questions the patient had, emphasized the importance of the vaccine, and provided a verbal recommendation for vaccination. If interested in receiving the vaccine, the patient was then escorted directly to the immunization clinic (located on-site), where the vaccine was administered. The patient was given a magnet with the date for the next vaccination in the series. The practitioner then completed her documentation in the medical record and HPV vaccination was recorded.

Evaluation Plan

The program was monitored and evaluated through chart reviews via an electronic medical record (EMR) system. Chart reviews were conducted prior to beginning the program to collect pre-program data, during the program, and upon completion. Charts were screened for the HPV vaccination code and to see if the HPV vaccine had been documented. Patient follow-up was completed via email and phone call if they had not received the vaccine during the visit. Upon completion of the program, data were compiled and a vaccination percentage was generated.

Results

The goal of this program was to increase patient knowledge and HPV vaccinations rates by 20% from baseline, which was achieved and exceeded. The pre-program vaccination rate was 55% and the post-intervention vaccination percentage increased to 91%, a 65% increase in vaccination rates. Throughout the 4-month program, 103 eligible patients were identified as needing the HPV vaccination and out of those, 94 patients were then vaccinated. Also, 100% of the patients seen during the program's entirety received HPV education and a recommendation for vaccination if eligible.

Discussion

The Human Papillomavirus is the most common sexually transmitted infection in the United States, yet public knowledge and vaccination rates remain low. Thus, this program set out to increase HPV awareness and increase vaccination rates among active duty servicewomen. The results of the program were impressive and in only 4 months, a 65% increase in vaccination rates was seen. By providing patients with HPV education and recommending vaccination, the program created a new average vaccination rate of 91% of eligible patients, up from the previous baseline of 55%.

Another current organization encouraging HPV vaccination is the U.S. Department of Health and Human Services' (USDHHS), and Healthy People 2020 (HP2020) objectives seek to increase routine HPV vaccination coverage for adolescents. Immunization and Infectious Disease (IID) objectives 11.4 and 11.5 outline goals to increase HPV vaccination coverage for females (IID-11.4) and males (IID-11.5) ages 13-15 to 80% (USDHHS, 2015). These target goals are important; however they only cover a specific age range and do not cover those females and males who were not vaccinated

as adolescents. There are no benchmark goals for older adolescents or young adults even though the Gardasil vaccine is approved for females and males ages 9-26. This evidence-based program in military servicewomen exceeded the HP2020 benchmark vaccination goal of 80% for ages 13-15 years and demonstrated the importance of continuing to educate about HPV and encourage vaccination among older adolescents and young adults.

The program results suggest that education about HPV will improve vaccination rates. Thus, if health care providers educate patients, parents, and society about HPV, we may see an increase in vaccination. One of the main arguments against vaccination is a parental concern that it promotes sexual activity at a younger age. A recent study done by Jena, Goldman, & Seabury (2015), found that HPV vaccination was not associated with increased STI rates in a large cohort of females ages 12-18, suggesting that HPV vaccination is unlikely to cause unsafe sexual practices (Jena et al., 2015). Studies such as this one and evidence found from this project can be utilized by health care providers to have informed conversations with patients and parents about HPV to decrease concerns about vaccination.

In conclusion, these results demonstrate the importance of patient and provider education about HPV and the need for vaccination recommendations from health care providers. Future evidence-based projects should replicate this program in other clinical sites to improve vaccination rates and increase awareness.

Conclusions and Implications

HPV is a rapidly spreading problem and will continue to be so without accurate patient education and vaccine recommendations from health care providers. By supplying

patients with knowledge, we can empower them to take control of their own health and inspire them to pass on their learned experience to others. Health care professionals play a key role in the patient education process and research has linked patient education and vaccine recommendations to increased acceptance of HPV vaccine. Cervical cancer is a preventable disease; together we can make a difference.

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2014 HPV Vaccination Rates

Table 1. 2014 HPV Vaccination Rates.
This figure illustrates the increase in vaccination rates over time.

Figure 1. Number of patients vaccinated. This figure illustrates the total number of patients seen and percentage of those patients opting to be vaccinated

Poster Abstract

IMPROVING HPV VACCINATION IN MILITARY WOMEN

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Project Purpose: The purpose of the project was to implement Human Papillomavirus (HPV) patient education during every well woman exam (WWE) to improve patient knowledge and HPV vaccination rates in military women aged 18-26 years.

Background: The Human Papillomavirus (HPV) has been identified as the biggest risk factor for cervical cancer and, despite the availability of a vaccine; HPV continues to be the most common STI in the U. S. (American Cancer Society, 2013). Approximately 79 million Americans are currently infected with HPV, and 14 million individuals will become infected annually, leading to more than 10,000 cases of cervical cancer each year (Centers for Disease Control and Prevention, 2014). Most cases of HPV are asymptomatic and people are unaware they are infected; thus, patient education and vaccination are key elements to battling the problem. Significant reductions in new HPV infections and reinfection rates are possible with patient education and vaccine recommendation by health care providers.

Project Plan: The health care provider responsible for all women's health visits in an active duty military treatment facility provided patient education during regularly scheduled annual and/or initial well woman exams. Patients received an educational handout and a verbal recommendation for the HPV vaccine. Immunizations were provided at the close of the visit, if desired. Project effectiveness was evaluated based on changes in HPV immunization rates before and after the project.

Outcomes: The goal of this program was to increase patient knowledge and HPV vaccination rates by providing education and a verbal recommendation for vaccination during regularly scheduled well-woman exams (WWE). The project resulted in a 65% increase in vaccination rates, raising the pre-program vaccination rate of 55% to a post-intervention vaccine percentage of 91%.

Conclusions: The results of this evidence-based practice project demonstrate the importance of patient education and provider recommendation in vaccine acceptance.

IMPROVING HPV VACCINATION IN MILITARY WOMEN

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BACKGROUND

- The Human Papillomavirus (HPV) is the most common sexually transmitted disease in the U.S., despite the availability of a vaccine (American Cancer Society, 2013).
- 79 million Americans are currently infected with HPV, 14 million individuals will become infected annually, leading to more than 10,000 cases of cervical cancer each year (CDC, 2013).
- Research demonstrates that young military servicewomen have significantly higher rates of STIs, HPV, and cervical dysplasia
- A U.S. Army medical center STI clinic found that HPV rates in service women ranged from 36-51%, which is higher than the U.S. general population (Goyal, Mattocks, & Saddler, 2012)
- Program took place at a southern California Naval Branch Health Clinic providing care to a large population of active duty servicewomen in the targeted age group of (18-26) years old

AIM/PURPOSE

- The purpose of this IRB approved evidence-based quality improvement project was to implement Human Papillomavirus (HPV) patient education during every well woman exam (WWE) to improve patient knowledge and HPV vaccination rates in military women aged 18-26 years

EVIDENCE

- Nearly every sexually active person will acquire HPV at some point in their lives (ACS, 2013)
- HPV is the biggest risk factor for cervical cancer (CDC, 2012)
- Vaccines such as Gardasil are currently considered one of the safest and most effective ways to prevent cervical cancer and other HPV related complications (CDC, 2013)
- Educational interventions to increase HPV awareness and vaccination help to boost vaccination rates (Kester, 2014)
- HPV vaccine uptake and acceptability increased when patients were given education and a recommendation for vaccination from their health care provider (Brewer & Fazekas, 2007)
- Patients were 5 times more likely to receive the HPV vaccine if a recommendation was given by their health care provider versus those who did not receive a recommendation (Vitalo, Lee, & Mehta, 2013)

PRACTICE INNOVATION

- The health care provider responsible for women's health visits in an active duty military treatment facility provided patient education during regularly scheduled annual and/or initial well woman exams.
- Patients received an educational handout and a verbal recommendation for the HPV vaccine
- Immunizations were provided at the close of the visit, if desired
- Project effectiveness was evaluated based on changes in HPV immunizations rates before and after program implementation

EVALUATION METHOD

- Project evaluated via electronic medical record (EMR) chart review
- Compared the number of patients coded by HCP for needing HPV vaccine and the number of individuals who actually received vaccination
- Pre-data gathered via EMR review and pre-intervention vaccination percentage generated
- Post-data gathered via EMR review and post-intervention percentage generated
- Compared pre-intervention percentage versus post-intervention percentage to determine if practice change increased vaccination rates

RESULTS

- The goal of this program was to increase patient knowledge and HPV vaccination rates by 20% from baseline which was achieved
- The average pre-data vaccination percentage was 55% and the average post-intervention vaccination percentage was 91%
- Out of 103 eligible patients, 94 of them were vaccinated
- 100% of patients received HPV education and a recommendation for vaccination if eligible

Patients opting out of vaccine: 9

CONCLUSIONS/IMPLICATIONS FOR CLINICAL PRACTICE

- Based on the results of this program, patient education and health care provider recommendation for HPV vaccination increases HPV vaccination rates
- The intervention utilized in this program should be continued and implemented in similar clinical settings
- Vaccinating women and men against HPV could decrease HPV infection rates, re-infection rates, and cervical cancer incidence
- This program demonstrates the importance of patient education and provider awareness about HPV
- HPV vaccines could potentially decrease health care spending on HPV and HPV related complications

ACKNOWLEDGEMENTS

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TABLES/GRAPHS

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- Key references with links included:**
(1) [Military women vaccination](#)
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- Additional references available upon request

Improving HPV Vaccination In Military Women

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Mary Jo Clark, PhD, RN, Joseph F. Burkard, DNSc, CRNA

Background

- HPV is the most common sexually transmitted disease in the U.S. (American Cancer Society, 2014)
- 79 million Americans currently infected
 - 14 million new cases/year (CDC, 2013)
- HPV is biggest risk factor for cervical cancer (CDC, 2012)
- Studies have found military servicewomen having higher rates of STIs, HPV, and cervical dysplasia (Goyal, Mattocks, & Sandler, 2012)

Background

- Increasing vaccination rates is nationally recognized by HP2020
 - **Immunization and Infectious Disease (IID)**
 - Objective IID-11:** Increase routine vaccination coverage levels for adolescents
 - **IID-11.4:** Increase the vaccination coverage level of 3 doses of human papillomavirus (HPV) vaccine for females by age 13 to 15 years to **80%**
 - **IID-11.5:** Increase the vaccination coverage level of 3 doses of human papillomavirus (HPV) vaccine for males by age 13 to 15 years to **80%**
 - **NO BENCHMARK FOR OLDER ADOLESCENTS OR YOUNG ADULTS**

Is this clinically relevant?

- Studies have found military servicewomen having higher rates of STIs, HPV, and cervical dysplasia
- Baseline vaccination rates ranged from 48-67% (**Average 55%**)
 - BELOW HP2020 BENCHMARK
 - Area for improvement
 - Potential to:
 - Increase patient knowledge/awareness
 - Improve health outcomes
 - Empower patients to take control of their health care
 - Reduce HPV infections and complication rates
 - Cost Savings

Practice Innovation

- HPV patient education during all regularly scheduled well women's exams (WWEs) and educational handouts were provided
- HCP provided verbal recommendation for HPV vaccine
- Escorted patients to immunization clinic immediately after visit if vaccination desired

Cost Benefit Analysis

- Costs:
 - Provider Salary (Covered by DON)
 - Paper& ink for handouts (Covered by DON)
 - Gardasil Vaccine (Covered by DON)
- Benefits:
 - ✓ Increase health outcomes
 - ✓ Reduce HPV infection and complication rates
 - ✓ **DECREASE CERVICAL CANCER**
 - ✓ Decrease visits
 - ✓ Cost savings
 - Vaccine vs. Cancer Tx

Outcomes

- Goal was to increase baseline vaccination percentage by 20%
- Increased average vaccination percentage to 91% (65% increase)
- **HIGHER THAN HP2020 GOAL**
- 103 patients eligible, 94 vaccinated
- 100% of patients received HPV education

HPV Vaccination Rates

Pre-Intervention:

Feb 2014- 50%

Mar 2014- 48%

Apr 2014- 67%

May 2014- 55%

Average: 55%

Post-Intervention:

Sep 2014- 82%

Oct 2014- 91%

Nov 2014- 93%

Dec 2014- 100%

Average: 91%

Conclusions & Implications for Clinical Practice

- HPV education and HCP recommendation **INCREASE** vaccination rates
- Educational intervention could potentially decrease HPV infection and complications
- Educational intervention with vaccination could potentially save the Navy millions of dollars
- **Providers need to be educated!**
- Intervention should be implemented in similar clinics

Barriers & Lessons Learned

- Transient population (deployments, change of duty station) makes follow-up difficult
 - Thus **PATIENT EDUCATION IS KEY**
- Provider Turnover/deployments
- Ensuring vaccination documentation in EMR

Questions, Comments, Concerns, Compliments?

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